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IN REPLY REFER TO:
DIR 11-012

June 28, 2011

David K. Tanuoue, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Re: **Special Use Permit (SUP) No. 2008/SUP-2; State Land Use Commission (LUC) Docket No. SP09-403; <u>In re Department of Environmental Services, City and County of Honolulu</u>; Application to Modify SUP No. 2008/SUP 2 by Modifying the LUC's Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications dated October 22, 2009**

The Department of Environmental Services, City and County of Honolulu (the "Applicant" or the "Department of Environmental Services"), respectfully moves the Planning Commission, City and County of Honolulu (the "Planning Commission"), for an Order modifying State Special Use Permit ("SUP") No. 2008/SUP-2, which superseded State SUP No. 86/SUP-5, and which permitted a 92.5 acre expansion and time extension to capacity as allowed by the Department of Health, State of Hawaii ("DOH") for the disposal of solid waste at the Waimanalo Gulch Sanitary Landfill ("WGSL" or "Landfill").

This Application is made in accordance with Section 2-18 and Section 2-49 of the Rules of the Planning Commission and Section 15-15-70 of the State of Hawaii, Land Use Commission ("LUC") Rules. Further, the LUC has formally asserted to the Circuit Court of the First Circuit that there is nothing precluding the Department of Environmental Services from requesting relief from conditions of the 2009 LUC Order in the future: "there is nothing to preclude ENV from requesting [from the Planning Commission] an extension of the 2012 date if it is unable, using reasonable diligence as required in Condition No. 4, to identify and develop a new landfill site." <u>See</u> Exhibit "A," Appellee State of Hawai'i, Land Use Commission's Answering Brief, filed on April 12, 2010, <u>In the Matter of Department of Environmental Services, City and County of</u>

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Honolulu vs. Land Use Commission, State of Hawaii, et al., Civil No. 09-1-2719-11, p. 9, attached hereto and incorporated herein.

Also, presenting this Application first to the Planning Commission for its consideration, rather than directly to the LUC, will promote the maximum opportunity for public participation and input by all interested parties. Furthermore, in light of the lack of specificity in the applicable rules, enabling both the Planning Commission and the LUC to consider Applicant's request will reduce the possibility of a procedural challenge. Finally, if the Planning Commission determines that it does not have the authority to consider this request, it may so conclude and direct Applicant to seek consideration from the LUC.

Applicant specifically requests that the Planning Commission modify the LUC's Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications, dated October 22, 2009 (the "2009 LUC Decision"), by deleting the July 31, 2012, deadline to cease disposal of municipal solid waste ("MSW") at WGSL, as set forth in Condition No. 14 of said Order. The Department of Environmental Services seeks to use the WGSL until it reaches its permitted capacity, as allowed by the DOH, and as set forth in the Planning Commission's Findings of Fact, Conclusions, and Decision, dated August 4, 2009 (the "2009 Planning Commission Decision").

The basis for this Application is that the current permitted area of the Landfill, approximately 200 acres, has a useful life well beyond July 31, 2012. See *Final Environmental Impact Statement, Waimanalo Gulch Sanitary Landfill Lateral Expansion, Waimanalo Gulch, Oahu, Hawaii, TMKs: (1) 9-2-003: 072 and 073*, dated October 2008 ("2008 FEIS")[1] at Section 1.1, Proposed Action at pg. 1-1 ("The landfill has been in operation since 1989 and has capacity remaining with the unused 92.5 acres of the approximately 200 acre property for an estimated minimum life of approximately 15 years") (footnote omitted); see also Section 2.6.3, Landfill Capacity at pg. 2-27 ("At present, the lifespan of WGSL is projected for a minimum period of 15 years.") The 2008 FEIS, which was accepted by the Department of Planning and Permitting, City and County of Honolulu ("Department of Planning and Permitting") on October 13, 2008, thoroughly studied the current footprint, operations and environmental impacts associated with the use of the WGSL to capacity. See 2009 Planning Commission Decision, pg. 2, ¶ 3; see also 2008 FEIS at Section 1, Executive Summary; Section 3, Introduction; Section 4, Project Description; and Section 5, Environmental Setting, Potential Impacts and Mitigation Measures. Neither the permitted area nor the methods of operation will change with this

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[1] Although the 2008 FEIS is a part of the record in Docket No. SP09-403, for ease of reference, attached hereto and incorporated herein as Exhibit "B" is the 2008 FEIS on CD-ROM.

Application. See 2008 FEIS at Section 1.1, Proposed Action; Section 4, Project Description. Moreover, the Landfill's current footprint has already been approved by the Planning Commission and the LUC and the Landfill has a solid waste permit from the DOH. See 2009 Planning Commission Decision, Decision and Order, pg. 24; see also 2009 LUC Decision pgs. 4-5; Declaration of Timothy E. Steinberger ("Dec. Steinberger"), ¶¶ 17, 19. It is therefore in the public interest to use WGSL, the only permitted MSW landfill on O'ahu, to capacity: this ensures maximum utility of our island's finite land resources and allows Applicant to properly manage the MSW of the City and County of Honolulu ("City") so as to protect the public health and safety of O'ahu's residents and visitors.

If the Landfill is forced to cease accepting MSW for disposal on July 31, 2012, in accordance with Condition No. 14 of the 2009 LUC Order, there will be no viable options to meet O'ahu's solid waste management needs. See 2008 FEIS at Section 1.2.2., No Action Alternative at pgs. 1-2 ("The No Action Alternative, which would involve taking no further action to extend the use of the WGSL was rejected because the consequences would result in an unacceptable health, safety, and economic impact to all communities on O'ahu."); see also Section 9.3., No Action Alternative, pgs. 9-6 to 9-8. For example, certain types of MSW, including special wastes such as sewage sludge, animal carcasses, treated medical waste; residue from the City's Honolulu Program of Waste Energy Recovery waste-to-energy facility ("H-POWER"); and bulky item waste cannot be disposed of at H-POWER and must be disposed of at a permitted landfill. See 2009 Planning Commission Decision, ¶¶ 94, 97, pg. 19. That landfill is WGSL. See 2009 Planning Commission Decision, ¶¶ 91, 92, 94, pgs. 18-19. Without WGSL, the inability to dispose of various wastes will potentially create serious health and safety issues. See 2009 Planning Commission Decision, ¶ 93, pg. 18.

In order to alleviate this potential health and safety risk, it is respectfully requested that the Planning Commission modify SUP No. 2008/SUP-2 by deleting Condition No. 14 of the 2009 LUC Decision, thereby allowing the usage of WGSL to dispose of MSW until the site reaches its permitted capacity as provided in the 2009 Planning Commission Decision.

I. BACKGROUND

A. Establishment of the Landfill

On October 17, 1985, the Director of Land Utilization, City and County of Honolulu (nka the Department of Planning and Permitting), accepted the Environmental Impact Statement for the establishment of a landfill at Waimanalo Gulch, Honouliuli, 'Ewa, O'ahu, Hawai'i. See 2008 FEIS at Section 2.5, Historical Background of the State Special Use Permit, at pgs. 2-18.

On February 4, 1987, the Planning Commission approved the SUP application to establish the Landfill on approximately 60.5 acres of land within the Agricultural District, subject to six conditions. The application was submitted by the Department of Public Works, City and County of Honolulu (nka the Department of Environmental Services). Id.

Because the SUP was for land greater than fifteen acres, on April 20, 1987, the LUC also approved the issuance of the SUP in Special Permit Docket Number 87-362 to establish the Landfill, subject to eight conditions.[2] See the LUC's Findings of Fact, Conclusions of Law and Decision and Order dated April 20, 1987, attached hereto and incorporated herein as Exhibit "C."

B. Expansion of the Landfill by 26 acres

On July 26, 1989, the Planning Commission approved an amendment to the SUP to expand the Landfill by 26 acres, with one additional condition. Applicant had requested the amendment because 26 acres had been inadvertently left out of the original SUP. The additional 26 acres was necessary to allow enough land area for the proposed administration building, weighing station, drainage structures and access roads. See 2008 FEIS at pgs. 2-19.

On October 31, 1989, the LUC also approved the SUP amendment to expand the existing permitted area by 26 acres, with the additional condition as recommended by the Planning Commission. See the LUC's Findings of Fact, Conclusions of Law and Decision and Order dated October 31, 1989, attached hereto and incorporated herein as Exhibit "D," pgs. 9-10.

C. Further Expansion of the Landfill by 21 acres

On January 10, 2003, the Department of Planning and Permitting accepted the Final Supplemental Environmental Impact Statement ("FEIS"), which addressed a proposed 21-acre expansion of the landfill. See 2008 FEIS at pgs. 2-19.

On March 13, 2003, the Planning Commission granted the application of the Department of Environmental Services to expand the landfill by 21 acres ("2003 Planning Commission Decision" attached hereto and incorporated herein as Exhibit "E"), which, at that time, was projected to extend the life of the landfill by 5 years. The proposed

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[2] "Special permits for areas greater than fifteen (15) acres require approval of both the planning commission and the land use commission." Rules of Planning Commission § 2-38; see also Hawai'i Revised Statutes ("HRS") § 205-6.

expansion included four cells (E1 through E4) for disposing of MSW, berms, detention and stilling basins, drainage channels and access routes. In this Decision, the Planning Commission recommended that the Department of Environmental Services submit an alternative landfill site, or sites, to the City Council by December 31, 2003. The Planning Commission did not, however, condition its approval on this recommendation. See 2003 Planning Commission Decision.

With its approval of the 21-acre expansion, the Planning Commission imposed two additional conditions. One of those conditions, Condition No. 10, required the following:

> Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

Id., at p. 5.

On June 9, 2003, the LUC issued the 2003 LUC Decision, attached hereto and incorporated herein as Exhibit "F." The LUC adopted Condition No. 10 of the 2003 Planning Commission Decision as Condition No. 12 in the 2003 LUC Decision. The LUC Decision also required the City Council to select a new site for a landfill, with the assistance of the Blue Ribbon Site Selection Committee, by June 1, 2004. See 2003 LUC Decision, pgs. 7-9.

D. Resolution Adopted by City Council Selecting WGSL as the City's Future Landfill Site.

After receiving from the LUC an extension of the deadline to make its determination, on December 1, 2004, the City Council selected WGSL as the City's future landfill site. The resolution setting forth the City Council's decision, Resolution No. 04-348, CD1, FD1 (December 1, 2004), City Council, City and County of Honolulu ("WGSL Resolution"), is attached hereto and incorporated herein as Exhibit "G." In selecting the Landfill as the future site, the City Council noted, in pertinent part, the following:

> (1) The site currently has over 15 years capacity left with further expansion, and this capacity can be further extended should the city be successful in reducing the amount of waste currently entering the landfill through recycling and the use of new technologies;

> (2) The city already owns the property and the infrastructure is already in place, making the site the most economical and least expensive to develop and maintain as a landfill;
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> (3) Other sites will require a large capital outlay by the city to acquire the land through condemnation and to develop and construct the site and required supporting infrastructure;
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> (4) A landfill management contract is already in place for 15 years;
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> (5) This is the only site where the costs and revenues for a landfill are known factors; and
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> (6) The current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impact, odors, airborne waste, litter and dust control[.]

WGSL Resolution, pgs. 2-3.

As expressed in the WGSL Resolution, the City Council decided that WGSL would satisfy O‘ahu's need for a landfill to manage its solid waste for the foreseeable future.

E. Extension of Waste Acceptance Deadline at WGSL.

On July 6, 2007, the Department of Environmental Services filed an application with the Department of Planning and Permitting to amend Condition No. 10 of the 2003 Planning Commission Decision, by extending the deadline to accept waste at WGSL from May 1, 2008, to May 1, 2010, or until WGSL reached its permitted capacity, whichever occurred first. This timeline extension was necessary in order to accommodate and implement the City Council's selection of WGSL as the City's future landfill site. See State Special Use Permit (SUP) No. 86/SUP-5, In re Department of Environmental Services, City and County of Honolulu (FKA Department of Public Works, City and County of Honolulu); Application to Modify (1) the Findings of Fact, Conclusions and Decision dated March 13, 2003, and (2) the Decision and Order Approving Amendment to Special Use Permit Issued June 9, 2003, filed with the Department of Planning and Permitting on July 6, 2007, without accompanying exhibits ("2007 Application"), attached hereto and incorporated herein as

Exhibit "H." An FEIS for the further expansion of WGSL by approximately 92.5 acres, to the full acreage of the site at approximately 200 acres, needed to be completed before the Department of Environmental Services could prepare an application for a new SUP that would cover the entire WGSL property. See 2008 FEIS at pgs. 2-21.

On January 16, 2008, the Planning Commission granted the Department of Environmental Services' application to amend Condition No. 10 of the 2003 Planning Commission Decision to extend the waste acceptance deadline by two years (to May 1, 2010), or until WGSL reached its permitted capacity, and issued its Findings of Fact, Conclusions of Law, and Decision and Order (the "2008 Planning Commission Decision"), attached hereto and incorporated herein as Exhibit "I." The Planning Commission recommended that the LUC similarly amend Condition No. 12 of the 2003 LUC Decision. See 2008 Planning Commission Decision, pgs. 7-8.

On March 7, 2008, the LUC issued its Findings of Fact, Conclusions of Law, and Decision and Order adopting with Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit on March 14, 2008 (the "2008 LUC Decision"), attached hereto and incorporated herein as Exhibit "J." The LUC adopted the Planning Commission's recommendation with modifications by amending the waste acceptance deadline from May 1, 2010, to November 1, 2009, and by requiring the Department of Environmental Services to report to the LUC every six months on the actions taken to alleviate further use of WGSL. See 2008 LUC Decision, p. 18.

F. Application for a New SUP to Supersede Prior SUP to Allow a 92.5-Acre Expansion and Time Extension for WGSL.

On December 3, 2008, the Department of Environmental Services filed an application for a new SUP (the "Application") to supersede the existing SUP (State Special Use Permit No. 86/SUP-5), to allow a 92.5-acre expansion and time extension for the existing operating portion of WGSL. See 2009 Planning Commission Decision, ¶ 5, pg. 2. The Department of Environmental Services concurrently sought to withdraw its existing SUP permit for approximately 107.5 acres (File No. 86/SUP-5) and the conditions imposed therein, if the new SUP permit was granted. Id. at ¶ 6, pg. 3. The Application, designated as County Special Use Permit File No. 2008/SUP-2, was processed by the Department of Planning and Permitting, which recommended to the Planning Commission that the Application be approved with conditions. Id. at ¶ 10, pg. 3.

The Planning Commission conducted a contested case hearing on the Application on June 22, 2009, June 24, 2009, July 1, 2009, July 2, 2009, and July 8, 2009. Id. at ¶¶ 19, 20, 22, 23, 25, pgs. 5-6. On July 31, 2009, the Planning Commission recommended approval of the Application subject to 10 conditions, and further recommended approval of the withdrawal of the prior SUP for WGSL (SUP File No. 86/SUP-5) upon 2008/SUP-2 taking effect, and that all conditions previously placed on the Property under SUP File No. 86/SUP-5 would then be null and void. The decision of the Planning Commission was set forth in its Findings of Fact, Conclusions of Law, and Decision and Order dated August 4, 2009, attached hereto and incorporated herein as Exhibit "K." The 2009 Planning Commission Decision was based on the evidence presented at the contested case hearing, the credibility of the witnesses testifying at the hearing, the proposed findings of fact, conclusions of law, and decisions and orders submitted by the parties and their respective responses thereto, and the written arguments of the parties. Id. at pg. 1.

Notably, the 2009 Planning Commission Decision does not contain any expiration date for the SUP or any deadline for the acceptance of waste at WGSL. Commissioner Kerry Komatsubara ("Komatsubara"), who authored this Decision, explained that "[t]he term or the length of the new SUP shall be until the Waimanalo Gulch landfill reaches its capacity as compared to a definite time period of 'X' number of years." Komatsubara noted that the Department of Environmental Services had "demonstrated that we need a landfill. I think it's pretty obvious; we need a landfill on this island for us to move forward…it would not be in the community's best interest if we were to close this landfill before we find another landfill." Komatsubara further explained his reasoning as follows:

> In my opinion, simply putting on a new closure date to this new SUP will not lead to the closure of the Waimanalo Gulch Sanitary Landfill. I believe that the focus should not be on picking a date. The focus should be on how do we get the City to select a new site because you're not going to close this landfill until you find another site. I don't think it's in the interest of our community not to have a landfill.
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> So what this proposal does is, it says look, [Applicant] can keep [WGSL] open until your [*sic*] full, until you've reached the capacity, but you have an obligation starting from next year [2010] to start looking for a new site. Now whether you take it seriously or not, that's up to you because we have the power to call you in, and you have the obligation now to report every year on what you're doing to find a new landfill site whether it be a replacement site or supplemental site or both. We have the right to hold a hearing at any time we feel that you are not…the applicant is not in good faith moving forward with reasonable diligence to find a new site.

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> ...I think going down the old path of just putting a [closure] date in there has not worked. We put it down three or four times before and every time we came to that date, it was extended further and further...I'd rather not say it's a certain date only to know that when we reach that date we're going to extend it further until we find the new site. I'd rather focus on an effort to find a new site and have [Applicant] come in every year and explain to us where you are in your effort to find a new site. That's what this [order] does.

Relevant portions of the transcript of the July 31, 2009, decision-making hearing of the Planning Commission are attached hereto and incorporated herein as Exhibit "L."

On October 22, 2009, the LUC issued its written Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications ("2009 LUC Decision"), attached hereto and incorporated herein as Exhibit "M."

The 2009 LUC Decision granted the Application subject to "(1) the withdrawal of County Special Use Permit File No. 86/SUP-5 and LUC Docket No. SP87-362, provided that the existing conditions therein shall be incorporated to the extent they are consistent with and applicable to this decision and are not duplicative of any additional conditions imposed hereafter; (2) the conditions as recommended by the Planning Commission in County Special Use Permit File No. 2008/SUP-2 (LUC Docket No. SP09-403) and modified as appropriate"; and (3) the following relevant conditions:

> 14. Municipal solid waste shall be allowed at the WGSL up to July 31, 2012, provided that only ash and residue from H-POWER shall be allowed at the WGSL after July 31, 2012.
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> 15. The Honolulu City Council through the City Administration shall report to the public every three months on the efforts of the City Council and the City Administration in regard to the continued use of the WGSL, including any funding arrangements that are being considered by the City Council and the City Administration.
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> 16. The City Council and the City Administration shall have a public hearing every three months to report on the status of their efforts to either reduce or continue the use of the WGSL.

2009 LUC Decision, pgs. 4, 8-9.

G. Subsequent Court Proceedings Related to the 2009 LUC Decision

On November 19, 2009, the Department of Environmental Services filed its Notice of Appeal; Statement of the Case; Designation of Record on Appeal; Order for Certification and Transmission of Record; Exhibits "A" and "B" to the Circuit Court of the First Circuit ("Circuit Court"). Specifically, the Department of Environmental Services appealed the LUC's imposition of a July 31, 2012, deadline to cease the disposal of MSW at WGSL, as set forth in Condition No. 14 of the 2009 LUC Decision, as arbitrary and capricious, characterized by abuse of discretion and a clearly unwarranted exercise of discretion in light of the record developed before the Planning Commission. The Department of Environmental Services further appealed the LUC's imposition of reporting requirements, as set forth in Condition Nos. 15 and 16 of the 2009 LUC Decision, as in excess of the statutory authority and jurisdiction of the LUC. See Dec. Steinberger, ¶ 20.

Oral arguments were held before the Honorable Judge Rhonda A. Nishimura of the Circuit Court on July 14, 2010. Id.

On September 21, 2010, the Circuit Court issued its Order Affirming Land Use Commission's Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law and Decision and Order Dated October 22, 2009 with Modifications, which is attached hereto and incorporated herein as Exhibit "N." Said Order modified Conditions No. 15 and 16 of the 2009 LUC Decision by deleting the references to the Honolulu City Council and the City administration, and substituting the same with the Department of Environmental Services. The Order also erroneously affirmed Condition No. 14 of the 2009 LUC Decision. Id.

Final Judgment was filed on October 19, 2010, and the Notice of Entry of Judgment was filed on October 21, 2010. On November 12, 2010, the Department of Environmental Services timely filed its Notice of Appeal and Civil Appeals Docketing Statement to the Intermediate Court of Appeals ("ICA") relating to that portion of the Circuit Court's Order which wrongly affirmed the LUC's arbitrary and unsupported deadline of July 31, 2012, to cease acceptance of MSW at WGSL. See Dec. Steinberger, ¶¶ 20, 21.

The Department of Environmental Services filed its Opening Brief to the ICA on February 15, 2011. Briefing is not yet concluded and the case remains pending before the ICA. Id.

II. REQUEST FOR MODIFICATION OF SUP No. 2008/SUP-2

Section 2-49 of the Rules of the Planning Commission provides, in relevant part:

> (a) A petitioner who desires a modification or deletion of a condition imposed by the commission shall make such a request to the commission in writing. This request shall be processed in the same manner as the original petition for a SUP. A public hearing on the request shall be held prior to any commission action.
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> . . .
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> (c). . . Modification of conditions for areas greater than fifteen (15) acres will require the concurrence of the land use commission.

As discussed above, the Planning Commission did not place any expiration date on 2008/SUP-2 or any deadline for the acceptance of waste at WGSL. See generally 2009 Planning Commission Decision; see also Exhibit "L." The LUC, however, imposed the July 31, 2012, deadline to close WGSL to MSW in Condition No. 14. See 2009 LUC Decision, pg. 8.

The current DOH Solid Waste Management Permit for WGSL, which encompasses the approximately 200 acre property, was issued on June 4, 2010, and is attached hereto and incorporated herein as Exhibit "O." That permit states that WGSL "may accept MSW and ash for disposal until the date specified in the associated Special Use Permit or until the landfill/monofill reaches its permitted capacity, whichever comes first." Id. at pgs. 1, 9. The SUP now in effect requires that the Landfill stop accepting MSW on July 31, 2012, well before WGSL will reach its permitted capacity. See 2008 FEIS at Section 1.1, Proposed Action at pg. 1-1; Section 2.6.3, Landfill Capacity at pg. 2-27; see also Dec. Steinberger, ¶ 22. For the reasons that follow below, it is not only practical to extend the Landfill's solid waste acceptance deadline, but also necessary and critical for effective and safe management of the City's solid waste.

A. The Currently Permitted Landfill Has a Useful Life that Will Extend Well Beyond the July 31, 2012, Deadline.

WGSL is located on approximately 200 acres of land and has years of capacity remaining within this permitted area. See 2008 FEIS at Section 1.1, Proposed Action at pg. 1-1; Section 2.6.3, Landfill Capacity at pg. 2-27; see also Dec. Steinberger, ¶ 22. Based upon typical rates of disposal at WGSL, that remaining capacity is estimated to be approximately fifteen years.[3] Id. From 2005 through 2009, the volume of municipal solid waste disposed of at WGSL is illustrated as follows:

Disposal of MSW at WGSL[4]

Year	2005	2006	2007	2008	2009
Tons	391,579	286,842	306,691	233,065	178,512

This chart reflects that the Department of Environmental Services has been actively reducing waste volumes that are directed to WGSL through its various waste diversion programs.[5] See 2009 Planning Commission Decision, ¶ 100, pg. 20 ("The City is actively reducing waste volume that is directed to the landfill."). However, even with such waste diversion programs, WGSL remains vitally important to the City's Integrated Solid Waste Management Plan. See 2009 Planning Commission Decision, ¶ 91, pg. 18. The continued availability of WGSL is a DOH permit condition to operate H-POWER (e.g., to dispose of the waste that exceeds the capacity of H-POWER, or waste that is diverted from that facility due to routine maintenance or unanticipated closures). See 2009 Planning Commission Decision, ¶ 92, pg. 18. The Landfill is also needed for clean up in the event of a natural

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[3] The remaining capacity of WGSL is an estimate only as rates of disposal fluctuate based upon numerous factors, e.g., the economy, waste diversion programs such as the implementation of island-wide recycling, possible disaster events, etc.

[4] See Opala.org, Recycling and Landfill Diversion, http://www.opala.org/solid_waste/archive/facts2.html.

[5] For example, the Department of Environmental Services is expanding its H-POWER plant with a third boiler, which is expected to increase the facility's capacity by an additional 300,000 tons of MSW per year by late 2011 or early 2012. See 2009 Planning Commission Decision, ¶ 100, pg. 20; see also Dec. Steinberger, ¶ 23. The Department of Environmental Services also completed full implementation of its island-wide, curbside recycling program in May 2010, which is in addition to its program of community recycling bins. Dec. Steinberger, ¶ 23. A facility at the City's Sand Island Wastewater Treatment Plant turns bio-solids into fertilizer pellets, so that such material may be reused as a soil amendment product. Id. The Department of Environmental Services' other initiatives include awarding a contract for a new recycling facility that will accept green waste, food waste and sewage sludge. Id.

disaster, to properly dispose of special wastes such as screenings and sludge from sewage treatment plants, animal carcasses, tank bottom sludge, contaminated food waste that cannot be recycled, and contaminated soil that is below certain toxicity levels ("special wastes") and bulky wastes, and because there is waste material that cannot be combusted, recycled, reused, or shipped.[6] See 2009 Planning Commission Decision, ¶ 92, 97, pgs. 18-19.

The City remains committed to adopting and implementing waste handling programs that will reduce O'ahu's dependency on landfilling. Dec. Steinberger, ¶ 23. The fact remains, however, that there are no methods or technologies that will completely eliminate the need for landfilling. See 2008 FEIS, Appendix K, Alternatives Analysis, 2008. If WGSL is forced to cease accepting MSW for disposal on July 31, 2012, then there will be no permitted landfill to serve O'ahu's municipal solid waste disposal needs, and this could have significant public health and safety implications for the residents and visitors of this island. See 2008 FEIS at Section 9.3., No Action Alternative, pgs. 9-6 to 9-8.

B. WGSL Remains an Integral Part of the City's Solid Waste Management System.

The Landfill is a critical component of the City's solid waste management system and the final destination for certain solid wastes including MSW, recycling residue, and H-POWER generated ash, residue and waste that cannot further be combusted, recycled or reused. See 2009 Planning Commission Decision, ¶¶ 92, 95, 97, pgs. 18-19. If SUP No. 2008/SUP-2 is not amended by deleting Condition No. 14 of the 2009 LUC Decision, the Landfill will be forced to stop accepting MSW as of July 31, 2012, and special wastes, bulky wastes and waste material that cannot be combusted, recycled, reused, or shipped, will have nowhere to go for proper disposal. See 2009 Planning Commission Decision, ¶¶ 92, 97, pgs. 18-19; 2008 FEIS at Section 9.3., No Action Alternative, pgs. 9-6 to 9-8; see also Dec. Steinberger, ¶ 24. This stoppage will have an adverse, island-wide impact on all of the communities on O'ahu because the City will no longer have the ability to dispose of certain wastes in a sanitary manner. Id. The City would also no longer be permitted to operate H-POWER, as that facility must have a MSW landfill disposal option as required by its DOH solid waste permit. See 2009 Planning Commission Decision, ¶ 92, pg. 18; see also Dec. Steinberger, ¶ 24. Furthermore, in the event of a disaster such as a hurricane or a tsunami, the City would have no permitted site to dispose of the ensuing debris. Id. In other words, not only would there be no sanitary or secure means of disposing of special wastes and bulky wastes, H-POWER would no longer be permitted to accept any MSW and there would be no facility to properly dispose of disaster debris. Dec. Steinberger, ¶ 24. Therefore, forcing the Landfill to cease accepting MSW will likely result in major public

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[6] As explained in part 2 herein, off-island shipment of MSW is not a viable option.

health and safety problems for the City, its residents and visitors, and the State of Hawai'i. See 2009 Planning Commission Decision, ¶ 93, pg. 18.

1. WGSL Remains Necessary Even with an Expanded H-POWER.

Although most municipal waste is currently directed to the H-POWER facility, H-POWER does not have the capacity, or ability, to accept all of Oahu's refuse. See 2009 Planning Commission Decision, ¶ 97, pg. 19. WGSL also remains necessary in order to dispose of disaster debris, bulky wastes and special wastes. Id.; see also ¶ 92, pg. 18. Further, as discussed previously, the DOH solid waste permit for H-POWER requires that a landfill disposal option for MSW be available. Id. at ¶ 92, pg. 18.

The recent closure of WGSL from January 12 to January 28, 2011, due to unprecedented storms in December 2010 and in January 2011, has served to highlight the need for a landfill. During that seventeen-day closure period, there were delays in the disposal of H-POWER residue, bulky item waste, and wastewater sludge. All such wastes cannot be disposed of at H-POWER and must be disposed of in the Landfill. The closure of WGSL greatly impacted the disposal of H-POWER residue, bulky item waste, and wastewater sludge, all of which cannot be disposed of at H-POWER and must be disposed of at WGSL, the only permitted facility on O'ahu to accept these types of waste. The closure of WGSL also hampered H-POWER's ability to accept MSW because of the backlog of residue that accumulated at the facility. City refuse transfer stations that depend on H-POWER for waste disposal were also adversely impacted and experienced heavy buildups of trash. City wastewater treatment facilities resorted to temporary on-site storage of sewage sludge to cope with the situation. Further, the Department of Environmental Services ceased collection of bulky item wastes, resulting in unsightly piles of waste in many neighborhoods across the island. Generators of other special wastes that are normally disposed of at WGSL had to make their own arrangements to store or otherwise dispose of their waste until the Landfill could be reopened. The closure of WGSL had far reaching impacts upon the City's ability to dispose of solid waste, with restrictions imposed at all six of the City's convenience centers, as well as at its three transfer stations. On April 13, 2011, the WGSL and all City refuse facilities resumed normal operations and were opened to the public. See Dec. Steinberger, ¶ 25.

By 2012, when H-POWER's third boiler is expected to be fully operational, the City anticipates that about eighty percent (80%) of the island's waste stream will be diverted from landfill disposal. See 2009 Planning Commission Decision, ¶ 101, pg. 20. Twenty percent (20%), however, of O'ahu's waste will still need to be landfilled at WGSL, as certain wastes cannot be recycled or combusted. Id., see also ¶¶ 92, 97, pgs. 18-19. Further, the expanded H-POWER facility will still require the continued availability of WGSL as a permit condition to operate, to ensure proper disposal of MSW that is diverted from H-POWER due to routine maintenance, unanticipated closures or if the amount of waste exceeds the capacity of the facility. Id. at ¶ 92, pg. 18; Dec. Steinberger, ¶ 24.

2. Transshipment of solid waste off-island is no longer a viable alternative.

The off-island shipment of O'ahu's solid waste is no longer a viable alternative, not even for the short term. The City did attempt to ship waste to the mainland but only as an interim solid waste disposal alternative until the H-POWER facility was expanded with the addition of a third boiler. See Planning Commission Transcript dated 07/01/09 at 198:23-199:4; see also Dec. Steinberger, ¶ 26. However, this attempt was not successful and shipping is now precluded by a court imposed injunction on the shipping of waste from Hawai'i to Washington and Oregon via the Columbia River. Dec. Steinberger, ¶ 26.

In January 2008, the City issued an Invitation for Bids ("IFB") for the baling, shipping, offloading, transporting and disposing (transshipment) of City-provided MSW to a U.S. Mainland landfill for a term of at least 36 months. The City received and opened three bids on June 17, 2008. Following the bid opening, the two highest bidders filed a total of four procurement protests, disputing for various reasons the adequacy of the apparent low bid. These protests were resolved after several months, with all the protests ultimately being denied, and no appeals being taken of those denials. See Dec. Steinberger, ¶ 27.

Pursuant to the requirements of the State Procurement Code, the City was prohibited from taking any actions toward the award of a contract during the pendency of the protests. With the protests resolved, the City reviewed the apparent low bid submitted by Hawaiian Waste Systems, LLC ("HWS"), and eventually the City's Chief Procurement Officer issued a determination that the low bid was not responsive to the requirements of the IFB. Pursuant to the State Procurement Code, HWS appealed this determination to the Office of Administrative Hearings at the Department of Commerce and Consumer Affairs ("DCCA"). See Dec. Steinberger, ¶ 28.

Following a hearing at DCCA, and prior to the deadline for the Hearings Officer to issue a decision on the appeal, the City and HWS agreed to settle the procurement protest. The settlement was confirmed in an Order approved by the Hearings Officer. Id. Pursuant to the Settlement and Order, the contract for interim shipment of MSW was awarded to HWS on August 27, 2009. The commencement of services under the contract was to begin by the end of September 2009. The City issued a Notice to Proceed to HWS for September 25, 2009. Both parties agreed that delivery of MSW would start on September 28, 2009. See Dec. Steinberger, ¶ 29.

HWS asked the City to cease delivering waste on April 1, 2010. At that point, approximately 20,000 tons of MSW had been delivered to HWS, which baled, wrapped and stockpiled the MSW at three locations, and no waste had been shipped due to HWS' inability to obtain required permits for the contracted services. See Dec. Steinberger, ¶ 30.

The environmental assessment for HWS' revised plan to ship the baled waste to different ports (Longview, WA; Rainier, OR; and Portland, OR)[7] was posted on the Federal Register on January 19, 2010 and the closing date for comments was February 18, 2010. On May, 27, 2010 the United States Department of Agriculture ("USDA") concluded their responses to public comments and published a Finding of No Significant Impact ("FONSI"). The required Compliance Agreements were issued in June 2010. See Dec. Steinberger, ¶ 31.

On July 8, 2010, the USDA issued a Notification of Suspension of Operations Pursuant to Compliance Agreement No. Oahu RGOO2 to HWS. Dec. Steinberger, ¶ 32. On August 30, 2010, the United States District Court, Eastern District of Washington issued an injunction enjoining the shipment of waste from Hawaii to Washington or Oregon ports on the Columbia River and/or to the Roosevelt Landfill in Washington in Confederated Tribes and Bands of the Yakama Nation, et al., v. United States Department of Agriculture, et al., No. CV-10-3050-EFS, attached hereto and incorporated herein as Exhibit "P." The USDA has canceled the Compliance Agreement permits of all Hawaii shippers that might otherwise have enabled the shipment of waste to the mainland. As of the filing of this Application, the Yakama Nation lawsuit remains active and the injunction continues in effect. See Dec. Steinberger, ¶ 32.

Accordingly, no waste was ever shipped to the mainland due to various problems encountered by HWS. In order to properly dispose of the approximately 20,000 tons of baled MSW, HWS agreed to disassemble the bales, sort the waste and take the burnable waste to H-POWER and the non-burnable waste to the Waimanalo Gulch Landfill. As of January 2011, approximately 11,000 tons had been taken to H-POWER and 140 tons had been taken to WGSL. See Dec. Steinberger, ¶ 33.

On January 6, 2011, there was a fire at the HWS facility that damaged the building in which the waste bales were disassembled. Because HWS' solid waste permit requires the waste to be processed under cover, without the use of the building, HWS' breaking apart and sorting of the waste for disposal at H-POWER and WGSL had to be suspended. Thereafter, the City and HWS continued to work together, in collaboration with DOH, to dispose of the remaining tons of baled waste. On May 12, 2011, the last bale of waste at the HWS facility

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[7] The original environmental assessment reviewed HWS' originally proposed port located in Roosevelt, WA. Dec. Steinberger, ¶ 31.

was removed and delivered to a City waste disposal facility. Of the original 20,000 tons in its possession, HWS delivered 14,779 tons to H-POWER (76%) and 4,565 (24%) tons to WGSL. HWS was able to extract and recycle 1,525 tons of metal. See Dec. Steinberger, ¶ 34.

Accordingly, because WGSL is the only currently permitted landfill available to serve O'ahu's municipal solid waste needs, it is also the City's best and only viable option for disposal of certain wastes. See 2009 Planning Commission Decision, ¶¶ 92, 94, 97, pgs. 18-19. Requiring the landfill to stop accepting MSW on July 31, 2012, will have immediate and dire consequences for all of O'ahu. 2009 Planning Commission Decision, ¶ 93, pg. 18; see also 2008 FEIS at Section 9.3., No Action Alternative at pgs. 9-6 to 9-8.

C. Additional Time Is Needed To Identify One or More New Landfill Sites That Shall Either Replace Or Supplement WGSL.

Condition No. 1 of the 2009 Planning Commission Decision, which was adopted in most part by the LUC as Condition No. 4 of the 2009 LUC Decision,[8] provides:

> On or before November 1, 2010, the Applicant shall begin to identify and develop one or more new landfill sites that shall either replace or supplement the WGSL. The Applicant's effort to identify and develop such sites shall be performed with reasonable diligence, and the Honolulu City Council is encouraged to work cooperatively with the Applicant's efforts to select a new landfill site on Oahu. Upon the selection of a new landfill site or sites on Oahu, the Applicant shall provide written notice to the Planning Commission. After receipt of such written notice, the Planning Commission shall hold a pubic hearing to reevaluate 2008/SUP-2 (SP09-403) and shall determine whether modification or revocation of 2008/SUP-2 (SP09-403) is appropriate at that time.

2009 Planning Commission Decision, pg. 25.

Funding for the new landfill site selection process was appropriated in the City's Fiscal Year (FY) 2010 budget with additional funds appropriated in FY 2011. In November 2009, the Department of Environmental Services began the process to allot appropriated funds for a procurement to contract a consultant to facilitate the landfill site selection process. On June 25, 2010, the City contracted with the R.M. Towill Corporation,

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[8] Condition No. 1 of the 2009 Planning Commission Decision is identical to Condition No. 4 of the 2009 LUC Decision except that Condition No. 4 included the added requirement that the "Planning Commission shall make a recommendation to the Land Use Commission." 2009 LUC Decision,
pg. 6.

specifically to assist the Mayor's Landfill Site Selection Advisory Committee ("Landfill Advisory Committee"). The Landfill Advisory Committee is charged by the Mayor to provide advisory recommendations to the City concerning the selection of a future site or sites for a landfill to accept MSW, ash and residue from the City's H-POWER waste-to-energy facility, and construction and demolition debris waste. The procedure involving the use of an advisory committee to assist in landfill site selection was set forth in the City's Integrated Solid Waste Management Plan (October 2008). The Mayor chose 12 members to serve on the Landfill Advisory Committee based upon numerous criteria including technical expertise and experience, community involvement, and availability to serve. See Dec. Steinberger, ¶¶ 35, 36.

The members of the Landfill Advisory Committee are: Bruce Anderson, David Arakawa, Thomas Arizumi, David Cooper, John DeSoto, John Goody, Joe Lapilio, Tesha H. Malama, Janice Marsters, Richard Poirier, Chuck Prentiss, and George West. Due to various personal reasons, however, Bruce Anderson, David Cooper and John DeSoto have since resigned from the committee. See Dec. Steinberger, ¶ 36.

The first meeting of the Landfill Advisory Committee was held on January 20, 2011, and subsequent meetings were held on February 10, March 10, March 31, and May 12, 2011. The next tentatively scheduled meetings are June 23 and July 19, 2011. Additional meetings may be scheduled as needed by the Landfill Advisory Committee. Barring unforeseen delays, the Landfill Advisory Committee's final report is expected to be completed and sent to the Mayor by October 2011. All Committee meetings are open to the public and to public comment. Handouts provided to the Landfill Advisory Committee as well as the Group Memory of each meeting are posted online at opala.org. See Dec. Steinberger, ¶ 37.

Once a site or sites are identified by the Landfill Advisory Committee, as acknowledged in both the 2009 Planning Commission Decision and the 2009 LUC Decision, it will take more than seven years to acquire, permit, design and construct the new landfill site(s). See 2009 Planning Commission Decision, ¶¶ 33, 34; see also 2009 LUC Decision at pgs. 4-5. As noted, the work of the Landfill Advisory Committee is anticipated to be concluded within the third quarter of 2011; the Department of Environmental Services must then continue on with various additional steps, anticipated to require a number of years to complete. Dec. Steinberger, ¶ 38. These tasks include, but are not limited to, the following:

1. Hawai‘i Revised Statutes (“HRS”) Chapter 343, Environmental Impact Statement (“EIS”)

The preparation and processing of an EIS in full compliance with HRS Chapter 343 and related administrative rules for O‘ahu’s next landfill site or sites to replace or supplement WGSL must satisfy all necessary requirements, including but not limited to conducting site surveys and investigations, analyzing alternatives including alternative sites and technologies, obtaining public and governmental agency input, analyzing direct, secondary, and cumulative impacts, developing appropriate mitigation measures, and ensuring the opportunity for public participation and comments. Dec. Steinberger, ¶ 39.

The EIS process will include among other things the filing of three principal documents with the Office of Environmental Quality Control, State of Hawaii (“OEQC”): (1) a Final Environmental Assessment/EIS Preparation Notice (“FEA/EISPN”), which upon publication will invoke a mandatory thirty (30) day public comment period; (2) a Draft EIS that will incorporate and address all relevant public comments that are received in response to the FEA/EISPN; the publication of the Draft EIS, which will invoke a mandatory forty-five (45) day public comment period; and (3) the acceptance of the Final EIS that will incorporate and address all relevant public comments received in response to the Draft EIS. Id.

The Department of Environmental Services fully expects that because of the inherent difficulty in identifying a new landfill site or sites for O‘ahu, extensive environmental documentation will likely be required before the Final EIS for said site(s) can be completed. For example, the 2008 FEIS for WGSL was delayed by approximately one year in order to complete the requisite environmental documentation mandated by HRS Chapter 343.[9]

Based upon the prior experience with the 2008 FEIS, the Department of Environmental Services estimates that the time needed to complete an EIS for the new landfill site(s) is between one and two years, provided that there are no legal challenges. Id. Any legal challenges will only lengthen the time needed to complete an EIS. Id.

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[9] Examples of additional environmental disclosure documentation that was required for the 2008 FEIS included: (1) the discovery of three stone uprights that required archaeological investigation and coordination with the State Historic Preservation Division and cultural informants; and (2) the commissioning of an Invertebrate Survey for the 2008 FEIS. Dec. Steinberger, ¶ 39; see also 2007 Application.

2. Acquisition of the Selected Landfill Site(s)

This task is dependent upon the alternative landfill site(s) that is selected. If the site(s) is not presently owned by the City, the land acquisition process could be lengthy. If the City must acquire new land, a summary of the process is as follows: an appraisal of the land value; a determination by the City regarding the funding source for the acquisition; and approval for the expenditure of public funds by the Honolulu City Council. See Dec. Steinberger, ¶ 40.

Moreover, if the City does not own the property and the landowner is unwilling to sell the property to the City, a condemnation process could ensue. This process is expected to be lengthy and would likely involve litigation. Id.

For these reasons, it is difficult for the Department of Environmental Services to estimate the length of time required to acquire a new landfill site(s). For the purposes of this Application, however, an approximate estimate of time is one to three years. Id.

3. Detailed Engineering Studies, Construction and Bid Documents, and Other Approvals

Following the completion of the EIS process and the acquisition of the site(s), detailed engineering studies will need to be completed to support the landfill design. These studies will include, but are not limited to: land surveys; geotechnical soils and structural investigations; hydrology and hydrogeological investigations. The completion of these studies is required so that the landfill construction drawings can incorporate civil design requirements, such as the provision of drainage, access roadways, and infrastructure, to support the use of the site. Coordination with governmental agencies, utilities, and adjoining landowners, consistent with mitigation measures identified in the EIS, will also be required to minimize disturbance to nearby property owners and utilities. See Dec. Steinberger, ¶ 41.

The length of time required for the completion of detailed engineering studies, construction drawings and bid documents, and the processing of procurements for the design and construction contractors (which could include the selection of a qualified landfill operator), as well as the acquisition of building permits, land use approvals such as a SUP or district boundary amendment, depending on where the site(s) is located, and other necessary approvals, is estimated to be between one and three years. Id.

Based on the foregoing, no new landfill site or sites intended to replace or supplement WGSL will be operational as of the July 31, 2012, deadline to cease accepting

MSW at WGSL as imposed by Condition No. 14 of the 2009 LUC Decision. See 2009 Planning Commission Decision, ¶ 34, pg. 8; see also Dec. Steinberger, ¶ 42.

III. CONCLUSION

In accordance with the foregoing, the Applicant requests that the Planning Commission modify SUP No. 2008/SUP-2 by deleting Condition No. 14 of the 2009 LUC Decision to enable WGSL to continue accepting MSW until the Landfill reaches its permitted capacity as provided in the 2009 Planning Commission Decision.

For all the foregoing reasons, the Department of Environmental Services respectfully requests that the Planning Commission grant this application.

Sincerely,

Timothy E. Steinberger, P.E.
Director

Attachments

VERIFICATION

TIMOTHY E. STEINBERGER, P.E., being duly sworn, on oath, deposes and says that he is the Director of the Department of Environmental Services, City and County of Honolulu, and as such is authorized to make this verification on behalf of the Department of Environmental Services; that he has read the foregoing Application and knows the contents thereof; and that the same are true to the best of his knowledge, information and belief.

DATED: Honolulu, Hawaii, June 28, 2011.

TIMOTHY E. STEINBERGER, P.E.

Subscribed and sworn to me
this 28th day of June, 2011.

Michelle N I Lau
Name: MICHELLE N.I. LAU
Notary Public, State of Hawaii
My commission expires: 9-21-2014

Date: 6-28-11 #Pages: -37-
Name: MICHELLE N.I. LAU 1st Circuit
Doc. Description: SUP No. 2008/SUP-2
App to Modify 2008/SUP-2
Michelle N I Lau
Notary Signature
NOTARY CERTIFICATION

DECLARATION OF TIMOTHY E. STEINBERGER

I, TIMOTHY E. STEINBERGER, hereby declare as follows:

1. I am the Director for the Department of Environmental Services.

2. I make this declaration based upon personal knowledge in support the Application to Modify State Special Use Permit ("SUP") No. 2008/SUP-2 by modifying the State of Hawaii Land Use Commission's (the "LUC's") Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications, dated October 22, 2009, by deleting the July 31, 2012, deadline to cease disposal of municipal solid waste ("MSW") at the Waimanalo Gulch Sanitary Landfill ("WGSL" or "Landfill"), as set forth in Condition No. 14 of said Order.

3. Attached hereto as Exhibit "A" is a true and correct copy of relevant portions of Appellee State of Hawaii Land Use Commission's Answering Brief to the Circuit Court of the First Circuit, filed on April 12, 2010, In the Matter of Department of Environmental Services, City and County of Honolulu vs. Land Use Commission, State of Hawaii, et al., Civil No. 09-1-2719-11.

4. Attached hereto as Exhibit "B" is a true and correct CD copy of the *Final Environmental Impact Statement, Waimanalo Gulch Sanitary Landfill Lateral Expansion, Waimanalo Gulch, Oahu, Hawaii, TMKs: (1) 9-2-003: 072 and 073*, dated October 2008.

5. Attached hereto as Exhibit "C" is a true and correct copy of the LUC's Findings of Fact, Conclusions of Law and Decision and Order issued April 20, 1987.

6. Attached hereto as Exhibit "D" is a true and correct copy of the LUC's Findings of Fact, Conclusions of Law and Decision and Order issued on October 31, 1989.

7. Attached hereto as Exhibit "E" is a true and correct copy of the Planning Commission's Findings of Fact, Conclusions and Decision dated March 13, 2003 (the "2003 Planning Commission Decision").

8. Attached hereto as Exhibit "F" is a true and correct copy of the LUC's Decision and Order Approving Amendment to Special Use Permit issued June 9, 2003 (the "2003 LUC Decision").

9. Attached hereto as Exhibit "G" is a true and correct copy of Resolution No. 04-348, CD 1, FD 1, adopted by the Honolulu City Council on December 1, 2004.

10. Attached hereto as Exhibit "H" is a true and correct copy of State Special Use Permit (SUP) No. 86/SUP-5, In re Department of Environmental Services, City and County of Honolulu (FKA Department of Public Works, City and County of Honolulu); Application to Modify (1) the Findings of Fact, Conclusions and Decision dated March 13, 2003, and (2) the Decision and Order Approving Amendment to Special Use Permit Issued June 9, 2003, filed with the Department of Planning and Permitting on July 6, 2007, without accompanying exhibits ("2007 Application").

11. Attached hereto as Exhibit "I" is a true and correct copy of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order dated January 16, 2008 (the "2008 Planning Commission Decision").

12. Attached hereto as Exhibit "J" is a true and correct copy of the LUC's Findings of Fact, Conclusions of Law, and Decision and Order adopting with

Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit, dated March 14, 2008 (the "2008 LUC Decision").

13. Attached hereto as Exhibit "K" is a true and correct copy of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order dated August 4, 2009 ("2009 Planning Commission Decision").

14. Attached hereto as Exhibit "L" is a true and correct copy of relevant portions of the transcript of the July 31, 2009, decision-making hearing of the Planning Commission.

15. Attached hereto as Exhibit "M" is a true and correct copy of the LUC's Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications, dated October 22, 2009 ("2009 LUC Decision").

16. Attached hereto as Exhibit "N" is a true and correct copy of the Circuit Court of the First Circuit's Order Affirming Land Use Commission's Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law and Decision and Order Dated October 22, 2009 with Modifications, dated September 21, 2010 ("Circuit Court Order").

17. Attached hereto as Exhibit "O" is the State of Hawai'i, Department of Health Solid Waste Management Permit No. LF-0182-09, issued on June 4, 2010

18. Attached hereto as Exhibit "P" is a true and correct copy of the United States District Court, Eastern District of Washington's order granting an injunction to enjoin the shipment of waste from Hawaii to Washington or Oregon ports on the

Columbia River and/or to the Roosevelt Landfill in Washington in Confederated Tribes and Bands of the Yakama Nation, et al., v. United States Department of Agriculture, et al., No. CV-10-3050-EFS, dated August 30, 2010.

19. On June 4, 2010, the State of Hawai'i, Department of Health ("DOH") issued Solid Waste Management Permit No. LF-0182-09, which encompasses the Landfill's current footprint, which consists of approximately 200 acres. That DOH permit states that WGSL "may accept MSW and ash for disposal until the date specified in the associated Special Use Permit or until the landfill/monofill reaches its permitted capacity, whichever comes first."

20. On November 19, 2009, in relation to the 2009 LUC Decision, the Department of Environmental Services filed its Notice of Appeal; Statement of the Case; Designation of Record on Appeal; Order for Certification and Transmission of Record; Exhibits "A" and "B" to the Circuit Court of the First Circuit ("Circuit Court"). Specifically, the Department of Environmental Services appealed the LUC's imposition of a July 31, 2012, deadline to cease the disposal of MSW at WGSL, as set forth in Condition No. 14 of the 2009 LUC Decision, as arbitrary and capricious, characterized by abuse of discretion and a clearly unwarranted exercise of discretion in light of the record developed before the Planning Commission. The Department of Environmental Services further appealed the LUC's imposition of reporting requirements, as set forth in Condition Nos. 15 and 16 of the 2009 LUC Decision, as in excess of the statutory authority and jurisdiction of the LUC. Oral arguments were held before the Honorable Judge Rhonda A. Nishimura of the Circuit Court on July 14, 2010. On September 21, 2010, the Circuit Court issued its Order Affirming Land Use Commission's Order

Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law and Decision and Order Dated October 22, 2009 with Modifications. Said Order modified Conditions No. 15 and 16 of the 2009 LUC Decision by deleting the references to the Honolulu City Council and the City administration, and substituting the same with the Department of Environmental Services. The Order also erroneously affirmed Condition No. 14 of the 2009 LUC Decision. Final Judgment was filed on October 19, 2010, and the Notice of Entry of Judgment was filed on October 21, 2010.

21. On November 12, 2010, the Department of Environmental Services timely filed its Notice of Appeal and Civil Appeals Docketing Statement to the Intermediate Court of Appeals ("ICA") relating to that portion of the Circuit Court's Order which wrongly affirmed the LUC's arbitrary and unsupported deadline of July 31, 2012, to cease acceptance of MSW at WGSL. The Department of Environmental Services filed its Opening Brief to the ICA on February 15, 2011. Briefing is not yet concluded and the case remains pending before the ICA.

22. The current permitted area of the Landfill, which is approximately 200 acres, has the capacity to continue to accept MSW well beyond the July 31, 2012, deadline to cease accepting MSW at WGSL imposed by the 2009 LUC decision. Based upon typical rates of disposal at WGSL, the remaining capacity in the permitted area is estimated to be approximately fifteen years. The remaining capacity of WGSL is an estimate only as rates of disposal fluctuate based upon numerous factors, <u>e.g.</u>, the economy, waste diversion programs, such as the implementation of island-wide recycling, possible disaster events, etc.

23. The Department of Environmental Services has been actively reducing waste volumes that are directed to WGSL through its various waste diversion programs. For example, the Department of Environmental Services is expanding its H-POWER plant with a third boiler, which is expected to increase the facility's capacity by an additional 300,000 tons of MSW per year by late 2011 or early 2012. The Department of Environmental Services also completed full implementation of its island-wide, curbside recycling program in May 2010, which is in addition to its program of community recycling bins. A facility at the City's Sand Island Wastewater Treatment Plant turns bio-solids into fertilizer pellets, so that such material may be reused as a soil amendment product. The Department of Environmental Services' other initiatives include awarding a contract for a new recycling facility that will accept green waste, food waste and sewage sludge. The City remains committed to adopting and implementing waste handling programs that will reduce O'ahu's dependency on landfilling.

24. If SUP No. 2008/SUP-2 is not amended by deleting Condition No. 14 of the 2009 LUC Decision, the Landfill will be forced to stop accepting MSW as of July 31, 2012, and special wastes, bulky wastes and waste material that cannot be combusted, recycled, reused, or shipped, will have nowhere to go for proper disposal. This stoppage will have an adverse, island-wide impact on all of the communities on O'ahu because the City will no longer have the ability to dispose of certain wastes in a sanitary manner. The City would also no longer be permitted to operate H-POWER, as that facility must have a MSW landfill disposal option as required by its DOH solid waste permit. Furthermore, in the event of a disaster such as a hurricane or a tsunami, the City would have no permitted site to dispose of the ensuing debris. In other words, not

only would there be no sanitary or secure means of disposing of special wastes and bulky wastes, H-POWER would no longer be permitted to accept any MSW and there would be no facility to properly dispose of disaster debris. Further, even when the H-POWER facility is expanded, it will still require the continued availability of WGSL as a permit condition to operate, to ensure proper disposal of MSW that is diverted from H-POWER due to routine maintenance, unanticipated closures or if the amount of waste exceeds the capacity of the facility.

25. The recent closure of WGSL from January 12 to January 28, 2011, due to unprecedented storms in December 2010 and in January 2011, has served to highlight the need for a landfill. During that seventeen-day closure period, there were delays in the disposal of H-POWER residue, bulky item waste, and wastewater sludge. All such wastes cannot be disposed of at H-POWER and must be disposed of in the Landfill. The closure of WGSL greatly impacted the disposal of H-POWER residue, bulky item waste, and wastewater sludge, all of which cannot be disposed of at H-POWER and must be disposed of at WGSL, the only permitted facility on O‘ahu to accept these types of waste. The closure of WGSL also hampered H-POWER's ability to accept MSW because of the backlog of residue that accumulated at the facility. City refuse transfer stations that depend on H-POWER for waste disposal were also adversely impacted and experienced heavy buildups of trash. City wastewater treatment facilities resorted to temporary on-site storage of sewage sludge to cope with the situation. Further, the Department of Environmental Services ceased collection of bulky item wastes, resulting in unsightly piles of waste in many neighborhoods across the island. Generators of other special wastes that are normally disposed of at WGSL had to make their own

arrangements to store or otherwise dispose of their waste until the Landfill could be reopened. The closure of WGSL had far reaching impacts upon the City's ability to dispose of solid waste, with restrictions imposed at all six of the City's convenience centers, as well as at its three transfer stations. On April 13, 2011, the WGSL and all City refuse facilities resumed normal operations and were opened to the public.

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27. In January 2008, the City issued an Invitation for Bids ("IFB") for the baling, shipping, offloading, transporting and disposing (transshipment) of City-provided MSW to a U.S. Mainland landfill for a term of at least 36 months. The City received and opened three bids on June 17, 2008. Following the bid opening, the two highest bidders filed a total of four procurement protests, disputing for various reasons the adequacy of the apparent low bid. These protests were resolved after several months, with all the protests ultimately being denied, and no appeals being taken of those denials.

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Procurement Officer issued a determination that the low bid was not responsive to the requirements of the IFB. Pursuant to the State Procurement Code, HWS appealed this determination to the Office of Administrative Hearings at the Department of Commerce and Consumer Affairs ("DCCA").

29. Following a hearing at DCCA, and prior to the deadline for the Hearings Officer to issue a decision on the appeal, the City and HWS agreed to settle the procurement protest. The settlement was confirmed in an Order approved by the Hearings Officer. Pursuant to the Settlement and Order, the contract for interim shipment of MSW was awarded to HWS on August 27, 2009. The commencement of services under the contract was to begin by the end of September 2009. The City issued a Notice to Proceed to HWS for September 25, 2009. Both parties agreed that delivery of MSW would start on September 28, 2009.

30. HWS asked the City to cease delivering waste on April 1, 2010. At that point, approximately 20,000 tons of MSW had been delivered to HWS, which baled, wrapped and stockpiled the MSW at three locations, and no waste had been shipped due to HWS' inability to obtain required permits for the contracted services.

31. Originally, HWS' proposed port on the U.S. mainland was located in Roosevelt, WA. HWS submitted a revised plan to ship baled waste to different ports (Longview, WA; Rainier, OR; and Portland, OR) and the environmental assessment for HWS' revised plan was posted on the Federal Register on January 19, 2010, and the closing date for comments was February 18, 2010. On May, 27, 2010 the United States Department of Agriculture ("USDA") concluded their responses to public comments and

published a Finding of No Significant Impact ("FONSI"). The required Compliance Agreements were issued in June 2010.

32. On July 8, 2010, the USDA issued a Notification of Suspension of Operations Pursuant to Compliance Agreement No. Oahu RGOO2 to HWS. On August 30, 2010, the United States District Court, Eastern District of Washington issued an injunction enjoining the shipment of waste from Hawaii to Washington or Oregon ports on the Columbia River and/or to the Roosevelt Landfill in Washington in Confederated Tribes and Bands of the Yakama Nation, et al., v. United States Department of Agriculture, et al., No. CV-10-3050-EFS. The USDA has canceled the Compliance Agreement permits of all Hawaii shippers that might otherwise have enabled the shipment of waste to the mainland. As of the filing of this Application, the Yakama Nation lawsuit remains active and the injunction continues in effect.

33. Accordingly, no waste was ever shipped to the mainland due to various problems encountered by HWS. In order to properly dispose of the approximately 20,000 tons of baled MSW, HWS agreed to disassemble the bales, sort the waste and take the burnable waste to H-POWER and the non-burnable waste to the Waimanalo Gulch Landfill. As of January 2011, approximately 11,000 tons had been taken to H-POWER and 140 tons had been taken to WGSL.

34. On January 6, 2011, there was a fire at the HWS facility that damaged the building in which the waste bales were disassembled. Because HWS' solid waste permit requires the waste to be processed under cover, without the use of the building, HWS' breaking apart and sorting of the waste for disposal at H-POWER and WGSL had to be suspended. Thereafter, the City and HWS continued to work together, in

collaboration with DOH, to dispose of the remaining tons of baled waste. On May 12, 2011, the last bale of waste at the HWS facility was removed and delivered to a City waste disposal facility. Of the original 20,000 tons in its possession, HWS delivered 14,779 tons to H-POWER (76%) and 4,565 (24%) tons to WGSL. HWS was able to extract and recycle 1,525 tons of metal.

35. As required by Condition No. 1 of the 2009 Planning Commission Decision and Condition No. 4 of the 2009 LUC Decision, the Department of Environmental Services is diligently working towards identifying one or more new landfill sites that shall either replace or supplement the WGSL. Funding for the new landfill site selection process was appropriated in the City's Fiscal Year (FY) 2010 budget with additional funds appropriated in FY 2011. In November 2009, the Department of Environmental Services began the process to allot appropriated funds for a procurement to contract a consultant to facilitate the landfill site selection process. On June 25, 2010, the City contracted with the R.M. Towill Corporation, specifically to assist the Mayor's Landfill Site Selection Advisory Committee ("Landfill Advisory Committee").

36. The Landfill Advisory Committee is charged by the Mayor to provide advisory recommendations to the City concerning the selection of a future site or sites for a landfill to accept MSW, ash and residue from the City's H-POWER waste-to-energy facility, and construction and demolition debris waste. The procedure involving the use of an advisory committee to assist in landfill site selection was set forth in the City's Integrated Solid Waste Management Plan (October 2008). The Mayor chose 12 members to serve on the Landfill Advisory Committee based upon numerous criteria including technical expertise and experience, community involvement, and availability to

serve. The members of the Landfill Advisory Committee are: Bruce Anderson, David Arakawa, Thomas Arizumi, David Cooper, John DeSoto, John Goody, Joe Lapilio, Tesha H. Malama, Janice Marsters, Richard Poirier, Chuck Prentiss, and George West. Due to various personal reasons, however, Bruce Anderson, David Cooper and John DeSoto have since resigned from the committee.

37. The first meeting of the Landfill Advisory Committee was held on January 20, 2011, and subsequent meetings were held on February 10, March 10, March 31, and May 12, 2011. The next tentatively scheduled meetings are June 23 and July 19, 2011. Additional meetings may be scheduled as needed by the Landfill Advisory Committee. Barring unforeseen delays, the Landfill Advisory Committee's final report is expected to be completed and sent to the Mayor by October 2011. All Committee meetings are open to the public and to public comment. Handouts provided to the Landfill Advisory Committee as well as the Group Memory of each meeting are posted online at opala.org.

38. Once a site or sites are identified by the Landfill Advisory Committee, it will take more than seven years to acquire, permit, design and construct the new landfill site(s). As noted, the work of the Landfill Advisory Committee is anticipated to be concluded within the third quarter of 2011; the Department of Environmental Services must then undertake various additional steps, anticipated to require a number of years to complete.

39. The preparation and processing of an Environmental Impact Statement ("EIS") in full compliance with Hawai'i Revised Statutes ("HRS") Chapter 343 and related administrative rules for O'ahu's next landfill site or sites to replace or supplement

WGSL must satisfy all necessary requirements, including but not limited to conducting site surveys and investigations, analyzing alternatives including alternative sites and technologies, obtaining public and governmental agency input, analyzing direct, secondary, and cumulative impacts, developing appropriate mitigation measures, and ensuring the opportunity for public participation and comments. The EIS process will include among other things the filing of three principal documents with the Office of Environmental Quality Control, State of Hawaii ("OEQC"): (1) a Final Environmental Assessment/EIS Preparation Notice ("FEA/EISPN"), which upon publication will invoke a mandatory thirty (30) day public comment period; (2) a Draft EIS that will incorporate and address all relevant public comments that are received in response to the FEA/EISPN; the publication of the Draft EIS, which will invoke a mandatory forty-five (45) day public comment period; and (3) the acceptance of the Final EIS that will incorporate and address all relevant public comments received in response to the Draft EIS. The Department of Environmental Services fully expects that because of the inherent difficulty in identifying a new landfill site or sites for O'ahu, extensive environmental documentation will likely be required before the Final EIS for said site(s) can be completed. For example, the 2008 FEIS for WGSL was anticipated to be completed by December 2007, but was delayed by approximately one year in order to complete the requisite environmental documentation mandated by HRS Chapter 343 in relation to the discovery of three stone uprights that required archaeological investigation and coordination with the State Historic Preservation Division and cultural informants as well as to commission an Invertebrate Survey. Based upon the prior experience with the 2008 FEIS, the Department of Environmental Services estimates that the time needed to complete an EIS for the new landfill site(s) is between one and two years, provided that there are no legal challenges. Any legal challenges will only lengthen the time needed to complete an EIS.

40. The timeline for the acquisition of the landfill site or sites identified by the Landfill Advisory Committee is dependent upon the alternative landfill site(s) that is selected. If the site(s) is not presently owned by the City, the land acquisition process could be lengthy. If the City must acquire new land, a summary of the process is as follows: an appraisal of the land value; a determination by the City regarding the funding source for the acquisition; and approval for the expenditure of public funds by the Honolulu City Council. Moreover, if the City does not own the property and the landowner is unwilling to sell the property to the City, a condemnation process could ensue. This process is expected to be lengthy and would likely involve litigation. For these reasons, it is difficult for the Department of Environmental Services to estimate the length of time required to acquire a new landfill site(s). For the purposes of this Application, however, an approximate estimate of time is one to three years.

41. Following the completion of the EIS process and the acquisition of the site(s), detailed engineering studies will need to be completed to support the landfill design. These studies will include, but are not limited to: land surveys; geotechnical soils and structural investigations; hydrology and hydrogeological investigations. The completion of these studies is required so that the landfill construction drawings can incorporate civil design requirements, such as the provision of drainage, access roadways, and infrastructure, to support the use of the site. Coordination with governmental agencies, utilities, and adjoining landowners, consistent with mitigation

measures identified in the EIS, will also be required to minimize disturbance to nearby property owners and utilities. The length of time required for the completion of detailed engineering studies, construction drawings and bid documents, and the processing of procurements for the design and construction contractors (which could include the selection of a qualified landfill operator), as well as the acquisition of building permits, land use approvals such as a SUP or district boundary amendment, depending on where the site(s) is located, and other necessary approvals, is estimated to be between one and three years.

42. Based on the foregoing, no new landfill site or sites intended to replace or supplement WGSL will be operational as of the July 31, 2012, deadline to cease accepting MSW at WGSL as imposed by Condition No. 14 of the 2009 LUC Decision.

I DECLARE UNDER PENALTY OF LAW THAT THE FOREGOING IS TRUE AND CORRECT.

DATED: Honolulu, Hawai'i, June 28, 2011.

TIMOTHY E. STEINBERGER, P.E.

Takeuchi / MW
Souki / Blanchard

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CORPORATION COUNSEL
C AND C OF HONOLULU

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FIRST CIRCUIT COURT
STATE OF HAWAII
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F. OTAKE
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Attorneys for Appellee State of Hawai'i,
Land Use Commission

IN THE CIRCUIT COURT OF THE FIRST CIRCUIT

STATE OF HAWAI'I

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU,

Appellant,

vs.

LAND USE COMMISSION, STATE OF HAWAI'I; COLLEEN HANABUSA, MAILE SHIMABUKURO, AND KO OLINA COMMUNITY ASSOCIATION,

Appellees.

CIVIL NO. 09-1-2719-11
(Agency Appeal)

APPELLEE STATE OF HAWAI'I, LAND USE COMMISSION'S ANSWERING BRIEF; CERTIFICATE OF SERVICE

Hearing:	July 14, 2010
Time:	8:30 A.M.
Judge:	The Honorable Rhonda A. Nishimura

EXHIBIT A

> City Council is encouraged to work cooperatively with the Applicant's effort to select a new landfill site on Oahu. Upon the selection of a new landfill site or sites on Oahu, the Applicant shall provide written notice to the Planning Commission. After receipt of such written notice, the Planning Commission shall hold a public hearing to reevaluate 2008/SUP-2(SP09-403) and shall determine whether modification or revocation of 2008/SUP-2(SP09-403 is appropriate at that time. The Planning Commission shall make a recommendation to the Land Use Commission.

(ROA 0166.)

Clearly ENV is required by condition No. 4 to identify and develop a new landfill site or sites.

1. ENV is Not Precluded from Requesting Relief from the Conditions in the Future.

Although ENV may claim that Condition No. 14 does not provide adequate time to identify and develop a new landfill, ENV has been on notice for years in prior special permit proceedings relating to WGSL that it was required to do so. Indeed, the special permit for the existing landfill required closure of WGSL in 2008 and was extended to November 2009. ENV has had years to begin the process of identifying a new landfill site or sites. Further, there is nothing to preclude ENV from requesting an extension of the 2012 date if it is unable, using reasonable diligence as required in Condition No. 4, to identify and develop a new landfill site. In the prior special permit, as noted above, ENV requested and was given extensions of time because the City was unable to identify a new site. Even the Planning Commission and ENV's witness recognized this:

> GAYNOR: I'm not sure if you're gonna be comfortable answering this so if you're not, I'll get it answered later on, but one of the exhibits that we have is the 2005 Planning Commission Findings of Fact and Decision

EXHIBIT B

CD of Waimanalo Gulch Sanitary Landfill Lateral Expansion
Final Environmental Impact Statement (Volumes 1-3)

Department of Environmental Services
City and County of Honolulu
October 13, 2008

Volume 1 of 3

Final Environmental Impact Statement
Prepared in Accordance with Chapter 343, Hawaii Revised Statutes and
Title 11, Chapter 200, Hawaii Administrative Rules

Waimānalo Gulch Sanitary Landfill Lateral Expansion

Waimānalo Gulch, O‘ahu, Hawai‘i
TMKs: (1) 9-2-003: 072 and 073

October 2008

City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, 3rd Floor
Kapolei, Hawai‘i 96707

R. M. TOWILL CORPORATION
SINCE 1930
2024 North King Street, Suite 200
Honolulu, Hawaii 96819-3494

1-21149-00

Final Environmental Impact Statement

Waimānalo Gulch Sanitary Landfill Lateral Expansion

Waimānalo Gulch, Oʻahu, Hawaiʻi
TMKs: (1) 9-2-003: 072 and 073

October 2008

Prepared Pursuant to
Chapter 343, Hawaiʻi Revised Statutes, and
Title 11, Chapter 200, Hawaiʻi Administrative Rules

By

City and County of Honolulu
Department of Environmental Services
Kapolei, Hawaiʻi 96707

October 10, 2008
Date

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E., Director
Department of Environmental Services
City and County of Honolulu

This document and all ancillary documents were prepared under my direction or supervision. This information, to the best of my knowledge, fully addresses document content requirements as set forth in HAR, Section 11-200-17 and 11-200-18, as applicable.

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List of Acronyms

ADC	Alternate Daily Cover
AGL	Above Ground Level
AIS	Archaeological Inventory Survey
AMP	Archaeological Mitigation Plan
AMSL	Above Mean Sea Level
APE	Area of Potential Effect
APHIS	U. S. Animal and Plant Health Inspection Services
ASR	Automobile Shredder Residue
BMSL	Below Mean Sea Level
BWS	Board of Water Supply
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
CS	Charter School
CSH	Cultural Surveys Hawai‘i, Inc. (Archaeologists)
CWA	Clean Water Act
CWRM	Commission on Water Resource Management
CY	Cubic yards
DDC	Department of Design and Construction, City & County of Honolulu
DEIS	Draft Environmental Impact Statement
DLNR	State Department of Land and Natural Resources
DOH	State Department of Health
DPP	Department of Planning and Permitting, City & County of Honolulu
DPR	Department of Parks and Recreation, City & County of Honolulu
EISPN	Environmental Impact Statement Preparation Notice
ENV	Department of Environmental Services, City & County of Honolulu
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
F	Fahrenheit

FAA	Federal Aviation Administration
FCC	Federal Communications Commission
Ft/d	Feet per day
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GCCS	Gas Collection and Control System
GHG	Greenhouse gas or gasses
GPS	Global Positioning System
GPZ	Groundwater Protection Zone
HAR	Hawai‘i Administrative Rules
HDPE	High Density Polyethlene
HECO	Hawaiian Electric Company
HFD	Honolulu Fire Department
HPD	Honolulu Police Department
H-POWER	Honolulu Program of Waste Energy Recovery
HRS	Hawai‘i Revised Statutes
HWS	Hawaii Waste Systems, LLC
Kg	Kilogram
KOP	Knock-Out Pot
KV	Kilovolt
LCA	Land Court Award
LEL	Lower explosive limit
LFG	Landfill Gas
LCRS	Leachate Collection and Recovery System
LFTGE	Landfill to Gas Energy
LLC	Limited Liability Company
LUO	Land Use Ordinance
ug/L	Micrograms per liter
mg/L	Milligrams per liter
MSHA	Mine Safety and Health Administration
MSL	Mean Sea Level
MSW	Municipal Solid Waste

MTY	Metric tons per year
MW	Monitoring well
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System (Permitting program administered by the DOH)
NMOC	Non-methane organic compounds
NOI	Notice of Intent
NOV	Notice of Violation
NSPS	New Source Performance Standards
NVO	Notice of Violation and Order
OEQC	Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
OIBC	Oʻahu Island Burial Council
PM	Particulate matter
PWCG	Pacific Waste Consulting Group
PWED	Public Works and Economic Development
PPQ	Local office of USDA, APHIS
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
RDF	Refuse Derived Fuel
RFP	Request for Proposals
ROH	Revised Ordinances of Honolulu
SIWWTP	Sand Island Wastewater Treatment Plant
SHPD	State Historic Preservation Division
SIHP	State Inventory of Historic Properties
SDTC	Sustainable Development Technology Canada
SPCC	Spill Prevention Control and Countermeasure
SWIM	Solid Waste Integrated Management
TMK	Tax Map Key
TDS	Total dissolved solids
TPD	Tons per day
TPY	Tons per year

UH	University of Hawai‘i
UIC	Underground Injection Control
USDA	U.S. Department of Agriculture
WCCHC	Wai‘anae Coast Comprehensive Health Center
WGSL	Waimānalo Gulch Sanitary Landfill
WIC	Women, Infants, and Children
WMH	Waste Management of Hawai‘i, Inc.
WTE	Waste to Energy
WWTP	Wastewater Treatment Plant

Project Summary

Project:	Waimānalo Gulch Sanitary Landfill Lateral Expansion
Proposing Agency:	City & County of Honolulu Department of Environmental Services 1000 Uluohia Street, 3rd Floor, Kapolei, Hawai‘i 96707 Eric S. Takamura, Ph.D., P.E., Director
Accepting Authority:	City & County of Honolulu Department of Planning and Permitting On Behalf of the Mayor 650 South King Street, Honolulu, Hawai‘i 96813 Henry Eng, FAICP, Director
TMK:	(1) 9-2-03: Parcels 072 and 073
Location:	Waimānalo Gulch, Island of O‘ahu
Project Area:	92.5 acres are proposed for the lateral expansion. The total Waimānalo Gulch Sanitary Landfill property is 200 acres.
FEIS Preparers:	R. M. Towill Corporation 2024 North King Street, Suite 200 Honolulu, Hawai‘i 96819 Contact: Brian Takeda, Planning Project Coordinator
County Zoning:	Ag-2, General Agricultural District
State Land Use:	Agricultural
Existing Land Uses:	The Waimanalo Gulch Sanitary Landfill property is used by the City & County of Honolulu for a municipal sanitary landfill in accordance with EPA RCRA D requirements.
Proposed Action:	Lateral expansion of the Waimānalo Gulch Sanitary Landfill property for municipal sanitary landfill purposes and accessory uses
Permits that May be Required:	EPA, Title V, Clean Air Act, Covered Source Permit Federal Communications Comm. License, Radio Station Authorization Department of Health Solid Waste Management Permit National Pollutant Discharge Elimination System (NPDES), Permit Applications for Discharges of Storm Water Associated with Construction Activities (NOI C) and Industrial Activities (NOI B) State Special Use Permit, State Land Use District Boundary Amendment Grubbing, Grading, Stockpiling, and Building Permits

Section 1

Executive Summary

This ~~Draft~~ Final Environmental Impact Statement (~~D~~FEIS) has been prepared for the proposed Waimānalo Gulch Sanitary Landfill (WGSL) Lateral Expansion project, located in Waimānalo Gulch, Oʻahu, Hawaiʻi. This ~~D~~FEIS has been prepared in accordance with Chapter 343, Hawaiʻi Revised Statutes (HRS), and Chapter 11-200, Hawaiʻi Administrative Rules (HAR), pertaining to the preparation of EIS documents.

1.1. Proposed Action

The Waimānalo Gulch Sanitary Landfill (WGSL) is an essential and necessary City & County of Honolulu facility that provides municipal and solid waste disposal for all the communities of Oʻahu. Refuse that is disposed of at the landfill includes Municipal Solid Waste (MSW); recycling residue; and, Honolulu Program of Waste Energy Recovery (H-POWER) ash and residue[1]. The landfill has been in operation since 1989 and has capacity remaining with the unused 92.5 acres of the approximately 200 acre property for an estimated minimum life of approximately 15 years[2]. This will extend the use of the site beyond November 1, 2009[3], the date the amended State Special Use Permit will prohibit the further acceptance of waste at the WGSL.

In addition to the expansion of the area of landfilling, the proposed project will involve the development of landfill associated support infrastructure (e.g., drainage, access roadways, landfill gas and leachate collection and monitoring systems, stockpile sites and other related features), a public drop off center, and a landfill gas to energy (LFGTE) system.

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[1] See Section 4.2.1. Waste Accepted at Landfill, for details on waste permitted for disposal at WGSL.

[2] Based on no unforeseen circumstances including natural or other disasters that would require disposal of clean up or recovery related debris. In such an event space at the landfill could be exhausted sooner.

[3] In March 2008, the State Land Use Commission approved the extension of time for the State Special Use Permit allowing the use of the current area of landfilling from May 1, 2008 to November 1, 2009.

1.2. Alternatives Considered

1.2.1. Introduction

The following alternatives to the proposed project were evaluated:

No Action - Landfilling at the Waimānalo Gulch Sanitary Landfill would cease on November 1, 2009, with no alternative site or technology available.

Delayed Action - The action on the permit would be delayed. Given the time needed to process the permits, the delayed and no action alternatives have the same effect.

Transshipment - O‘ahu’s MSW would be baled and transported to a mainland landfill for disposal. Even with this alternative, not all MSW can be transshipped.

Alternative Technologies - Technologies other than landfilling that could reduce the amount of material requiring disposal and generate electricity or another beneficial reuse product. Alternative technologies that were considered include:

- Thermal and non-thermal technologies;
- Enhanced recycling;
- The expansion of H–POWER; and
- Alternative methods of landfilling, such as the disposal of ash and MSW in the same cell, and use of a bioreactor landfill.

Alternative Sites - Alternative sites on O‘ahu for the landfill. The five alternative landfill sites considered in the analysis were:

- Ameron Quarry;
- Mā‘ili Quarry;
- Makaiwa Gulch;
- Nānākuli B; and
- Waimānalo Gulch Sanitary Landfill.

1.2.2. No Action Alternative

The No Action Alternative, which would involve taking no further action to extend the use of the WGSL was rejected because the consequences would result in an unacceptable health, safety, and economic impact to all communities on O‘ahu.

1.2.3. Delayed Action Alternative

The Delayed Action Alternative involves delaying further effort to extend the use of the WGSL. Because the Delayed Action and No Action Alternatives would have similar results, it was rejected.

1.2.4. Transshipment of Waste Off-Island

Waste transshipment involves the packaging of MSW for shipment to a disposal site located off-island. Transshipment is a potential alternative that can reduce the need for a municipal sanitary landfill, but cannot completely replace it because of major issues.

1.2.5. Alternative Technologies to Refuse Disposal

There are currently no alternatives that have been proven to completely eliminate the need for a landfill. Alternative technologies reduce the demand for a landfill, but some residue will need to be disposed of in a landfill. The alternative technologies considered included (PWCG, 2008)[4]:

1. Non Thermal Technologies: (1) Anaerobic Digestion; (2) Aerobic Digestion; and (3) Hydroloysis
2. Thermal Technologies: (1) Plasma Arc; and (2) Gasification/Pyrolysis
3. Waste to Energy
4. Expanded Recycling: (2) Improvements to Recycling Infrastructure; and (2) Recycling to Energy
5. Wet Cell Landfill
6. Co-Disposal of MSW, Ash, and Residue

Conclusion Regarding Alternative Technologies

- Emerging or existing technology based approaches show promise for use in the City & County of Honolulu. However, none of the approaches are capable of completely eliminating the need for a municipal landfill.

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[4] See Section 9.5. Alternative Technologies to Refuse Disposal for further discussion.

- Some alternative technologies, such as hydrolysis (generation of process wastewater and other byproducts), involves the potential for environmental impacts that would require further examination.
- A number of the technologies that produce a secondary product, e.g., fuels for the generation of electricity or recovered plastic, metal, or glass products, do not have established commercial markets in the State.
- Certain alternative technologies such as waste to energy, are viable when considered as part of the City's waste management system. It is expected that other technologies and approaches will be developed as they mature and demonstrate feasible application in other municipalities.

1.2.6. Alternative Sites for a Municipal Landfill

A total of 42 landfill sites were evaluated for the proposed project. In addition to the evaluation of these sites, the City considered (1) the use of two more landfill sites for MSW and ash and residue, as well as (2) the use of two or more landfill sites to separately handle MSW in one landfill and ash and residue in another. The use of two or more sites was considered by ENV for the proposed project, but was not selected for consideration based on (FSEIS, Waimānalo Gulch Sanitary Landfill Expansion, 2002):

1. Land resources on O‘ahu are finite and limited. Use of more than one landfill site for the disposal of MSW and/or ash and residue would foreclose or limit other alternative land uses that might otherwise be provided.
2. Potential for negative environmental impacts associated with the development of any landfill requires major effort to ensure mitigation. Development of two or more landfill sites would increase potential for negative environmental impacts and costs.
3. Economies of scale from an appropriately sized facility would generally result in more efficient use of land than two smaller facilities that may not be as easily planned from a landfill development perspective.

The sites that were considered are identified in **Table 1-1, Potential Landfill Sites**.

Table 1-1, Potential Landfill Sites

Site Name	TMK	Size (Acres)	Capacity (MM cy*)	Life (Years)
Auloa	4-2-14:por 1	55	2.8	4.7
Ameron Quarry	4-2-15:01	391	9.0	15.0
Barbers Point	9-1-16:18, por 1	15	0.7	1.2
Bellows	4-1-15: por. 01	173	7.5	12.5
Diamond Head Crater	3-1-42:por 6	115	4.3	7.2
Ewa No. 1	9-1-17	-	-	
Ewa No. 2	9-1-10	-	-	
Halawa A	9-9-10:8,9,por 10 & 26	40	1.5	2.5
Halawa B	9-9-10:27, por 10	60	2.2	3.7
Heeia Kai	4-6	-	-	
Heeia Uka	4-6-14:01	163	2.4	4.0
Honouliuli	9-1-17:por 4	22	1.7	2.8
Kaaawa	5-1	150	5.6	9.3
Kaena	6-9-1:por 3, 33 & 34	40	1.5	2.5
Kahaluu	4-7	-	-	
Kahe	9-2-3:por 27	200	7.4	12.3
Kalaheo (landfill reuse)	4-2-15:por 1 & 6	134	4.3	7.2
Kaloi	9-2-02:por 1; 9-2-3:por 2; 9-2-4:por 5	400	24.3	40.5
Kapaa No. 1	4-4-14:por 2	60	3.0	5.1
Kapaa No. 2 & 3 (closed)	4-2-15:por 1, 3, 4, 7	-	-	
Kaukonahua	7-1	34	1.3	2.2
Keekee	6-9-1:por 3 & 4, 6-9-3: por 2	40	1.2	2.0
Koko Crater	3-9-12: por 1	140	5.5	9.2
Kunia A	9-4-4: por 4	150	5.6	9.3
Kunia B	9-4-3: por 19	190	7.0	11.7
Maili	8-7-10:por. 03	200	9.2	15.3
Makaiwa	9-2-3: por. 02	338	15.0	25.0
Makakilo Quarry	9-2-3:82	175	10.0	16.7
Makua	8-1-1, 8-2-1	600	7.4	12.3
Mililani	9-5	34	2.2	3.7
Nanakuli A	8-7-9:1 &3 and 8-7-21:26	179	4.0	6.7
Nanakuli B	8-7-9: pors. 1 & 7	432	9.4	15.6
Ohikilolo	8-3-1: 13	706	15.6	26.0
Olomana	4-2	-	-	
Poamoho	7-1	5	0.7	1.2
Punaluu	5-3	200	7.4	12.3
Sand Island	1-5-41	150	5.6	9.3
Waiahole	4-8	60	2.3	3.8
Waianae Expansion	8-5-3 and 6	140	6.8	11.3
Waihee	4-7	61	2.3	3.8
Waikane	4-8	200	9.0	15.0
Waimanalo Gulch Exp.**	9-2-3: 72 & 73	60	12.0	20.0
Waimanalo North	4-1-8: 13	171	9.6	16.0

* Million cubic yards (cy)

** Information has been updated since the Mayor's Committee Report, but prior to the preparation of this EIS. The current lateral expansion acreage is approximately 92.5 acres. The actual area of use may be changed as the design is refined and reviewed by government regulatory agencies.

Note: Based on Final EIS for Waimanalo Gulch Expansion, December 2002.

1.2.7. Preferred Alternative

Alternative technologies and the transshipment of waste show promise toward reducing the need for landfills. The generation of MSW that exceeds the processing capacity of H-POWER as well as the generation of ash and residue, however, requires a municipal landfill as part of the City's long term waste management system. (PWCG, 2008).

The time between preparation of this EIS and the date of compliance with the State LUC Order, November 1, 2009, is insufficient for the administrative processes to permit another alternative for all MSW and H-POWER refuse requiring disposal. The State LUC Order calling for a halt to the acceptance of any further ~~MSW~~ waste deliveries to the WGSL will come into effect on November 1, 2009. Even if this timeframe were extended the schedule for preparation and approval of a new alternative site can be expected to take several years. (PWCG, 2008).

The WGSL is the only alternative currently available to dispose of MSW and H–POWER ash and residue. Continued use of the WGSL until it has been filled to its physical capacity to accept waste is the Preferred Alternative (PWCG, 2008).

1.3. Potential Project Impacts and Mitigation Measures

Potential project impacts and proposed mitigation measures include:

1.3.1. Environmental Setting

Climate and Rainfall

The proposed project is not anticipated to result nor constitute a source of impact to the climate or rainfall resources of the project area or region.

Topography and Geology

Potential impacts are anticipated to involve changes to the landforms of the WGSL property and the underlying soils and site geology. Mitigation will involve updates to technical studies and design documents to maintain the soils and geologic stability of the site. Based on the results, an appropriate design will be prepared and reviewed by the Department of Environmental Services (ENV), the DOH, and other regulatory agencies as required by law.

Surface Water

The proposed project will involve a review of the existing drainage system and its capacity to handle the planned area of expansion. Design, engineering and construction will be reviewed by regulatory agencies. Adverse effects to surface water are not anticipated.

Groundwater and Hydrology

There is potential for leachate entering brackish groundwater from the landfill. Mitigation to address this issue is currently provided through the existing Leachate Collection and Removal System (LCRS) design. As required, the LCRS system design will be modified to ensure against the potential for adverse effects to groundwater and hydrogeological resources of the site.

Natural Hazards

Adverse effects from the proposed project are not anticipated for the following:

Flood Zone - Drainage controls to handle storms have been implemented for the existing site. Future controls will be designed by the City and WMH to be consistent with the requirements for the State and City & County of Honolulu.

Hurricanes - Work procedures practiced within the existing area of landfilling will be practiced within the area of lateral expansion. The measures are designed to reduce the potential for loss of soils, MSW, and ash due to a hurricane or related heavy storm.

Seismic Activity (Earthquakes) - Seismic risk at the project site is minimal. The design of both the current sanitary landfill and the proposed area of lateral expansion will meet the EPA Subtitle D (40 CFR Part 258) standard for stability. No further mitigation measures with regard to seismic activity are required or recommended.

Air Quality

Air quality is not anticipated to be adversely affected by the project. The following were evaluated:

Dust - Airborne dust will be the primary air pollutant. To reduce and mitigate the potential for the release of fugitive dust preventative measures will be practiced by the operator in accordance with the provisions of HAR, Chapter 11-60.1-33, Fugitive Dust. The generation of adverse dust levels from controlled blasting is not anticipated. This is based on the limited yield of the charge, subsurface placement, and nature of the controlled blasting which is designed to fracture rock and not displace earthen material.

Odor - Odors associated with the proposed project include vehicular odor, odors from the hauling of waste to the landfill, and odors as a result of landfill gas emissions.

Vehicular Odors and Exhausts - Exhaust emissions are mitigated by compliance of the landfill operator, commercial, and private vehicle operators with HAR, Chapter 60-1, Air Pollution Control, Subpart 1.34, Motor Vehicles. The site operator will also ensure that all vehicles and equipment associated with landfill operations are properly muffled and maintained in good operating condition.

Odors from Waste Hauling - Potential sources of odor include the delivery of refuse vehicles containing putrescible waste, sewage solids that cannot be processed by wastewater treatment plants, and other types of waste. Odor management will involve: (1) refuse vehicle processing and control; and (2) use of an odor neutralizing system.

Solid sewage sludge from the Sand Island Wastewater Treatment Plant (SIWWTP) that was previously disposed of at the WGSL is currently undergoing treatment in a waste digester recently installed at the ~~Sand Island Wastewater Treatment Plant (~~SIWWTP~~)~~. It is anticipated that as this system is brought to full operational capacity that the requirement for disposal of treated sludge solids will further decrease, eventually removing this source of odorous waste from the landfill.

Stabilized, dewatered sludge from the Honouliuli, Wai'anae, Kailua Regional, and Kahuku Wastewater Treatment Plants, as well as from private sources, is landfilled at WGSL. The City is in the process of seeking beneficial uses for the stabilized, dewatering sludge from the Honouliuli WWTP.

Landfill Gas Associated Odor - The generation of landfill gas is controlled by use of a landfill gas collection and control system (GCCS) that was installed in 2005. The system is operating in accordance with requirements and no adverse effects due to the performance of the system to address landfill gas associated odor are anticipated.

Landfill Associated Gases - Landfill gases at WGSL are monitored in compliance with RCRA Subtitle D regulations, HAR Chapter 11-58, and the WGSL Solid Waste Permit (No.LF-0054-02). The monitoring regularly assesses the landfill and requires an appropriate response to address any exceedances in allowable standards. DOH may also establish other requirements. No adverse effects from landfill associated gases including methane, hydrogen, and other potential emissions are anticipated.

Acoustic Characteristics

The potential for adverse effects as a result of noise generated by the proposed project is not anticipated. The following will be provided:

Construction Vehicles and Equipment - Vehicles and equipment will produce noise. Mitigation of short-term potential construction impacts will involve compliance with the provisions of HAR Chapter 11-43, Community Noise Control. All internal combustion powered vehicles and equipment will be equipped with mufflers or other noise attenuation devices as required.

Construction Activity - Noise associated with construction activities are not anticipated to result in adverse effects to the surrounding area and region. Portions of the work that may affect the adjoining Makaiwa Gulch and the future planned Makaiwa Hills development will be buffered by a ridge separating the two gulches. Other practices will be employed by WMH in coordination with the developers of Makaiwa Hills.

Rock Crushing - Rocks and boulders too large for use will be reduced in size with a rock crusher. Potential impacts include: generation of noise and dust; and visual impacts that could result if views of rock crushing equipment and machinery are readily visible from across the Farrington Highway and coastal shoreline.

Generation of noise will be within a relatively isolated portion of Waimānalo Gulch. The ridge between Waimānalo Gulch and Makaiwa Gulch will also serve to help to reduce potential noise impacts from the planned future Makaiwa Hills development. Other mitigation including the scheduling of rock crushing during normal landfill operating hours will be provided.

Controlled Blasting - Blasting will involve not more than one blast per day on an infrequent basis consisting of approximately one to three days per week, taking place toward the end of the work day. Potential noise effects are not expected to affect the surrounding community along Farrington Highway.

Flora and Faunal Resources

Flora

The results of the botanical survey indicate no special concerns or legal constraints related to botanical resources at Waimānalo Gulch (AECOS Consultants, Inc., 2007). No adverse effects to the flora resources at the WGSL are anticipated.

Fauna

Native and migratory birds were not observed at the property. There are no unique habitats. Similar areas occur all along the leeward side of Oahu. (Bruner, 2006). No adverse effects to the faunal resources at the WGSL are anticipated.

Scenic and Aesthetic Environment

The majority of the proposed project will not be visible from most vantage points along the Farrington Highway in the Wai‘anae or Kahe Point directions. The existing Kahe Point ridge line provides some screening of views of the landfill, including the proposed expansion area. While some potential viewplane impacts are anticipated, mitigation measures have been proposed to eliminate or reduce the potential for adverse impacts.

The general area that fronts Waimānalo Gulch (i.e. from the Kai Lani subdivision to Ko Olina Beach Club) is expected to be the most impacted because activities can be seen from areas within this “view corridor”. Mitigation to reduce visual impacts has been initially implemented. Further landscaping will be implemented to address the dry conditions of the site that have hindered prior hydromulching and plantings. Landscaping and the further use of irrigation will be used to promote vegetative growth similar to that found on the adjoining hillsides.

Views of refuse and construction vehicles in transit to and from the active areas of landfilling will be addressed with carefully located interior roads using the terrain to screen the vehicles. Carefully placed landscaping elements including trees or other tall vegetation will also be implemented.

Views toward the landfill along Farrington Highway, from the Waiʻanae side of the landfill, will be addressed with landscaping treatment, as appropriate, that will include the use of landscaping elements along the western ridge of the WGSL adjoining the Kahe Power Generating Station. This will require careful placement of landscaping elements to maintain views toward the ridgeline to respect the huakaʻi pō (procession of the night marchers) viewplane.

As much as possible, native trees, shrubs and groundcover will be integrated into the landscaping plan.

1.3.2. Public Services

Traffic and Circulation

The proposed project is not expected to generate additional vehicle trips. However, increased development islandwide may result in an increase in site-generated trips to the landfill since additional refuse vehicles may be required to service these areas.

No adverse impacts to traffic are anticipated or expected, however, the Traffic Impact Report recommends: (1) maintaining roadway widths, (2) turning radii, (3) sight distance, and (4) on- and off-loading areas to prevent vehicles from queuing onto the highway. These recommendations will be maintained by WMH, and the owner of the facility, ENV.

Wastewater

The proposed project is not anticipated to result in potential for negative adverse impacts due to wastewater treatment. The project will not require upgrades to municipal wastewater service lines or to the Honoʻuliʻuli Wastewater Treatment Plant.

Potable/Drinking Water

The proposed project will be served by the existing Board of Water Supply (BWS) main along Farrington Highway. No major new construction involving the use of new water supply will be required for the lateral expansion of the landfill.

Power and Communications

Electrical power is provided from the Hawaiian Electric Company (HECO) by overhead service lines. Communications service is provided by Hawaiian Telecom. Use and operation of the planned area of lateral expansion will be coordinated with HECO to minimize the possibility of a disruption of service. The existing power and communications facilities are expected to be sufficient for the proposed project. No adverse impacts are anticipated.

Police and Fire Protection

The current level of police service provided to the WGSL is expected to be sufficient. ENV and WMH will maintain fire apparatus access throughout the site to ensure that fire fighting vehicles and equipment are capable of mobilizing to all locations. No adverse impacts are anticipated to police and fire protection services and no further mitigation is proposed.

Health Care and Emergency Services

The proposed project will involve the continuation of use of the site and does not represent a major increase in use that would require additional health care or emergency services beyond those presently provided. This use is not expected to require additional health care or emergency services beyond those presently available. No adverse impacts are anticipated

Education and Library Services

The proposed project is not expected to affect existing schools or libraries located in the region.

Parks and Recreation

The proposed project is anticipated to have potential impacts that are similar to existing conditions that include landfill associated odor, windblown litter, and visual impacts. The exception to these potential impacts, however, involves the location of the proposed project further mauka within the Waimānalo Gulch which will help to reduce potential odors directly attributable to the landfill, the control of windblown litter from working cells, and visibility of working activities on the landfill.

Control of Landfill Odor - The potential for odor from vehicles include: vehicles from residential and commercial sources; vehicles that carry treated sewage solids; and private self-haulers. Odors from refuse awaiting disposal involve a temporary condition in that once the refuse is buried and covered, the source of the odor is removed from exposure to the air column. Odors resulting from landfill decomposition are addressed with the LCRS and GCCS.

Control of Windblown Litter - Mitigative measures include:

- Use of permanent, temporary, and portable litter fences.
- Waste is processed and covered with cover material as soon as practicable.
- On-call or standby work crews are deployed concurrent with the acceptance of refuse at the WGSL.

- ENV will enforce existing rules, regulations, and procedural practices to reduce the incidence of windblown litter.
  Management personnel at WGSL also enforce the rule requiring all loads entering the landfill to be secured by use of a tarp, cover, or enclosure.

Visibility of Working Activities on the Landfill - Portions of the existing area of work are visible from various locations along Farrington Highway and the Ko Olina Resort (see Section 5.10. Scenic and Aesthetic Environment. Mitigation involves: (1) the location of the planned area of expansion further mauka and within the Waimānalo Gulch to minimize views into active areas of landfilling; and (2) the use of landscaping with trees and vegetative cover. While not all elements of the proposed project can be totally screened from view, the location of work and the careful placement of landscaping elements are expected to significantly reduce the potential for viewplane and aesthetic impacts.

1.3.3. Socioeconomic and Related Environment

Socioeconomic Characteristics

Public Facilities and Services
Police Protection, Fire Protection, Emergency and Medical Services - Extension of the landfill operations are not anticipated to result in adverse effects. WHM will provide adequate access for fire apparatus. WGSL and the surrounding communities are adequately serviced by EMS services.

Education and Library Services - Expansion of the WGSL Sanitary Landfill will not create the need for additional elementary schools, nor will it affect existing elementary schools differently than they are affected at the present time. No impacts to schools or libraries are anticipated.

Parks and Recreation - An expanded WGSL does not generate any additional demand for area parks. Odor issues and litter issues will be addressed by WMH and ENV. The proposed expansion and continued use of WGSL will have no impact on the use of nearby parks. (SMS Research, 2008).

Other Social Impacts

Positive Social Impacts

Reduced Impact on Other Oʻahu Communities - Moving the current landfill operation to another Oʻahu location would only shift the potential for adverse impacts to another community, still requiring that the issues of litter, traffic, odors, and visual pollution be addressed and managed. (SMS Research, 2008).

Negative Social Impacts

Department of Health Issues - On December 7, 2007, ~~having addressed the two remaining counts identified in a DOH notice of violation (NOV),~~ the City and the DOH signed a settlement agreement which settled all issues arising from and related to the DOH Notice of Violation (NOV). According to WMH and the City, the public and the environment were never at risk at any time over the period of use of the site.

Property Values - The 2002 Socio-Economic Impact Assessment of the WGSL Expansion found single-family homes fit the hypothesis that property values increase with distance from the landfill up to a distance of about three miles. However, the condominium analysis shows a significant correlation of increased value and proximity to the landfill – the opposite result. (SMS Research, 2008)[5].

Diminishing Community Trust - The failure to follow through on commitments by prior City administrations to close WGSL may be having an impact in eroding public trust and increasing cynicism toward City government. There appears to be general agreement among those interviewed that there has been insufficient community involvement (SMS Research, 2008).

Environmental Injustice - Interviewees point out that Leeward Oʻahu is on the receiving end of many of Oʻahu's burdens. Those interviewed argue the use and expansion of

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[5] See Appendix J, Socioeconomic Impact Assessment, in Volume 2 of ~~2~~3 of this ~~D~~FEIS.

WGSL will only increase the imbalance of those impacts on Leeward Oʻahu. (SMS Research, 2008).

Proponents of keeping the landfill in operation point out that the siting of the landfill occurred long before the siting of several of the other examples noted above and had nothing to do with the demographics of surrounding communities. Furthermore, surrounding communities accommodate Ko Olina, abutting the Second City of Kapolei. This is the fastest growing region on Oʻahu and WGSL does not appear to have stymied its growth. This is not indicative of a community suffering from environmental injustice. (SMS Research, 2008).

Economic Impacts

Employment and Earnings
Construction - Expansion of WGSL is expected to take 10 years to complete. Pending the receipt of final engineering figures, the construction of the expansion has been estimated at $86,000,000 over ten years. (SMS Research, 2008).

Employment - The net positive impact of the WGSL expansion will result in the creation of approximately 651 direct, indirect and induced person-years of employment. (SMS Research, 2008).

Earnings - The proposed project will result in an overall net positive impact on earnings. In total, approximately $63.3 million in earnings will be generated. These earnings will boost the local economy, as many of the dollars will be used to purchase goods and services from other industries. (SMS Research, 2008).

Fiscal Impacts: State of Hawaii
The indirect and induced impact of this project will result in $6.2 million in state tax revenues. In total, the project would result in an estimated positive impact of $10.4 million in state tax revenues. (SMS Research, 2008).

The socioeconomic analysis did not take into account any indirect or induced economic effects of the landfill operation on surrounding businesses. There was insufficient, verifiable information available at the time of the compilation of the report. As noted, the residential sales program at Ko Olina has been successful. If it could have been more successful without the landfill is speculative. (SMS Research, 2008).

Socioeconomic Mitigation Measures

Improving Current Practices

> *Views - WMH should continue to implement the on-site landscaping plans that have already been developed; especially for those areas facing south toward Ko-Olina (SMS Research, 2008).*
>
> *WMH should design and implement landscape screens (e.g., pines, tall hedges) along the berm and the access road that is visible from Farrington Highway, fronting the Kahe Power Plant. As an alternative, WMH might consider entering into a partnership with HECO to plant an effective screen of trees along Farrington Highway which would have the dual purpose of screening the landfill operations and the power plant from passing vehicles (SMS Research, 2008).*

Landscaping plans have been prepared to screen exposed areas and views of landfill operations. Initial plantings have been started and will be augmented with new plantings. The west-facing stability berm along the upper access road shields views from some of the operations, but not all of it. Selected plantings, consistent with the area vegetation will be investigated for use as visual buffer.

> *Odor - WMH and the City should continue to be vigilant in processing the sludge from the sewage treatment plants upon delivery and in taking all means to reduce any odor impacts (SMS Research, 2008).*

Diversion of some of the sludge for processing at the Synagro-WTT facility at SIWWTP and the improved performance of the odor neutralizing mist system appears to have had a significant positive impact. ~~However, WMH will pay continued attention to the performance of the Synagro system.~~

> *Litter - WMH must continue to monitor the egress and ingress of vehicles and continue to aggressively enforce the anti-littering regulations and fines (SMS Research, 2008).*

WMH inspects and monitors trucks entering and leaving the landfill to ensure that loads are secured upon entry and that the trucks are free from debris before exiting. Citizens and others who deliver trash without adequately secured loads generate windblown litter. Public education will be implemented by ENV and WMH to supplement the inspections.

> *ENV and WMH should maintain a direct communication link with the HPD; in the case of littering, it will lead to faster, more effective response (SMS Research, 2008). Additionally, this communication linkage should expand to the community most affected by the potential loss of refuse from vehicles traveling along public thoroughfares.*

1. WMH and ENV will seek the participation of the HPD as a participant in the WGSL Oversight Advisory Committee.
2. WMH and ENV will notify the community through the WMH newsletter and the ENV website, opala.org, of the steps that the public can take to help with reporting highway littering.

Improving Community Involvement and Communications

Community Involvement

> *The City must effectively use the Oversight Advisory Committee (SMS Research, 2008).*

A first step to improved use of the Oversight Advisory Committee is described above. Other measures include:

1. Maintain and expand outreach, education, and coordination of landfill operations with the area neighborhood boards.
2. WMH will continue to extend and to expand visits to the landfill.
3. WMH will continue its outreach efforts with the adjoining (1) Ko Olina Community Association (KOCA) and the various homeowner/owner associations within Ko Olina; and (2) adjoining homeowners and residents in the area including Nānākuli and the planned Makaiwa Hills project.

> *The City should continue to contribute to a community benefits package for as long as the landfill exists (SMS Research, 2008).*

The value of the community benefits have been identified as $2.7 million in 2007 and ~~will be~~ $2.0 million in 2008. The experience gained from current work by the City will be applied in the form of future modifications to improve the system.

> *The representation on the Committee that determines the benefits package should include all directly affected communities (SMS Research, 2008).*

Identification of specific benefits that will be distributed and the parties that will be responsible for representing the communities involved remain on-going. Future information, including the names of participants involved will be provided by the City by website on opala.org or other agency website.

Website

> *WMH/ENV should use its web-sites aggressively as educational and communication tools (SMS Research, 2008).*

The ENV website, opala.org will be used for the dissemination of future information including site tours (currently offered), the status of new technology undergoing evaluation, and other matters involving refuse management.

Improving the Commitment to Alternative Solutions to Landfilling

Alternatives to Landfills

> *The City should continue to invest in Research and Development, and where feasible, implement alternative technologies that will result in a reduction in the City's dependency on a landfill (SMS Research, 2008).*

The City is actively involved in the investigation of feasible alternatives to landfilling. While no current alternative can completely remove the need for a landfill the City remains committed to research and utilization of methods as they prove feasible for taxpayers and the environment.

Alternative Locations

> *The City should continue to seek an alternative site to WGSL as the primary landfill location on O'ahu (SMS Research, 2008).*

Prior to closure of the proposed project the City will initiate the search for O‘ahu's next landfill site. Participation in this effort should be initiated within the next 10 years.

Land Use and Ownership

Regional and Local Land Uses

The region of ‘Ewa surrounding the WGSL is composed of a mix of multiple land uses including residential, resort, recreational, business, commercial, and industrial uses. Other land uses including businesses, parks, schools, and other facilities also operate in the region. Ko Olina and the Makaiwa Hills development lie closest to the WGSL.

Potential Impacts and Mitigation Measures

The potential for impacts are expected to be at a localized or community level. WGSL is expected to result in potential land use impacts similar to those associated with the current use of the site. These potential impacts include:

- The generation of nuisance odors during delivery and landfilling of refuse.
- Windblown litter from the landfill becoming airborne and litter from improperly secured loads from refuse delivery trucks and private self-haulers.
- Traffic impacts associated with the transit of vehicles entering and leaving WGSL.
- The tracking of mud and sediments onto Farrington Highway from vehicles exiting the landfill.
- The migration of fugitive dust from landfill operations including earthwork and vehicles transiting to and from the site.
- The modification or loss of mauka view planes toward the WGSL.

A number of mitigation measures as described in this document have been identified to address the potential impacts described above. These measures will continue to require ongoing coordination with surrounding community and landownership interests.

Effort by the City Administration to establish an Oversight Advisory Committee for Waimānalo Gulch was initiated in July 2006. While the Oversight Advisory Committee will continue, on-going efforts by ENV and WMH will be maintained and extended to coordinate the operation of WGSL with the surrounding community. The mitigation measures that will be implemented are described in Section 7, 7.1.~~5~~6. Socioeconomic Mitigation Measures.

Historic and Archaeological Resources

An Archaeological Inventory Survey (AIS) of the proposed project site was conducted by Cultural Surveys Hawai‘i (CSH) in 2007 and 2008. The purpose of the AIS was to document all historic properties within the 92.5 acre area of the proposed project known as the Area of Potential Effect (APE). The inspection of the site identified one historic property: State Inventory of Historic Properties (SIHP) # 50-80-12-6903. The site is of pre-contact origin, and consists of three large upright boulders potentially utilized as trail or boundary markers.

According to CSH the consultation effort determined no clear consensus regarding the function of the three stone uprights. However, all of the cultural consultants indicated that the stones were significant and that they were likely used by traditional Native Hawaiian cultural practitioners in the past. All cultural consultants also felt the stones should be preserved in place if at all possible because their significance and function are likely tied to their current location. If preservation in place is not an option, most were in favor of temporary relocation to Battery Arizona, with movement of the stones back to as near as possible to their original location once the landfill is closed. (CSH, 2008).

Potential Impacts and Mitigation Measures

The proposed project will require excavation, mass grading, controlled blasting, and earthwork to develop landfill cells and other structural features. The development of a modified landfill design was considered by WMH and ENV as a means of providing further protection to the stone uprights. This consideration would avoid the location of the uprights along a steep slope to maintain and preserve the condition of the existing site. However, according to WMH the uprights are located along a ridgeline that would remain susceptible to vibration.

Based on concern that construction could jeopardize the area of the site and potentially undermine the stability of the underlying surface of the stone uprights, or the uprights themselves, WMH and ENV have determined that the three upright stones comprising SIHP # 50-80-12-6903 cannot reasonably be preserved in place. Accordingly, a project effect determination of “effect with agreed upon mitigation commitments” is proposed.

Mitigation to preserve the site is recommended in the form of relocation of the three SIHP # 50-80-12-6903 upright stones to the Battery Arizona site, located in the southwestern portion of the WGSL. The proposed relocation would ensure and maintain the safety of the stones during construction activities, and make the stones more accessible to interested parties.

Based on the results of the cultural consultation, however, cultural informants would prefer to see the stones eventually returned to near their original resting places once the landfill is no longer active, with interpretive signage based on further background research and making public access available. WMH and ENV will further consider this alternative in consultation with the SHPD and community cultural informants. (CSH, 2008).

Cultural Impact Assessment

A Cultural Impact Assessment (CIA) of the proposed project site was conducted by Cultural Surveys Hawai‘i (CSH) in 2007 and 2008. The purpose of the CIA is to consider the effects the proposed project may have on traditional cultural practices and resources.

In addition to previous use activities, the importation of landfill material since 1987 has most likely further eliminated any historic properties and plant resources related to Hawaiian cultural practices and beliefs that may have been present at the project site. The presence of the landfill over the last fifteen years has already precluded any traditionally established access to *mauka* areas through Waimānalo Gulch. (CSH, 2008).

The ʻili of Waimānalo has been described by community participants in the CIA as a sacred area of great cultural importance. Community participants express great concern about the Huakaʻi Pō Kāne (Night Marchers). According to kūpuna, the trail of the Night Marchers in this area runs from mauka to makai. Hawaiian cultural belief is that these trails are significant and must not be impeded for fear of retribution from spirits of the departed. (CSH, 2008).

Based on the information gathered for the CIA the proposed project will affect traditional Native Hawaiian stone uprights (SIHP # 50-80-12-6903) (CSH, 2008).

Potential Impacts and Mitigation Measures

The proposed project may potentially affect cultural resources found at the planned area of lateral expansion. The following measures are designed to mitigate or reduce the potential for impacts:

1. Per Section 7.3.8. Potential Impacts and Mitigation Measures, ENV and WMH propose that the stone uprights be relocated based on the preparation of an Archaeological Monitoring Plan (AMP) with guidance from the SHPD and community informants identified by SHPD and CSH. The AMP will include a preservation plan for future cultural access.

2. Lands makai of Waimānalo Gulch have been bisected by Farrington Highway along the coastline. Although it may not be possible to completely recover this traditional mauka/makai relationship, there are three important cultural properties that can be addressed with culturally sensitive treatment: (1) cultural site SIHP # 50-80-12-6903; (2) the legend of the huakaʻi pō; and (3) a series of six natural caves and rock overhangs. These features are an important part of the Hawaiian landscape and their appropriate treatment will be provided.

3. ENV and WMH will consult with community informants to mitigate or reduce the potential for visual blockage of the west and east ridgelines of the Waimānalo Gulch.

4. Six natural caves and rock overhangs in the northwestern portion of the project area were examined and documented (Dalton and Hammatt 2008). No significant cultural material was observed or discovered. Although burials were not encountered it is always possible they may be discovered. In the unlikely event of a discovery work in the immediate area will cease and the SHPD will be notified. Instructions and guidance for future steps will be obtained from the SHPD.

5. Although the land has been dramatically altered, there remains a possibility that burials and other archaeological sites may be present in and around the proposed project area. ENV and WMH will comply with the requirements for archaeological and cultural protection and preservation in Chapter 6E, HRS, and other applicable laws and regulations.

6. ENV and WMH will continue to consult with the community regarding archaeological, cultural, and other environmental matters involving the operation of the existing WGSL and the proposed lateral expansion project.

1.4. Secondary and Cumulative Impacts

The proposed WGSL Lateral Expansion project is planned to be initiated upon the exhaustion of space in the final Cell E-4 of the existing approved area of landfilling. In this regard, the potential for secondary and cumulative impacts, in many instances, can be considered similar to the impacts from use of the existing area of landfilling.

Potential secondary and cumulative impacts considered for this project include the following:

1.4.1. Potential Environmental Impacts

Climate and Rainfall

Secondary or cumulative impacts are not anticipated or expected. While the proposed scope and scale of the project are not sufficient to influence these resources, greenhouse gases (GHG) such as methane and carbon dioxide generated from the landfill could be a potential contributing factor to global warming. An investigation of alternatives to the use of landfills in Section 9 and Appendix K, found that WGSL in combination with the use of landfill gas for the generation of electricity, and the use of the site for the disposal of H-POWER ash, are expected to contribute to fewer GHG emissions than use of the site solely as a landfill with no provision or support for the recovery of energy.

Topography, Geology and Soils
Secondary or cumulative impacts based on the continued use of WGSL are not anticipated or expected. The site has been in operation for approximately 18 to 19 years and has been subject to ongoing technical studies and evaluations by independent technical consultants for the topographic, geologic and soils resources of the site to ascertain the performance and environmental safety of the facility. During this period the technical studies that have been completed have been used to improve the capacity, capability, and safe use of the site for a landfill.

The evaluation of WGSL through the preparation of technical studies and reports will continue to be used for further improvements and modifications, as required, through the mitigative measures provided in this EIS document.

Surface Water, Groundwater, and Hydrology
Secondary or cumulative impacts to surface water, groundwater, and hydrological resources at the WGSL and region are not anticipated.

The proposed practices, procedures and mitigative measures provided in this EIS have been designed to maintain the use of the site for a landfill for a period of not less than 15 years. Long term monitoring and inspection of the site by WMH will be further provided through a EPA required post closure plan for not less than 30 years following the closure of the site. These measures, which are designed to mitigate against potential primary impacts associated with stormwater erosion and discharges of refuse and leachate to the surface water, groundwater, and hydrologic resources of the site and the surrounding region, would serve as the principal means of avoiding the occurrence of secondary or cumulative impacts.

Natural Hazards

Potential secondary or cumulative impacts associated with floods, hurricanes, earthquakes, and tsunami have been considered in the design and operating practices applied to the site. Adverse impacts are not anticipated. Safe engineering and design standards have been incorporated in the construction of the existing area of landfilling and will be applied to the proposed area of lateral expansion. The standards applied to the site are designed to maintain a reasonable level of long term safety and reduce or prevent secondary effects due to natural hazards from floods, earthquakes, or tsunami.

Air Quality

The potential for secondary or cumulative effects from landfill gas emissions and operational use of the site involving earthwork and deliveries of refuse exists at the site without the long term use of the mitigative measures provided in this EIS document, and the operational practices that are employed by WMH. Potential long term effects can include the migration of landfill gas, dust, and nuisance odors associated with the landfill and refuse deliveries.

Mitigation to address these concerns will serve to avoid potential secondary and cumulative impacts through on-going monitoring and operational practices that maintain the existing environmental safety of the site, such that it would avoid the opportunity for other larger impacts to occur. In some cases, these measures have already been implemented: a landfill gas collection and control system has been constructed and is operating to reduce uncontrolled releases of landfill associated gases; and a waste digester at the Sand Island Wastewater Treatment Plant has been constructed and in recent months has demonstrated improved performance with fewer deliveries of odor generating sewage solids.

Acoustic Characteristics

While the potential for primary noise impacts associated with construction and operation activities are not anticipated, mitigative measures are provided in Section 5.8. Acoustic Characteristics. Potential for secondary and cumulative impacts with regard to the planned Makaiwa Hills subdivision, located next to the WGSL along its eastern boundary, are similarly not anticipated. Construction and earthwork within the landfill will be inhibited by the ridgeline separating the two properties. Mitigation to address the potential for secondary and cumulative impacts will be the same as those designed to address the primary impacts. This will include proper maintenance of all equipment with appropriate sound attenuation as required in accordance with federal, state and City & County of Honolulu regulations, the scheduling of rock crushing during normal landfill operating hours to avoid possible disturbance to surrounding neighbors, and other measures as identified in Section 5.8.

Flora and Fauna Resources

Potential for secondary or cumulative adverse impacts to flora and fauna (including invertebrate) resources at the site are not anticipated. The proposed project will be limited to the use of the City owned property. No expansion outside of the property boundary is planned or proposed. While the planned use of the site will require the removal of vegetation to establish the lateral landfill expansion area, this constitutes a short term effect of a scope and scale that is limited to the Waimanalo Gulch landfill property. In the longer term, upon completion of work the site will be restored with vegetation similar to that found on the adjoining hill sides. Whenever possible, native species will be used.

Scenic and Aesthetic Resources

The potential secondary or cumulative impact of the planned use of the site will involve modification of the surface contours within the Waimānalo Gulch, that may be considered as a continuation of the present land use, but within the lateral expansion area. This modification is a necessary part of the project to establish landfill cells, stability slopes, berms, and installation of supporting facilities to allow for a landfill that meets the required federal, state, and City & County of Honolulu regulations for a properly designed and safe facility. While use of the site for landfilling will involve the alteration of the viewplane, mitigative measures as provided in Section 5.10.2. Potential Impacts and Mitigation Measures (Scenic and Aesthetic Environment) are proposed to reduce the impacts.

Over the long term, during the operational use of the site vegetative practices and landscaping will serve to minimize the appearance of the landfill. The site will be allowed to revegetate to match the surrounding, undeveloped hillsides once the capacity of the facility has been reached, and during the planned 30 year period of landfill maintenance and monitoring.

1.4.2. Potential Public Service Impacts

Traffic and Circulation

Potential for secondary or cumulative impacts associated with traffic and circulation are not anticipated. The proposed project will constitute a continuation of use of the site for landfilling which was started in the early 1990s. According to the traffic impact report performed for the project, the WGSL is not expected to itself generate major new transportation demands along Farrington Highway, but that the demand for use of the area roadways would most likely be from increasing development in the area. In order to maintain safe operating conditions for the users of the WGSL and the public transiting along Farrington Highway, WMH will periodically evaluate traffic to assess the need for further traffic controls to maintain public safety.

Wastewater and Potable/Drinking Water

Potential for secondary or cumulative impacts are not anticipated. The site is currently provided with adequate service for wastewater and water. No new or future demands that would exacerbate the current or long term provision of these services are anticipated.

Power and Communications

Potential for secondary or cumulative impacts are not anticipated. The proposed project is adequately served and it is anticipated that future requirements would not result in the demand for services beyond those provided by the existing utility companies.

Police, Fire, Health Care, and Emergency Services

Potential for secondary or cumulative impacts are not anticipated. The proposed project is adequately served and it is anticipated that future requirements would not result in the demand for services beyond those provided.

Education and Library Services

Potential for secondary or cumulative impacts to education or library services are not anticipated.

Parks and Recreation

The potential for secondary or cumulative impacts to parks and recreational facilities are not anticipated. The mitigative measures as provided in Section 6.10.2. Potential Impact and Mitigation Measures (Parks and Recreation), will address the migration of landfill associated odor, windblown litter migrating to area beaches and parks, and visual impacts.

Other potential secondary effects from impacts to air, water, or soils that might otherwise affect the use of parks and recreational facilities in the area will be subject to the mitigative measures as provided in Sections 5.2. Topography, 5.3. Geology, 5.4. Surface Water, 5.5. Groundwater and Hydrology, and 5.7. Air Quality.

1.4.3. Potential Socioeconomic and Related Environmental Impacts

Socioeconomic Characteristics

Potential secondary or cumulative impacts to the socioeconomic resources of the area and region are possible without implementation of the mitigative measures provided in this EIS document, and the operational and management practices employed by WMH for the proposed project. These impacts involve potential financial losses to area businesses, and resort and residential sales from landfill associated nuisances and environmental impacts as outlined in Section 7.1.3. Community Issues and Concerns, ~~and~~ Section 7.1.4. Socioeconomic Impacts; and Section 7.1.5. Addendum to Socioeconomic Impacts.

If directly attributed to the landfill: (1) the immediate secondary potential impact could involve the loss of income, employment, sales, and tax revenues from the lowering of economic demand for the area; and (2) the cumulative potential impact could involve the long term loss of the capacity of the region to attract future business, residential, and other related economic growth.

The mitigative measures as provided in this EIS to address the socioeconomic resources of the area and region have been proposed to mitigate or reduce the potential for primary impacts that could lead to the potential secondary or cumulative impacts described above. These mitigation measures are provided in Section 7.1. ~~5~~6. Socioeconomic Mitigation Measures, and in other sections of this EIS to maintain the environmental quality of the site and region.

Land Use and Ownership

The proposed project is anticipated to result in the potential for secondary and cumulative land use impacts similar to those associated with the current use of the site. These potential impacts would be an outgrowth of those identified in Section 7.2.3. Potential Impacts and Mitigation Measures (Land Use and Ownership), summarized as:

- The generation of nuisance odors.
- Windblown litter from the landfill becoming airborne and litter from improperly secured loads from refuse trucks and private self-haulers.
- Traffic impacts associated with the transit of vehicles entering and leaving WGSL.
- The tracking of mud and sediments onto Farrington Highway.
- The migration of fugitive dust from landfill operations.
- The modification or loss of mauka view planes toward the WGSL.

These direct impacts could potentially lead to secondary and cumulative impacts that would include the loss or impaired use of land and properties in the affected area. Mitigation to address these concerns is identified and addressed in Section 7.1.~~5~~6. Socioeconomic Mitigation Measures, and in the following Sections to address the specific points above:

- 4.2.3. Environmental Controls, Litter, to address windblown litter.
- 4.4. Dust and Mud, to address tracking of mud and migration of fugitive dust.
- 5.7.3. Potential Impacts and Mitigation Measures (Air Quality), for odor control.
- 5.10.2. Potential Impacts and Mitigation Measures (Scenic and Aesthetic Environment), to address impacts to view planes toward the WGSL.

Historic and Archaeological Resources

There is potential for secondary impacts to historic and archaeological resources that may be present in the area of lateral expansion. Mitigation to address this possibility has been provided in Section 7.3.8. Potential Impacts and Mitigation Measures (Historic and Archaeological Resources), and in Section 7.4.7. Summary and Conclusions, Potential Impacts and Mitigation Measures (Cultural Impact Assessment).

Cultural Impact Assessment

Secondary and cumulative impacts associated with the use of the site involve the potential for the discovery of other cultural resources, artifacts, or burials that may be present at the project site. This potential however, was considered and served as one important reason for the completion of the Archaeological Inventory Survey (AIS) and Cultural Impact Assessment (CIA) for this project.

Mitigation to address the potential for impacts to archaeological and cultural resources will be coordinated between WMH, ENV, and the SHPD and community informants to develop an appropriate plan for treatment for the stone uprights (SIHP # 50-80-12-6903), huakaʻi pō (procession of the night marchers), and six caves and overhangs. The plan will consider the provision of access by cultural practitioners.

In the unlikely event of the discovery of a burial, work in the immediate area will cease until appropriate coordination with the SHPD has been completed. As required, the applicable provisions of law including HRS, Chapter 6E, and HAR, Chapter 13-300 (regarding burials) to maintain the protection of archaeological and cultural resources will be provided by WMH and ENV.

1.5. Consistency with Land Use Plans, Policies, and Controls

1.5.1. Hawai‘i State Plan

The proposed project maintains consistency with the provisions of the State Plan in the following:

> *Section 226-6(b) To achieve the general economic objectives, it shall be the policy of this State to:* (14) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy."

The proposed project provides for the safe and effective disposal of municipal refuse for all the communities of O‘ahu. This waste, if not properly managed, could affect O‘ahu's islandwide "…scenic beauty and the aloha spirit, which are vital to a healthy economy." (See Sections 4 through 6 of this document).

> *Section 226-11(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to: (1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.*

The proposed project is based on the use of an existing City owned facility and is an effort to conserve the limited and precious land resources of O‘ahu. Conservation practices are supported through the promotion of recycling and the generation of energy through H-POWER. Future plans also call for the use of landfill gas to one day be used in the generation of electricity.

> *Section 226-11(b) (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems; (3) Take into account the physical attributes of areas when planning and designing activities and facilities; (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage; and (5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions; and (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'I; and (8) Pursue compatible relationships among activities, facilities, and natural resources.*

Factors taken into account in the assessment of WGSL include: a relatively dry climate; the absence of drinking/potable groundwater resources that could be adversely affected by a landfill; and the absence of known threatened or endangered species. Protection against potential "costly or irreparable environmental damage", will involve the use of mitigative measures and practices as described in this EIS document.

There is limited space available for facilities such as a landfill. The subject EIS proposes mitigative measures and other practices that reflect the City and WMH's commitment for a well run facility that avoids or minimizes the potential for adverse effects.

> *Section 226-12 (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to: (I) Promote the preservation and restoration of significant natural and historic resources; (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features; (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage; and (5) Encourage the design of developments and activities that complement the natural beauty of the islands.*

The preservation and restoration of natural and historic resources has or is currently being addressed through the conduct of special studies of flora, fauna, archaeological, and cultural resources, and through the development of mitigative measures. According to special studies, no known threatened or endangered species were observed at the site. An existing archaeological site was found in the form of three stone uprights along the southwestern edge of the landfill property. To address this discovery coordination for an appropriate treatment plan is in progress. The City intends to work with the SHPD and community to provide appropriate treatment. All required provisions of Chapter 6E, HRS, and other provisions of law governing archaeological preservation and protection will be complied with.

View impacts involve mauka views toward the landfill property. While it is not possible to shield from view the location and features of the entirety of the WGSL, the potential for visual impacts during operation of the landfill will be minimized and mitigated with vegetative controls including the use of hydromulching, and plantings of grass, dryland shrubs, and trees, as provided in the project's landscaping plan.

> *Section 226-14 Objective and policies for facility systems-in general.*
> *(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives. (b) To achieve the general facility systems objective, it shall be the policy of this State to: (1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.*

The proposed project represents a major capital project necessary for the disposal of municipal solid waste and refuse on O‘ahu. The project will serve all of O‘ahu's residents and visitors and is an essential part of the City's refuse management system.

> *Section 226-14 (b)(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.*

The proposed project will allow flexibility in the development and adoption of future City initiatives that will reduce dependency on landfills: (1) The future adoption of new technologies will require sufficient time for operational viability; (2) There are no existing refuse technologies that do not themselves result in the generation of some refuse that cannot be further recovered, recycled, or otherwise reused. For these forms of waste, a landfill is the most viable method of disposal; (3) Any effort to reduce the volume of refuse being landfilled would benefit O‘ahu through an extension of the life of the landfill. Landfill capacity that is not used would forestall the need to seek a new landfill location; (4) The landfill serves as a public resource in the event of a natural disaster such as a hurricane, earthquake or tsunami. A location for the disposal of cleanup and demolition debris would be required to meet public health and safety requirements during recovery.

> *Section 226-14 (b)(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.*

The proposed project represents the effort to expand an existing public facility that is owned by the City & County of Honolulu. The expansion will be supported within the existing resource capacity of the site and at reasonable taxpayer cost.

> *Section 226-15 Objectives and policies for facility systems-solid and liquid wastes. (a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives: (1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes. (b) To achieve solid and liquid waste objectives, it shall be the policy of this State to: (2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic, and (3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.*

The proposed project will facilitate the maintenance of public health and sanitation standards with regard to the disposal of MSW and refuse. Although the proposed project does not in itself involve recycling, the City, through its Solid Waste Integrated Management Plan identifies recycling and materials recovery efforts to reduce O‘ahu's overall dependency on the need for landfills.

The City has promoted the investigation and adoption of technology based methods that have proven to be efficient and economic in the reduction and treatment of solid waste. Examples include a solids digester facility and recent efforts to upgrade H-POWER.

> *Section 226-104 (b) Priority guidelines for regional growth distribution and land resource utilization: (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.*

The proposed project involves the use of agricultural land that has not been classified by the Agricultural Lands of Importance to the State of Hawai‘i (ALISH) system. The non-essential agricultural nature of the land can be considered as a use that would allow for the maintenance of other, more important agricultural lands.

> *Section 226-104 (b)(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized; (12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations; and (13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.*

The proposed project has been evaluated with regard to the potential for adverse effects to critical environmental features or habitat. There are no known threatened or endangered species present and as appropriate, mitigative measures are proposed to minimize, mitigate, or otherwise reduce the potential for adverse environmental impacts.

The WGSL has the potential to continue to support O‘ahu's refuse disposal requirements for the next approximately 15 years. This use would support and preempt the use of other locations until such time that the present site has reached capacity.

As noted, this EIS document identifies the appropriate application of mitigative measures and practices to avoid the potential for adverse environmental impacts as a result of development for the area of lateral expansion.

1.5.2. State Functional Plans

The proposed project is considered to be relevant and consistent with the State Energy and Recreation Functional Plans.

1.5.3. State Land Use Law

The proposed project is located within the State Agricultural District. Because the project is in the State Agricultural District, a State Special Use Permit or State Land Use District Boundary Amendment must be obtained for the proposed expansion.

1.5.4. Special Management Area

According to the City SMA Boundary Map for the Ewa area, the proposed project site is located outside of the SMA and is therefore not subject to SMA regulation.

1.5.5. Coastal Zone Management Program

The following is an assessment of the project with respect to the CZMP objectives and policies set forth in HRS Section 205(A)-2.

1. Recreational resources

The proposed facility is not located on the coastline or shoreline and does not involve the use of coastal resources. The site is not in a location suitable for the development of new shoreline recreational opportunities or to dedicable shoreline areas with recreational value. However, with the eventual reclamation of the site, future recreational park opportunities may one day become available.

2. Historic resources

Archaeological investigation of the site has resulted in the discovery of three stone uprights in early 2007. To address the uprights: (1) the SHPD was notified to ascertain further actions or requirements to ensure no disturbance; and (2) notification and coordination with appropriate parties as determined by SHPD that includes the Office of Hawaiian Affairs (OHA) and SHPD-designated cultural informants from the area. The process of coordination to develop an appropriate treatment plan to preserve the uprights is in progress.

3. Scenic and open space resources

The majority of the proposed project will not be visible from most vantage points along the Farrington Highway in the Wai‘anae or Kahe Point directions. The existing Kahe Point ridge line provides screening of views of the landfill, including the proposed expansion area.

The general area that fronts Waimānalo Gulch from the Kai Lani subdivision to Ko Olina Beach Club will be the most potentially impacted. Mitigation to reduce visual impacts has been initially implemented and will be modified for the proposed project. The existing site has a 400-foot-wide vegetative buffer strip along the eastern portion of the site with a north-south separation of 800 to 1,000 feet. The existing landfill has been hydromulched to begin the growth of grasses. The landscaping effort, once established, will resemble vegetation on adjoining hillsides. In time, plant species in the surrounding areas are expected to spread into the closed areas of the landfill through natural seeding.

4. Coastal ecosystems

The proposed project is not expected to have any adverse effects on coastal or marine coastal ecosystems. The location of the project is mauka of the shoreline and the Farrington Highway.

5. Economic uses

Although the proposed project is not a coastal dependent facility, the location of the project site was based on selection criteria and governmental regulations that establish the suitability of the site for use as a landfill. This land use is not expected to affect the location or expansion of future coastal dependent developments.

6. Coastal hazards

The potential for hazards from storm wave, tsunami, hurricane, wind, flood erosion, subsidence, and point and nonpoint source pollution are addressed through adherence to the landfill site operating manual and all required regulatory permits. Coastal flooding is not anticipated based on the location of the project inland and upgradient of the Farrington Highway.

7. Managing development

WGSL is in the State Agricultural District. The zoning is AG-2, General Agricultural. Land uses are subject to regulation by the State and City. All improvement activities will comply with State and City & County of Honolulu environmental rules and regulations.

8. Public participation

Public involvement will consist of public notification of the project as provided in the Office of Environmental Quality Control (OEQC) Bulletin. See Section 13, Organizations, Agencies, and Public Parties Consulted in the Environmental Impact Statement Process. All written public comments to ~~this~~ the DEIS will be provided with a written response and as appropriate, mitigation measures will be developed to address issues and concerns. As needed, additional information has been provided in this FEIS to address concerns and issues raised.

9. Beach protection

The proposed project is not located along the shoreline or beach. No structures are proposed seaward of the shoreline. Control of erosion will be based on conformance to standards of the City regulating the control of erosion.

10. Marine resources

The proposed project does not involve or utilize marine resources.

1.5.6. City & County of Honolulu General Plan

The proposed project is consistent with the following General Plan objectives and policies:

> *"I. Population*
> *Objective B: To plan for future population growth; Policy 1: Allocate efficiently the money and resources of the City and County in order to meet the needs of Oahu's anticipated future population; and Policy 2: Provide adequate support facilities to accommodate future growth in the number of visitors to Oahu."*

Although the proposed project does not directly influence future population growth, it represents an important public facility serving the island of O‘ahu by providing a location and means for the disposal of municipal refuse. In this regard the project is a necessary use of resources to meet future population needs and growth in the number of visitors.

> *"III. Natural Environment*
> *Objective A: To protect and preserve the natural environment; Policy 1: Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development; Policy 2: Seek the restoration of environmentally damaged areas and natural resources; and Policy 4: Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive land forms, and existing vegetation."*

The proposed project will require an expansion of use and require transformation of the existing site into space that will be used for landfilling. With the eventual closure of the site, the land is expected to be reclaimed for other purposes that may be considered more compatible with the area surroundings, such as park space that will constitute a public purpose and benefit.

> *"V. Transportation & Utilities*
> *Objective B: To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal; Policy 3: Encourage the development of new technology which will reduce the cost of providing water and the cost of waste disposal; Policy 4: Encourage a lowering of the per-capita consumption of water and the per-capita production of waste; Policy 5: Provide safe, efficient, and environmentally sensitive waste-collection and waste-disposal services; Policy 6: Support programs to recover resources from solid-waste and recycle wastewater; and Policy 7: Require the safe disposal of hazardous waste."*

The proposed project is designed to serve as an environmentally sound method for the disposal of municipal solid waste and ash. New technology based solutions will continue to be evaluated by the City. At this time however, there are no new technologies with proven feasibility of performance or that would completely eliminate the generation of waste by-products that would require disposal (see **Appendix K**).

The recovery of resources from solid waste is already occurring through the recycling of waste materials into energy through the City's H-POWER facility. Plans for the expansion of the H-POWER have been proposed by the City. It is possible in the future that as new and emerging technologies demonstrate feasibility of application for the City that such technologies will be adopted. At this time, however, there are no alternatives that could by itself address the need for landfilling.

The WGSL does not accept hazardous waste.

> *"VIII. Public Safety*
> *Objective B: To protect the people of Oahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions. Policy 2: Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard; and Policy 8: Provide adequate search and rescue and disaster response services."*

In the event of a public emergency involving hurricane, tsunami, or earthquake, WGSL will serve as a repository for disaster debris. This use will promote public safety through the disposal of debris that could otherwise accumulate in populated areas.

1.5.7. City & County of Honolulu ‘Ewa Development Plan (‘Ewa Sustainable Communities Plan)

The proposed project will be evaluated for consistency with the updated ‘Ewa Development Plan (DP), as appropriate, during the preparation of the project EIS, and upon completion of the ‘‘Ewa DP five-year review. The project site is depicted on the ‘Ewa DP within the Preservation District on the plan’s illustrative Open Space and Phasing Maps. The ‘Ewa DP discusses the analysis and recommendations of the Solid Waste Integrated Management (SWIM) Plan, prepared by the Department of Public Works and last adopted by the Honolulu City Council in 1995. The Ewa DP states that the SWIM Plan identified the Waimānalo Gulch as having potential for expansion; however, siting and/or expansion of sanitary landfills should be analyzed and approved based on islandwide studies and siting evaluations (such as the Chapter 343, HRS, EIS process which is the subject of this document).

The Development Plan Public Facilities Map also depicts a symbol for the existing landfill facility, but does not delineate the boundaries of the landfill.

1.5.8. City & County of Honolulu Zoning Law

The project site is zoned AG-2 General Agricultural District. According to the Land Use Ordinance, the landfill is a "public use" and is permitted in the AG-2 General Agricultural District.

1.6. Unresolved Issues

1.6.1. Preservation of Stone Uprights

The final disposition of the three stone uprights discovered at WGSL are in the process of review and coordination with the SHPD, Office of Hawaiian Affairs, and SHPD's designated cultural informants to identify and define an appropriate course of preservation.

The location of the stone uprights has the potential to affect the planned construction of the site depending on the need for site adjustments to accommodate the area containing the uprights. This effect is expected to be known only after the SHPD decision regarding the preservation plan for the uprights. As applicable, this decision will be factored into the final design and engineering, and construction drawings that will be prepared for the proposed project.

1.6.2. Final Engineering Construction Details

The detailed final landfill phasing and engineering plans will be prepared by WMH. Although the final phasing plans are not yet complete, the area of use for active landfill cells is approximately ~37 acres, within the planned 92.5 acres of lateral expansion. The remaining areas of the 92.5 acre not planned for landfill cells will be used for stockpiling of landfill cover material, utilities including access roadways and drainage controls, landscaping, and related landfill associated purposes.

1.6.3 Release of Crushed Rock from the Site

The proposed project will result in the generation of recovered soil, cobbles and boulders from excavation and grading of the site. Material that is suitable use as cover material will be stockpiled and used for landfill cover. A decision regarding the release or possible sale of any excess material has not yet been determined. The City & County of Honolulu, however, retains the ownership rights to any excavated materials. Since August 1, 1991, the City has received royalties for any excavated and processed material removed from the WGSL.

1.6.4. EPA Notice of Violation (NOV)

Because the EPA's NOV is currently under discussion amongst the EPA, the City and Waste Management, no final determination as to the alleged violations has been made. There is no relationship between the EPA NOV and the City's sewer systems.

1.6.5. Elevated Temperatures

Landfill gas temperatures at the WGSL exceed the EPA specified maximum temperature due to atypical chemical and biological processes that are unique to the site. WMH has shown that the elevated temperatures have not caused a fire. Notification of the operating characteristics of the WGSL have been reported to the EPA to ensure sufficient monitoring and operating standards are carried out to maintain safety and security of the site, and to propose the granting of an alternate operating standard. WMH is currently awaiting a response from the EPA and will coordinate appropriate measures to maintain compliance with all regulations as required by law.

1.6.6. Appeals of Decisions to Extend SUP to November 1, 2009

Colleen Hanabusa and the Ko Olina Community Association (KOCA) filed two appeals challenging the Planning Commission's and the Land Use Commission's approvals of an amendment to the SUP to extend the deadline for waste acceptance at WGSL. The appeals were consolidated on June 25, 2008. Oral argument was heard on October 1, 2008, and the Circuit Court dismissed the appeal challenging the Planning Commission's decision and affirmed the LUC's decision. (See Section 11.6. Appeals of Decisions to Extend SUP, for detail).

1.7. Summary of EISPN Comments and Responses

A table summarizing the written comments received from the EISPN, the responses prepared, and the DEIS sections referencing the responses, as appropriate, is provided in Table 1-~~1~~2, Summary of Draft EIS Comments and Responses to the WGSL EISPN.

1.8. Summary of DEIS Comments and Responses

A table summarizing the written comments received from the DEIS, the responses prepared, and the FEIS sections referencing the responses, as appropriate, is provided in Table 1-3, Summary of Final EIS Comments and Responses to the WGSL DEIS.

Table 1-2
Summary of Draft EIS Comments and Responses to the WGSL EISPN

Table 1-~~1~~2: Summary of Draft EIS Comments and Responses to the Waimanalo Gulch Sanitary Landfill Expansion Environmental Impact Statement Preparation Notice (EISPN)

Note: *See Section 15. Comments and Responses to the EISPN for the comment and response letters.

Commenting Party/Itemized Comments		Date of Letter	DEIS Section Reference and Comments*
1.	Boisse P. Correa, Chief of Police	11/28/2006	
	Honolulu Police Department		
	City & County of Honolulu		
1.1	This project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department.		See response letter. Section 6.5. Police Protection. The proposed project should have no unanticipated impact on the Police Department.
2.	Lester K. C. Chang, Director	11/30/2007	
	Department of Parks and Recreation		
	City & County of Honolulu		
2.1	The Department of Parks and Recreation has no comment and as the proposed expansion will have no impact on any program or facility of this department, you are invited to remove us as a consulted party to the balance of the EIS process.		See response letter. Section 6.10. Parks and Recreation. The proposed project will have no impact on any program or facility of DPR. DPR has requested to be removed as a consulted party to the EIS process.
3.	Denis R. Lau, P.E., Chief	11/30/2007	
	Department of Health - Clean Water Branch		
	State of Hawaii		
3.1	The Draft Environmental Impact Statement should address the impacts to state waters and controlling pollutants in storm water runoff in accordance with Hawaii Administrative Rules (HAR), Chapters 11-54, 11-55 and 11-58.1.		See response letter. Section 4.6. Stormwater Management, Section 5.4. Surface Water, describes the measures to address compliance with HAR 11-54, 11-55, and 11-58.1.
3.2	Construction activities related to the expansion requires National Pollutant Discharge Elimination System (NPDES) general permit coverage for storm water associated with construction activity. A Notice of Intent (NOI) form for NPDES general permit coverage should be submitted at least 30 days before the commencement of construction activities.		See response letter. Section 12. Permits and Regulatory Approvals That May be Required. A permit application for the NOI Form C, Construction Stormwater permit application will be prepared and filed.
3.3	Any other discharge from the project, including, but not limited to, treated effluent from leaking underground storage tank remedial activities, hydrotesting water, and construction dewatering effluent, requires separate NPDES general permit coverages. Please see Item 2 above for information regarding the submittal of NOI.		Section 12. Permits and Regulatory Approvals That May be Required. Construction activities for the proposed project that generate storm and non-stormwater discharges to state waters will be subject to the NPDES regulations. Should the proposed project be approved, the appropriate NPDES permit applications will be prepared and filed for the area of expansion. A list of the permit applications that may be required will be provided in the DEIS.
3.4	The existing portion of the facility currently has coverage under the NPDES general permit for discharges of storm water associated with industrial activity. This coverage expires on November 6, 2007, and a renewal NOI must be submitted before the expiration date. A reminder will be sent to you next year. When the expansion project is completed, the Storm Water Pollution Control Plan for the facility must be revised to address the expanded area and submitted to our office.		Section 12. Permits and Regulatory Approvals That May be Required. The NPDES NOI Form B permit application will be filed and will contain the project's revised Storm Water Pollution Control Plan for the proposed area of expansion.
3.5	In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOT or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOT or application has been or is being reviewed by SHPD. If applicable, please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.		See response letter. "Information concerning compliance with SHPD regulatory requirements will be provided in the DEIS. Documents that will be submitted to the SHPD for review will include an archaeological study of the planned area of expansion, and copies of the NPDES permit applications, as applicable." Section 12. Permits and Regulatory Approvals That May be Required, and Section 7.3. Historic and Archaeological Resources, provides information concerning compliance with SHPD regulatory requirements and includes an archaeological study of the planned area of expansion.
3.6	Any discharges related to project construction or operation activities, with or without a Section 401 Water Quality Certification or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54.		See response letter. Section 12. Permits and Regulatory Approvals That May be Required. The requirement that all project construction activities must comply with HAR, Chapter 11-54, Water Quality Standards, is noted and will be complied with should the proposed project be approved.

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3.6 The Hawaii Revised Statutes, Subsection 342D-50(a), requires that "[No] person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this Chapter, or a permit or variance issued by the director."		See response letter. Section 12. Permits and Regulatory Approvals That May be Required. The City and its operator, Waste Management of Hawaii, will comply with the requirements the subject section.
4. Patricia Hamamoto, Superintendent	12/8/2006	
Department of Education, State of Hawaii		
4.1 No comment at this time.		NA
5. S. B. Teramoto, Board Vice President	12/11/2006	
AOAO at The Coconut Plantation		
5.1 The Waimanalo Gulch Landfill continues to adversely impact the surrounding areas of Ko Olina with odors, dust and a constant stream of trucks. The Association of Apartment Owners at The Coconut Plantation, whom I am representing, are very concerned with the open issues of garbage still being piled higher than a permit allows and the level of leachate - liquid seepage from garbage is not totally monitored. We have seen flying trash and plastic bags that litter the roadways, parks, nearby residences and eventually polluting our ocean.		See response letter. The height of the existing landfill was coordinated with the State Department of Health (DOH) through a request for a height modification submitted in February 2006. On February 20, 2008, the DOH approved the height modification request based on thorough stability analyses. Leachate generated from the operation of the existing area of landfill is currently being monitored in accordance with DOH requirements. Litter management practices for the proposed site are provided in Section 4.2.3. Environmental Controls, Litter.
5.2 This landfill has reached its safe limit for its size and proximity to the ocean. It has previously been determined that the area between the gulch and the waterfront can only handle the load point that is now being reached.		See response letter. Section 4. Project Description; Section 5.2. Topography; Section 5.3. Geology; Section 5.4. Suface Water; and Section 5.5. Gorundwater and Hydrology, discuss the ability of the site to support the planned lateral expansion of the landfill and includes a description of the proposed area of use and its capacity.
5.3 Another concern is the run-off of storm water that comes from the landfill. This run-off is detrimental to our reefs, which are of great importance to the tourism business, here on the Leeward Coast. The artificial reef created by the warm water discharge pipe at the power station is the best snorkeling on the Leeward Coast of the Island and the life blood for numerous charter operations for both Ko Olina Marina and Waianae Harbor. All around this small section (about 500 yards to the right of the gulch), the reefs are dying as the coral heads and fish are smothered by the mud and contaminates that are allowed to flow into our ocean. To expand the landfill beyond current limits is guaranteed to adversely effect the ocean environment here for decades. ...It is imperative to have the environmental study incorporate how compliance enforcement is to be adhered to. So far it appears we have been failed by the watch dog organizations. It is our position that the Waimanalo Landfill be closed		See response letter. Section 4. Project Description; Section 4.6. Stormwater Management. Describes the stormwater management controls of the existing and planned lateral landfill expansion. This includes a discussion of the potential for impacts to nearshore waters as well as mitigative measures, as appropriate, to ensure protection of the ocean coastal resources. Section 5.10. Scenic and Aesthetic Environment addresses mitigation for visual impacts. Section 5.7. Air Quality addresses mitigation of landfill associated odors. Section 4.2.3. Environmental Controls, Litter, addresses windblown litter control. Section 4.4. Dust and Mud addresses dust control.
6. Orlando "Dan" Davidson, Executive Director	12/12/2006	
Hawaii Housing Finance and Development Corporation		
State of Hawaii		
6.1 We have no housing-related comments to offer.		NA
7. Eugene C. Lee, P.E., Director	12/12/2006	
Dept. of Design and Construction		
City & County of Honolulu		
7.1 Department has no comments to offer at this time.		NA
8. Steve Kelly, Manager - Entitlements & Infrastructure	12/13/2006	
Makaiwa Hills, LLC		

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8.1 Makaiwa Hills LLC ("MH LLC") is the fee owner of approximately 1,700 acres of property ("Property") located on the eastern boundary of the Waimanalo Gulch Landfill ("Waimanalo Gulch"). As part of the Environmental Impact Statement ("EIS") Public Scoping process, MH LLC submitted a letter dated August 29,2006, which outlined concerns regarding blasting activity that had been occurring near the western portion of the Property. MH LLC expressed concern that the aforementioned blasting activity, as well as any future activity could threaten the Property's structural integrity.		See response letter. Section 5.8. Acoustic Characteristics. Controlled blasting is discussed and appropriate controls are described to prevent against the potential for adverse impacts. Section 4. Project Description and Section 5.3. Geology. The potential for geologic structural and related potential impacts and planned mitigation measures are discussed.
8.2 Structural integrity of the slope along Waimānalo Gulch's eastern boundary line.		See response letter. Section 4.1. Construction Activities, Section 5.3. Geology. The specific locations and details associated with some of the items will not be fully known or finalized at the time the EIS is processed. The intention of ENV and WMH is to closely coordinate the work activities required to mitigate and minimize any potential for impacts. As much as possible, the DEIS will describe the structural integrity of the site, operational practices, and other practices that will be used to ensure a well run and operated facility.
8.3 Proposed operations near Waimānalo Gulch's eastern boundary line.		See response to Item 8.2.
8.4 Proposed access points for any expansion of Waimanalo Gulch near the eastern boundary.		See response to Item 8.2.
8.5 The eventual height of Waimānalo Gulch along its eastern boundary.		See response to Item 8.2.
8.6 The distance from the top of slope to the Waimanalo Gulch eastern property line.		See response to Item 8.2.
8.7 Blast distances from Waimanalo Gulch's eastern property line.		See response to Item 8.2.
9. Deborah Kim Morikawa, Director	12/14/2006	
Department of Community Services		
City & County of Honolulu		
9.1 The subject project will have no impact on the projects and programs of the Department of Community Services.		NA
9.2 However, we believe it is worth noting in the Draft and Final EIS that the City and County of Honolulu will be allocating a $2 million community benefits package to offset the impact of the Waimanalo Gulch landfill. The intent is that $1 million will go to the Department of Parks and Recreation for parks improvements to the areas most directly affected by the landfill. The rest of the money will be used by the Department of Community Services to provide grants and services that will address problems or concerns identified by residents.		See response letter. Section 7.1.3.2. Community Issues and Concerns Regarding WGSL. The City has allocated a $2 million community benefits package in fiscal year (FY) 2007 to communities in the vicinity of the Waimanalo Gulch landfill. The Administration proposes additional funding to continue the community benefits program to Leeward Communities in the next FY.
10. Genevieve Salmonson, Director	12/15/2006	
Office of Environmental Quality Control		
State of Hawaii		
10.1 Notice of the Nānākuli EISPN was published in our May 23rd, 2006 Environmental Notice. In the draft EIS fully discuss the relation between the currently proposed expansion of Waimānalo Gulch and Nanakuli B.		See response letter. Section 9.6. Alternative Sites for a Municipal Landfill. Nānākuli B landfill is considered an alternative to the proposed project but is not considered viable by the ENV.
10.2 In February 2006 the State DOH issued a Notice and Finding of Violation and Order against Waste Management of Hawaii and the City & County of Honolulu for 18 alleged violations of solid waste management laws, regulations, and permit conditions at Waimanalo Gulch Landfill. When and how will these alleged violations be corrected? What assurance does the public have that these alleged violations will not occur in the expansion area?		Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. All alleged violations in the NVO have been resolved.
10.3 A list of acronyms and abbreviations used in the text would be helpful for the reviewer. Please include such a list in the draft EIS.		See response letter. Table of Contents. A list of acronyms is included in the EIS document.

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10.4 A list of agencies and community groups to be consulted during the EIS process was not included in the EISPN. Include this list in the EIS.		See response letter. Section 13. Organizations, Agencies, and Public Parties Consulted in the Environmental Impact Statement Process, provides this list.
10.5 In the DEIS permits list (or chart) be sure indicate the status of each.		See response letter. Section 12. Permits and Regulatory Approvals That May be Required. The DEIS includes the status of the permits and approval that may be required.
10.6 The text accompanying this figure indicates that the Kahe power plant lies to the east of the landfill, while in the figure it lies to the west. Please correct this in the draft EIS.		See response letter. Section 4.1.1. Project Location, Section 7.2.1. Regional Land Uses, Section 7.2.2. Properties within Proximity to the Proposed Project. The location of the HECO power plant is west of the WGSL and is acknowledged.
11. Keith S. Shide, Principal Executive	12/18/2006	
Board of Water Supply		
City & County of Honolulu		
11.1 We have no objections to the proposed project.		NA
12. Kenneth G. Silva, Fire Chief	12/19/2006	
Honolulu Fire Department		
City & County of Honolulu		
12.1 The Honolulu Fire Depaertment has no additional comments. Please refer to our letter dated June 29, 2001, to acting Director, Timothy E. Steinberger.		See response letter. Section 6.6. Fire Protection. The 6/29/01 letter references the provision of fire apparatus access. Fire apparatus access will be provided for the project duration. Waste Management of Hawaii, will notify the Fire Department if there be any issues with maintaining access.
13. James Hodge **Hawaiian Waste Systems, LLC**	12/20/2006	
13.1 Identification of appropriate waste; acceptable versus unacceptable waste: Because Roosevelt Landfill is a RCRA Subtitle D facility, it does not accept any hazardous or "dangerous" wastes as defined by the Resource Conservation and Recovery Act. Thus, multiple layers of protection against the inclusion of hazardous waste in Hawaiian waste bales will be in effect in HWS' process... HWS' screening process will be reviewed and regulated by the State of Hawaii Department of Health, USDA and the Klickitat County Health Department, all subject to US EPA Subtitle D regulations.		See reponse letter.
13.2 Locations for staging, handling and processing of waste for subsequent shipment/export: Oahu has a number of suitable locations for waste processing facilities that could be easily developed... HWS has identified a location for waste transshipment and is currently proceeding with its development.		See reponse letter.
13.3 The range of (financial) costs associated with transshipment: It is estimated that the cost of transshipment will be dramatically less than other "new technology" alternatives that have been examined by the City of Honolulu, and competitive (considering relative capital investment) with traditional alternatives such as new landfills or incinerators."		See reponse letter.
13.4 Potential environmental costs for the City and County of Honolulu: Waste transshipment will have a positive environmental impact on essential sanitary services in the City and County of Honolulu. The City and County has tried unsuccessfully to site new landfills or secure alternative technologies. Waimanalo Gulch Sanitary Landfill is no longer located in an optimal area due to urban infill. Because of these issues, Honolulu is in desperate need of disposal alternatives. HWS' export system presents an alternative that is environmentally secure over a short or long-term period...		See reponse letter.
13.5 Potential environmental costs for the mainland U.S. facility receiving the waste: Roosevelt Landfill was designed and engineered to be one of the world's most environmentally secure landfills... Allied Waste, the second largest solid waste company in the United States and owner/operator of Roosevelt Landfill, provides complete indemnification to its solid waste customers by taking title to all solid waste entering the facility.		See response letter. The engineering and operating standards of the Roosevelt Landfill, approximately 2,500 miles or more from Honolulu, are acknowledged.

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13.6	Transshipment leading to Oahu 's dependency on resources out of its control: Waste export has become such an integral part of solid waste management in the United States that Hawaii is now the only US state that does not export or import any waste... We encourage the EIS process to review the prevalence and commonality of regional landfilling throughout the mainland US.		See reponse letter.
13.7	The receiving state will assume the long term environmental management issues and problems associated with accepting Oahu's refuse: Klickitat County, host municipality of the Roosevelt Landfill, conceived of and developed the facility via a public procurement process as an economic development initiative... The Klickitat County Commissioners have been kept apprised of HWS' export project in Honolulu, and have sent letters to officials in Hawaii supporting the concept and inviting them to visit Roosevelt... Roosevelt Landfill's capacity - permitted for 5 million tons annually and 220 million tons overall, with room for expansion - is such that waste from Honolulu would not significantly impact its ability to meet current and future domestic waste disposal needs.		See reponse letter.
14.	**Clyde W. Nāmu'o, Administrator**	12/21/2006	
	Office of Hawaiian Affairs		
	State of Hawaii		
14.1	Although we appreciate that an Environmental Impact Statement (EIS) is being prepared for this project, we point out that the purpose of Hawaii's EIS law is not to justify the environmental effects of government actions after economic and technical decisions have been made. Rather, the purpose is to "ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical consideration." HAR § 11-200-1. In line with this purpose is the requirement that "the agency shall assess at the earliest practicable time the significance of potential impacts of its actions, including the overall, cumulative impact in light of related actions in the region and further actions contemplated." HAR § 11-200-5.		See response letter. This comment is acknowledged.
14.2	This EISPN appears to address the isolated issue of expanding a landfill, and not the comprehensive issue of sustainable waste management on O'ahu... Without guidance of a comprehensive waste management plan for the island, the cumulative impacts of a single landfill cannot be analyzed.		See response letter. Section 1. Executive Summary, indicates the EIS is being developed in conjunction with the preparation of the Solid Waste Integrated Management (SWIM) Plan. While the SWIM Plan will provide the policy guidance and direction for the future handling of Oahu's solid waste through a number of projects and facilities that include Waimanalo Gulch. Cumulative Impacts are also discussed.
14.3	... it appears that this EIS is being prepared merely to discuss and possibly mitigate environmental effects, rather than to serve as an "informational document" to guide the County's decision-making...this use of the EIS process misses the point of the EIS law to encourage discussion of environmental issues before important decisions are made...the County must comprehensively analyze innovative and environmentally friendly waste disposal methods that are appropriate for our island state.		See response letter. Section 9. Alternatives to the Proposed Action, Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling. ENV has been actively involved in the exploration of alternative methods and technologies to waste reduction and disposal and will continue to do so.

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14.4	We request that the forthcoming EIS include a detailed analysis of the reasons behind the current SUP condition to close the landfill by 2008. We also request that the EIS clearly state the changed circumstances or other reasons that prevent the applicant from honoring its commitment to close Waimanalo Gulch Landfill. The EISPN at page 1-3 notes that the Mayor's Advisory Committee, which was formed in December 2003 to recommend different landfill sites, chose to consider Waimanalo Gulch, which was then ranked the highest among the choices. Please discuss the ranking criteria used, as well as the why Waimanalo Gulch was still considered, despite the goal of the Committee to recommend a different site. Please also discuss what good faith efforts were made to find other suitable landfill sites, and how the applicant attempted to comply with the LUC's purpose and intent behind conditioning the SUP on closure by 2008.		See response letter. Section 2. Project Background. Describes the events, including the SUP, and the current status of the WGSL closure date. 2.2.2. Council Resolution 04-348, CD1, FD1, Selecting a Site for a New City Landfill. Describes further detail re selection of Waimanalo Gulch despite the goal of the Mayors Advisory Cmte. on Landfill Site Selection to select another site. Section 9. Alternatives to the Proposed Action. Describes the work of the Committee. Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling. Documents prior activities by ENV to consider alternatives to landfilling.
14.5	We also request that the EIS address the various health concerns that have been raised by the Department of Health, and how these problems will be addressed and prevented in the future. In addition, please provide detailed analysis of how impacts to the surrounding community will be mitigated, including proposed benefits packages.		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health provides info. on the DOH Notice of Violation and Order which occurred after it had been self-reported by Waste Management of Hawai'i, Inc. The great majority of the alleged violations were addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. All alleged violations (environmental and health concerns) in the NVO have been resolved.
15.	**Laverne Higa, P.E., Director and Chief Engineer**	12/22/2006	
	Department of Facility Maintenance		
	City & County of Honolulu		
15.1	No comments to offer at this time. Expansion of the landfill will have negligible impact on our facilities and operations.		NA
16.	**Rida Cabanilla, State Representative**	12/22/2006	
	House of Representatives		
	State of Hawaii		
	Please consider the sentiments of those that took possession of property nearby the landfill with the understanding that their ownership would not be subjected to particular operations of the landfill, let alone another expansion of it beyond May 1, 2008... It is the duty and obligation of Legislators and the Judiciary to oversee that agreements tended to, are adhered to within their respective jurisdictions. In the capacity of being a State Representative, I urge those making the decision on the expansion to include approximately 92.5 acres be rendered inappropriate and dismissed... Your favorable consideration to explore other means to mitigate the disposal/storage of waste is greatly appreciated...		See response letter. The EISPN, Section 1, Project Background, identifies the option of closing WGSL as not now available to the City. Section 9. Alternatives to the Proposed Action, identifies alternatives to the continued long-term use of the landfill investigated by the City. Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling, identfies prior efforts by the City to promote alternative technology and waste reduction.
17.	**Ralph F. Harris, President**	12/23/2006	
	Ko Olina Fairways - Association of Apartment Owners		
17.1	Our community and our neighbors in abutting communities have relied on the pending closure of the Landfill. We have invested enormous time and effort since the incomplete and flawed DEIS and SEIS effort of 1999 and 2002 ended with a commitment from the City government and the Mayor to close the site to Municipal Waste in 2008. For the City to change directors in the Department of Environmental Services and then re-launch a plan to continue using the Waimanalo Dump past the closure date is an insult to our island community and an example of a government system out of control.		See response letter.

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17.2	Yes we attended the community meeting sponsored by your department at Nanakuli High School and although you have made this resurrection attempt with consultant facilitators there was not one person supporting the City's effort! In fact, Kumu Kamaki Kanahele said it all at the meeting with the same emotion and disbelief that most of us believe in seeing the City's total disregard and disrespect of previous community input facing the flawed efforts of the past and through meetings too numerous to recall.		See response letter.
17.3	The best I can say is that homeowners in our association are dumbfounded by this re-assessment of the problem after (please count them) EIGHT (8) years [l999-2006] wherein the City does not have a solid waste alternate site but does have a plan and commitment to the community to close Waimanalo Gulch in Kapolei! When you look at the time line over the past eight (8) years the City could have located and prepared the alternate site for business well before the closure date in 2008 for Waimanalo Gulch in Kapolei.		See response letter. Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling, also identfies prior efforts by the City to promote alternative technology and waste reduction.
17.4	We are opposed to this restart of the EIS preparation process for the subject site and recommend that the alternative site or alternative waste disposal methods are developed and close Waimanalo Gulch at Kapolei on time in May 2008.		See response letter. Section 9. Alternatives to the Proposed Action, identifies alternatives to the continued long-term use of the landfill investigated by the City.
17.5	We agree with the comments of Cynthia Rezentes and Senator Colleen Hanabusa and others published in the EIS Preparation report regarding the many detailed issues and comments that have not been resolved and will need to be a part of the new EIS process. We find that in the face of litigation and mismanagement of the facility that the City continues to shape the decision making process to match a predetermined objective.		See response letter. Comment is acknowledged.
17.6	Our association will be actively involved in every effort to close the Waimanalo Gulch Landfill located in Kapolei as we believe there is a conflict in land use, there are pending legal issues involving $2.8 million dollars in fines to the City that are directed at the poorly operated facility and that this location is not acceptable.		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. All alleged violations in the NVO have been resolved.
17.7	The State and the City have designated Kapolei and West Oahu as growth areas with designated mass transit needs and increasing populations. Please drive the roads and highways in Kapolei and see for yourself the litter and filth that travels here daily by truck.		See response letter. The presence of the existing Waimanalo Gulch has made possible economic growth and development through the use of a site for the safe and efficient disposal of municipal refuse. The landfill has supported economic growth and development of not only the Ewa region, but islandwide for all the communities of Oahu. Section 4.2.3. Environmental Controls, Litter, addresses windblown litter control. Section 4.4. Dust and Mud addresses dust control. Section 6.1. Traffic and Circulation addresses traffic control.
18.	**David J. Reantaso**	12/26/2006	
18.1	I would like to take the opportunity to voice my concerns about the proposed expansion of the Waimanalo Gulch Sanitary Landfill... These include environmental hazards - ground water contamination, underground methane fires, potential ocean runoff, and air pollution. Other reasons include the wasting of the City and County of Honolulu natural and financial resources.		See response letter. Section 4.2. Facility Operations, identifies on-site environmental controls. Section 4 Project Description, identifies other project site environmental controls including control of methane, fires, and stormwater runoff. Section 4.7. Regulation of Air Quality, discusses regulatory requirements of WGSL. Section 5.7. Air Quality, discusses air quality at the site and identifies proposed mitigation measures.
18.2	Many private entities offer recycling solutions that would not be harmful to our delicate ecosystem and also offer financially profitability. By not seriously exploring these alternative technologies, the leadership of the City and County of Honolulu will do a disservice to our community.		See response letter. Section 9. Alternatives to the Proposed Action, identifies alternatives to the continued long-term use of the landfill investigated by the City. Recycling was considered as an alternative.

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18.3 If nothing else, close it for monetary reasons. We have already had large fines levied - fines that to this day have not been paid. The fines that will have to be eventually paid - will be paid with our increasingly harder to come by tax dollars. The City's leadership has promised to close Waimanalo Gulch Sanitary Landfill twice. It's time to keep that promise. The permit for expansion should not be granted.		See response letter. -The immediate closure of the Waimanalo Gulch Sanitary Landfill without a feasible alternative is not a reasonable nor prudent action that can be taken. -Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. All alleged violations in the NVO have been resolved. -The reason for the City's current EIS involve a number of actions that have transpired since completion of the last EIS in December 2002. Documentation of the prior commitment to close Waimanalo Gulch was provided in the EISPN, Section 1, Project Background.
19. Robert H. Kaialau III	12/26/2006	
19.1 The validity of the following mandates for closure is as pertinent today as when they were issued: • The State of Hawaii Special Use Permit calls for the closure of the landfill by May 1, 2008... • The planned completion and final closure of the last cell is projected for the end of 5 years from the start of use of the last 14.9-acre expansion area on December 24, 2002. • Summary report and Council Resolution 04-348... • Council Bill 37 (2005)... ...Section 5 of the Bill further directed the City to submit to the Council by December 31, 2006, its plan to comply with the ordinance, noted that at a minimum, the City administration shall include in the plan the strategies for, and costs of compliance.		See response letter. Concerning Resolution 04-348, CD1, FD1, and Bill 37 (2005). Resolution 04-348 called for the selection of Waimanalo Gulch as the city's landfill. The reasons for the selection were provided in the EISPN, Section 1.2.2. Council Resolution 04-348, CD1, FD1, Selecting a Site for a New City Landfill. Bill 37 was vetoed by the Mayor and did not become law per the EISPN, Section 1.2.3.
19.2 Any action to further expand the existing Waimanalo Gulch Sanitary Landfill satisfies the description in the Hawaii Administrative Rules, Title 11, Chapter 200 §11-200-12 - Significance Criteria as ". . . an action . . . determined to have a significant effect on the environment...		See response letter. Section 14, Significant Criteria, discusses the requirements of the project and the Significance Criteria in HAR 11-200-12 and the relationship to the proposed project.
19.3 The pending expansion permit application is in direct contradiction to all commitments made to date of the City's intent to systematically reduce and eventually cease operation of the existing Waimanalo Gulch Sanitary Landfill.		See response letter. Section 2. Project Background, provides the events leading to the current decision to seek the expansion of the WGSL.
19.4 ...Of the 18 counts of violation identified in the Department of Health - Notice and Finding of Violation dated January 31, 2006 (Docket No, 05-SHW-SWS-004); five violations related directly to excess leachate levels, and the operators failure to measure and report as required by the existing permit. Adverse effects on groundwater and aquifers are widely documented, not to mention the direct contamination witnessed on Farrington Highway fronting the landfill site caused by runoff resulting from over saturation during heavy rains...		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. All alleged violations in the NVO have been resolved. Section 4.6. Stormwater Management and Section 5.4. Surface Water, describes stormwater management controls and stormwater mitigation measures.
19.5 The existing Solid Waste Management Permit Number LF-0054-02 requires the current facility operator to provide a written plan and relative record keeping documenting the actions taken to minimize free litter through out the landfill facility as well as preventing the occurrence of litter, dust and odors beyond the facility's property line... The failure of the facility operator to insure these mandates are met is well documented by the Department of Health inspectors as well the public. Citation of these violations can also be found in the Jan 2006 Notice and Finding document.		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health, above, describes the resolution of the DOH violation notice. Section 4.2.3. Environmental Controls, Litter, addresses windblown litter control and Section 4.4. Dust and Mud, addresses dust control for the proposed project.

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19.6	Large trucks and loose debris from the facility are an on-going problem. As mentioned above, litter that makes it way beyond the facility's property line attach to automobile windshields and antennas often-endangering drivers. Daily, large trucks exiting the facility speed across the two westbound lanes of traffic in an effort to beat on-coming traffic as they make their way to the east bound lanes headed toward Honolulu often creating near miss traffic accidents. Trucks, waiting to enter the landfill facility are often forced to line-up along the westbound shoulder of Farrington Highway are documented regularly. While waiting to enter the facility, these trucks often leak and seep sludge and other toxic, odorous liquid.		See response letter. Section 7.1.5.1. Improving Current Practices, provides mitigation practices against littering off-site and on-site at the landfill. Section 7.1.3.2. Community Issues and Concerns Regarding WGSL, provides mitigation practices for active litter management including vehicular queuing and measures to reduce and prevent such occurrences. Section 6.1. Traffic and Circulation, addresses traffic controls and the result of a traffic study. Section 4.2.7. Waste Unloading and Compaction, addresses procedures during waste unloading.
19.7	The City and County of Honolulu's administration...continue to operate in direct contradiction to every written plan - accepted and proposed mandating that the existing landfill facility located at Waimanalo Gulch on the Leeward Coast of Oahu be closed. Postponing the solicitation and selection of alternative waste processing technologies, refusal to consider transshipment of waste off-island and the failure to complete the long over-due Solid Waste Integrated Management Plan are the short list of examples. In turn, the City and County has done little to identify and expedite the selection and implementation of any number of available alternative waste processing technologies...		See response letter. Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling, identfies prior efforts by the City to promote alternative technology and waste reduction. Section 9. Alternatives to the Proposed Action, addresses the alternatives that were considered by the City to eliminate or reduce the need for landfilling.
19.8	The General Plan for the City and County of Honolulu...sets forth the following policy statement found in Chapter 5: Transportation and Utilities, Objective B... To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal....		See response letter. Section 8.6. 8.6. City & County of Honolulu General Plan, discusses Chapter 5, Objective B, Policy 3, 4, 5, 6, and 7.
19.9	As documented in the preparation notice, when the Waimanalo Gulch Sanitary Landfill was designated in 1989, "there was limited to [sic] growth in the Ewa region. Today, almost 20 years later, the City of Kapolei and the surrounding region known as the Ewa Plain are the most rapidly growing areas on the Island of Oahu...because of the administration's indurate response to the Honolulu City Council's request that the SWIM plan be completed in a timely manner; it is incumbent on all permit granting agencies to be influenced by the subsequent Environmental Impact Statement and related State Special Use Permit (SUP) Amendment application to deny any further expansion of the existing Waimanalo Gulch Sanitary Landfill facility.		See response letter. Section 7. Socioeconomic and Related Enviroment, Potential Impacts and Mitigation Measures, discusses the growth of the Ewa region and the relationship of this growth to the subject project. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue that was the single remaining violation. All alleged violations in the NVO have been resolved. Section 2.3.2. U.S. Environmental Protection Agency, discusses the EPA Notice of Violation (NOV) that is currently under discussion amongst the EPA, the City and Waste Management. Until the negotiations are concluded, there can be no final determination as to the validity of the alleged violations.
20.	**Carroll E. Cox** **EnviroWatch, Inc.**	12/26/2006	
20.1	I wish to express our strong opposition to the planned expansion of the Waimanalo Gulch Sanitary Landfill, TMK 9-2-03. This opposition is based a [sic] number of concerns related to earlier management practices and the overall operation of the Waimanalo Gulch Sanitary Landfill, which has resulted in an Issuance of Notice and Finding of Violation Docket NO. 05-SHW-SWS-004 consisting of eighteen counts and two hundred and twelve documented incidences supporting the Notice and Finding of Violation.		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue that was the single remaining violation. All alleged violations in the NVO have been resolved.
20.2	We are [sic] also believe that the City and County of Honolulu's Department of Environmental Services continues to permit the operation of the Waimanalo Gulch Sanitary Landfill in breach of the original contract between the contractor...which is corroborated by the eighteen counts and two hundred and twelve documented incidences supporting the Notice and Finding of Violation. And, we are concerned that the current facility's permit and permit application is inadequate and does not address the concerns of [sic] regarding the Surface Water Management System Design and Final Cover Design.		See response letter. The contract between the City and Waste Management of Hawaii is a public document. The City has monitored the performance of Waste Management under this contract and has taken appropriate action to protect the public interest. As noted above, all alleged violations in the NVO have been resolved. Section 4.6. Stormwater Management and Section 5.4. Surface Water, describes stormwater management controls and stormwater mitigation measures. Section 4.1. Construction Activities, describes other features of the proposed design including the final cover design.

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20.3 The City and County of Honolulu has failed to meet all of the conditions required by the Land Use Commission. We do not have a curbside recycling program. We are failing to divert a large portion of the municipal and solid waste from the Waimanalo Gulch Sanitary Landfill. This is confirmed in the City and County of Honolulu's routine practice of closing the H-Power Plant in excess of one hundred days per year and diverting the municipal and solid waste to the Waimanalo Gulch Sanitary Landfill... we are concerned that the City and County of Honolulu has failed to utilize alternative methods of managing Municipal Solid Waste.		See response letter. The City has an on-going green waste curbside recycling program and sought public input in April/May 2007 for a curbside mixed recycling program that is now ongoing. The City has actively sought to increase the use of alternative technologies to reduce dependency on landfilling. In 2007 the City released a request for proposals (RFP) to investigate technology based alternatives, and in early 2008 related a request for proposals for waste transshipment. Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling, identfies prior efforts by the City to promote alternative technology and waste reduction.
21. **Ken Williams, Vice President - Resort Operations**	12/26/2007	
Ko Olina Community Association		
21.1 The EISPN fails to address the inadequacies of the 2002 FEIS, and the continued litigation concerning that document. ... it appears from the EISPN that the planned process fails to adequately consider the social and economic impacts of the landfill.		See response letter. Section 7. Socioeconomic and Related Enviroment, Potential Impacts and Mitigation Measures, discusses and considers the social and economic impacts of the proposed project.
21.2 The Draft and Final EIS must incorporate the City's Solid Waste Masterplan, which was supposed to be completed by the City in December 2006.		See response letter. The last Solid Waste Integrated Management (SWIM) Plan was completed by the City in 2004. As much as possible the preparation of the subject DEIS is being coordinated with the SWIM Plan. However, the plan is currently under draft and will be coordinated with the DOH and other appropriate parties for approval.
21.3 The EISPN fails to address the Department of Health Notice of Violations, citing a multitude of violations with the operation of the Waimanalo Gulch Landfill...		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue that was the single remaining violation. All alleged violations in the NVO have been resolved. Section 2.3.2. U.S. Environmental Protection Agency, discusses the EPA Notice of Violation (NOV) that is currently under discussion amongst the EPA, the City and Waste Management. Until the negotiations are concluded, there can be no final determination as to the validity of the alleged violations.
21.4 Given these violations and the concerns raised by them, the EIS must disclose the impacts that would be caused by the structural failure of the Waimanalo Gulch Landfill. Whether by structural deficiency or, as recently experienced, earthquake, because of the landfill's formation within a gulch at the sole entrance to the Leeward Coast, a failure of the landfill sliding across Farrington Highway would have a significant impact that must be disclosed and discussed.		See response letter. Sections 4.1. Construction Activities, 5.2. Topography, 5.3. Geology, 5.4. Surface Water, 5.5. Groundwater and Hydrology, and 5.6. Natural Hazards, describes major factors considered, potential impacts, and mitigation measures to maintain pubilc health and safety of the facility and site.
21.5 The EIS must address the well documented and continued escape of waste from the Landfill site. This includes an analysis of the fact that HECO had identified the area as one of the windiest locations on the island and how the proposed expansion to higher elevations will create greater problems for waste being blown off the landfill. These disclosures must also identify where this escaping trash is landing and its impact on the land and, more importantly the ocean. The escaping waste goes much further than the "valley rim" as implied by the EISPN.		See response letter. Sections 4.2.3. Environmental Controls, and 7.1.5.1. Improving Current Practices, describes potential impacts and mitigation measures to address litter control.
21.6 The background section fails to identify the specific, sworn statements made by the City at the 2003 Planning Commission Meetings and State Land Use Commission meetings regarding the promised closure of Waimanalo Gulch Landfill, and which resulted in the specific language regarding the Landfill's closure in 2008 being included in both the Planning Commission and Land Use Commission Decision and Orders.		See response letter. Section 2, Project Background, acknowledges the commitments made by the prior administration to close Waimānalo Gulch by 2008.

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21.7 The EISPN fails to recognize that the Committee agreed that the "double blind methodology" was to be advisory only to the group, and was not to be used as a means of "ranking" the potential sites. Furthermore, it is inaccurate to state that the results of the methodology caused "a division in the Committee" or a change in the decision making process. Finally, despite the language in Council Resolution 04-348, the EISPN should accurately reflect that the Office of Informational Practices did not rule that the Committee's report was "void due to violations of the sunshine law." OIP does not have the legal authority to void such action or report. From the Council's actions in passing Council Resolution 04-348 and Bill 37 (2005), it is clear that the Council's position on the City's policy for its solid waste is to close Waimanalo Gulch Landfill.		See response letter. "The City acknowledges your comments. The final decision making by the Mayor's Advisory Committee was within the purview of its individual members to consider, reject, or ignore the results of the double blind process as it considered the optimal site for a landfill. As was noted in the Report of the Mayor's Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection, December 1, 2003, four of the members of the Committee resigned prior to the taking of a vote to move from consensus decision making to voting. The reasons for the resignations are clearly stated in the Report, as is the results of the voting that led to the removal of the Waimānalo Gulch landfill site." "We acknowledge that information concerning the results of Resolution 04-038 and Bill 37 are documented in the EISPN."
21.8 There are many inaccuracies in Section 4.11 of the EISPN. They include the following: ○ A more complete disclosure of the visibility of the Landfill is required. ... the visual impact is much more than a "gray-hued ash fill that resembles a quarry." ○ Vehicles driving on the hillside and higher elevation portions of the landfill can be seen from the ground and from driving along Farrington Highway. It is not only "From sea" that these impacts are visible. ○ Landfill operations vehicles CAN be visible - not "may be visible." ○ The queuing of vehicles, DO make the presence of the landfill apparent - not "may" and this does not make the landfill "momentarily apparent." The continued visibility of trucks, machinery and flying waste make the landfill continually apparent to all who live, visit, or drive through the area. ○ ..waste being blown off the landfill consists of more than just plastic bags and end up in more places than just the valley rim. Significant amounts of this waste has blown into adjacent properties and into the ocean.		See response letter. Section 5.10. Scenic and Aesthetic Environment, discusses the potential for visual impacts including existing conditions and identifies mitigation measures. Section 4.2.3. Environmental Controls, Litter, identifies controls to address windblown litter. Section 4.4. Dust and Mud, identifies measures for dust control.
21.9 The EISPN mentioned the hydromulching that has attempted to "landscape" the Landfill. However, it fails to address the less than adequate success of these efforts, and the visible canyons and rivulets created along the face of the landfill during heavy rains as the water erodes the dirt slope of the landfill.		See response letter. Section 5.10. Scenic and Aesthetic Environment, identifies the potential for visual impacts and identifies mitigation measures that will include new landscaping plans. Section 4.6. Stormwater Management and Section 5.4. Surface Water, describes stormwater management controls and stormwater mitigation measures to maintain compliance with applicable regulations and to protect against erosion..
21.10 The EIS must disclose the fact that because of the operator's failure to handle leachate problems at the landfill, large amounts of leachate were pumped in trucks and taken to the Waianae Waste Water Treatment Plant. The amount of that leachate must be disclosed and its true impacts must be investigated...		See response letter. Leachate accepted by the Waianae Wastewater Treatment Plant was, and continues to be, in accordance with regulatory requirements to ensure public health and safety. Leachate management and monitoring will be part of the Solid Waste Operating Permit application. According to ENV, the operator of the Waianae Wastewater Treatment Plant, the leachate accepted by the plant for processing has had very little or no impact on the wastewater effluent quality.
21.11 The EISPN fails to address the significant changes that has occurred in the potential of shipping waste to other landfills since the last EIS. In examining this alternative, the EIS must acknowledge and identify the multitudes of other cities and municipalities throughout the country that truck or ship their waste to other cities and states. Furthermore, the EIS must examine the recent changes in the Federal Rules allowing for the shipping of waste specifically from Hawaii to the mainland.		See response letter. Section 9. Alternatives to the Proposed Action, identifies alternatives to continued use of the landfill including waste transshipment and regjulations allowing for waste transshipment.
21.12 ...the EIS must recognize that ash and MSW landfills do not need to be located together. The impacts from these two types of waste are significantly different and given Honolulu's situation and history, the EIS must examine possible solutions where MSW and ash can be landfilled in different locations. This will increase the potential for possible locations for future landfill sites.		See response letter. Section 9.6.2. City & County Requirements for a Landfill, discusses the consideration of using more than one landfill for MSW and ash and residue.

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21.13 the EIS must encompass the multitude of comments - formal and informal - that have been received by the City and Waste Management over the last nearly six years, since the City started the attempts to expand the operations at Waimanalo Gulch Landfill. The operational problems at the Landfill, including those cited by the Department of Health in its Notice of Violation, must be directly addressed, as those have shown a clear failure of operations and proved that the concerns and complaints over the last six years were well founded.		See response letter. Section 2.3.1. State Department of Health, discusses the settlement agreement to the DOH notice of violation and order. Section 15. Comments and Responses to the EISPN, provides the comments and responses to comments to the EISPN.
22. Robert D. Harris	12/26/2006	
Sierra Club, O'ahu Group		
22.1 This analysis should look [sic] a review of pursuing other alternative [sic], including the use of other sites and implementing comprehensive waste reduction and recycling strategies...		See response letter. Section 9. Alternatives to the Proposed Action, identifies alternatives to the continued long-term use of the landfill investigated by the City.
22.2 Any analysis should consider the connection between continued use of the landfill and the social issues of discrimination, poverty, and the general distribution of environmental risks.		See response letter. Section 7.1.4.2. Other Social Impacts, discusses the concept of environmental injustice.
22.3 Residents in surrounding areas have long complained about odors, plastic bag litter, and other nuisances and environmental hazards from Waimanalo Gulch Landfill. Future housing may be built in the immediate vicinity of the landfill, including the proposed Makaiwa Hills development of nearly 5000 units by Campbell Estate/Makaiwa Hills LLC. A detailed analysis of all anticipated and potential impacts of the Waimanalo Gulch Sanitary Landfill on this housing should be included in the DEIS and FEIS.		See response letter. Section 5.8. Acoustic Characteristics, 5.8.2. Potential Impacts and Mitigation Measures, identifies the potential for noise impacts. Section 7.2.1. Regional Land Uses; 7.2.3. Potential Impacts and Mitigation Measures, identifies the potential land use impacts on surrounding land uses that include Makaiwa Hills, LLC.
22.4 Present and future volume of truck traffic, the levels of odor, gas emissions, fugitive dust and debris, and runoff from the existing land fill has affected the water, air and life quality of nearby residential and commercial properties, and the extent to which the proposed expansion of the landfill itself, will further affect these parameters...Palehua and Hono'uli'uli areas surrounding the Waimanalo Gulch landfill are home to a number of rare and endangered plants, mollusks and birds. Sections of these land areas are recognized as critical habitat for what is may be the last remaining population of the O'ahu elepai'o...thorough studies must be undertaken to determine the presence of any native and endemic animals and plants, both listed and non-listed, within the boundaries of the project and in areas immediately adjacent to it, particularly those mauka of the project that are contiguous with the Palehua and Hono'uli'uli land areas. ... A plan for restoration of the native forest cover should be developed...		See response letter. Section 1. Executive Summary, describes cumulative impacts. Section 6.1. Traffic and Circulation, describes the situation involving traffic as well as mitigation as appropriate. Section 4.2. Facility Operations, Section 4.3. Onsite Roads, Section 4.4. Dust and Mud, Section 4.5. Safety Procedures and Recordkeeping, Section 4.6. Stormwater Management, Section 5.4. Surface Water, Section 5.7. Air Quality, discusses odor, landfill associated gas, fugitive dust, and runoff in terms of operational practices and procedures, potential impacts, and proposed mitigative measures. Section 5.9. Flora & Fauna Resources, discusses the flora and fauna resources of the site, potential impacts, and proposed mitigative measures.
22.5 ...include sufficient baseline data for meaningful analysis of the adverse impact of runoff and other anthropogenic inputs related to existing and proposed landfill activities...should include... discussing how water flows through the project area into local aquifers, ephemeral water sources and... impact nearshore ocean waters...should spell out in detail any mitigation plan...should include an edaphic study that fully discusses the highly permeable and fragile nature of the soils and the effectiveness of any leachete [sic] collection system... should include any calculations or models used to support any conclusion regarding runoff and drainage into local aquifers and erosion of soils...reveal the cumulative impact of all runoff and leaching ...includes pesticides/ biocides..., fertilizers, sedimentation, heavy metals, grease, and other urban runoff ...should study the ...water pollution associated with similar ... landfill developments and discuss the degradation ...caused by similar projects...not glibly assume that mitigation measures would take care of all nonpoint source...problems.		See response letter. Section 4.6. Stormwater Management and Section 5.4. Surface Water, identies the stormwater controls used at the site, potential for impacts, and proposed mitigation measures. Section 5.5. Groundwater and Hydrology, provides information regarding the WGSL from licensed geologists, hydrogeologists, and other professionals.
22.6 The EIS should use both of the two most useful methodologies of Visual Impact Analysis: 1) Given a structure at point "x," where will it be seen from; and 2) From point "y," what can you see of the development?		See response letter. Section 5.10. Scenic and Aesthetic Environment, discusses the potential for impacts and proposed mitigation measures.

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22.7	The operators of Waimanalo Gulch Sanitary Landfill was recently fined $2.8 million for various environmental violations. Please discuss steps taken to remedy these violations and ensure that future violations do not occur. Please fully discuss how the public can be assured that any proposed mitigation measures will be performed and will be effective. Please describe the county and state government's monitoring and enforcement programs... staffing levels at the State Health Department's Solid Waste Branch, the City and County's Department of Environmental Services, and the City and County's Planning and Permitting Department sufficient to ensure that promises are kept...		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. All alleged violations in the NVO have been resolved Section 2.3.2. U.S. Environmental Protection Agency. The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. WMH and the City are in coordination with the EPA to resolve the EPA NOV.
22.8	The EIS should mention and fully discuss many key provisions in the Hawaii State Plan...		See response letter. Section 8.1. Hawai'i State Plan, describes the sections referenced.
23.	**Cynthia K. L. Rezentes**	12/26/2006	
23.1	This EISPN falls short of accurately representing past statements made about the location of this proposed expansion. In the 1984 EIS, approximately 56+/- acres were identified as being available for a landfill with the rest of the property being labeled as having slopes (8 - 18%) which limit the useful area to be used for landfills. The topography has not changed but it is being proposed that the area is now useful for landfills...		See response letter. Section 4. Project Description, identifies the proposed area of the project and the planned construction activities for use of the site.
23.2	There should also be included how this proposed EIS addresses the State Land Use Commission Decision and Order which calls for the closure of the WGSL in May 2008 (which implies no further waste will be accepted at WGSL). This was the date presented by the previous City and County of Honolulu administration.		See response letter. Section 2.1. Project Background, describes the date of expiration of the SUP permit footprint.
23.3	Considering the current facility is still out of compliance with the last EIS/permit which allowed for the expansion of the facility by another 21 acres and a height limitation which has been exceeded, the document should include how the current violations will be mitigated prior to the request for further expansion of the active landfill site.		See response letter. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue that was the single remaining violation. All alleged violations in the NVO have been resolved.
23.4	The discussion on water flow and direction is inadequate... it does not address any affects on the near shore waters...Most of that leachate was disposed of at the Wai'anae Wastewater Treatment Plant. What were the affects of the leachate being added to normal processes with disposal in off-shore waters?		See response letter. According to OEQC, "The EISPN does not give full detail of the proposal but defines the scope of analysis that will be covered in the subsequent environmental impact statement." (A Guidebook for the Hawaii State Environmental Review Process, June 2004). The EISPN is not intended to itself serve as the full disclosure document as required by Chapter 343, HRS. Section 4.6. Stormwater Management, Section 5.4. Surface Water, and Section 5.5. Groundwater and Hydrology, provides information on stormwater, surface, and groundwater characteristics, potential for impacts, and mitigation measures, as appropriate. "The leachate that is accepted by the operator of the Waianae Wastewater Treatment Plant was, and continues to be, in accordance with regulatory requirements to ensure public health and safety. Leachate management and monitoring will be part of the Solid Waste Operating Permit application. As noted in a memorandum to ENV from the operators of the Waianae Wastewater Treatment Plant, the leachate accepted by the plant for processing has had very little or no impact on the wastewater effluent quality that is being discharged to the ocean outfall (see attached memorandum dated October 2, 2007)."
23.5	There does not appear to be any discussion regarding the noise ... and how it might impact the Makaiwa Hills development... housing built near the boundary where the landfill will be operating in the near future...discussion should also extend to litter and odor mitigation...		See response letter. Section 5.8. Acoustic Characteristics, 5.8.2. Potential Impacts and Mitigation Measures, identifies the potential for noise impacts. Section 7.2.1. Regional Land Uses; 7.2.3. Potential Impacts and Mitigation Measures, identifies the potential land use impacts on surrounding land uses that include Makaiwa Hills.

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23.6 While there is a discussion regarding the visual impacts of the landfill from the makai side of the landfill, there is no discussion regarding the visual impact of the landfill from the Wai'anae direction. Currently, the landfill construction of the cells for the permitted expansion is visible over the ridgeline from the Wai'anae direction...		See response letter. Section 5.10. Scenic and Aesthetic Environment, provide further discussion of visual impacts from both the landfill as well as from selected points along Farrington Highway and other locations. Landscaping will be provided to improve the aesthetics of the site.
23.7 ...discussion about the responsibility of the operator to keep mud and dirt on the landfill property and not allow it to be deposited on Farrington Highway...		See response letter. Section 4.4. Dust and Mud, describes practices to reduce the incidence of dust and mud tracking onto the highway.
23.8 The City's SWIMP has Waimanalo Gulch Sanitary Landfill as a critical integral part of the plan. Unfortunately, the plan is now significantly behind schedule. The new plan should not only include the landfill but also include a serious discussion about alternatives to landfills and therefore, could have an impact on whether or not the expansion should be for the amount of time being proposed or be reduced or eliminated.		See response letter. An update of the Solid Waste Integrated Management (SWIM) Plan is on-going by the City. As much as possible the preparation of the SWIM Plan is being coordinated as the DEIS is being prepared. Section 9. Alternatives to the Proposed Action, discusses the alternatives that were considered by the City.
23.9 The EISPN...fails to state that the time to pursue other alternatives actually started from 2002, when the City committed to the communities that other methods would be pursued and no landfills would be needed after 2008. A more comprehensive discussion should be included as to actions already taken and why there was a failure to find any alternatives that could have been implemented to make the five year target.		See response letter. Section 7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling, identifies prior efforts taken by the City regarding alternatives to landfilling.
23.10 There is no discussion regarding the contract commitments to both H-POWER and Waste Management, Inc. This is significant to making an informed decision as to whether an expansion of the landfill is required if the City believes it is needed, the real length of time that makes sense for the proposal of an expansion.		See response letter. Although no discussion of the contractual agreements between the City and the operators of the H-POWER and Waimanalo Gulch landfill was provided in the EISPN, the contracts are public documents. Section 9.7. Preferred Alternative, discusses the role of recycling, H-POWER, and transshipment as a mix of options reducing the volume of material requiring landfilling.
23.11 The proposed EIS for this expansion of WGSL needs to be as comprehensive as today's knowledge base allows us to have considering the consequences of the action proposed will continue to have effects on our residents for many years to come. The EISPN should do no less and should address all issues brought up in the scoping meetings and via written comments. The submittal of these comments should not be construed as support for the expansion of Waimanalo Gulch Sanitary Landfill but should be viewed as open concerns that continue to not be fully addressed and should be in both the EISPN and EIS.		See response letter. "We have directed our consultant to address the issues raised during the EISPN public comment period as required under Chapter 343, HRS. As you are aware, these issues have been documented and will be discussed in the DEIS."
24. Colleen Hanabusa, Senator	12/26/2006	
President of the Senate		
Hawaii State Senate		
24.1 I incorporate by reference my comments set forth in a letter of August 30, 2006 which is found in the EISPN Appendix A. The EISPN fails to address the comments made therein and the Draft and/or Final EIS must do so to comply with the laws.		See response letter.
24.2 Project Background...Section fails to address whether the FSEIS prepared in December 2002 was a "shibai." Clearly it was inadequate and remains a subject to challenge in the Courts. Though a discussion is made about the Landfill Site Selection Process, the EISPN does not address how the preparer of the this [sic] document, as well as the consultant for the Landfill Site Selection Process can conclude that the service life of WGSL is fifteen (15) more years. This is especially troubling when the preparer of the EISPN was also the consultant to the site selection committee and the criteria was NO EXCAVATION.		See response letter. "We offer the following clarification to the above: (1) we acknowledge that your lawsuit concerning the 2002 Final Supplemental Environmental Impact Statement remains the subject of litigation. We do note however that Section 1 contains important information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of Oahu; (2) The service life of the landfill as presented to the Mayor's Advisory Committee in 2004 was twenty (20) years. The capacity for the current project will be discussed in the Draft EIS (DEIS);

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There should be a concern as whether this consultant is in a conflict of interest given the differing reports. Moreover, there must be a clear statement as to who is paying for the preparation of the various documents and studies required in the EIS process. If, for example, Waste Management is paying then the Final EIS will not truly be that of the City and/or the Department of Environmental Services which should have the general public's interest as its primary goal		(3) The no excavation remark that you cite comes from the Waimānalo Gulch Expansion, Potential Landfill Site Data Sheets, prepared for the Mayor's Advisory Committee on Landfill Siting, October 2003. The specific reference is to information provided for Criteria No. 23, Landfill Capacity or Site Life. According to the data sheet, "The volume was calculated assuming a 100 foot buffer around the site boundary, 30 acres for infrastructure facilities, no excavation, and filling to the natural grade." The rationale for not incorporating excavation as a factor involved: A. It was not in the consultant's scope of work to do field studies including drilling borings to obtain subsurface information. This is typically the case when doing preliminary siting studies both due to difficulty in gaining access to the property and the high cost of doing field studies. Without these studies, it is not possible to determine excavation depths or difficulty with any degree of certainty. Therefore, it is typical to assume minimal or no excavation in order to compare site capacities; B. Criteria No. 23, therefore, was established to provide an estimate of capacity only based on: an area adjusted with an approximately 100 foot buffer around the perimeter of the site; the use of 30 acres for infrastructure to operate the facility; no detailed engineering calculations incorporating soils conditions to produce information on excavation; and filling of the site to the natural grade of the terrain of the finished site. It is incorrect to conclude or imply on the basis of information from the data sheet alone that in the course of developing a landfill site that no excavation would be required. (4) The City ENV and Waste Management of Hawaii, Inc., are financing the preparation of the EIS. The interest of the general public, and the responsibility for and integrity of the document rests with the City & County of Honolulu." <u>Section 9.6.3.6. Landfill Capacity</u>, provides a discussion of landfill capacity requirements for the City.
24.3 The public needs to know whether any representation made by a Mayor and/or City Council is binding on subsequent administrations. This is especially critical when looking at the Decision and Order of the State of Hawai'i Land Use Commission ("LUC Order") and State of Hawai'i Department of Health's Notice of Violations and Order ("DOH NVO"). The culpability, remedial action and cause of these violations must be discussed.		See response letter. "Representations of officials may become law and be binding when appropriately enacted into law, or through other acts that have the force and effect of law. Subsequent Mayors and/or City Councils may, however, change prior law through appropriate legal processes." <u>Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health</u>. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue that was the single remaining violation. All alleged violations in the NVO have been resolved.
24.4 A detailed discussion is necessary as to the consequence of the LUC Order and the DOH NVO for the decision maker to have sufficient information to fully consider the proposed action. In that the Operator was selected in 1999; and there have obviously been problems with the manner in which they have performed, there should be a discussion as to whether that contract will be honored or should be honored. The Contract must be made public and the legal rights of all parties addressed.		See response letter. "Please refer to our comment above regarding the NVO. The contract between the City and Waste Management of Hawaii is a public document. The City has monitored the performance of Waste Management under this contract and has taken appropriate action to protect the public interest. As a result, significant improvements to landfill operations have occurred. The City intends to continue to administer the contract to ensure that the rights and responsibilities of the parties involved are addressed and the public interest is protected."
24.5 This introductory section is presented as if this issue is new. The expansion of the WGSL and the larger issue of disposal of municipal solid waste on this island are far from a new issue. This section also begs the issue of the problems with the operations and the operator of the WGSL.		See response letter. "The use of Waimanalo Gulch is not new and as indicated in the EISPN the site has been in use since 1989, approximately 19 years ago. The NVO will be discussed in the DEIS." <u>Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health</u>, provides information on the resolution of the NVO.

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24.6 ...Project Description...Section of the EISPN is in most parts verbatim from the FSEIS of December 2002. It would appear that given the difference in the slope and other physical characteristics of the expansion that this critical point should have been discussed versus a rehashing of the prior FSEIS... There must be a more detailed discussion as to the slope differential for WGSL in the proposed expansion area.		See response letter. "According the Office of Environmental Quality Control (OEQC), "The EISPN does not give full detail of the proposal but defines the scope of analysis that will be covered in the subsequent environmental impact statement." (A Guidebook for the Hawaii State Environmental Review Process, June 2004). In this regard the EISPN is not intended to itself serve as the full disclosure document as required by Chapter 343, Hawaii Revised Statutes (HRS). The proposed grades and use of the site including details and information will be provided as a part of the DEIS." Section 4. Project Description, provides additional information on the use of the site.
24.7 The expansion will clearly be where the land is steepest and will require excavation. It is, therefore, curious that this EISPN fails to address the amount of native soil and rock which will have to be removed...		See response letter. "The anticipated amount of soils excavation that will be necessary will be described in the DEIS. As indicated in the EISPN, "Information concerning these construction details and discussion of potential impacts and recommended mitigation measures relating to construction associated noise, odor, airborne litter, and storm water erosion will be provided in the DEIS." Section 4. Project Description, provides information on construction of the proposed project. Section 4.1.3. Waste Stream, Soil Excavation, and Soil Usage, provides information on soils usage. Section 4.2. Facility Operations, Section 4.2.3. Environmental Controls, Section 4.3. Onsite Roads, Section 4.4. Dust and Mud, Section 4.5. Safety Procedures and Recordkeeping, Section 4.6. Stormwater Management, Section 5.4. Surface Water, Section 5.7. Air Quality, discusses odor, litter, landfill associated gas, fugitive dust, and runoff in terms of operational practices and procedures, potential impacts, and proposed mitigative measures.
24.8 There needs to be a discussion as to the extent of that construction activity; its impact on the neighbors; and more importantly where will the materials go. The cost of such an activity must be calculated to do a true cost benefit analysis. The rights to the native soil (rock, etc.) must also be addressed. It is believed that with the present operation, the contractor who does the excavation is permitted to sell the rock and soil and keep the funds. If this is the case, the practice must change and the benefit should be to the taxpayers.		See response letter. "The extent of construction, its potential impact on adjoining property owners, and where and how the excavated materials will be utilized will be a part of the DEIS. The owner of the property, the City & County of Honolulu, retains the ownership rights to the excavated materials. Since August 1, 1991, the City has received royalties for any excavated and processed material removed for Waimanalo Gulch Sanitary Landfill." Section 4.1.3. Waste Stream, Soil Excavation, and Soil Usage, provides information on soils usage.
24.9 There needs to be an honest discussion as to whether the expansion of WGSL will require almost a 2 to 1 removal of the native soils. That is to say for 2 cubic feet of air space, 1 cubic feet of native soils will have to be removed. If that is not the case then the assumptions made in the Waste Management contract of 1999 require additional discussion.		See response letter. "The final design of the proposed project, including the height and elevation of the expansion area of the landfill and use of excavated materials, will follow the general guidelines set forth in the 1999 contract. The final design will be based on the use of sound engineering practices and compliance with environmental protection and regulatory requirements."
24.10 Given the recent decisions by the Hawai'i Supreme Court, it is necessary to discuss the concept of public trust... Note that the leachate was disposed of, for most part, in the Waianae Sewage Treatment Plant.		See response letter. "There has been no violation of the public trust. Leachate that is accepted by the plant operator for disposal at the Waianae Wastewater Treatment Plant was, and continues to be in accordance with regulatory requirements to ensure public health and safety. Leachate management and monitoring will be a part of the Solid Waste Management Permit application."
24.11 ...there is inadequate discussion of the leachate...requires a discussion as to the how the build up of the leachate affected or could affect the integrity of liner and the stability of the landfill. It must also be addressed in light of the expansion and the stress it will have upon the liner and the stability of the landfill.		See response letter. "An explanation of the leachate that is generated by the landfill will be provided in the DEIS. A discussion concerning the leachate collection and removal system design, including liner integrity and landfill stability, associated with the generation of leachate will be provided." Section 4.1.4. Geologic Considerations, Section 4.1.5. Liner and Final Cover Systems, Section 4.1.6. Final Cover, provides information on the liner integrity, landfill design, and the Leachate Collection and Removal System.
24.12 It is unacceptable for government to rely upon Waste Management's consultants or experts for stability calculations. This is not acting in the best interest of the public.		See response letter. "The consultants involved with the design of the Waimanalo Gulch Sanitary Landfill do work for both public and private organizations, are registered professional engineers, and are recognized experts in landfill design and stability analysis. Their work has been peer-reviewed by outside experts to ensure the work meets professional engineering standards. All of the work completed is available for public review including all analyses completed during the design."

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24.13 The recent construction of the rock berm wall ...requires discussion as to why it was constructed and how it is necessary for the structural integrity of the landfill. The berm wall is not to be used as a retaining wall and/or the basis for height expansions in the existing landfill.		See response letter. "The stability berm that is referred to was reviewed and approved by the DOH for construction under the current Solid Waste Management Permit. The purpose of the berm is to ensure that the ash monofil area of the landfill meets or exceeds regulatory and engineering design standards."
24.14 ...the height limitations in certain parts of the WGSL have been exceeded. Yet, to date, not [sic] hearings have been held on the height expansion. There needs to be a discussion as to capacity and how the City and Waste Management continue to operate the WGSL and address the violations set forth in the DOH NVO.		See response letter. "Our request to seek a height modification was submitted to DOH in February 2006. The height modification was approved by DOH on February 20, 2008. A discussion of the capacity of the site and the NVO will be provided in the DEIS." Section 4.1.3. Waste Stream, Soil Excavation, and Soil Usage, provides the preliminary design volumes and capacities of the site. Section 2.3. Environmental Compliance Violations, 2.3.1. State Department of Health, provides information on the settlement of the NVO.
24.15 Prior EISs have not acknowledged the cultural significance of the pathway to Palehua which Waimanalo Gulch served as. Also lacking is a discussion as to the environmental impact to the natural preserves for various native birds which Waimanalo Gulch serves as a habitat.		See response letter. "We have forwarded this information to Cultural Surveys of Hawaii, our archaeological and cultural consultant, which is preparing the Cultural Impact Assessment report for further investigation. Their findings will be provided in the DEIS. The potential for impacts to habitat for native flora and fauna will also be provided in the DEIS." Section 7.3. Historic and Archaeological Resources, and Section 7.4. Cultural Impact Assessment, summarizes the archaeological, historic,and cultural resources of the proposed project site including potential impacts and proposed mitigation measures. The Archaeological Inventory Survey and Cultural Impact Assessment studies are provided as appendices to the DEIS. Section 5.9. Flora and Faunal Resources, provides the results of studies of the site with regard to flora and faunal resources.
24.16 The visual impact of WGSL has not been adequately addressed especially with the construction of the rock berm wall. How is this area going to be restored to its original state with a rock berm wall?		See response letter. "An assessment of the potential visual impacts of the proposed project will be provided in the DEIS. This will include the investigation of views from both the landfill as well as from selected points along Farrington Highway and other locations. Landscaping will be provided to improve the aesthetics of the site. However, given the nature of use of the site involving landfilling, it will not be possible to return the site to its original condition." Section 5.10. Scenic and Aesthetic Environment, describes the potential impacts and proposed mitigative measures.
24.17 Odors continue for those who live by the WGSL.		See response letter. Section 4.2.3. Environmental Controls, and Section 5.7. Air Quality, discusses odor including mitigative measures and practice to control odor.
24.18 The role that Ko Olina plays as it relates to the economic growth for West Oahu is significant. While no one would consider placement of a landfill near Waikiki, the City does not hesitate to continue a landfill operations directly across the street from KO Olina.		See response letter. The City does not discount the importance of economic growth wherever it is occurring on the Island of Oahu. While there are no viable landfill sites near Waikiki we do note that places such as Ala Moana Park and the Kakaako Waterfront Park once served as landfills, and that various parts of Windward Oahu once supported landfills.
24.19 a discussion must be had as to what can be done if such a natural disaster caused the landfill to slip onto Farrington Highway. This discussion must look to the fact that expansion will be at steepest part of the footprint of the parcel of land and the stress it will place on the existing landfill. The people of the Waianae Coast have only one way in and one way out.		See response letter. Section 4.1. Construction Activities, and Section 4.8. Emergency Preparedness describes the facility planning to address the potential for disasters. Section 5.6. Natural Hazards, discusses the potential impacts and mitigation measures associated with floods, hurricanes, seismic activity (earthquakes), and tsunami.
24.20 There is no discussion as to how the expansion of WGSL continues to dump on and places the burden on the Waianae Coast. There needs to be a discussion of the concept of environmental justice.		See response letter. Section 7.1.4.2. Other Social Impacts, provides a discussion of "environmental injustice" involving the disproportionate burden of locating WGSL along the Wai'anae Coast.

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24.21 The Legislature is presently developing a plan on Sustainability for the year 2050. It is without any basis that the EISPN arrives at the conclusion that the expansion of WGSL is in conformance with the General Plan. The analysis which led to this conclusion is needed.		See response letter. "The sustainability for our island State is important. The use of Waimanalo Gulch promotes sustainability through the use of an on-island facility that has remaining but unused capacity. Without Waimanalo Gulch, new land, a precious resource, would need to be prematurely used when there is remaining capacity at this existing public facility." "The basis for the conformity of the proposed project with the General Plan is stated in the EISPN. It is noted that the Waimanalo Gulch Sanitary Landfill is in accordance with the Ewa Sustainable Communities Plan (Development Plan), and that this proposed project can only be implemented if it is in accordance with the General Plan."
24.22 The discussion of the Land Use Policies of the area cannot be made without a discussion of the LUC's D&O on the SUP. The D&O states that no later than May 1, 2008, the area shall be "restricted from accepting any additional waste material and be closed in accordance with an approved closure plan." This is the controlling Land Use Order on the site of the proposed expansion.		See response letter. "Necessary approvals, including those of the Land Use Commission and others, will be sought to allow for the proposed project. Further discussion of this item will be provided in the DEIS." Section 2.1. Project Background, and Section 3.3. 3.3. Need for the Proposed Project, identifies and provides a discussion of the LUC SUP order.
24.23 The issue of the protection of the aquifer requires further discussion. The EPA has a map which includes WGSL in the aquifer area. The Board of Water Supply has a map of convenience as it addresses WGSL. These maps must be explained.		See response letter. "The DEIS will identify the agencies with jurisdiction for the establishment of the Groundwater Protection Zone (GPZ) and Underground Injection Control (UIC) Line. A discussion of the relationship between the proposed project and the regulation of the GPZ, UIC, and other water resource requirements will be provided." Section 9.6.3.5. Local Exclusionary Criteria, Groundwater Restrictions, describes and explains the GPZ and UIC zones that are used in the DEIS. Section 5.4. Surface Water, and Section 5.5. Groundwater and Hydrology, provides information on other water resources of the site.
24.24 Alternatives to the Proposed Action. "This discussion in the FSEIS and other documents has been inadequate and continues to be so. After all these years, the City must have a better response on alternative technologies, transshipment and other sites than what is provided. Again, it appears that it is simply easier to continue to the existing landfill; and therefore all attempts to address alternatives in good faith will never be a reality. In that a private landfill is also proposed, the City's position on the landfill and how it will impact on the flow of trash needs discussion.		See response letter. "Alternative technology, transshipment, and other on-island landfill sites will be discussed in the DEIS. The City acknowledges a proposed private landfill in Nānākuli. However, the Waimānalo Gulch Sanitary Landfill is considered the most viable site for O'ahu's future landfill needs for the next approximately 15 years, or until an alternative becomes available that would completely replace the need for a landfill on island." Section 9. Alternatives to the Proposed Action, provides the alternatives that were considered by the City.
24.25 The State Land Use Commission is a State agency not within the City & County of Honolulu. There is also a requirement to secure the DOH permits.		See response letter. "The reference to the State Land Use Commission is based on their participation in the decision making for the State Special Use Permit administered by the City Department of Planning and Permitting. Department of Health administered permit applications including the Solid Waste Management Permit application will be filed for this project."
24.26 it is critical that the decision maker and the general pubic are made to understand why the promises of government need not be kept. There must also be a discussion as to how much money the City and County makes in the landfill business.		See response letter. "The DEIS will include a discussion of the past history of events related to the future of the landfill, and provide information as to how the decision to propose expansion of the landfill, rather than closure, was reached." "The City combines tip fee revenue from City transfer stations and the landfill. The revenue for FY06 was $14,051,214 as reported in the City and County of Honolulu Operating Budget, Detailed Statement of Revenues and Surplus, Solid Waste Special Fund (250) Disposal Charges." "A small portion of the tip fee revenue is attributed to commercial accounts disposal at transfer stations. Most of the tip fee revenue is generated by commercial accounts disposal at the landfill. In accordance with Chapter 9, Section 9-4.2, Revised Ordinances of Honolulu (ROH), only businesses, and federal and state agencies accounts are charged a landfill tip fee. Homeowners and eleemosynary organizations pay no fees." Section 2. Project Background, provides the events leading to the consideration of WGSL for the preferred alternative.
24.27 What is also lacking is the fact that in a few years, the status of H Power will also be an issue. If the City decides to re purchase H Power, then that cost must be made known and its impact on the cost of solid waste disposal.		See response letter. Section 9. Alternatives to the Proposed Project, Section 9.7. Preferred Alternative, identifies H-POWER and transshipment as a viable alternative to reduce waste requiring landfilling.

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24.28	If a private landfill operation is permitted and the transshipment of rubbish is also approved, then the impact of such action must also be discussed in terms of the environmental impacts to the public.		See response letter. "As noted, the City acknowledges a proposed private landfill in Nānākuli but considers the Waimānalo Gulch Sanitary Landfill a more viable alternative. The consideration of the Nānākuli site and waste transshipment will be provided in the DEIS." Section 9. Alternatives to the Proposed Project, Section 9.6. Alternative Sites for a Municipal Landfill, provides an evaluation of alternative sites that include Nanakuli. Section 9.4. Transshipment of Waste Off-Island, provides an evaluation of waste transshipment.
25.	**Colleen Hanabusa, Senator**	8/30/2006	
	Hawaii State Senate		
25.1	Standard To Be Met...The condition to all EISs is that it be compiled in "good faith" and sets forth sufficient information. The past practice of the City has shown that EISs have not been compiled in good faith and nor does it provide sufficient information. At the very minimum the City must take its past EISs and explain the discrepancies that have been found and set forth whatever infomation it now relies upon to justify its change in position.		See response letter. "We appreciate your references to our legal responsibilities under the Hawaii EIS law. Please also refer to Section 1 of the EISPN that contains information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of O'ahu."
25.2	At the outset, the City must explain why it has changed its position from an expansion of only 5 years to now an additional 15 years. ...A discussion should be had as to whether the City can be bound by its statements under oath like a person.		See response letter. "Prior representations concerning the closure of Waimanalo Gulch have been identified in the EISPN. This information will also be provided in the DEIS." Section 2. Project Background, provides the basis for the City's decision to proceed with the EIS for the project.
25.3	An EIS is "meaningless" if it is self-serving and rationalizes an outcome. The contract between Waste Management, Inc. and the City for the operation of WGSL was entered into in 1999 for 15 years. This was two years before the first Draft EIS in 2000; and three years before the FSEIS. At the very minimum, this shows the decision to expand WGSL was a done deal in 1999. Also explain what was done after the City entered into it in 1999. Also explain what was done after the City said the expansion would be for only 5 years. Was the contract amended?"		See response letter. "The contract amendment dated May 1, 1999, provided for the expansion of the Waimānalo Gulch site. Subsequently, the prior administration decided on a five-year limit for the use of the site. The contract was not amended to a shorter term because the exact date of termination could not have been determined. Although the contract was not amended, the City retains control of the contract and can terminate it at any time when it is in the best interest of the City. As provided in Contract Special Provision 29, the contract can be terminated, "... in whole or in part, whenever the Director shall determine that termination of the contract, in whole or in part, is in the best interest of the City.""
25.4	HRS §343-2 defines an EIS as one that discloses, among other items, the "alternatives to the action and their environmental effects."...HAR §11-200-17 addresses...alternatives as follows: describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected...Money is not the paramount criteria in arriving at a decision which is environmentally sound...HAR §11-200-17 F. 5 states that...the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency...		See response letter. "An examination of alternatives that include other potential landfill sites, waste transshipment, and technology based solutions, will be provided in the DEIS. This will include the consideration of factors that do not involve funding as the major criteria for evaluation." Section 9. Alternatives to the Proposed Action, identifies the alternatives that were consdiered by the City.
25.5	Ordinance 9-1/1(a)(6)(b)(1) states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill. What is the status and what is the consequence of this non-compliance?		See response letter. "The City acknowledges that it was not possible to increase recycling, reuse, composting and waste diversion to a level that could support up to a 75 percent reduction by 2002. At the same time, ENV is committed to pursuing all reasonable and feasible options that can contribute to reducing our dependency on the use of landfilling. Recent actions involve the establishment of pilot programs for waste recycling and a major decision to expand the capacity of H-POWER to promote recycling through the generation of energy from municipal refuse. We will continue to pursue these and other options with the City Council as well as O'ahu's communities."

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25.6 A major source of "odor" for the landfill is sludge. What is the City's treatment of sludge and for what period of time will it continue to be dumped in the landfill.		See response letter. "Major improvements in the City's handling of sludge at the Sand Island Wastewater Treatment Plant have occurred since the initial start up of the recently constructed waste digester. These improvements have significantly reduced odors and the requirement for the disposal of untreated sewage sludge. We expect that as the facility becomes fully operational that further improvements will result."
25.7 "HAR §11-200-17 D requires the Draft SEIS to "contain a separate and distinct section that includes a statement of purpose and need for a proposed action." ...There is an application for a private landfill pending and also the fact that the Department of Agriculture will now permit the transshipment of MSW. These points must be addressed in discussing any need of the expansion, especially in light of the prior statements that there will be no need for landfills in 5 years."		See response letter. "We appreciate your citation of prior case law concerning the purpose and need for the EIS. The application for the private landfill in Nānākuli and the potential for transshipment as methods to eliminate the need for the proposed Waimanalo Gulch Sanitary Landfill lateral expansion will be provided in the DEIS." Section 9. Alternatives to the Proposed Action, identifies the consideration of the Nanakuli site for a landfill as well as waste transshipment off-island.
25.8 The City must address the discrepancies in all the draft EISs along with the reports provided by RM Towill to the Blue Ribbon Commission which was tasked with siting the new landfill. The criteria was no excavation. RM Towill determined that WGSL had a life of 20 more years with the criteria. This is in direct conflict with other EISs also prepared by RM Towill. What does the City intend to do about this obvious misrepresentation? How does the City explain this discrepancy.		See response letter. "The no excavation remark that you cite comes from the Waimānalo Gulch Expansion, Potential Landfill Site Data Sheets, prepared for the Mayor's Advisory Committee on Landfill Siting, October 2003. The specific reference is to information provided for Criteria No. 23, Landfill Capacity or Site Life. According to the data sheet, "The volume was calculated assuming a 100 foot buffer around the site boundary, 30 acres for infrastructure facilities, no excavation, and filling to the natural grade." Criteria No. 23, therefore, was established to provide an estimate of capacity only based on: an area adjusted with an approximately 100 foot buffer around the perimeter of the site; the use of 30 acres for infrastructure to operate the facility; no detailed engineering calculations incorporating soils conditions to produce information on excavation; and filling of the site to the natural grade of the terrain of the finished site. It is incorrect to conclude on the basis of information from the data sheet alone that in the course of developing a landfill site that no excavation "The 2002 Final Supplemental EIS for the Waimānalo Gulch Expansion, as well as other prior Waimānalo Gulch EIS documents, were prepared by our consultants based on civil engineering design studies supported by geotechnical investigations and/or soils evaluations that are referenced in the EIS documents. The engineering information for the 2002 EIS was provided by Waste Management of Hawai'i, Inc., who utilized licensed professionals to conduct the studies. The factors that can result in different capacities or life of the site would include refinements to the planned design of the site, knowledge of how the soils conditions or topographic changes would affect the design, or adjustments to the site to accommodate new infrastructure or stability features in order to maintain safety or improve the efficient use of the site. There are other factors that can affect capacity or life of the site that will be provided in the DEIS for the proposed project." Section 4.1.2. Features of Construction of Lateral Expansion, provides information on soil usage for the WGSL. Section 9.6.3.6. Landfill Capacity, provides a discussion of landfill capacity requirements for the City.
The extreme slope of WGSL for the proposed expansion and the newly constructed rock berm are related. What is the stability of the expansion? How much native soil will have to be removed? Where will it be removed to? Will the excavated materials be sold?		See response letter. "A discussion of the anticipated excavation requirements for the proposed project will be provided in the DEIS. This will include an estimate on how much soil will need to be excavated, and the stability of the site. The soils removed from the site that will be used for cover material will be stored on site. A decision regarding the release or possible sale of any cover material cannot be made at this time based on the status of the project within the EIS process. The owner of the property, the City & County of Honolulu, however, retains the ownership rights to the excavated materials. Since August 1, 1991, the City has received royalties for any excavated and processed material removed for the Waimānalo Gulch Sanitary Landfill." See reference above and Section 4.1.2. and Section 9.6.3.6.

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25.9 In light of the concern over the stability of slope as evidenced by the construction of the rock berm wall, how will the community be assured about its stability? How is the integrity of the liner tested? Will the berm wall act as the retaining wall to justify and increase the slope?		See response letter. "The DEIS will provide information concerning engineering design standards and practices that ensure the stability of the site. The most recent test of the site's stability involved the recent earthquake event of October 15, 2006, when a magnitude 6.7 earthquake occurred about 10 miles north-northwest of Kailua-Kona. According to our site operator, Waste Management of Hawai'i, Inc., an inspection following the earthquake indicated there was no failure or damage to the landfill and its supporting infrastructure as a result." "The stability berm that is referred to was reviewed and approved by the DOH for construction under the current Solid Waste Management Permit. The purpose of the berm is to ensure that the ash monofill area of the landfill meets or exceeds regulatory and engineering design standards, including those for soil retention." Section 5.3. Geology, Section 5.3.3. Potential Impacts and Mitigation Measures, provides the geologic basis for the design of the proposed project. Section 4. Project Description, Section 4.1.5. Liner and Final Cover Systems, decribes the design features of the liner system.
25.10 The Notice and Finding of Violation ("Notice and Finding") and Order dated January 31, 2006, of the Department of Health ("DOH") as to the operations of WGSL must be addressed... There are also additional violations that were not included in the DOH Order, such as the applicant's failure to submit a revised Closure and Post-Closure Plan no later than May 1, 2005, which was finally submitted on February 22, 2006 and the operators unauthorized night work preparing a new cell for receiving waste.		See response letter. "The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved."
25.11 The recent Hokulia case makes clear the State's public trust for the waters of our State. How has this trust obligation been met.		See response letter. "A discussion of state waters and efforts that have been taken by the City and Waste Management to ensure the protection of this important resource will be provided in the DEIS." Section 4.6. Stormwater Management, and Section 5.4. Surface Water, provides information on the requirements of the project in relation to DOH administration of state water quality.
25.12 The EIS cannot merely address the proposed expansion. It must address the cumulative effects of the operation of WGSL since the 1980s in addition to the proposed expansion on the Coast, including the disposal of leachate off site at the Waianae Wastewater Treatment plant.		See response letter. "A discussion of cumulative effects as a result of the proposed project will be provided in the DEIS." Section 1. Executive Summary, provides a discussion of cumulative effects.
25.13 The EIS must address the concept of environmental justice and how the City's use of this landfill and others in the Waianae Coast affect the community.		See response letter. "A discussion of environmental justice and its relationship to the proposed project will be provided in the DEIS." Section 7.1.4.2. Other Social Impacts, discusses the concept of environmental injustice.
25.14 These are the concerns and issues which must be addressed in the EIS. It continues to remain my position that WGSL must close...		See response letter. "We acknowledge your opposition to the proposed project and have included you as a consulting party to the EIS process for this project."
26. Henry Eng, FAICP, Director	12/26/2006	
Department of Planning and Permitting		
City & County of Honolulu		
26.1 Pg. 1-1, paragraphs 2 and 3: Condition 12 of the Land Use Commission's Decision and Order date June 9, 2003 states...not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan. We interpret the above condition to mean that the landfill cannot accept all forms of waste, including H-POWER ash, residue, and unacceptable wastes. On paragraph 3, we suggest the word 'accepted' be used instead of 'approved'.		See response letter. "This recommendation is noted. However, in reviewing the OEQC's requirements for the preparation of EIS documents, the term "approved" is correct in usage."

Commenting Party/Itemized Comments	Date of Letter	DEIS Section Reference and Comments*
26.2 Pg. 1-2, paragraph 1 : The date the Special Use Permit amendment is approved is the date the Land Use Commission's Order is effective, June 9, 2003. The footnote should be revised accordingly. Also, please delete the word 'municipal' in the last sentence.		See response letter. "This recommendation is noted and will be addressed in the DEIS." Section 2.2. Events Affecting the Decision to Expand Waimanalo Gulch, provides this correction.
26.3 Pg. 1-13, paragraphs 1 and 2: The site should be consistently described as being located in Waimanalo Gulch, Honouliuli, Ewa, Oahu. Please make the necessary changes to all references on location. When the landfill received its Special Use Permit (SUP) approval on April 20, 1987, the approved landfill area was 60.5 acres. On October 31, 1989, the Land Use Commission (LUC) approved a 26-acre addition to the original approved area to include support areas of the area approved for landfilling. Thus, at the time when the landfill began initial operations, the landfill and support areas was limited to 86.5 acres and should not be described as being 200 acres.		See response letter. "This recommendation is noted and will be addressed in the DEIS." Note: reference has been revised to Waimanalo Gulch, Oahu, Hawaii. Section 3.1. Project Location and Area of Use, provides clarification between area of the approved landfill and the proposed project.
26.4 Pg. 2-3, paragraph 1: Please indicate what uses are proposed for the 100-foot buffer. Also, will there be any part of the 200-acre property left undisturbed or as it was prior to landfilling operations? If so, please describe and map these areas.		See response letter. "The area of buffer is intended to remain free of actual landfilling and placement of waste. Other locations encompassed by the 92.5 acres where uses are known at this time will be provided in the DEIS. Some of the proposed uses include landscaping, access roads, grading, environmental monitoring and stockpiling of excavated materials that will be reused on-site for cover material." Section 4.1. Project Description, provides the uses of the proposed project area that are known at this time.
26.5 Pg. 2-4, paragraph 4: Condition 12 of the LUC Decision and Order of June 9, 2003, applies to the entire 107.5-acre approved area, not just the 21-acre expansion area.		See response letter. This recommendation is noted and will be addressed in the DEIS. Section 3.3. Need for the Proposed Project, describes the entire approved area as 107.5 acres.
26.6 Pg. 2-1 5, paragraph 1: The Draft Environmental Impact Statement (DEIS) should indicate that portions of the 92.5-acre proposed expansion area was graded, for what purpose, when, and whether these areas are still being disturbed for landfill operations.		See response letter. "This recommendation is noted and will be addressed in the DEIS." Section 4.1.1. Project Location, describes the limited area within the proposed project area that was graded to maintain safety of the existing Cell E-4.
26.7 Pg. 3-1, Section 3.2.: This section should state whether regulated hazardous waste is accepted, examples of unacceptable waste and all types of residue, the quantity and frequency of sewer sludge and related sewage residue accepted, and whether delivery of wastes after normal business hours also include other processes involving spreading, compacting, covering, relocation, or other waste disposal landfilling processes normally associated with operations during regular business hours.		See response letter. "The types of waste that are accepted at the landfill will be provided in the DEIS. Processed sewage solids deliveries have recently been reduced in volume and frequency with the operation of the Synagro waste digester at the Sand Island Wastewater Treatment Plant. Other landfill associated practices will be described in the DEIS." Section 4.2. Facility Operations, identifies the types of waste that are accepted including unacceptable waste that is not. This section also describes other practices associated with operations.
26.8 Pg. 3-4, Section 3.3.: Detailed information on irrigation for landscaping/revegetation should be provided in the DEIS.		See response letter. "The DEIS will provide further information on landscaping as well as irrigation usage for the proposed project. Other points of information concerning use of the site and operational practices will be included." Section 6.3. Potable Water, describes water use for irrigation and dust control. Section 4.2. Facility Operations
26.9 The DEIS should describe existing and proposed cell construction, reclamation, revegetation, closure, monitoring, and reuse across the entire 200-acre property and what will be/have been disposed in each cell, the order in which each cell has been/will be completed and reclaimed/revegetated/reused.		See response letter. "The DEIS will provide information on operational practices and site development that will include the proposed location of cells, infrastructure, and landscaping for the proposed project. Other points of detail including the order of use of the cells, or the waste content of the cells, or the final reuse across the 200 acre site have not yet been fully determined. As much as possible, the information that is available for the proposed project will be provided." Section 4. Project Description, provides information on the use of the site for the existing and proposed area of use.

Commenting Party/Itemized Comments	Date of Letter	DEIS Section Reference and Comments*
26.10 The DEIS should disclose how the expansion area will be integrated into its overall phasing of operations, from cell construction to reuse, and whether phasing such operations would outweigh the benefits, if any, of maintaining portions of its operations at the makai portion of the property, i.e., support services and ash monofils. Discussions regarding whether impacts to the community and the environment could be minimized by closing/reclaiming/reusing the completed portions of the existing landfill closest to Farrington Highway and relocating its operations further into the gulch should be included in the DEIS. This could include relocation of the scale house, maintenance operations, and other noxious activities since much of the 92-acre expansion area is located at the northern portion of the property.		See response letter. "Preliminary site and engineering plans of the relationship of the proposed project to the existing area of use will be provided in the DEIS. The specific phasing plan has not yet been developed. However, the project phasing will be designed to minimize the potential for environmental impacts due to operation of the landfill." <u>Section 4. Project Description</u>, provides operational information on the proposed project including the preliminary construction drawing layout of the site.
26.11 Details should be provided as to what drainage and berming techniques will be applied at the property's mauka boundary since the gulch extends further mauka of the property line.		See response letter. "A discussion of drainage and geotechnical soils stability controls that will be implemented for the proposed project will be provided in the DEIS." <u>Section 4.6. Stormwater Management, Section 5.4. Surface Water</u>, and <u>Section 5.5. Groundwater and Hydrology</u>, identifies the considerations that were factored for the design of the site.
26.12 The DEIS should include a timeline showing all permit processing timeframes, start of construction within the expansion area, projected closure and reclamation of completed cells within the entire 200-acre property.		See response letter. "The schedule for the proposed lateral expansion of the site will commence upon approval of all required permits and land use approvals. The status of these approvals will be provided in the DEIS." "The rate of use of the proposed landfill cannot be precisely projected. This is because the capacity available will continue to be influenced by (1) the rate at which refuse is disposed of due to economic and population conditions, and (2) the rate at which refuse diversion efforts are successful." <u>Section 12. Permits and Regulatory Approvals That May be Required</u>, identifies the permits required and the proposed filing status of each.
26.13 The DEIS should include a visual analysis of the landfill from current conditions to closure and reclamation by cells/monofils from public vantage points such as Ko Olina, Farrington Highway, Makaiwa Hills, and Honokai Hale.		See response letter. "A visual analysis will be undertaken to assess the potential for adverse viewplane impacts associated with the proposed expansion of the site. This information will be provided in the DEIS." <u>Section 5.10. Scenic and Aesthetic Environment</u>, provides the visual assessment of the site including discussion regarding potential impacts and proposed mitigation measures.
26.14 A detailed landscape plan showing screening along Farrington Highway and proposed vegetation/topographic features on completed cells/monofils/other waste disposal site on the 200-acre property.		See response letter. Proposed mitigative measures that will include landscaping will be provided in the DEIS. <u>Section 5.10. Scenic and Aesthetic Environment</u>, provides a landscaping plan and other elements to mitigate the potential for visual impacts.
26.15 Initial construction activities for the expansion of the existing landfill may require grubbing, grading and stockpiling permits. Furthermore, a grading permit may be required for the final cover that will be placed prior to landfill closure.		See response letter. "The permits that may be required for the expansion of the site will be provided in the DEIS." <u>Section 12. Permits and Regulatory Approvals That May be Required</u>, identifies the permits required and the proposed filing status of each.
26.16 A drainage report may be required at a later date.		See response letter. "This is acknowledged. Information concerning stormwater drainage will be provided in the DEIS." <u>Section 4.6. Stormwater Management</u>, and <u>Section 5.4. Surface Water</u>, provides information that has been completed on drainage and stormwater control.
26.17 The DEIS should include a current (imaged in 2007) high resolution aerial photo of the entire 200-acre property.		See response letter. "A current aerial photograph will be provided in the DEIS." <u>Section 3. Introduction</u>, see Figure 3-3.
27. Robert Au	12/26/2006	
27.1 A fire that originated from the landfill burned down one of our homes, and we will now have to go through the new building permit procedures to have it established again.		See response letter. "We are not aware of a fire from the landfill causing the loss of the home that you describe. We ask that you contact us concerning this matter so that it can be properly investigated. Please contact Ms. Wilma Namumnart, of our office at 692-5358."

Commenting Party/Itemized Comments		Date of Letter	DEIS Section Reference and Comments*
27.2	We feel that the health qualities of living in this area are compromised, and that property values have been suppressed because of the current environment that the landfill has created.		See response letter. "A number of environmental factors will be investigated as part of the Draft EIS (DEIS). This will include air, hydrology and geology, flora and fauna, and socioeconomic factors associated with use of the site for the proposed project. Potential for adverse environmental effects will be researched and as appropriate, mitigation measures will be recommended to minimize or ameliorate the potential for impacts." Section 5.5. Groundwater and Hydrology, Section 5.7. Air Quality, Section 5.9. Flora and Faunal Resources, Section 7.1. Socioeconomic Characteristics, provides the infomration indicated in the response letter.
27.3	...A study should be done on the impact of Hawaii Electric's Kahe Power Plant and Waimanalo Gulch Landfill on the fresh water table in this area and the long term effects to our island.Kahe valley (Waimanalo Gulch) has a 10 year flood plane [sic] prior to the creation of this landfill. There is a stream bed with a bridge under this landfill which is a good indication what can happen at this location. We are very concern [sic] about this potential...		See response letter. "Although the City does not operate the Kahe Point Power Generating Station, the DEIS for the proposed Waimanalo Gulch Sanitary Landfill Expansion project will provide water quality and hydrogeological information on surface and ground water resources that may be affected by the use of the landfill. This research will be undertaken by a licensed professional. Data collected from the course of the study will be included as part of the DEIS." "Information concerning storm water drainage and planned drainage control features to ensure short- and long-term protection of the land and nearshore waters will also be provided." Section 5.4. Surface Water, Section 5.5. Groundwater and Hydrology, Section 4.6. Stormwater Management, Section 4.1. Construction Activities, and Section 4.2. Facility Operations, describes the site resources in relation to the proposed project, including potential impacts and mitigation measures.
27.4	It was presented to the public as a solid waste Waimanalo Gulch landfill, at a certain size, and set time limitation for it [sic] existence. The City has expanded and change [sic] these factors twice, and are now trying to do it again...It is time that agreements are honored, and not changed at the City's convenience.		See response letter. "Please refer to Section 1 of the EISPN that provided important information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of Oahu."
27.5	The landfill is part of a historical sight [sic]. Fort Arizona is located on top of a mountain ridge at Kahe Point adjacent to and part of "Waimanalo Gulch Landfill"...Currently, to get to it, one has to drive through the landfill.		See response letter. "Your recognition of the Battery Arizona site is noted. For clarification, we note that the Battery Arizona bunker complex lies within the landfill property, however, the location of the turret is within the adjacent Hawaiian Electric Company property. An examination of this site as well as other potentially important historical sites and features will be further described in the DEIS. As appropriate, mitigation measures will be recommended to ensure against adverse effects." Section 7.3. Historic and Archaeological Resources, provides a description of the archaeological and historic resources found on site, and includes discussion concerning potential impacts and proposed mitigation measures.
28.	**Ernest Y. W. Lau, Public Works Administrator**	12/27/2006	
	Department of Accounting and General Services		
	State of Hawaii		
28.1	Thank you for the opportunity to review the information regarding the subject project. We support the City and County of Honolulu's efforts in resolving the issues related to the island of Oahu's municipal refuse. We have no additional comments to offer at this time.		NA
29.	**Barry Fukunaga. P.E., Director of Transportation**	12/28/2006	
	Department of Transportation		
	State of Hawaii		
29.1	The EISPN discussed alternative actions involving transporting refuse to another landfill facility outside of Hawaii. If one of the alternatives involves possible use of facilities at the State harbors, particularly Honolulu or Kalaeloa Barbers Point Harbor, to collect and stage refuse before shipping, further EIS evaluation should fully analyze the impacts to handling refuse at the harbors, including the congestion already being experienced at the harbors.		See response letter. "The investigation of alternatives in the Draft EIS (DEIS) will include waste transshipment and the potential for impacts to harbor facilities under jurisdiction of the Department of Transportation (DOT). We appreciate there is congestion already present at the harbors and will note this in the DEIS. The full assessment of traffic impacts, however, should be investigated by the party or parties responsible for the transshipment of waste from Oahu for the specific locations where it is proposed." Section 9.4.6. Potential Issues with Waste Transshipment, identifies congestion as a potential issue.

Commenting Party/Itemized Comments	Date of Letter	DEIS Section Reference and Comments*
29.2 The EISPN stated that a traffic assessment report is being prepared. The report should address traffic conditions and ingress/egress at the landfill facility. Prior situations or events involving vehicle movements at the access on Farrington Highway should be reviewed, especially for incidents or conditions where improvements at and around the entry intersection may be needed. The report should also cover having sufficient on-site queue area for vehicle waiting lines to avoid any back ups at or onto the highway.		See response letter. "We confirm the traffic assessment will investigate traffic conditions and ingress/egress at the facility, review vehicular movement along Farrington Highway from and to the facility, and provide recommendations concerning vehicle queuing to avoid congestion at or onto the highway." Section 6.1. Traffic and Circulation, presents the findings of the traffic assessment and includes proposed mitigation measures.
30. Laura H. Thielen, Director	12/29/2006	
Office of Planning		
State of Hawaii		
30.1 The State has an affirmative duty to project Hawaii's nearshore waters. Please discuss how stormwater and wastewater generated by the project will be prevented from reducing the quality of nearshore water.		See response letter. "The Draft EIS (DEIS) will provide information on environmental management of stormwater and wastewater associated with the proposed project. Potential for impacts and proposed mitigation measures will be described to prevent degradation of nearshore state waters." Section 4.6. Stormwater Management and Section 6.2. Wastewater, provides information on stormwater controls and wastewater facilities to protect water quality.
30.2 Water resource protection is a critical State issue. The proposed project is within a designated Water Management Area. Please include information on the drinking water and non-potable water sources that will be utilized for the project.		See responses letter. "Information relating to water supply, public health, and cultural/historic resources is under investigation and will be provided as a part of the DEIS." Section 5.5.2. Site Groundwater and Hydrogeology, Section 5.5.3. Project Site in Relation to Protected Groundwater Areas, describes the water resources underlying the proposed project site. Section 6.3 Potable Water, identifies the Board of Water Supply as the source of potable water for the project.
30.3 If the project will have a potential to generate hazardous materials or result in the possible contamination of the air, soil, or water, please discuss how public health and safety will be protected.		Section 4.2.4. Material Acceptance, hazardous waste is considered an unacceptable material not for disposal in the landfill. Section 4.7. Regulation of Air Quality, Section 5.7. Air Quality, Section 5.3.2. Soils, Section 4.6. Stormwater Management, Section 5.4. Surface Water, and Section 5.5. Groundwater and Hydrology, describes the potential for adverse effects including generation of potentially hazardous materials, and proposed mitigation measures.
30.4 Please include an inventory survey of cultural and historic sites, with monitoring and preservation plans approved by the State Historic Preservation Division. Please discuss how access for Native Hawaiians for traditional and customary practices will be preserved to include visual landmarks if applicable.		Section 7.3. Historic and Archaeological Resources and Section 7.4. Cultural Impact Assessment, provide the results of the Arch. Inventory Survey and Cultural Impact Assesements conducted for the project including potential impacts and proposed mitigation measures. The sections will also describe the status of approval of any monitoring and preservation plans proposed.
30.5 Please include an inventory of flora and fauna on the project site and any required protections. Consider in the design of your field observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. In addition, a description of scenic resources should also be included.		Section 5.9. Flora and Faunal Resources, provides the results of botanical and faunal studies conducted for the proposed project. Section 6.10. Parks and Recreation, provides a description of recreational uses in the area. Section 5.10. Scenic and Aesthetic Environment, provides a description of te scenic and aesthetic environment of the site, including potential for impacts and mitigation measures. The design of vegetative treatments considering dry and wet seasonal changes are provided.
30.6 The State oversees protection of natural, cultural, and economic resources within the coastal zone. Please discuss how the proposed project will balance the competing values of economic development and preservation of coastal resources, including protection from hurricane, storm surge, flood hazard, volcano, and soil erosion as applicable.		Section 8.5. Hawai'i Coastal Zone Management Program, provides a discussion of the proposed project in relation to the objectives of the Hawai'i CZM Program.
31. Russell Y. Tsuji, Administrator	1/23/2007	
Department of Land and Natural Resources		
Land Division		
State of Hawaii		

Commenting Party/Itemized Comments		Date of Letter	DEIS Section Reference and Comments*
31.1	...the Department of Land and Natural Resources has no comment to offer on the subject matter.		NA
32.	**Lawrence T. Yamamoto, Director**	1/23/2007	
	Natural Resources Conservation Service		
	United States Department of Agriculture		
32.1	We have reviewed the above mentioned document and have no comment at this time.		NA
33.	**Melvin N. Kaku, Director**	1/23/2007	
	Department of Transportation Services		
	City & County of Honolulu		
33.1	The Draft EIS should identify which roadways will be providing access to the project site during construction of the landfill expansion.		See response lettter. Section 6.1. Traffic and Circulation, identifies Farrington Highway as the major roadway providing access to the site.
33.2	Comments should be requested from the State Department of Transportation (SDOT) because access to the landfill is from Farrington Highway, which is under SDOT jurisdiction.		See response letter. "Comments for the subject project have been requested from the State Department of Transportation who, in addition to the Department of Transportation Services, will continue to be consulted parties for the duration of the EIS process." Section 15. Comments and Responses to the EISPN, see comment letter from DOT, December 28, 2006.
34.	**Steven Y.K. Chang, P.E., Chief**	2/9/2007	
	Solid and Hazardous Waste Branch		
	Department of Health		
	State of Hawaii		
34.1	It is noted on page 2-5 that a 100-foot buffer will be maintained between landfill activities and the property line will be maintained. We note that the Makaiwa Hills residential development is proposed on land adjacent to the landfill. Ideally, buffers would be able to contain the impacts of landfill activities, such as odor and windblown litter, entirely within facility boundaries. We are concerned that the proposed buffers are not sufficient to minimize impacts on housing and/or associated land uses.		See response letter. "The area of buffer is intended to remain free of actual landfilling and placement of waste. As required, other measures to reduce the potential impacts of nuisance concerns including odor and windblown litter will be described in the Draft EIS (DEIS)." Section 4.2.3. Environmental Controls, provides information on management of litter, including windblown litter, and odor. Section 7.2. Land Use and Ownership, provides information on mitigation measures related to nearby properties to the landfill.
34.2	The SWS also notes that the proposed landfill expansion requires a solid waste management permit, and will address all other issues through the permit application process.		See response letter. "We acknowledge that a solid waste management permit application will be required for the proposed project and look forward to further working with you to address the requirements of the Solid and Hazardous Waste Branch." Section 12. Permits and Regulatory Approvals That May be Required, identifies the Solid Waste Management Permit.

Table 1-3

Summary of Final EIS Comments and Responses to the WGSL DEIS

Table 1-3: Summary of Final EIS Comments and Responses to the Waimanalo Gulch Sanitary Landfill Expansion DEIS

Note: This table contains a summary of the comments provided in Section 16-Comments and Responses to the DEIS.
See Section 16 for the specific comments received and responses provided.

Commenting Party/Itemized Comments	Date of Letter	FEIS Section Reference and Comments*
1. Alvin K. Tomita, Acting Fire Chief	6/2/2008	
Honolulu Fire Department		
City & County of Honolulu		
1.1 The Honolulu Fire Department reviewed the materials provided and has no objections to the project.		We acknowledge that you have no objections to the proposed project.
2. George W. Niotta	6//2008	
2.1 Will there be no additional trucks taking trash to the dump? Will the [Kapolei] streets be less torn up by the increased traffic?		The answer to your question regarding additional trucks hauling refuse to the Waimānalo Gulch Sanitary Landfill Lateral Expansion site was addressed by the Traffic Impact Report, which is a part of the subject DEIS. According to the DEIS, Section 6.1.1. Traffic Impact Report, the existing and projected "with project" conditions indicated that "The critical traffic movements at the intersection of Farrington Highway with the WGSL (Waimānalo Gulch Sanitary Landfill) access road are expected to continue operating at LOS (level of service) "B" and LOS "C" during the AM and PM peak periods, respectively. The total traffic volumes entering the intersection are expected to increase by less than 1% during both peak hours of traffic with proposed expansion. These increases in the total traffic volumes are in the range of daily volume fluctuations along Farrington Highway and represent a minimal increase in the overall traffic volumes." The amount of increased vehicles entering the proposed landfill equate to approximately 11 southbound vehicles during the morning peak period (between 6:15 am and 7:15 am) and 31 southbound vehicles during the afternoon peak period (between 3:45 PM and 4:45 PM). This increase in traffic, while minimal, represents the provision of an important public service for Kapolei and all the island communities of O'ahu, by making possible the collection and disposal of municipal refuse.
2.2 I realize the City & County has made up its mind to expand the dump, but at least be honest-- "no adverse environmental impact" is definitely not true or honest.		The project DEIS represents major effort by the City and Waste Management of Hawai'i to identify potential adverse environmental impacts and appropriate mitigation measures to reduce or otherwise minimize the effects of the proposed project. No less than eight independent special studies and several engineering studies have been commissioned and are referenced in the subject DEIS. We urge you to review these documents and the mitigation measures that have been proposed to address the potential for environmental impacts.
3. Eugene C. Lee, P.E., Director	6/9/2008	
Department of Design and Construction		
City & County of Honolulu		
3.1 The Department of Design and Construction has no comments to offer at this time.		We acknowledge that you have no comments concerning the subject project.
4. Boisse P. Correa, Chief of Police	6/10/2008	
Honolulu Police Department		
City & County of Honolulu		
4.1 This project should have no significant impact on the facilities or operations of the Honolulu Police Department.		We acknowledge that the proposed project should have no significant impact on the facilities or operations of the Honolulu Police Department.
5. Craig I. Nishimura, P.E., Director	6/13/2008	
Department of Facility Maintenance		
City & County of Honolulu		
5.1 We have no comments to offer as the facility does not impact us.		We acknowledge that you have no comments to offer and that the proposed project will not impact your Department.

Commenting Party/Itemized Comments	Date of Letter	FEIS Section Reference and Comments*
6. Yoshinori Imagawa	6/28/2008	
6.1 The company that runs the Waimanalo Gulch Landfill has had serious, repeated violations and fines in the past. There is no reason to believe that these violations or more troubling violations won't occur in the future.		It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimānalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaiʻi are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality). It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk, and we anticipate that based on these procedures, that sufficient safeguards will continue to maintain public health and safety.
6.2 It is unfair and unjust to approve the expansion of Waimanalo Gulch Landtill without first implementing curbside recycling inclusive of, but not limited to, green compostable waste, glass, paper, newspaper, aluminum and cardboard. Diversion and waste to energy programs must occur prior to, or in conjunction with any expansion.		The City believes that curbside recycling, waste diversion, and refuse to energy are all important programs that will contribute to reducing our islandwide dependency on landfilling. However, these programs, including a number of other alternatives cited in the project DEIS, will not by themselves completely eliminate the need for a municipal sanitary landfill. For refuse that cannot be further recycled or otherwise reused, a landfill must continue to remain a key element of the City's refuse management system even as it continues to explore, examine, and implement the waste diversion and refuse to energy systems that you identify.
7. Orlando Davidson, Executive Officer	7/3/2008	
Land Use Commission Department of Business, Economic Development & Tourism		
State of Hawaii		
7.1 We confirm that the site of the lateral expansion of the WGSL is designated within the State Land Use Agricultural District.		We acknowledge your comment.
7.2 In accordance with section 1 1-200-1 7(e), Hawaii Administrative Rules (HAR), a project description, including, among other things, a historic perspective, should be provided. We acknowledge the background of the WGSL provided in Section 2 of the DEIS, including reference to the recent action of the Land Use Commission (LUC) that extended the deadline to accept solid waste at the WGSL from May 1,2008, to November 1,2009. In the interest of full disclosure, please also include the appeals filed by the KO Olina Community Association (KOCA) and Colleen Hanabusa to the decisions of the City and County of Honolulu Planning Commission (Planning Commission) and the LUC in regard to the deadline extension.		This comment is acknowledged regarding the inclusion of the appeals filed. See Section 2.5. Historical Background of the State Special Use Permit, of the Final EIS (FEIS) for this project.
We understand that with the lateral expansion of the WGSL on the unused 92.5-acre portion of the 200-acre site, a minimum life of approximately 15 years for the landfill is projected. We further understand that prior to the closure of the expansion area, the City and County will initiate the search for the next landfill. We request that greater specification be provided regarding the municipal solid waste plans and policies of the City and County, including alternative technology and waste reduction strategies and programs, beyond the projected life of the WGSL.		The City's Draft Integrated Solid Waste Management Plan was completed in June 2008 after the publication of the subject DEIS. We will provide further information concerning the municipal solid waste plans and policies contained in the draft document in the forthcoming FEIS for this project.
7.3 In accordance with section 1 1-200-17(f), HAR, a separate and distinct section on alternatives which could attain the objectives of the action, including alternatives requiring actions of a significantly different nature, should be provided. At the LUC's March 6 and 7,2008, meeting on the deadline extension to accept solid waste at the WGSL, several commissioners noted that a district		This comment is acknowledged and will be addressed in the FEIS by indicating that both the filing of a new SUP application and/or a new Land Use District Boundary Amendment (LUDBA) application will constitute a viable means of addressing the use of the site for a municipal landfill. We add that the use of the site for landfilling purposes has been adequately and sufficiently addressed through the SUP filed for this project since 1989, when the site was opened for use.

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boundary amendment may be a more appropriate mechanism by which to seek the expansion of the WGSL rather than by an amendment to the existing special use permit (SUP). Accordingly, we request that the alternative of reclassifying the WGSL site fiom the Agricultural District to the Urban District be thoroughly addressed.		See Section 8.3. State Land Use Law, and Section 12. Permits and Regulatory Approvals That May Be Required, in the FEIS regarding the filing of a new SUP application and/or LUDBA application for this project.
7.4 In accordance with section 1 1-200- 17(h), HAR, the status of each identified approval should be described. Therefore, we request that to the extent possible the projected submittal dates (i.e., by month/year) of the various permit applications be provided.		The projected submittal dates for the land use entitlements and other pending permissions for the proposed project are not known at this time due to the pending EIS process that is currently underway. We can report, however, that as soon as practicable that these applications will be prepared and filed with the appropriate governmental agencies upon the conclusion of the current EIS process.
7.5 In accordance with section 1 1-200-1 7(i), HAR, the probable impact of the proposed action on the environment should be included. Review of the DEIS indicates that no inventory and assessment of arthropods on the 92.5-acre expansion area was conducted. Although the location of the subject property may not require that a comprehensive arthropod study be conducted, we request that this matter be addressed in the interest of full environmental disclosure. Additionally, a discussion on the existing civil defense conditions and potential impacts and proposed mitigation measures should be included.		This comment regarding arthropods is being investigated and will be addressed in the forthcoming project's FEIS in Section 5.9.4. Invertebrates, and Section 5.9.5. Potential Impacts and Mitigation Measures. The City Department of Emergency Management has been consulted concerning any civil defense related coordination that may be required. At this time the Department of Emergency Management has indicated no additional concerns or issues relating to the WGSL other than to note that the nearby location of the Battery Arizona site will not be used for public shelter given the condition of the facility. See attached Memorandum dated September 29, 2008.
7.6 In accordance with section 1 1-200-1 7(n), HAR, a separate and distinct section that summarizes unresolved issues should be included. To the extent that no decision has been rendered on the appeals filed by KOCA and Colleen Hanabusa to the decisions of the Planning Commission and the LUC in regard to the deadline extension, we request that they be identified as unresolved issues at this time.		This request is acknowledged. See Section 11. Unresolved Issues, of the FEIS which provides further information regarding this issue.
7.7 As you know, by Findings of Fact, Conclusions of Law, and Decision and Order Adopting with Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit issued on March 14, 2008, the LUC extended the deadline to accept solid waste at the landfill from May 1, 2008, to November 1,2009, subject to, among other things, the requirement that the Applicant report to the LUC every six months on the actions taken to alleviate the further use of the WGSL. We acknowledge that the DEIS (p. 9-36) references the expansion of the H-POWER garbage-to-energy plant that was approved by the Mayor on January 18, 2008. However, we request that this discussion provide greater specificity to include, but not be limited to, the nature of the expansion, the capacity of the expansion, the life of the expansion, and its role in alleviating the further use of the WGSL. We also request that the discussion on the transshipment of waste and curbside recycling be updated with the latest efforts of the City and County to implement such alternatives to refuse disposal at the WGSL.		While the specific operational details of the planned H-POWER expansion project will be provided in the EIS documentation prepared for that project, we can provide information concerning the City's consideration of Waste to Energy (WTE) facilities in relation to handling the refuse needs of the Island of O'ahu. This information is provided in Section 2.6.2. Waste to Energy (WTE) Capacity, in the FEIS. Section 2.6.4. Waste Transshipment to the Mainland, in the FEIS, describes current efforts and the relationship between waste transshipment and the City's refuse management system. The DEIS has provided information on the latest efforts of the City in promoting recycling to reduce dependency on landfilling. See Sections: 9.5.6. Expanded Recycling; 9.5.6.1. Improvements to Recycling Infrastructure; and, 9.5.6.2. Recycling to Energy.
7.8 Condition No. 5 of the LUC's Decision and Order Approving Amendment to Special Use Permit (D&O Approving Amendment) issued on June 9,2003, specified that the WGSL would be operational only between the hours of 7:OO a.m. and 4:30 p.m. daily. Clarification should be provided as to whether the current operational hours of the WGSL are proposed to be changed with its expansion.		The operational hours of 7:00 AM to 4:30 PM are not planned to be changed.

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7.9 Condition No. 19 of the LUC's D&O Approving Amendment also specified that the City and County shall implement by executive order or ordinance measures for, among other things, wood recovery, metal recovery, gypsum recovery, and enhanced enforcement of landfill bans. Clarification should be provided as to the efforts of the City and County to comply with this condition.		In order to sustain a successful material recovery operation, the amount of material available at landfill was reestablished in the 2006 Waste Composition study. The total metals in the landfill waste stream have decreased. Gypsum board has decreased to less than one percent of the total waste or approximately 1,500 tons. In the area of wood, amounts have decreased to a little over ten percent, with treated wood making up over half of the amount of wood available. While it is possible to attempt to recover metals, gypsum board, and wood, the amounts being landfilled are not sufficient to sustain a cost-effective program. Actions that the City is currently supporting include the State Beverage Deposit law and focusing on enhanced enforcement of landfill bans. City staff are assigned intermittently to the landfill and H-POWER to ensure compliance with bans. If any vehicle is in violation of the bans, they receive a 'first warning.' If the vehicle returns with a banned material the hauling company is warned that if deliveries continue the company will not be allowed to dispose of waste at the landfill. Waste hauling companies that have been issued warnings have complied.
7.10 In the DEIS, there are several references to the term potable water. We request that it be replaced by the term drinking water. We have been advised that although potable water has generally been used to mean drinking water, the Department of Health (DOH) uses the latter term specifically to indicate water for human consumption that is derived from surface water and/or groundwater and is regulated by the DOH pursuant to chapter 11-20, HAR.		We acknowledge your request and will augment the use of the term potable water as "potable/drinking water" in the forthcoming FEIS.
7.11 We request that the EIS explicitly reference the applicable category of action within chapter 343, Hawaii Revised Statutes, and chapter 11-200, HAR, that triggered its preparation.		We acknowledge your request. See Section 3.2. Purpose of the Draft Final Environmental Impact Statement, providing this information.
7.12 On page 8-12, the DEIS states that an SUP for the expansion of the WGSL must be obtained through the City and County of Honolulu. Notwithstanding the LUC's concerns about the appropriateness of an SUP in this matter, clarification should be provided as to whether the Department of Environmental Services intends to seek an amendment to the existing SUP or an entirely new SUP. Please be advised that in either case the LUC will have jurisdiction over the application in the event the Planning Commission recommends its approval. As such, Section 12 and other applicable sections within the DEIS should be revised accordingly. Finally, as part of the SUP process, the WGSL expansion is required to meet the SUP guidelines in determining an "unusual and reasonable" use in the Agricultural District pursuant to section 15-15-95, HAR. We believe that given the purpose of the EIS, it would be appropriate to specifically address said guidelines in the document.		At this time the City has not yet determined if it will file a new SUP and/or LUDBA for the proposed project. Section 12, Permits and Regulatory Approvals That May be Required, will be revised accordingly in the FEIS. As noted, while the preparation of a SUP and/or LUDBA has not been determined at this time, we acknowledge that the content of an SUP application when it is filed should meet the SUP guidelines and applicable regulations of law, and do not necessarily agree that this determination should be a part of the EIS process under Chapter 343, HRS.
8. Maribel M. Saelid	7/4/2008	
8.1 The company that runs the Waimanalo Gulch Landfill has had serious, repeated violations and fines in the past. There is no reason to believe that these violations or more troubling violations won't occur in the future.		It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimānalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawai'i are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality). It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk, and we anticipate that based on these procedures, that sufficient safeguards will continue to maintain public health and safety.

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8.2	It is unfair and unjust to approve the expansion of Waimanalo Gulch Landtill without first implementing curbside recycling inclusive of, but not limited to, green compostable waste, glass, paper, newspaper, aluminum and cardboard. Diversion and waste to energy programs must occur prior to, or in conjunction with any expansion.		The City believes that curbside recycling, waste diversion, and refuse to energy are all important programs that will contribute to reducing our islandwide dependency on landfilling. However, these programs, including a number of other alternatives cited in the project DEIS, will not by themselves completely eliminate the need for a municipal sanitary landfill. For refuse that cannot be further recycled or otherwise reused, a landfill must continue to remain a key element of the City's refuse management system even as the City continues to explore, examine, and implement the waste diversion and refuse to energy systems that you identify.
9.	Kelvin H. Sunada, Manager	7/6/2008	
	Environmental Planning Office, Department of Health		
	State of Hawaii		
9.1	Any project and its potential impacts to State waters must meet the following criteria: Antidegradation policy (HAR, Section 11-54-1.1), Designated uses (HAR, Section 11-54-3), Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).		This comment cites the water quality regulations of Hawaiʻi Administrative Rules, Section 11-54, Water Quality Standards, that apply to all projects in the State of Hawaiʻi.
9.2	You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form: Storm water associated with construction activities, Discharge of Hydrotesting water, Discharge of dewatering effluent. You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities.		This comment cites Hawaiʻi Administrative Rules, Section 11-55, Water Pollution Control, governing the requirements of the NPDES permit program in the State of Hawaiʻi. The ocean waters off of the proposed project site are designated as Class "A." This designation will require the filing of the NOI Form C, Construction Stormwater permit application which has been identified in Section 12, Permits and Regulatory Approvals That May Be Required.
9.3	For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge.		Please refer to our comment above.
9.4	You must also submit a copy of the NOT or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project.		We acknowledge the requirement that the SHPD be provided with a copy of the NOI Form C permit application for the proposed project.
9.5	At least 30 calendar days prior to the completion of the expansion, you must modify your NOI for storm water associated with industrial activity and Storm Water Pollution Control Plan to include the area of expansion and submit these documents to the CWB along with a $500 filing fee.		We acknowledge this requirement for the approved existing NPDES NOI Form B permit for the Waimānalo Gulch Sanitary Landfill.
9.6	Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the State's Water Quality Standards.		We acknowledge your requirement.
9.7	The draft DEIS states that a landfill gas to energy system may be installed. If so, the installation of this system may require a modification to the existing Title V permit.		We acknowledge your requirement.
9.8	We recommend that the contractors operate under a dust control management plan. The plan does not require the Department of Health approval, however it will help with identifying and minimizing the dust problems from the proposed project.		We acknowledge the recommendation and note that the provision for dust control has been provided in the Operations Plan for the Waimānalo Gulch Sanitary Landfill, as submitted to the DOH.

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10. Peter Rappa, Environmental Review Coordinator	7/7/2008	
University of Hawaii - Manoa		
Environmental Center		
10.1 Trying to determine the total picture of solid waste generation and disposal by looking at the various components is confusing. It doesn't seem to add up. Adding a discussion in Section 3 on the total amount of garbage collected, what goes into the landfill, what goes to H-POWER, what goes to green waste, and what is recycled would be helpful in understanding the magnitude of the problems and will aid in weighing the alternative waste strategies.		The Final EIS, Section 9.2.2. Composition of Waste Stream, will include tables to provide the information requested. The new tables will identify the amount of waste taken to Waimānalo Gulch and H-POWER, as well as an estimate of the amount of materials recycled. Tables will also be provided identifying the sector from which the waste was collected (residential and commercial), and the amount collected by the City and other waste haulers.
10.2 In [the Environmental Compliance Violations] section, the DOH and EPA violation notices are listed. While the DEIS adequately discusses the measures that have been taken to address the violations, there is no discussion on why these violations occurred in the first place. Without a mention of this, the discussion of the retroactive measures taken to correct the violations seems incomplete.		Both the City and Waste Management of Hawaiʻi acknowledge that the alleged violations have occurred because of delays in implementing and reporting operational activities at the landfill. All of the allegations that were brought to light based on the operator's self-reporting practices were either corrected or were in the immediate process of being corrected (e.g., addressing the atypical temperatures at the landfill with the EPA) when the notices of violations were issued in early 2006. The primary corrective step that has been taken since that time has been to improve the timeliness of correcting and then reporting the required information to the DOH and EPA. The DEIS identifies the steps taken to help prevent a future occurrence in Section 2.3. Environmental Compliance Violations and Section 2.4. Summary of Current Status.
10.3 The first full paragraph on page 3-6 contains the line "As an annual acreage, approximately 800 tons per day . . . . or delivered." What has acreage to do with tonnage of solid waste? Was this a mistake or is there some formula for equating amount of waste delivered with the amount of land used?		Thank you for pointing out this typographical error. The correct entry that will be provided in the Final EIS will read, "As an annual average, approximately 800 tons per day…".
10.4 The final line in the section of the DEIS dealing with final covering of the landfill states that the "site may request the DOH permit alternative cover in lieu of the Subtitle D prescriptive cover described above." What are other types of covering contemplated? Does the City and County have anything else in mind? If so, shouldn't they be discussed in the DEIS? Does Subtitle D allow for alternative covers for the landfill?		RCRA, Subtitle D, allows for the use of alternative cover. The alternative cover that is being considered involves a thicker soil cover to handle the root systems of the types of trees being considered at the landfill. The tree types being contemplated will be similar to those found on the surrounding terrain. Native or other trees with a long tap root will not be used. Also, boulders may be added to enhance the appearance of the site.
10.5 How much waste is usually excluded per day under the Unacceptable Waste Exclusion Program?		This waste amounts to less than 1 percent of the refuse disposed of at the landfill.
10.6 In the management of unacceptable waste, hazardous waste is stored in a temporary storage area for 90 days after the accumulation of 220 pounds or more. What happens to the hazardous waste after the 90 day period expires? Why wait 90 days after it reaches 220 pounds, why not just dispose of it then?		Waste identified as "hazardous" is collected for temporary holding in a specially designated site that is designed to contain the waste and prevent exposure paths to the environment. A typical hazardous waste item for example, is a car battery. The reason for the safe storage of this type of waste prior to removal to an approved disposal facility is to minimize the number of trips involving the transport of these types of materials.
10.7 What does the groundwater and gas monitoring consist of? Are they devices that are placed in the ground that detect gas and record the data on graph paper? Are they gauges that are periodically read? How is monitoring carried out?		The groundwater and gas monitoring systems consist of the use of subsurface wells for the collection of samples. Sampling of these wells are by trained third party personnel who collect the samples according to industry standard practices that involve chain of custody, quality assurance/quality control procedures, and other protocols that govern the length of time and conditions under which a sample is collected prior to analysis. The samples are submitted to a laboratory certified by the State DOH. The results of all analyses, including the supporting documentation establishing that the samples were collected properly are provided in a report that is submitted to the DOH.
10.8 In Section 4.6.1 the DEIS mentions that the landfill stormwater management system is designed and constructed to manage runoff from a 25-year, 24-hour storm. What about a 100-year storm? How did the site fare during the January 2007 rain events?		The 25-year storm was used as an industry safety standard that was compliant with the City & County of Honolulu. The handling of stormwater for a 100- year storm event would involve considerable retention and drainage system sizing requirements that are not considered feasible or reasonable for the WGSL. The performance of the WGSL during the January 2007 rain events were satisfactory and provided for the sufficient control and treatment of stormwater runoff.

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10.9 In the section on landfill gas temperatures, it is mentioned that WGSL has temperatures exceeding the EPA specified maximum temperature. Other approved mainland landfills with temperatures exceeding EPA limits are then listed. Absent from this discussion is a mention of the actual temperatures found at WGSL.		The wells with temperatures above the EPA's standard operating temperature of 131° Fahrenheit average approximately 165° F. One well has had an isolated temperature reading of 184° F, which is the highest recorded temperature of any well at the landfill. This information has been submitted to the EPA. See Section 5.7.3. Potential Impacts and Mitigation Measures, of the FEIS relating to landfill gas emissions, relating to a discussion on the LFG (landfill gas) Collection System, providing this information.
10.10 The DEIS states that hydromulching has not been very successful on top of the filled areas due to dry conditions at the site. The DEIS continues by stating that landscaping and the further use of irrigation will promote vegetative growth similar to that found on the adjoining hillsides. Can you provide more details on why there has been little success with revegetation, and how new action plans will remedy this?		The initial difficulty with vegetative growth involved the dry and low rainfall conditions of the Leeward side of O'ahu. The sporadic level of rainfall received at the site was simply not conducive to growth. The new plan will address this constraint by selectively targeting smaller portions of the site with as many "targets" as can be provided while meeting the water conservation requirements of the Board of Water Supply. An important feature of the plan is to more efficiently use irrigation while recognizing that the contours of the landfill are subject to change as various portions of the site are filled. Landscaping will therefore follow the filling of the cells. In order to do so, the new system will employ a central trunk water line that will run across the slope of the landfill and use perforated feed lines that run from the central trunk line. We expect that this will constitute an improvement over the prior practice of using rigid perforated water hoses that were prone to breakage whenever it was necessary to move or relocate the water hoses.
10.11 In this section the DEIS states "For several years, Hawai'i residents have responded to polls on the major issues facing the community by pointing to the economy and education as the most important issues for the State (Figure 7-1). Environmental issues . . . do not achieve the same salience." Figure 7-1 illustrates the relative expressed importance of the economy, education, traffic, housing, and drugs, but the issue of then environment does not appear at all. Is this because Hawai'i residents were not given thenoption of choosing the environment as an issue (a structured poll), or because it was mentioned so infrequently that it would not show up on the graph?		The question that was posed to those interviewed was open-ended allowing them to select the environment if they chose to do so. While SMS Research has noted that the environment is becoming of increasing concern to Hawaii residents it does not come up in numbers that exceed one to five percent of the population.
10.12 The DEIS states that the value of the community benefits were identified as $2.7 million in 2007 and $2.0 million in 2008. While the specific benefits that will be distributed in the future have not yet been determined, can you provide more detail on the benefit packages provided in previous years?		The community benefits initiative is a new program that was started by the current City Administration. Prior to 2007, there were no community benefits initiatives associated with the project.
10.13 There are a number of technology driven options examined in the first half of the lengthy discussion of alternatives. Each of these is evaluated as an all or nothing choice. There is no reason why several options might be considered in tandem that could address the need for the City and County to address it solid waste situation. Some of these methods taken together could lead to the closure or at least lead to a drastic reduction in the use of the landfill. There is also incomplete information about the cost of each of these options. Could not reasonable estimates of cost be found so that the options could be compared?		The alternative technologies to landfilling provided in the DEIS have been used in sizes smaller than noted. The size used in the DEIS was as specified by the City to define the project types that would be considered in its Invitation for Bid (IFB) for alternative technology. The Final EIS will provide discussion of the use of multiple smaller technologies. See Section 9.6. Alternative Technologies to Refuse Disposal, subsection 9.6.1. Introduction. Concerning the cost of the technologies, many of the alternatives evaluated have not had a full scale project built. Some have. To compare the cost of these two disparate conditions would result in an inaccurate and unfair evaluation. In addition, site specific factors must be reflected in the cost of a facility and those need to be estimated based on preliminary engineering data that was unavailable for most of the technologies.
11. Colleen Hanabusa, Senator, 21st District	7/7/2008	
The Senate		
State of Hawaii		
11.1 Section 2 Project Background -- This section begins with the incorrect conclusion that WGSL is 'essential and necessary' for the City and County of Honolulu ('City'). WGSL is deemed to be essential and necessary only because no action has been taken by the City in truly exploring alternatives to landfilling on this island.		The City is responsible for providing for the disposal of waste materials. Currently the primary disposal methods in use are recycling, landfilling and incineration. As explained in the DEIS, WGSL is the only currently permitted municipal solid waste ("MSW") landfill on Oahu. Any alternative landfill location other than Waimanalo Gulch will take time to select, acquire and permit. H–POWER handles the majority of the MSW that is disposed on the island. Waimanalo Gulch provides disposal capacity for the ash and residue from H–POWER and is a permitting requirement for H–POWER to operate. Since the Waimanalo Gulch is the only currently permitted MSW landfill and since H-POWER is required to take ash and residue to a permitted landfill, the Waimanalo Gulch Sanitary Landfill ("WGSL") is "essential and necessary."

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11.2 An honest discussion is lacking in the DEIS as to why the City delayed in bringing the expansion to the public. News media reports of comments by the Planning Commission of the City and County (‘PC’) and the Land Use Commission (‘LUC’) evidence that these decision makers were also not pleased with what could be construed as a deliberate delay to request the extension. This expansion request will also be construed as leaving decision makers no alternative but to grant an extension.		On June 9, 2003, the LUC issued its Decision and Order Approving Amendment to Special Use Permit (“2003 LUC Decision”). The City was ordered by the LUC to select a new site by June 1, 2004. The Mayor’s Advisory Committee on Landfill Siting (“Mayor’s Advisory Committee”) was formed in June 2003 by Mayor Harris to make a recommendation to the City Council as to a new site for the landfill. The Committee issued a list of 4 sites for City Council consideration on December 1, 2003, in accordance with Condition No. 1 of the 2003 LUC Decision. The City Council conducted an independent evaluation of the selection process used by the Committee, and determined that it was unable to make a decision by the LUC’s June 1, 2004 deadline. The City was granted a 6-month extension, to December 1, 2004, to make a decision on a new landfill site. The City also sought the LUC’s clarification as to whether Waimanalo Gulch could be considered by the City Council as the future landfill site. The LUC stated that such a decision was not within its jurisdiction. Accordingly, Waimanalo Gulch was then considered as a potential landfill site by the City Council. The City Council selected Waimanalo Gulch as the future landfill site on December 1, 2004. The current City administration took office in January 2005 and immediately began a review of the options for MSW disposal. This process took about a year to conclude. By early 2006, the City decided to proceed with the environmental review process for the future use of Waimanalo Gulch. In February 2006, the City Council passed Council Bill 37 (2005), CD2, which would have closed WGSL by May 1, 2008. Bill 37 was vetoed and the environmental review process for expansion of WGSL began in 2006. The EIS Preparation Notice was published in The Environmental Notice in November 2006. Stone uprights were identified in the proposed expansion area in the Spring of 2007. Due to a staff shortage at SHPD, the evaluation of the cultural significance of the stones was delayed. Because a cultural impact assessment is required in an EIS, completion of the EIS was delayed. Additionally, the City has been in the process of seeking to increase waste-to-energy capacity as an alternative to landfilling and to transship refuse to be landfilled on the mainland. In both cases, the results to date have been reflected in the DEIS. Because it was clear that given the delays related to evaluation of the stone uprights the City would be unable to complete the EIS and receive the proper permits before the May 1, 2008 deadline for cessation of waste acceptance at WGSL, the City sought a 2-year extension based on the fact that there was additional unused capacity. Ultimately, an 18-month extension was granted.
11.3 Blue Ribbon Commission - Much of this DEIS is based upon the Mayor's Advisory Committee on Landfill Site Selection (‘Blue Ribbon Commission’). What the DEIS fails to address is that this Blue Ribbon Commission, having been staffed by R.M. Towill provided the members with inadequate information or incorrect information to fulfill their task.		The process followed by the Mayor’s Advisory Committee is detailed in the EIS. The Mayor’s Advisory Committee’s recommendations were made based on its own selection of criteria it considered important to the selection of an alternative landfill site. R. M. Towill supported by Pacific Waste Consulting Group, SMS Research, Cultural Surveys Hawai‘i, and the City gathered the information requested of it by the Committee. Site specific information was sought in a number of instances, but access to some of the potential sites was either denied or delayed (until late in the LUC timetable) by the landowners of four of the five sites. As a result assumptions that were shared with the Committee were made to enable a reasonable comparative analysis. Although there was significant technical data about WGSL available, in order to put all of the sites on an equal level for comparison, the “no excavation” assumption and other assumptions were used for the evaluation. These assumptions were documented in the data sheets that were provided to the Committee.

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11.4 Though much is made about violations of the Sunshine law, what is lacking is an honest discussion of the flawed information which was provided to the Blue Ribbon Commission. Response by the City that R.M. Towill is not expected to know what the conditions of the land is absolutely laughable. The entity which has prepared all EISs in recent history and who is well aware of the Contract entered into to extend the management contract with Waste Management Hawaii, Inc. (‘WMI’) for the landfill operations at WGSL, cannot argue ignorance. It is of significance that the City finally admits that one of the criteria to assess the sites was no excavation. How R.M. Towill or the City could present WGSL expansion for 20 years with no excavation is akin to bad faith. The City and R.M. Towill was definitely on notice and failed to inform the Blue Ribbon Commission of this fact.		This comment regarding the City's contract with Waste Management of Hawaii, Inc. (“Waste Management”), and the comment regarding "no excavation", are similar to comments made in earlier letters from you dated August 30, 2006 and December 26, 2006. We offer the following response, which is consistent with earlier responses: The contract amendment dated May 1, 1999, provided for the expansion of the Waimanalo Gulch site. Subsequently, the prior administration decided on a five-year limit for the use of the site. The contract was not amended to a shorter term because the exact date of termination could not have been determined. Although the contract was not amended, the City retains control of the contract and can terminate it at any time when it is in the best interest of the City. As provided in Contract Special Provision 29, the contract can be terminated, “… in whole or in part, whenever the Director shall determine that termination of the contract, in whole or in part, is in the best interest of the City.” (Letter to Colleen Hanabusa from ENV, May 12, 2008) Waste Management, consultants, and the City all understand this provision. The contract is a publicly available document. Regarding "no excavation": The no excavation remark that you cite comes from the Waimanalo Gulch Expansion, Potential Landfill Site Data Sheets, prepared for the Mayor's Advisory Committee on Landfill Siting, October 2003. The specific reference is to information provided for Criteria No. 23, Landfill Capacity or Site Life. According to the data sheet, "The volume was calculated assuming a 100 foot buffer around the site boundary, 30 acres for infrastructure facilities, no excavation, and filling to the natural grade." The rationale for not incorporating excavation as a factor involved the following: A. It was not in the consultant’s scope of work to do field studies including drilling borings to obtain subsurface information. This is typically the case when doing preliminary siting studies due to difficulty in gaining access to the property, the extensive time required for such studies, and the high cost of doing field studies. Without these studies, it is not possible to determine excavation depths or difficulty with any degree of certainty. Therefore, it is typical to assume minimal or no excavation in order to compare site capacities; B. Criteria No. 23, therefore, was established to provide an estimate of capacity only based on: an area adjusted with an approximately 100 foot buffer around the perimeter of the site; the use of 30 acres for infrastructure to operate the facility; no detailed engineering calculations incorporating soils conditions to produce information on excavation; and filling of the site to the natural grade of the terrain of the finished site. It is incorrect to conclude or imply on the basis of information from the data sheet alone that in the course of developing a landfill site that no excavation would be required. See Letter to Colleen Hanabusa from ENV, May 12, 2008.
11.5 The Contract between WMI and City should be made a part of the Appendices for the Final Supplement EIS to be accurate and complete.		The contract between the City and Waste Management is a matter of public record and is publicly available for those who may wish to view it. The absence of the contract in the Appendices will not affect the accuracy, nor completeness, of the EIS.
11.6 In addition, the Appendix which is found in Volume 3 of 3 fails to include those pages which address the criteria as well as how the alternative sites were evaluated by R.M. Towill. This should definitely be included for all to review.		The full Report of the Mayor’s Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection dated December 1, 2003, which addressed the 31 criteria used by the Mayor’s Advisory Committee as well as how alternative sites were evaluated, is attached as an exhibit to Appendix K of the DEIS, and located on the City’s website at http://www.opala.org/solid_waste/archive/Mayor%27s_Advisory_Committee_on_Landfill_Siting.html. Additionally, a description of the criteria and evaluation process is located on pages 9-51 to 9-73 of the DEIS.
11.7 Under Section 4 of this letter, there will be a discussion of the costs. Cost which was a criteria for the Blue Ribbon Commission had very minimal expenses for WGSL because of the lack of excavation. This is again shown to be an incorrect statement.		Costs are addressed below in responses to comments 35 and 36.
11.8 DOH Violations - The so called alleged efforts of the City to address the Department of Health's Notice of Violations (‘NOV’) and how to prevent them in the future need more details. This is especially true in light of the subsequent allegations of mismanagement and the recent lawsuit regarding the City's rebate of tipping fees to Schnitzer steel.		As a result of the NOV, and new regulations and requirements, additional provisions were included in the revised landfill operating permit. Furthermore, the Department of Health, State of Hawaii (“DOH”), has greatly increased the frequency of its site inspections and review of the required operating documents.

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What is of significance is the issue of what is the City doing to monitor what is being placed in the landfill. It is also important that irrespective of whether the violations were 'settled;' there is still lacking information as to how and where the asbestos was buried. This is hidden in the violations regarding the reporting to the DOH.		Finally, City staff is in constant contact with Waste Management and addresses issues that may arise on a daily basis. City staff does an initial screening of what is being placed in the landfill when the delivery vehicle is at the scale house. Waste Management does further screening as the waste is disposed of at the working face of the landfill. The City co-authors or receives copies of all reports submitted to DOH. The allegations in the Schnitzer Steel lawsuit – to which the City is not a party – have yet to be proven, and in any event, Schnitzer Steel provides annual certification that the recycling residue in question meets all legal requirements for landfill disposal. Asbestos is handled in accordance with Part II, section C, of operating permit dated February 20, 2008, which is publicly available.
11.9 The exceedance of grade is a critical issue as to future monitoring and there needs to be a more detailed discussion as to how this will be avoided in the future.		After extensive review and a stability analysis, DOH approved the grade modification to WGSL. A ground survey is performed on a bi-monthly basis to compare existing grades with approved grades. DOH is responsible for enforcement at the site and determines the frequency of its inspections. See also Section 2.3.1. State Department of Health of the FEIS, for further discussion.
11.10 EPA Violations - It is unacceptable to merely address these violations as "resolution pending." In light of this Department and the City's battles with the EPA on the sewer systems, it is important to cover in this DEIS the relationship between the two, if any.		The primary violation in the EPA Finding and Notice of Violation ("EPA NOV") was the late installation of the gas collection system, which was self-reported. It was installed and operational by November 2005. Subsequently, the EPA issued its NOV in April 2006. Thus, what led to the initial violation was corrected. In addition, EPA alleged that the WGSL continues to operate in violation of EPA regulations because the WGSL's wellhead gas temperatures exceed 131°F in some of the landfill gas wells. Waste Management continues to monitor and evaluate the potential causes of the elevated gas temperatures and has provided documentation to EPA and DOH to demonstrate that the Landfill can be safely operated at these higher temperatures. Waste Management will continue to coordinate appropriate measures to maintain compliance with all regulations as required by law. There is no relationship between this EPA NOV and the City's sewer systems. See also Section 2.3.2. U.S. Environmental Protection Agency, of the FEIS.
11.11 More importantly, what is lacking is a discussion as to what the City has done in terms of contract evaluations and performance evaluations of its operator, WMI. Given the nature of their violations and the magnitude, the DEIS is required to provide this information to the public.		To evaluate operations performance, the City hired a third-party engineering consultant to evaluate landfill operations. They concluded that Waste Management was performing at a satisfactory level. Waste Management also contracted with another third- party engineering consultant to evaluate the effect landfill operations may have on neighboring areas and has shared data with the City. The City's staff meets weekly with Waste Management's staff to discuss landfill operations. In addition, the City's Refuse Disposal Engineer is in daily contact with Waste Management's General Manager regarding operations at WGSL. See also Section 2.4. Summary of Current Status, of the FEIS.
11.12 Section 3 Introduction - This introduction is lacking in that it fails to set forth that this is a project which was promised to be closed by the prior administration and this Mayor as well.		The City acknowledges that prior commitments were made by previous administration officials to close WGSL by 2008. See also pages 2-2 and 2-3 of the DEIS. This position was overridden by the subsequent City Council selection of WGSL as the location of the City's future landfill as described in section 2 of the DEIS. The City is unaware of any commitment by the current administration to close WGSL.
11.13 Moreover, in that the City has chosen to address the requirements of a DEIS in this section of its document, it should be clear as to exactly what is required, such as: Department of Health Rules ('HAR') § 11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The 'General Provisions' highlight the expectation of the EIS process. . . . An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision makers will be enlightened to any environmental consequences of the proposed action.		The DEIS was prepared in accordance with Hawaii Revised Statutes ("HRS") Chapter 343 and Title 11, Chapter 200, of the Hawaii Administrative Rules ("HAR"). The environmental review process allows for public input, such as your letter, which benefits the integrity of the review.

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11.14 Clearly, this DEIS is a self serving recitation and a rationalization of what the City wants to do. The Rules require that these statements be prepared at the earliest opportunity and it is evident that the City chose to wait until the last possible moment. The argument which the City will raise is the discovery of stone outcroppings. However, the City chose to file this DEIS without a determination by the EPA on the violations at WGSL. When it has been convenient, the City has chosen to act so that there is no time for any viable alternative.		See the response at pages 1-2 of this letter regarding the EIS process and timeline. A cultural impact assessment is a necessary component of an EIS in accordance with Hawaii law. This assessment could not be completed until the cultural stone uprights were evaluated. This evaluation and the cultural impact assessment have been completed, however, the final preservation plan for the stone uprights is currently being developed, and has therefore, been identified as an unresolved issue in Section 11 of the DEIS. The City, Waste Management and SHPD will work to ensure that an appropriate preservation plan is put into place. Resolution of the EPA NOV is not required to complete this DEIS. The EIS is an informational document and provides the current status of the EPA NOV. It cannot predict the resolution of the EPA NOV. The City did not wait for completion of the negotiations with EPA to complete the EIS as doing so would have further compressed the schedule. The EPA operates on its own schedule.
11.15 Figure 3-2 in this section depicts expansion which will exceed the present SUP boundary. This means that the expansion is expected on the lower portion of WGSL nearest Farrington Highway which will make the landfill more visible to the residents. This expansion will take all of the 200 acres at WGSL minus a 100 foot barrier around the perimeter of the property boundary.		The extent of proposed landfill expansion area is shown in Figure 3-2, Figure 4-6, Figure 5-1 and Figure 5-3 of the DEIS, and these figures show that expansion will occur mauka and northeast of the currently permitted area. The area south of Ash Cells 1 and 8, which you referred to as the “lower portion of WGSL nearest Farrington Highway,” is currently permitted for facilities, but not for landfilling. That area is already a part of the permitted footprint and is expected to continue to be used for facilities. The lower portions of the expansion area, as depicted on Figure 3-2 will be used for accessory uses, not landfilling. See also Figure 4-6 (Approximate Final Grading Plan and Proposed Stockpile Location). Surface treatments including landscaping will be done to improve the appearance of the site.
11.16 Section 4 Project Description - It is interesting that the City refuses to acknowledge that WGSL is located near Ko Olina. Ko Olina has a community and is marked as the Second Resort destination for the Island of Oahu. In these difficult economic times, it would be significance to know that location of the landfill to a major economic engine for the City and the State of Hawai`i.		The DEIS clearly shows the location of Ko Olina and its proximity to WGSL in Figures 7-3, 7-4, and 7-5. Section 7.2., Land Use and Ownership, clearly acknowledges the presence and importance of Ko Olina as one of several regional land uses in proximity to WGSL.
11.17 Given that there has been a contested case hearing recently completed on the WGSL, it is of interest that the sworn to testimony of the City officials are not included in some form or another.		The transcript of the Contested Case Hearing is a publicly available document. It is not necessary to recite or attach the transcript to the EIS. However, where your comment misstates testimony, the corrections are noted below.
11.18 For example: Frank Doyle testified that he was Chief of the Division of Refuse when WGSL was initially selected. He confirmed that the original Environmental Impact Statement (‘EIS’) stated that only 59 or 60 acres was suitable for landfill use. (For ease of reference, the "Tr." refers to the transcript in the Contested Case Hearing held on December 7, 2007, followed by the page numbers Tr. 215 and 217).		Mr. Doyle testified that the first EIS contained a reference that WGSL contained “59, 60 [acres], somewhere in that area” of land good for landfilling. See Transcript at 217. Please also refer to comment 29 below.
11.19 You, [sic] Mr. Takamura testified that to expand WGSL under the 17 year contract with WMI, 8 million cubic yards of native soil will have to be removed to create 15 million cubic yards of airspace (landfill). (Tr. 67-68).		Dr. Takamura testified that it sounded familiar that 8 million cubic yards of native soil will have to be removed to create 15 million cubic yards of airspace. See Transcript at 68.
11.20 WGSL is up the side of a mountain. In the present expansion of WGSL by the 14.9 acres, WMI encountered blue rock and has been blasting to expand WGSL. (Tr. 177-178). Paul Burns, former manager of WMI for WGSL, testified that grading has been done at WGSL which is outside the permitted 14.9 acres and is where blue rock has been encountered. (Tr. 149). It is for sloping of rock faces and drainage. (Tr. 150). In the E-3, E-4 area as much as 700,000 cubic yards of blue rock was removed. (Tr. 152-153).		Mr. Burns testified that drainage, grading and sloping of rock faces for safety reasons has occurred outside of the 14.9 acre expansion area designated for landfilling. See Transcript at 150. Mr. Burns also testified that rock “probably in the 700,000 cubic yard range” was removed from Cells E-3 and E-4. See id. at 152-53.
11.21 At the landfill, leachate is created. Leachate is ‘the decomposition of organic matter . . .produces CO2; if it's anaerobic, it produces methane, and the other end product is water. There's also water in — loose water with the material we grab or dispose of, so when it decomposes and breaks down, water seeps to the bottom . . . where the liner is and it collects there. . .’ (Tr. 71).		Dr. Takamura testified as follows: In the decomposition of organic matter, I guess the biological activity produces CO2; if it’s anaerobic it produces methane; and the other end product is water. There’s also water in -- loose water with the material we grab or dispose of, so when it decomposes and breaks down, water seeps to the bottom of the -- where the liner is and it collects there and it goes to the low point, and that’s what we term “leachate.” See Transcript at 70-71.

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11.22 Count I of the NOV is entitled 'Exceedance of Permitted Grades' and is relevant to the representation of the capacity at WGSL. (Id. at 2). In Count I and as testified to by Burns, permitted capacity in the ash monofill area was filled and exceeded in 2004 by 100,000 tons. (Tr. 168). In addition, 129,200 cubic yards of Municipal Solid Waste ('MSW') was placed above permitted grades. This computes to about 91,000-100,000 tons. (Tr. 168-169). When the DOH learned of these violations, it had originally told WMI to re-grade the ash monofill area and remove the excess MSW to the back portion of the landfill. (Tr. 248). An alternative provided to WMI was to construct the berms to address the stability issue. (Tr. 250).		Paragraph 9 of Count I of the DOH Notice and Finding of Violation (NOV) provides, "In a letter dated February 3, 2005, Waste Management states 'approximately 100,000 tons of ash delivered from the H-POWER facility has been placed above the current permitted grades of the ash monofill'. The February 3, 2005 letter further states that the placement of ash occurred during 2004." Mr. Burns testified that he was unable to answer whether 100,000 tons of ash had been placed above current permitted grades in the ash monofill because that was before he arrived in Hawaii. See Transcript at 167-68. Paragraph 11 of Count I of the DOH NOV provides, "With a submission dated February 22, 2005, showing 2005 topography and master plan final grades, Waste Management noted that 139,485 cubic yards of ash and 129,240 cubic yards of MSW were placed beyond the permitted grades." As to paragraph 11 of Count I of the DOH NOV, Mr. Burns testified that 130,000 cubic yards was "about 91,000 tons, about there, 90-something thousand?". See Transcript at 168-169. Gary Siu of DOH testified that DOH asked Waste Management and/or the City to regrade the ash on the Waianae side, and to remove the overfilled area in the MSW area and take it to areas with capacity. See Transcript at 248. Regarding the berm, Gary Siu testified, "The construction of the ash -- the berm to stabilize the ash was done -- because when they told us that they overfilled it, I believe there's a letter signed by Larry Lau putting some options in front of them, and the option they chose was to build a stability berm." See Transcript at 250.
11.23 A 'toe berm' was constructed at the 'toe' of the ash monofill when Takamura was Director to address the overall stability of the WGSL. (Tr. 56 and 58).		Dr. Takamura stated that Colleen Hanabusa should ask the engineers about the purpose of the toe berm. See Transcript at 56. He testified that he understood that his approval was needed for the construction of the toe berm because "[i]t's part of the operations of the Waimanalo Gulch landfill." See id. at 57. Dr. Takamura further testified that the toe berm was already being constructed prior to a meeting with DOH regarding the NOV. See id. at 58. He believed that there had been discussions about stability prior to his meeting with DOH. See id.
11.24 Takamura testified that stability issues are common when you touch a slope and WGSL is up the slope of the mountainside. (Tr. 60). Burns conceded the stability concerns and described WGSL as a canyon and once the valley is filled (the gulch) then when the expansion is upward, there is an effect throughout the whole facility. It is similar to stacking on the top and the effect will be there for the lower area. (Tr.159- 160).		It is unclear what "Burns conceded the stability concerns" means. Specifically, Mr. Burns testified, "As you mentioned earlier, we've got a canyon fill or a valley fill, and that valley, it's a 'V' shape, in very simplistic terms a 'V'-shaped gulch and it's not flat, it kind of points uphill; so, whatever you do on the upper reaches has an effect, pretty much through the whole facility..." See Transcript at 158-59. In response to the question "[B]ecause of what I consider the stacking -- just a layman person's perspective -- stacking of the MSW and the landfill that you -- that the decision was made that at the ash monofill, the bottom area, that the height should be reduced for stability?," Mr. Burns testified, "They all kind of go together." See id. at 159.
11.25 Due to the topography of WGSL, there are three stability berms. One is for the ash monofill area and called the 'toe berm.' The others are the E-1 berm and the West berm. (Tr. 151). The E-1 berm was constructed in late 2005 to 2006 and the West berm in 2006-2007. (Tr. 164). All three berms were constructed with blue rock from primarily the E-3 cells. (Tr. 177-178). The West berm was constructed to stabilize the landfill as the east side (E cells) are being filled. As the east side fills the forces push the to the west side. (Tr. 254). These berms were stability berms which were a result of WMI overfilling WGSL. (Tr. 267).		Mr. Burns testified that he believed the E-1 berm was built in late 2005, maybe into 2006. See Transcript at 164. Mr. Burns also testified that the western berm was constructed with blue rock, that the toe berm was constructed with blue rock which primarily came out of Cell E-3, and that he was unsure where the material to construct the E-1 berm came from. See Transcript at 177-78. Mr. Siu testified, "As you fill the east side, the force is pushing on the west side." See id. at 254. In response to the question, "So, the stability berm is the ones that came in 2005?," Mr. Siu stated, "That's correct. And they're not a part of a permit application; they're part of a response to overfilling the landfill and potentially making a site unstable, which is what their analysis showed." See id. at 267. Regarding Mr. Siu's comment, the City clarifies that only the ash toe berm was added to address an isolated low factor of safety in some portions of the ash monofill caused by overfill. The E-1 berm and West berm were a part of the initial design for the 14.9-acre expansion of WGSL, and were not added at a later date to address an unanticipated low factor of safety. It should also be noted that Mr. Siu testified that he was not an expert on stability analysis and did not conduct his own stability analysis of WGSL. See id. at 260-261.
11.26 There needs to be a description of safety factors. For example the testimony has been: Safety factor at WGSL is calculated at 1.5; however anything above it is acceptable. (Tr. 172). The example given is that in the E-1 area the safety factor is less than 1.5; however the addition of the berm brings it up to 1.5. (Tr. 173). The safety factor affects the grades at the landfill.		Mr. Burns testified that Hawaii has a minimum safety factor of 1.5, and that anything above 1.5 is acceptable. See Transcript at 171-77. Mr. Burns provided a hypothetical example, "So, if we do a design without, say--for example, without a stability berm, in the E-1 area we may have a factor of safety below 1.5; it could be 1.4. You add that stability berm in place, it -- you know, it boosts your factor of safety to the 1.5. It just gives you that extra level of insurance." Id. at 173.

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For example if the factor was 2.0, the grades would need to be lowered. (Tr. 185). The stability factor at the ash monofill area before the toe berm was 1.29. (Tr. 248). A related issue is that WMI had used the wrong liner in that the 'textured liner' was not used and a 'smooth' liner was which called into question the resistance to movement of the landfill. There were at least two cells in the middle of the landfill with smooth liners. (Tr. 134).		Mr. Burns testified that if 2.0 was the factor of safety, it may affect WGSL's final grades or future designs. Id. at 185. He testified, "They would need to be lower, probably," and "There's some areas it would have no effect on; other areas it may have some effect." Id. at 185-86. Mr. Siu testified that he thought the factor of safety was 1.29 with the overfill in the ash area. Id. at 247-48. As to the liner issue, Mr. Burns testified as follows: So, during -- in 2001, while we were doing the design of the 14.9 acre expansion, we realized there were some cells constructed in the middle that were done with a different lining system. They were specified to be a -- what we call a "textured liner"; it's a real course, rough thing with a high-friction surface on it. There were a couple of cells that were built with smooth. Why? I can't answer; I wasn't there at the time. But the due diligence of that analysis brought that to light. So, what that means is, instead of having a real course friction angle in some of these cells, it's smooth, so it's not quite as resistant to movement. However, looking at it in the light of the whole project, I want to make sure that everybody knows the landfill was stable, there was no -- ever any sense or -- that the facility was going to slide. So, I want to make sure everybody is clear. Even though that friction value was lower in some areas, the whole site was stable and there was never any problems from that perspective. Id. at 134.
11.27 There are two types of safety factors, static and seismic. (Tr. 257). Seismic is when movement is anticipated and is calculated into the analysis. (Tr. 258).		Mr. Siu testified that the seismic safety factor is different from the static safety factor. See Transcript at 257. As to the seismic safety factor, Mr. Siu testified, "There's a number of ways to do seismic. You can do it by using what they call a pseudostatic; and that is, you try to analyze in such a way that there would be no movement, and then you would, again, have a factor of safety. The other way, which this facility is using is, they're using a deformation type of analysis, and there's a determination made as to how much deformation you will -- is appropriate to accept." Id. at 257-58.
11.28 In a report by EA Engineering, Science and Technology, Inc., the stability factor of 2 is what is proposed with the explanation that safety factors between 1.5 to 1.9 is acceptable when it does not 'pose and imminent threat to human health or the environment.' The proximity to Farrington Highway and Kai Lani subdivision suggest imminent threat and supports the increase to 2.0. Exhibit H at 6.		The EA Engineering Science and Technology, Inc. ("EA") Report introduced at the Contested Case Hearing was never authenticated by EA and was not signed by a licensed professional. Licensed and qualified professionals at DOH and experts retained to assist them will evaluate details of the landfill design. The safety factors, and other analytical approaches used by Waste Management to design the expansion, will be subject to extensive scrutiny to ensure the analysis is appropriate considering all conditions at this site.
11.29 What is clearly relevant to the general public and not set forth in this DEIS is the issue of the stability of the landfill and the requirement for the berms. It is very relevant especially when viewed in light of the first EIS which said only 59-60 acres were suitable for landfill. This is also important when viewed in light of the criteria of the Blue Ribbon Commission which included the statement that they would fill to "natural grade." (Criteria No. 23). The transcript of the Contested Case Hearing should be made a part of the Final Supplemental EIS as well.		The Revised Environmental Impact Statement accepted by the Director of Land Utilization on October 17, 1985 (the "first" EIS), stated that WGSL contained about 80+ acres of usable land. See Revised Environmental Impact Statement dated May 7, 1984, at S-5, S-7. The usable area was estimated based on the engineering knowledge, operational processes and regulatory environment at that time, all of which have changed since 1984. The usable area for a landfill is subject to continuing evaluation and change over time, as the science and engineering of landfills evolve. WGSL is an example. The preliminary design of the usable footprint is disclosed in Section 4 of the DEIS. The first EIS also mentioned that 57± acres will be used for the landfill. See id. at 2-1. One part of one of the 31 criteria used by the Mayor's Advisory Committee to provide a basis for comparative analysis of the sites was filling to natural grade. The Committee never assumed that any of the four sites, or an expansion at WGSL, would be designed as a landfill to the "natural grade." The final design of the selected site would consider the site specific conditions and would have to be approved by DOH. Regarding your suggestion that the transcript of the Contested Case Hearing should be made a part of the Final EIS, please refer to the response to comment 17 above.
11.30 Given the concern of the stability of the landfill and the recent earthquake on the Big Island, a discussion must be had as to what can be done if such a natural disaster caused the landfill to slip onto Farrington Highway. This discussion must look to the fact that expansion will be at the steepest part of the footprint of the parcel of land and the stress it will place on the existing landfill. The people of the Waianae Coast have only one way in and one way out.		The design of the Waimanalo Gulch expansion considers the seismic and other factors appropriate to the island and to the area of the site. Detailed stability analyses were completed during the project design. The design of the current SUP area and the proposed area of expansion will meet the EPA Subtitle D (40 CFR Part 258) standard for stability. The design of the expansion will be subject to review by appropriate City and State agencies when they evaluate the permit documents. See also Section 5.6.5., Potential Impacts and Mitigation Measures, pertaining to Seismic Activity (Earthquakes), of the FEIS.

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11.31 Stability of the Landfill must be analyzed in light of Figure 3-2 which shows the expansion throughout the 200 acres of land. It will be a total landfill with the exception of a 100 foot buffer.		As noted in the DEIS, the areas that will be used for MSW and ash cells do not encompass the entire 200 acres. Comments related to stability were responded to earlier in this letter.
11.32 Though mentioned earlier, the fact that City states in this section that it has a program to control the 'Contaminated Materials,' this is without basis. It is also without basis that the 'all documentation of asbestos disposal' is present on site. In fact, that is one of violations that WMI could not determine where the asbestos was disposed of. The asbestos disposal plan may set forth a plan; however, from the NOV we know that WMI did not follow that plan. It is unacceptable to simply state a plan and have no enforcement as to whether it will be followed.		Any waste that is not MSW is considered "special waste," subject to profiling as described in the Operations Plan, which is publicly available at WGSL. The description of the Operations Plan in the EIS, including the Asbestos Acceptance Plan, was developed to address proper waste practices and procedures. The Operations Plan addresses all safety regulations including those in the NOV. Accordingly, the policies and practices outlined in the EIS and detailed in the Operations Plans are more than adequate because they address the issues identified in the NOV. Moreover, the Operations Plan was reviewed by DOH during its evaluation of the grade modification permit application. This permit was approved on February 20, 2008. DOH has been actively reviewing and inspecting landfill operations. Questions now and in the future about the documentation of asbestos disposal will be handled as outlined in the Operations Plan.
11.33 As well, statements that their storm water or water drainage are managed is incorrect. Again, the NOV is on point and the amount of leachate which had to be pumped and dumped into the Waianae Sewage Treatment plant needs to be addressed.		Leachate is not allowed to co-mingle with stormwater runoff. Stormwater runoff is managed pursuant to the Surface Water Plan, and is unrelated to leachate management. While Count XV of the NOV related to a failure to submit the annual surface water (stormwater) plan, the leachate management issues are wholly separate from surface water and stormwater management issues. Again, the Operations Plan was developed to address proper waste handling practices and procedures, and includes extensive stormwater monitoring and surface water management. Leachate level issues related to pump and equipment failures were corrected as part of the NOV resolution. The leachate that is accepted by the operator of the Waianae Wastewater Treatment Plant was, and continues to be, handled in accordance with regulatory requirements to ensure public health and safety. Leachate is collected at the site, analyzed regularly through independent laboratory tests, and taken to the Waianae Sewage Treatment Plan where it is properly treated. The amount of leachate varies and the need to pump and dispose of it is monitored regularly. The monitoring reports are part of the documentation reviewed by the DOH inspectors and are publicly available. Pumping the leachate from the site and disposing of it at the Waianae Wastewater Treatment Plant are DOH-approved waste disposal practices. As noted in a memorandum to ENV from the operators of the Waianae Wastewater Treatment Plant, the leachate accepted by the plant for processing has had very little or no impact on the wastewater effluent quality that is being discharged to the ocean outfall. See October 2, 2007 memorandum from the Division of Environmental Quality to Frank Doyle, which was included as a part of section 15 of the DEIS. Leachate management and monitoring will be a part of the Solid Waste Operating Permit application.
11.34 Figure 4.9 seems contrary to the representations made to the Ko Olina community. Assuming that the color chart sets forth the sequence of the closure, then the area in the back of the landfill will be closed before the areas closest to Farrington Highway. This means that landfill operations will be visible from Farrington throughout the extended life of the landfill.		It is unclear what representations are being referred to regarding visibility of the landfill. The closure sequence depicted in Figure 4.9 does not reflect the cessation of actual landfilling operations, but rather the anticipated final cover of those areas. Final cover or closure cannot be installed until the landfill operations associated with the expansion area in the back of WGSL have been completed. The present plan is to continue filling along the west side of the landfill as the final phase of filling. These operations will start at the west stability berm and continue to the area of the ash monofil. It is important to recognize that the face of the ash disposal area has largely been covered with an interim soil cover, and portions have been planted with natural vegetation. As that vegetation matures and becomes fully established, and as the operator places rocks on the face to emulate the nearby undisturbed ground, even the ash monofill will be much less distinguishable from the surrounding land. Additional landscaping to the front area of WGSL is planned. See also Section 4.10. Closure of Lateral Expansion Area, of the FEIS.
11.35 Cost of the Landfill - Another issue which was a criteria in the Blue Ribbon Commission's consideration was costs. At Section 4.11 a discussion of costs showed $60,800,000 for the cots of the excavation and other costs for a total cost of $99,400,000 in 2008 dollars. How are these costs arrived at?		Engineers did a design cost analysis for the WGSL and calculated costs for anticipated excavation, grading, landfill liners, access roads, a leachate collection system, a drainage system, and other accessory requirements.

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11.36 In addition, the costs of the berms should be included in that these structural changes enable the City to now petition for an extension.		The cost of the existing toe berm is not a part of the anticipated future costs of the expansion project, which are described in Section 4.11. As noted above in response to comment 25, the existing E-1 berm and West berm were a part of the initial design of WGSL and were not included in the estimated costs of future improvements. However, as noted in the response to No. 38, below, the cost of extending a portion of the west berm up the canyon is included in the proposed expansion project.
11.37 In addition, the reference in the DEIS is to the figure $86 million as the cost. The discrepancy must be addressed.		The estimated figure of $86 million dollars was identified on Page 7-30 of the DEIS by SMS Research through consultation with Waste Management, as costs associated with the construction of the site over a 10-year period. The estimated figure of $99.4 million dollars, also prepared by Waste Management, is provided in the DEIS in Section 4.11, Project Schedule and Cost, and represents operating and construction costs that would be incurred over a 15-year period. Thus, the two figures represent two different periods of time and different activities, and are not comparable.
11.38 There also needs to be a discussion as to whether additional berms will be required or are anticipated at the site.		At this time, while additional berms are not anticipated, the proposed expansion design includes extending the west berm up the canyon. The final design, however, will be determined during permitting after completion of the EIS process. See also Section 11.2. Final Engineering and Construction Details, of the DEIS.
11.39 In discussing costs, the City has said it makes a profit of $4 million a year at WGSL. If this is the case, for a 15 year expansion the operational cost will increase by at least $6.63 million a year. Why is this then economical?		The EIS does not address the City's profit at the landfill. It is unclear what representations are being referred to regarding $4 million annual profit. The City is responsible for providing safe and adequate waste disposal, and these costs will exist at any landfill site, regardless of the amount of income it receives because of landfill operations.
11.40 Section 5 Environmental Setting - Given the recent decisions by the Hawaii Supreme Court, it is necessary to discuss the concept of public trust. This is especially true when looking at the waters of this State. What occurred with the operations of WGSL and the leachate is inexcusable and a violation of that public trust. Note that the leachate was disposed of, for most part, in the Waianae Sewage Treatment Plant.		There has been no violation of the public trust. Pursuant to the public trust doctrine, the state holds certain resources in trust for the benefit of its citizens, establishing the right of the public to fully enjoy them for commerce, navigation, fishing, bathing, and related activities. It is unclear, however, how the principles of the public trust doctrine are applicable to operations of WGSL and the disposal of leachate at the Waianae Wastewater Treatment Plant. Leachate from the landfill is disposed of and processed through secondary treatment at the Waianae Wastewater Treatment Plant, consistent with all regulatory requirements. The content of the leachate is sampled and analyzed regularly through independent laboratory tests. Monitoring data show that the leachate has not changed the water quality near the outfall. See October 2, 2007 memorandum from the Division of Environmental Quality to Frank Doyle, which was included as a part of section 15 of the DEIS. Any suggestion that the disposal of leachate at the Waianae Wastewater Treatment Plant is harming the waters of the State is without basis.
11.41 In this light, there is inadequate discussion of the leachate. This is especially troubling given the DOH NVO. This requires a discussion as to the how the build up of the leachate affected or could affect the integrity of liner and the stability of the landfill. It must also be addressed in light of the expansion and the stress it will have upon the liner and the stability of the landfill.		The amount of leachate the landfill is expected to produce is based on rainfall and operating experience. The methods used to collect and transport it to the points from which it is extracted and the ultimate disposal of the material are all part of the landfill design and the Operations Plan approved by DOH. The impact of the leachate on liner integrity and landfill stability are design considerations. As noted earlier, the design of the landfill will be subjected to DOH scrutiny to ensure they are consistent with conditions at this site, and with current practice and applicable regulations. The amount of detail in the EIS is adequate as the details of the leachate and site operations will be evaluated with the permit documents by DOH. The depth of leachate is not necessarily related to the integrity of the liner. The impact of various leachate levels on stability was evaluated and reported to DOH. The design and overall factor of safety includes all anticipated operating conditions, including level of leachate.
11.42 Geology - According to Figure 5.2, the proposed expansion will be primarily in the rRK soil type. This means rock over a large percentage of the surface. In addition, the description of the soil associated with rRK is 'sticky and very plastic.' This means that there will be a 'high shrink-swell potential when moisture laden.' The impact of this type of soil must be discussed when stability of the landfill will be an issue as it goes up the slope.		Soils and geotechnical analyses were performed to meet safety and regulatory requirements. The various factors affecting stability have been and will be taken into account as stability issues are reviewed and analyzed. In addition, DOH and any retained experts will review the analysis. See also Section 5.3.3. Potential Impacts and Mitigation Measures, of the FEIS, relating to soils which addresses this issue.

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11.43 There must be a more detailed discussion as to the slope differential for WGSL in the proposed expansion area. It is admitted to that the upper portion of WGSL where the expansion will take place will be steep with the rRK type soil. How will excavation be safely accomplished in that region must be discussed along with the storage or removal of the excavated 'native soil.		The stability of all cut slopes has been analyzed and will be reviewed by registered professionals during construction. All slopes will be excavated to meet required factors of safety and work will be done in accordance with all OSHA requirements. The DOH engineers and staff are expected to review all aspects of the construction during the permit review and while construction is in progress. See also Section 5.3.3. Potential Impacts and Mitigation Measures, of the FEIS, relating to soils which addresses this issue.
11.44 The rights to the native soil (rock, etc.) must also be addressed. It is believed that with the present operation, the contractor who does the excavation is permitted to sell the rock and soil and keep the funds. If this is the case, the practice must change and the benefit should be to the taxpayers. If the 'sale' of the rock is part of the contract with WMI, these amounts must be calculated.		The City retains the ownership rights to the excavated materials. On May 30, 1991, the City received bids for the material excavated, processed, and removed from Waimanalo Gulch Sanitary Landfill. Since August 1, 1991, the City has received royalties for any excavated and processed material removed from WGSL. Until the final design has been approved, it is difficult to determine the volume of excess materials that could be removed from the site.
11.45 The DEIS concludes that 'adverse impacts are not anticipated' as a result of the lateral expansion. There needs to be a definition of 'adverse impacts' and how the DEIS concludes that such impacts are 'not anticipated.' Clearly the City and its operator have stated these similar conclusions in prior EISs and the NOV has shown to the contrary. For example how else will height violations be noted other than a 'fly by.' What type of monitoring device will be utilized to establish that the landfill is stable other than mathematical computations performed by WMI's experts? Part of the costs of the operation of the landfill should include a fund which the DOH utilizes to hire its own experts to monitor the landfill activities.		Adverse impacts to topography, geology, or soils are not anticipated with appropriate mitigation measures. Adverse impacts are detrimental impacts, and include adverse ecological effects, aesthetic effects, historic effects, cultural effects, economic effects, social effects, health effects, whether primary, secondary or cumulative. See HAR § 11-200-2. The height violation, while it exceeded the DOH permit, did not result in an adverse impact to stability. The landfill was stable at all times even when the grade exceedance occurred. The earlier permitted grades were lowered causing in part the grade exceedance. The issue was more complicated than just exceeding a permitted grade height, as the comment portrays. The exceedance was self-reported, since it was known at the time that the grade height was lowered as a precaution. A ground survey is performed by a licensed professional surveyor on a bi-monthly basis to compare existing grades with approved grades. The current operating permit requires seismic monitoring. Inclinometers are being considered for WGSL to aid in identifying movement should it occur. While there is no device that would determine whether a landfill is stable or not, the stability analyses are based on "state of practice," and they, along with the selected factor of safety, are based on experience with similar slopes and extensive analysis of both stable and unstable slopes by the U.S. Army Corps of Engineers and the U.S. Bureau of Land Reclamation. In the case of WGSL, Waste Management has undertaken steps beyond standard practice, and outside experts have reviewed the work performed by its consultants. Additionally, DOH has reviewed the stability analyses and consulted with outside experts. Every ton that goes into the landfill is assessed a fee which is paid to the State to assist with funding their administrative and enforcement activities. DOH already employs inspectors who visit the landfill at frequent intervals.
11.46 Regional Hydrology - This discussion in the DEIS is of interest in that it is in direct contradiction to the UIC line which is what is relied upon in the siting of the landfill. Discussion is necessary as to how the UIC line has been arrived at when it is clear that WGSL does sit over and is a part of the 'Makaiwa Aquifer System.' Given the past mismanagement of WGSL by WMI, it is critical that we understand the assumptions which have been made in the past, in particular the UIC line and landfill operations over an aquifer. There is an EPA map on the water systems which differs from that of the DOH. There needs to be a discussion as to difference and how the UIC lines have conveniently been drawn around existing landfill areas throughout the State. Read in conjunction with the discussion in Section 7 as to the natural springs and water sources in the area, there should be an analysis done as to why the UIC line carves out WGSL; and more importantly the long term impact of the landfill over an aquifer.		The UIC line designations are handled by DOH and other state agencies. Neither ENV nor Waste Management was involved in the determination of the UIC line at WGSL. If location or validity of such lines is in question, it is an issue that must be addressed pursuant to applicable federal or state law and procedure. The UIC line was determined pursuant to state and local law and jurisdiction. The City accepts current laws and regulations as validly enacted and promulgated. The location of the UIC line is one example. We are not aware of the EPA map to which you refer, and cannot prepare a response to a vague reference to an EPA map.
11.47 Air Quality - There needs to a discussion in Air Quality of the EPA violations against the WGSL. Though the matter has not been resolved, for the DEIS to be accurate, the violations should be set forth as well as the anticipated remedy for the problems. Also, to the extent that the EPA violations overlap with the NOV, that discussion should also be found in the EIS.		The matter involving the installation of the gas collection system has been addressed. A gas monitoring and collection system was installed in 2005, and has been operating successfully. It is regulated through the terms of WGSL's air permit. The DOH NOV does not overlap with the EPA violations.

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11.48 Under this section, a passing discussion is made of the impact of the 'sludge' and how it is no longer being disposed of at WGSL. The accuracy of the statement is challenged as to when it was 'no longer being disposed of at WGSL.' How much sludge is or has been disposed of at WGSL must be discussed. In addition, it is unclear as to whether the pellets have been authorized for sale. If not, then are these pellets being disposed of in WGSL? It is believed that the statement is incorrect as to whether the sludge is no longer at WGSL.		The DEIS does not state that sludge is no longer being disposed of at WGSL. The DEIS emphasizes a change in processing sludge from the Sand Island Wastewater Treatment Plant ("SIWWTP") and the reduction of sludge disposed of at WGSL from the SIWWTP due to this change in processing. The sludge from the SIWWTP previously disposed of at WGSL is currently undergoing treatment in a waste digester at the SIWWTP where the sludge is turned into fertilizer pellets. The process of drying sludge into fertilizer pellets began in March 2007. In June 2007, due to a fire, operations at SIWWTP pelletizing facility ceased until September 2007. During that time 763 tons of de-watered sludge from SIWWTP was landfilled at WGSL. For the entire 2007 year, approximately 3,122 tons of stabilized, de-watered sludge (pelletized and nonpelletized) from the SIWWTP were disposed of at WGSL. At present, all of the de-watered sludge from SIWWTP is turned into fertilizer pellets, and on average, 85% of the pellets is being used for golf course construction and soil manufacturing. The remaining amount of pellets, approximately 15% on average, is disposed at WGSL. All regulatory requirements have been met to allow beneficial use of the pellets. As the process matures and marketability increases, we anticipate a decrease in the amount of pellets that are landfilled at WGSL. Due to unforeseen circumstances, however, such as the June 2007 fire at the pelletizing facility at SIWWTP, there may times when stabilized, de-watered sludge from SIWWTP will need to be landfilled at WGSL. Besides some of the fertilizer pellets from the SIWWTP, stabilized, de-watered sludge from the Honouliuli, Waianae, Kailua Regional, and Kahuku Wastewater Treatment Plants, as well as sludge from private (non-City) sources is still being landfilled at WGSL. For the entire 2007 year, the following approximate amounts of stabilized, de-watered sludge were disposed of at WGSL from the following City waste water treatment plants ("WWTP"): Honouliuli WWTP - 4,192 tons; Kailua Regional - 766 tons; Waianae WWTP - 277 tons; and Kahuku WWTP - 1 ton. Besides the significant reduction of sludge from the SIWWTP being landfilled, the City is in the process of seeking beneficial uses for the stabilized, de-watered sludge from the Honouliuli Wastewater Treatment Plant. See also Section 4.2. Facility Operations, 4.2.1. Waste Accepted at Landfill, of the FEIS.
11.49 Methane Gas - Part of the NOV was a violation as to methane gas. The concern is whether the methane gas is smoldering or burning at WGSL. There needs to be a discussion as to how this is monitored and also that methane gas fires are found in landfill operations and WGSL should be no different. If in fact there is such a fire smoldering, what is the anticipated impact on the community and the stability of the landfill. Though there is an attempt to say that landfill permitted temperatures are higher in other states, the issue is the impact on this landfill which is located so very close to a resort and homes.		Extensive studies at WGSL have shown that there is no subsurface fire occurring now or in the past at the landfill. Information demonstrating that there is no fire has been sent to the EPA and DOH. See also the following sections already provided as a part of the DEIS: Section 4.6.1. Explosive Gas, for monitoring requirements related to explosive gases such as methane; and Section 5.7.3. Potential Impacts and Mitigation Measures, relating to air quality addressing the monitoring practices, procedures, and regulations that are in place to mitigate against any potential for impacts associated with the atypical elevated temperatures at WGSL.
11.50 Blasting - As expected, due to the soil type in the expansion, excavation must occur with the assistance of blasting of the rocks. It is significant that the blasting is anticipated to be no more than one per day and no more than one to three times per week. If this is the average, then over a 15 year period these are a significant number of blasting activity. The discussions surround the noise and not as to the stability or structural impact on the landfill and the surrounding area. Related is the discussion on the culturally significant outcroppings which the City claims cannot safely remain in place. If the concern is over the impact of the blasting, then the blasting must have impact throughout the existing landfill. There needs to a discussion as to this fact, along with what impact it will have upon the structural berms presently built.		Controlled blasting will not be required for the entire anticipated life of the landfill, and is required only until the construction of the final cell. Controlled blasting does not impact the stability of the WGSL or any of its berms as it will be used only for loosening the rock from the slope. The energy output from controlled blasting is designed to be well below that produced by the design earthquake considered in the stability analysis performed to evaluate the safety of the landfill. See also Section 5.8.2. Potential Impacts and Mitigation Measures, of the FEIS, relating to acoustic characteristics. With respect to the cultural stone uprights, the City has proposed relocation prior to any excavation or controlled blasting at the proposed new expansion area for landfill cells as described on pages 7-81 through 7-87 of the DEIS (Section 7.3.8. Potential Impacts and Mitigation Measures, relating to historic and archaeological resources). The City, Waste Management and SHPD will work to ensure that an appropriate preservation plan is put in place.

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11.51 Pueo and Other Birds and/or Animals - It is unfortunate that the DEIS simply dispenses with these animals and birds due to the lack of sighting on a 'survey.' There needs to be a clear description as to how many surveys were taken and when. I have personally seen the Pueo on many occasions fly from WGSL to the area near Lanikuhonua and Kai Lani. It is questioned as to how thorough this survey is. There is a reference to a survey in 1999 and it must be clarified if the DEIS is relying upon this older study. The area is also designated as a habitat for the Elepaio. It appears that the DEIS is disagreeing with this designation. An explanation is needed as to this conclusion.		The DEIS, Section 5.9.3., Fauna, clearly indicated that two separate surveys were performed: In 2006, Phil Bruner, Ph.D., prepared the report, Survey of the Avifauna and Feral Mammals for the Proposed Waimanalo Gulch Landfill Expansion Project, O'ahu (Appendix F). The purpose was to provide the findings of a bird and mammal field survey. The same area of the site was previously surveyed in 1999 (Bruner, 1999) and data from this earlier survey is provided in the current study for comparison purposes. References to literature and unpublished reports since 1999 are included. According to the 2006 Report, the Pueo or Hawaiian Owl may forage in the area which is consistent with your observation. The area designated as critical habitat for the Elepaio by the U.S. Fish and Wildlife Services is located approximately 2 miles from the WGSL. No impacts to the habitat of the Elepaio are anticipated.
11.52 Aesthetics - As a person who has lived both at Kai Lani and now the Ko Olina Kai, I have no idea as to how the City can say that the lower portions of the landfill have a 'naturalized' look. It is not natural at all and neither is the view of trucks going up and down the landfill.		As parts of the landfill are closed, surface treatments including landscaping will be done to change the appearance of the site so that it blends in with the surrounding terrain. The excavation plan includes stockpiling of rocks with a "natural" look. The rocks will be placed on the surface after closing of the landfill. The trucks are a part of the operation and the view of trucks cannot be completely mitigated. We have included additional landscaping along the Kahe Point side of the landfill in order to mitigate views from the Waianae side of the landfill. Just as the view of a natural coastline cannot be mitigated or naturalized once hotel or resort development has occurred, the view of a natural gulch or ravine will be impacted by the presence of a landfill. Nevertheless, efforts to mitigate the impact will be ongoing.
11.53 The visual impact of WGSL has not been adequately addressed especially with the construction of the rock berm wall. How is this area going to be restored to its original state with a rock berm wall.		The view of the rock berms will be mitigated by the planting of trees. As they mature, the appearance of the berms will be mitigated by the vegetation. However, given the nature of the use of the site involving landfilling, it will not be possible to return the site to its original condition. The landscaping plans are included in the DEIS as Figures 5-19 through 5-21.
11.54 Section 6 Public Services, Potential Impacts And Mitigation Measures - Traffic - The DEIS is deficient in that it does not present the numbers of vehicles which travel to WGSL clearly in the body of its statement. It concludes by saying it is not anticipated to add more to the existing pattern. However, what is needed is a discussion as to what is the load and the description of the types of vehicles which will be used to dispose of the MSW or Ash at the WGSL. With the anticipated growth in the not only the second city of Kapolei but at Ko Olina, this discussion must address the actual numbers and the anticipated impact with the increase number of vehicles due to the growth in the area.		A traffic study, which includes vehicle counts, is directly cited in the body of the DEIS. As indicated in Section 6.1.1. Traffic Impact Report, "At the intersection with the existing landfill access road, Farrington Highway carries 2,046 vehicles eastbound and 859 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 1,131 vehicles traveling eastbound and 2,079 vehicles traveling westbound. The critical movement on the Farrington Highway approaches of the intersection is the eastbound left-turn traffic movement which operates at LOS "B" during both peak periods." "The WGSL access road approach of the intersection carries 11 vehicles southbound during the AM peak hour of traffic. During the PM peak hour of traffic, the traffic volume is slightly higher with 31 vehicles traveling southbound. The entirety of the report is attached as Appendix I to the DEIS. In general, with the construction of the third boiler at H-POWER, the number of vehicles delivering MSW to WGSL is expected to decrease, and the number of vehicles delivering ash and residue from H-POWER will increase. The overall result will be fewer vehicles arriving and departing from WGSL. The access road approach of the intersection operates at LOS "C" during both peak periods. Traffic queues occasionally formed on this approach of the intersection with average queue lengths of 2-3 vehicles observed during both peak periods."
11.55 Wastewater System - There needs to be discussion as how the existing system will be adequate when it clearly was not adequate for the limited expansion as noted in the NOV. The City must honestly discuss the shortcomings of WMI, the operator, who has failed to operate WGSL in a professional manner.		Wastewater facilities on page 6-10 of the DEIS refers to the toilets and other facilities for the workers at the landfill. Those facilities are currently in place and adequate. The need will not change with the expansion. No violations regarding the wastewater facilities were included in the NOV.

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11.56 Odors and Windblown Trash - The fact that those who live by WGSL continue to experience the odors is not adequately addressed by the DEIS. Like the 'surveys' mentioned above, there needs to be a discussion as to how the odors are being monitored. Testimony has been received by people who are on the golf course and those who live in Ko Olina as to odors and windblown trash of the landfill. It is important to note that Counts in the NOV addressed the windblown trash and odor issues. Given the fact that violations have been found, the City must ensure that these violations do not occur again, given that it continues to have the same operator.		Odor was not a part of the NOV. Waste Management responds to odor complaints and maintains an odor complaint log. Air quality and odor, as well as mitigative measures, are discussed on pages 5-37 though 5-59 of the DEIS. The wind-blown litter issue has been addressed through litter fences and permanent litter patrol. Litter, as well as mitigative measures, are discussed on page 4-18 of the DEIS. According to Waste Management, less than 5 complaints were received about odor and/or litter within the last 12 months. Not all of those complaints were verified.
11.57 Section 7 Socioeconomic and Related Environment, Potential Impacts and Mitigation Measures - NIMBYism - As expected, the Kailua Neighborhood Board has always been adverse to the closure of the WGSL. This is due to the fact that Ameron Quarry has been viewed as a successor. It is unfortunate that the communities are forced to take positions such as they have. If the City clearly looked at alternatives and did not deal in 'fear' and in its delay tactics, there could have been a long term resolution. It is not acceptable that the City's position is, 'where do you want to put it?' The City is the governmental agency tasked with this obligation and it cannot simply wait, as it has, with the hopes that other agencies will buy in to its mantra that there will be rubbish on the streets if an extension or expansion is not approved.		The City is tasked with the obligation to provide environmentally sound disposal services for solid waste. There is a need for a landfill on Oahu. The City must select the location of its landfill based on objectively established criteria. In accordance with this obligation, and as stated in the DEIS, the City selected WGSL. Other areas of the island have had landfills including, but not limited to, Ala Moana, Kaka'ako, Kailua, Kalihi, Lā'ie, Kāne'ohe, Pearl City, Wahiawā and Waipahu. See also http://www.opala.org/solid_waste/archive/History%20_Garbage_in_paradise.html. Landfills, freeways, prisons and wastewater treatment plants are an unfortunate necessity of modern civilization. The suggestion that politics, policy and fear play a role in landfill selection is undocumented. Politics and policy, however, have a role in timing of decisions. It is always important that decision makers provide the public with opportunities for input, even if such opportunities for input cause decisions to be delayed. However, it is a part of the process expected by the public. WGSL has been selected as the landfill for the benefit of the entire island and was approved by the City Council.
11.58 Economic Considerations - The role that Ko Olina plays as it relates to the economic growth for West Oahu is significant. While no one would consider placement of a landfill near Waikiki, the City does not hesitate to continue a landfill operations directly across the street from Ko Olina.		The City does not discount the importance of economic growth wherever it is occurring on the island of Oahu. While there are no viable landfill sites near Waikiki, places such as Ala Moana Park and the Kakaako Waterfront Park once served as landfills. Various parts of Windward Oahu also supported landfills. As represented in the DEIS, the City remains committed to the proper operation of the WGSL and to appropriate mitigation of potential adverse impacts.
11.59 Discussion on the Landfill impacts on jobs, etc. would exist wherever the landfill is sited. The discussion is lacking as to what could happen if WGSL is expanded as to the development of the Resort.		The DEIS provided a discussion of the economic conditions of the proposed landfill. Further information concerning the potential for adverse effects to surrounding land uses such as the Ko Olina Resort, will be addressed in the Final EIS. See also Section 7.1.5. Addendum to Socioeconomic Impacts, of the FEIS, which provides additional information on the potential for effects on property values in the surrounding region.
11.60 Fairness Issues - There is a discussion as to how some residents believe that Waianae is the dumping ground for the City; and the expansion of WGSL continues to dump on and places the burden on the Waianae Coast. There needs to be a discussion of the concept of environmental justice and how this discussion required under NEPA should be better explored in the DEIS.		Environmental injustice is addressed on pages 7-28 and 7-29 of the DEIS. In summary, the median household income in the immediate areas near WGSL exceeds the island average. The City is required to complete the EIS process pursuant to HRS Chapter 343, which does not require an analysis under NEPA.
11.61 Community Benefits Package - There needs to be an honest discussion on the benefits package. Remember that the Waianae Coast takes more than the City's rubbish. There is always the issue of 'catch up' for the Waianae Coast because it appears that it is last to receive anything. When the concept of a 'community benefits package' is discussed, there needs to be an analysis as to what the community would be entitled to as all others would and what is received in addition to that. The benefit must be in 'addition to' not merely a replacement of.		Basic City services are provided to all areas of the island as funded by the City Council, which must approve the City budget each fiscal year. The suggestion that programs and projects for the Leeward Coast communities are not as well funded as those for other parts of the island is undocumented. The current City administration has recognized that WGSL has a potential impact on the neighboring communities and implemented the community benefits program to provide those communities with funding for programs beyond those provided in the regular operating and capital budgets. This administration was the first to recognize the need for such a benefits program. A Committee comprised of representatives of Leeward Coast communities was established by the Mayor to review funding applications from nonprofit community groups and identify capital projects in their communities, and determine how funds will be utilized. The Committee is diligent is assuring that any program or project they fund will provide services and benefits that are in addition to, and not in lieu of, any provided through the normal City budget process. See also Section 7.1.3.2. Community Issues and Concerns Regarding WGSL, On The Community Benefits Package, in the FEIS.

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11.62 Historic and Archaeological Findings - Prior EISs have not acknowledged the cultural significance of the Waimanalo Gulch. The DEIS recognized what is described as 'Three upright boulders potentially utilized as trail or boundary markers.' It was agreed to that the stones were significant and likely used by traditional Native Hawaiian practitioners in the past. The consultants believed these stones should be preserved in place; however, the City has deemed this to be "not an option" and will move the structures. Though the cultural practitioners also expressed a concern as to the appearance of the landfill after it was completed and the boulders returned, it remains the position of the City to ignore these concerns and continue with the construction of the landfill. The DEIS must address whether the landfill expansion is at any cost and the cultural significance should be ignored.		The City has an obligation to protect public safety and health by providing waste management services. While City has proposed to preserve the stones by relocating them, the final preservation plan has not yet been determined. Relocation and preservation of the stones are currently options under consideration. The plan would be determined based on further consultation with cultural consultants, SHPD, ENV and Waste Management. The option of relocating the stones back to near their original resting places will be considered.
11.63 The DEIS must address the sentiments of OHA as stated: OHA has made a field visit to the project site and we noted three significant cultural features that were still intact in the project area. We are also aware of the probable existence of others yet to be discovered in the project area. OHA is further saddened that the larger setting that this project sits in is one that has been highly developed and degraded. Therefore, what TCPs [Traditional Cultural Properties] that remain must be protected. The Department of Planning and Permitting, as a county agency, is mandated by Hawai'i Const. Article XII, section 7, "to preserve and protect customary and traditional practices of Native Hawaiians." Ka Pa'akai 0 Ka'Aina v. Land Use Comm'n, 94 Haw. 31, 45 (2000). . . . OHA urges that nothing more be done with this project until full cultural assessment has been made of the project area. (OHA letter of September 21, 2007). At the very minimum, to address OHA's concern, there needs to be a clear statement as to how and what has been done for a 'full cultural assessment' of the project area. In that much of this land has been degraded, it does not give the City the right to continue in its degradation.		A full cultural impact assessment of the area and archaeological inventory survey were performed, attached to the DEIS as Appendices G and H and summarized in section 7 of the DEIS. A discussion of traditional cultural practices is included in the cultural impact assessment. No action will be taken at the site until concurrence with SHPD is obtained.
11.64 Though he has passed, a respected Kumu Hula of the area, John Kaimikaua, told the story of the role of Palehua and its relationship to WGSL. There is a video of his tale and it should be included in the discussion of the cultural significance of WGSL.		We have instructed our cultural and archaeological consultant to further investigate this item. If it is applicable, further information on the cultural significance of the content of the video will be referenced in the Final EIS.
11.65 The stories of the strange events in the initial construction of WGSL are rich. Yet, the DEIS continues in its predeteimined conclusion that the landfill should be expanded.		The stories are documented in the cultural impact assessment. At the same time, the City is pursuing development of the site because there is a need for a landfill to benefit all areas of Oahu.
11.66 Section 8 Relationship to Land Use Plans, Policies and Controls of the Potentially Affected Area - The concepts of the State General Plan have been revisited by the Legislature for the past 3 years. The Legislature has funded the Task Force on Sustainability for the year 2050. The Task Force has adopted it Sustainability Plans for the year 2050. In addition, what is now Act 183, SB 2646 CD1 of the 2008 Session, addresses the concepts of Important Agricultural Lands. The DEIS must engage in the discussion as to what is "important Ag lands" and recognize that it is no longer tied to land classification such as A, B, etc. In this light, does it impact the continued use of WGSL.		The sustainability of our island State is important. The use of WGSL promotes sustainability through the use of an on-island facility that has remaining but unused capacity. Without Waimanalo Gulch, new land, a precious resource, would need to be prematurely used when there is remaining capacity at this existing public facility. The DEIS addresses the proposed project's impacts on Important Agricultural Lands in Section 8.3. The DEIS notes that the proposed project is located within the State Agricultural District, however, the subject site is not classified as one of the three types of agricultural land (i.e., prime, unique, or other important agricultural lands) according to the Agricultural Lands of Importance to the State of Hawaii ("ALISH") system. The subject site is not currently used for agricultural production; is not associated with traditional native Hawaiian agricultural uses; has mostly rocky soil, has a relatively dry climate; and is not near support infrastructure conducive to agricultural productivity.

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11.67 The discussion of the Land Use Policies of the area cannot be made without a discussion of the LUC's D&O on the SUP, as amended. The D&O now states that no later than November 1, 2009, the area shall be 'restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.' This is the controlling LUC Order on the site of the proposed expansion. In addition, the City is to provide the LUC with updated status every 6 months. As someone who participated in the LUC hearing, it is clear that the LUC has sent a clear message to the City that it will not be caught in the untenable position that there is no alternative in the time remaining.		The EIS process will continue to fairly and accurately describe the events leading to the decision to select WGSL as the City's preferred alternative. Further information regarding this past history of events, including the current order of the LUC, will be provided in the Final EIS in Section 2, Project Background.
11.68 There is also a need to discuss whether the SUP process under HRS 205-6 is the proper mechanism by which to seek this expansion. The DEIS must consider whether a boundary amendment must be sought for this further expansion.		Because the subject property is located within the State Agricultural District, a State Special Use Permit ("SUP") must be obtained. HRS § 205-6 provides that the county Planning Commission "may permit certain unusual and reasonable uses within agricultural and rural districts other than those for which the district is classified." Because the SUP will be for land greater than 15 acres, the approval by the LUC is necessary. In the past, the LUC has granted SUP approvals for landfills, including WGSL. For purposes of the expansion addressed herein, the City may pursue either an SUP or a boundary amendment. This procedural decision does not impact the analysis contained in the EIS.
11.69 Section 9 Alternatives to the Proposed Action - This discussion in the FSEIS (most recent EIS on the property) and other documents has been inadequate in addressing alternatives. After all these years, the City must have a better response on alternative technologies, transshipment and other sites than what is provided. Again, it appears that it is simply easier to continue to have the existing landfill; and therefore all attempts to address alternatives in good faith will never be a reality.		The City has in good faith pursued alternative technologies that are reliable, cost efficient and scalable, and issued an RFP for alternative technologies. In response to the RFP, the only qualified proposals were for existing mass burn technologies. The City is currently pursuing mass burn technology through the expansion of H-POWER. As noted in the DEIS, no alternative can completely eliminate the need for a landfill. WGSL is a strategic component of the City's solid waste management system and the final destination for certain solid wastes including MSW, recycling residue, and H-POWER generated ash, residue and unacceptable waste that cannot be further combusted, shipped, recycled or reused.
11.70 The City has failed to timely develop its Solid Waste Management Plan. In that this is not a reality, documents such as this DEIS is not being judged by the appropriate measure.		The City has an Integrated Solid Waste Management Plan, and an update of that plan was adopted by the City Council in December 1994 through Resolution 94-306, CD1. A new draft update to the City's Integrated Solid Waste Management Plan was sent to DOH on July 1, 2008, for review. The DOH will determine its appropriateness prior to consideration by the City Council. The words "judged by the appropriate measure," are undefined and unclear. The DEIS as well as the Final EIS are prepared according to the standards set forth in HRS Chapter 343, as well as Hawaii Administrative Rules, Title 11, Chapter 200. See also Section 2.6. City Plans Involving the Future Handling of Solid Waste, of the FEIS, relating to the Integrated Solid Waste Management Plan.
11.71 An RFP for transshipment was solicited by the City. It is believed that the company who has been working on transshipping has had its bid challenged. If the City agrees that the bid is too low, then transshipment will not become a reality. The City does not prefer to transship because of the loss of revenue for the City. The DEIS must do a proper analysis of the loss of revenue and recall that cost is not a limiting factor in the discussion of alternatives.		A request for bids ("RFB"), not an RFP, was issued by the City for interim transshipment of MSW. The lowest bidder's bid has been challenged by three procurement protests, and the process to rule on the protests is on-going. If the low bid is ultimately determined to be a non-responsive or non-responsible bid, or the bid is otherwise rejected, then next lowest bid will be considered, consistent with applicable public procurement laws. As evidenced by the fact that an RFB for interim shipping was issued, and funds for this program have been appropriated, the City desires to transship; and if a contract can be awarded after the procurement protests are resolved, the City will transship up to the amount of available funds.
11.72 What is also of concern is the discussion on Plasma Arc and how this technology does not meet the City's requirements. The DEIS does not recognize the technology which is successfully operating in Japan and the GeoPlasma facility to be operational in St. Lucie, Florida. What is just as troubling is the absence of recognition that on May 7, 2008 SB 1720 HD2 was enrolled with the Governor and on May 23, 2008 it was signed into law as Act 104 (2008 Session). This Act relates to the Special Purpose Revenue Bond to Assist Jacoby Development, Inc., a Processing Enterprise. Jacoby Development Inc.-Geoplasma LLC is authorized to issue a SPRB to build a similar facility as Florida's in Hawai`i which will not cost the taxpayers anything. Instead of welcoming such a technology, the City, instead, finds that the technology is not adequate.		A discussion of why the Plasma Arc technology is inadequate at this time is contained in Section 9 of the DEIS. That section identifies the Plasma Arc plant operating in Utanshani Japan and provides a table summarizing the operating results from 2005. It also showed that the plant had not generated power for commercial sale during that time. The plant proposed for St. Lucie, Florida is also identified. Jacoby Development and St. Lucie are still in negotiations and construction of plant has not yet commenced. In addition, the DEIS identifies a plant in Ottawa Canada (owned by Plasco) that began processing MSW on January 26, 2008. The Plasco plant capacity is 85 tons per day of MSW. The operator of the plant posts reports monthly detailing the operating statistics. The following table shows the average amount of waste processed daily through the plasma system at the plant since start of operations. Power was first generated in the plant in February 2008. The results in this table are for the plant in startup, and should improve with time.

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		The plant capacity will not meet the City's minimum requirements even at full capacity operation. The discussion of plasma technology in the EIS will be revised to reflect these later operating results. The EIS will also be revised to reference Act 104 (SB 1720), which became law on May 23, 2008.
11.73 Discussion of alternative landfill sites are also premised on the Blue Ribbon Commission's findings. As stated earlier, the assumptions upon which the Commission made its recommendations are incorrect and must be re done. The landfill capacities and costs are especially problematic given the obvious misinformation provided by R.M. Towill. Look at Table 9-13 to demonstrate the difference in what is presented and what is the reality. This DEIS is placing the costs of WGSL expansion at $86-99 million.		The subject DEIS has documented the work of the Mayor's Advisory Committee and where appropriate has updated the basis for the findings of the Committee with new information to ensure that changed conditions were fairly and accurately considered in this current EIS effort. For example, according to the DEIS, Page 9-70, "Since the Advisory Committee report was completed, additional information has been provided regarding the cost of acquiring the Ameron Quarry and Makaiwa Gulch sites. In the Advisory Committee report, the cost of acquisition was the assessed value for property [tax] purposes. Parties representing Ameron Quarry and Makaiwa Gulch provided information to correct that information in letters appended to a letter from City Councilmember Tam to the State LUC. The information from Ameron Hawai'i and the Estate of James Campbell was subsequently used to maintain the integrity of the analysis. (DEIS, Page 9-70). With regard to the contents of Table 9-13, Revised Evaluation of Criterion 18, Cost of Site Acquisition, it is noted that the table identifies the cost of acquiring the various sites evaluated. Because the City already owns WGSL, the cost of acquisition is represented as $0. The site acquisition costs provided in Table 9-13 are completely different and are not to be confused with the construction and operating cost of $99.4 million for a period of 15 years provided in Section 4.11, Project Schedule and Cost, and the $86 million for construction over a period of 10 years provided on Page 7-30. See also the response to letter item no. 37, above.
11.74 It will always be the position of the people of the Waianae Coast that there should be no more landfills on our community. We have borne the burden for not only the landfills, MSW and construction, but also the power generation facilities, live fire exercises, the homeless, etc. There is a need to look at these alternatives in terms of what is fair and in the context of environmental justice.		The specific term "environmental justice" as defined by the EPA applies to documents prepared under NEPA standards and regulations. The subject DEIS, prepared pursuant to Chapter 343, HRS, however, does provide further discussion of "environmental injustice" in Section 7, Socioeconomic and Related Environment, Potential Impacts and Mitigation Measures. While the subject EIS has been prepared to specifically address the potential for significant environmental effects associated with the proposed project, the consideration for potential impacts associated with other power generation facilities, live fire exercises, and the homeless, while important issues, are not a part of the environmental disclosure of the subject project. Please also refer to the response to comment 60 above.
11.75 What is evident is that the City is not being honest in its discussion on Maili Quarry. This DEIS fails to note that the LUC denied that SUP permit of Sphere to operate a Construction and Demolition Landfill on the site. It is just as improbable that the LUC will grant a MSW landfill on the site. The proximity of this site to Maili Elementary School and its low water table is problematic. In addition, this site did accept AES's ash without a proper permit and without lining its landfill operations. In addition, traffic and access is a major concern. This landfill site is located off of a private road, Paakea which has been the site of major accidents due to the "dip" in the road. The question is whether the City will compute into its costs for the Quarry, the cost of the road and of access.		The Sphere Application was dismissed for a purely procedural reason, namely, because of a lack of jurisdiction. The case was not dismissed based on the merits. What the LUC would do if the City were to seek appropriate permits to operate an MSW landfill at Maili is not known. Maili appears to be a less attractive site for a landfill than Waimanalo Gulch. The Mayor's Advisory Committee also concluded that Maili was the least attractive out of the five sites as shown on table 9-15. The costs of road improvements were reflected in Cost of Development Criterion (number 19) for the Maili Quarry, which was published with the Mayor's Advisory Committee report. It should be noted, that the costs developed for the Mayor's Advisory Committee evaluation were based on the publicly available data and would be recalculated with site specific data if the site were selected by the City Council.
11.76 Nanakuli B is the site of a proposed private landfill. Nanakuli B will cause major traffic problems for the people of the Waianae Coast. The community will fight Nanakuli B because it is the expansion site of PVT Landfill, the only Construction and Demolition Landfill on this island. It cannot be the intent of the City to place two landfills across the street from each other and cause this community to bear this burden for a measly pay off. This DEIS must look into this inequity. The people of the Coast also want PVT closed.		The purpose of this EIS is to disclose the potential environmental effects of the proposed expansion at WGSL, not to close PVT Landfill. Nanakuli B appears to be a less attractive site for an MSW landfill than Waimanalo Gulch. The Mayor's Advisory Committee also concluded that Nanakuli B was the third least attractive out of the five sites as shown on table 9-15.

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11.77	Ameron Quarry is dispensed with because of costs. When the true costs of the expansion of WGSL is computed, the costs of WGSL exceeds that of Ameron.		Ameron Quarry was not "dispensed with because of costs." A review of Table 9-15 shows that Ameron Quarry received a lower score than WGSL across the 31 criteria. Information provided by the operators/owners of both the Ameron Quarry and the Makaiwa Gulch sites was considered. Both had advised the City that the cost of acquisition needed to be increased. Table 9-13 identifies the scoring for all five sites before and after the revision of the cost of acquisition. As can be seen in both Tables 9-13 and 9-14, the relative ranking of the sites with respect to their suitability as a landfill changed, but the clear conclusion that Waimanalo Gulch was the higher ranked site was unchanged.
11.78	What is lacking in this DEIS is the fact that in a few years, the status of H Power will also be an issue. If the City decides to re purchase H Power, then that cost must be made known and its impact on the cost of solid waste disposal. The expansion to a third boiler will have major cost implications.		Please see Section 9, Alternatives Analysis, of the Final EIS regarding the relation of expansion of H-POWER to WGSL. Should H-POWER add a third boiler, a full environmental review will be performed in accordance with applicable laws and regulations of the federal, state, and City & County of Honolulu governments.
11.79	Underlying all of this is the discussion on 'flow control' of the MSW. This DEIS is inadequate in that until the necessary 'flow control' is defined, the alternatives as it may be available by other vendors will not become a reality and what will remain is only the expansion alternative.		The DEIS adequately addresses the City's responsibility to manage solid waste for the City & County of Honolulu. Flow control is important and has been upheld by the U.S. Supreme Court because in order for local governments to properly manage solid waste and promote alternatives to landfilling, they need the ability to direct flow. The City has flow control pursuant to state law, and consistent with that authority, will continue to exercise such control so that it can be assured that various initiatives that minimize the need for landfill capacity can be managed and financed. The City's efforts to decrease the need for landfill disposal include expanded waste-to-energy capacity, interim transshipment of waste while additional H-POWER capacity is being constructed, expanded curbside recycling programs and illegal dumping control.
11.80	Notwithstanding, what is truly lacking in the DEIS is a combination of alternatives. To discuss these choices as a 'zero sum' game does not make this DEIS a true document upon which the decision makers can rely upon.		Please see section 9. Alternatives to the Proposed Action of the Final EIS for a discussion of a combination of alternatives. Alternatives have been discussed, but Oahu will always need a landfill because there will always be waste that cannot be further combusted, shipped, recycled or reused. Any viable alternative cannot completely eliminate the need for a landfill. Thus, a combination of viable alternatives will not eliminate the need for a landfill.
11.81	Section 10 Irreversible and Irretrievable Commitment - Again, the DEIS is a document with a predetermined outcome. It is simpler for the City to expand WGSL than to truly explore alternatives. Promises of how the landfill will operate better and mitigation will be enforced are empty promises in light of the past performances and present performances. The recent lawsuit against Schnitzer Steel shows how there is no monitoring by the WGSL or the City before millions are given for a rebate which allegedly should not have been given. The DEIS is without basis to make such a representation or conclusory statement to the public.		The purpose of the DEIS and the HRS Chapter 343 environmental review process is not to select the ideal landfill site. Rather, Waimanalo Gulch was selected by the Honolulu City Council in December 2004. The history of that process and the outcome of that selection process is presented in section 2 of the DEIS. The DEIS is an informational process prepared in compliance with HRS Chapter 343 and HAR Title 11, Chapter 200, and discloses "the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects." HRS § 343-2. Here the proposed action, consistent with the City Council's decision, is to expand WGSL as Oahu's future landfill site. Notwithstanding the allegations of any pending lawsuit, there are and have been considerable and substantive monitoring efforts, inspections, record keeping and reports regarding operations at WGSL. These requirements and records are being and have been maintained in accordance with WGSL's operating permit issued by the Solid and Hazardous Waste Branch of DOH. All records and reports are generally available publicly at DOH. Please refer to the response to comment 8 above regarding the Schnitzer Steel lawsuit.
11.82	Section 11 Unresolved Issues - Missing in this section is the EPA violations. In addition, it is disconcerting that the DEIS will have as an unresolved issue; the stone uprights.		The EPA violations have been added to the Final EIS at Section 11. Note that the EPA violations were discussed on pages 2-14 through 2-16 of the DEIS.

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Given that these issues are 'unresolved,' this DEIS could have been made public sooner. This is all part of the plan to go before the governmental agencies with no time left and to ask for yet another extension or the expansion.		The EISPN for the proposed project was published in November 2006. The stone uprights were located in the Spring of 2007. Due to a staff shortage at SHPD, evaluation of the cultural significance of the stone uprights was delayed, and the cultural impact assessment could not be completed. Because a cultural impact assessment is required in an EIS, completion of the EIS was delayed. The final preservation plan for the stone uprights has been identified as an unresolved issue in Section 11 of the Final EIS. The City and Waste Management will work with SHPD to ensure that an appropriate preservation plan is put in place.
11.83 Section 12 Permits and Regulatory Approvals that May be Required - The DEIS fails to recognize the State Land Use Commission is a State agency not within the City & County of Honolulu's process. In fact, HRS § 205-6 is the State Land Use Commission statute. This DEIS should address whether a boundary amendment will be required and not a SUP.		This comment will be addressed in a revised Section 12, Permits and Regulatory Approvals That May be Required, in the Final EIS. For purposes of the expansion, the City may pursue either an SUP or a boundary amendment, and both will be identified in the Final EIS. This procedural decision does not impact the analysis contained in the EIS.
11.84 Section 14 Significance Criteria - The DEIS provides its analysis of the significance criteria as set forth in §11-200-12 of the EIS Rules. The Rules provide: A. In considering the significance of potential environmental effects, agencies shall consider the sum of effects on the quality of the environment, and shall evaluate the overall and cumulative effects of an action. B. In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it: 1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource; 2. Curtails the range of beneficial uses of the environment; 3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders; 4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State; 5. Substantially affects public health; 6. Involves substantial secondary impacts, such as population changes or effects on public facilities; 7. Involves a substantial degradation of environmental quality; 8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions; 9. Substantially affects a rare, threatened, or endangered species, or its habitat; 10. Detrimentally affects air or water quality or ambient noise levels; 11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters; 12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or, 13. Requires substantial energy consumption. The DEIS answers each and every criteria in the negative. This provision of the EIS Rules is not applicable in that this section is relevant if there is to be a determination of no impact and therefore an EIS or an Environmental Assessment ('EA') will not be required. Specifically: § 11-200-9 Assessment of Agency Actions and Applicant Actions A. For agency actions, except those actions exempt from the preparation of an environmental assessment pursuant to section 343-5, HRS, or section 11-200-8, the proposing agency shall:		The comment that discussions of secondary and cumulative impacts associated with the project were not provided is incorrect. Secondary and cumulative effects were discussed and addressed in the DEIS in Section 1.4, Secondary and Cumulative Effects. The discussion concerning significance criteria was discussed and addressed in Section 14, Significance Criteria.

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4. Determine, after reviewing the environmental assessment described in paragraph (3), and considering the significance criteria in section 11-200-12, whether the proposed action warrants an anticipated negative declaration or an environmental impact statement preparation notice, provided that for an environmental impact statement preparation notice, the proposing agency shall inform the accepting authority of the proposed action; However, what is missing is paragraph I of the Contents of a Draft EIS: § 11-200-17 provides at: I. The draft EIS shall include a statement of the probable impact of the proposed act on the environment, and impacts of the natural or human environment on the project, which shall include consideration of all phases of the action and consideration of all consequences on the environment; direct and indirect effects shall be included. The interrelationships and cumulative environmental impacts of the proposed action and other related projects shall be discussed in the draft EIS. It should be realized that several actions, in particular those that involve the construction of public facilities or structures (e.g., highways, airports, sewer systems, water resource projects, etc.) may well stimulate or induce secondary effects. These secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment. The population and growth impacts of an action shall be estimated if expected to be significant, and an evaluation made of the effects of any possible change in population patterns or growth upon the resource base, including but not limited to land use, water, and public services, of the area in question. Also, if the proposed action constitutes a direct or indirect source of pollution as determined by any governmental agency, necessary data shall be incorporated into the EIS. The significance of the impacts shall be discussed in terms of subsections (j), (k), (1), and (m). [Emphasis added.]"		
11.85 The section of the EIS rules which applies to the DEIS, has it own definition of 'significant impact' as defined above. What the DEIS is clearly lacking is the discussion of secondary impacts. The recent Supreme Court decision in Sierra Club v. DOT, 105 Haw. 299, 167 P.3d 292 (2007) is on point. This case is also known as the 'Superferry Case' and it clearly has redefined the concept of secondary impacts. It is presumed under the EIS Rules that there is a secondary impact. This DEIS is void of any such discussion.		There are very significant differences between the Superferry case and the City Council's selection of WGSL as the site of Oahu's future landfill. In the Superferry case, there had been no ongoing or existing ferry operations in the state. Here, WGSL has been in operation since 1989, almost 20 years ago. Unlike the Superferry case, secondary impacts of WGSL are and have been known and observable since it began operations in 1989. Thus, the impacts of current operations at WGSL are known and have been observed for years. It is not necessary to predict or assume such impacts. Most of the Ko Olina Resort was planned, developed, marketed and sold while WGSL was in full operation. Most of the town of Kapolei was built and developed while WGSL was in full operation. The land use growth, population growth, and public services in the Kapolei and Ko Olina areas developed while WGSL was in full operation. Thus, secondary impacts on growth, population, and public services are likely related to city policies rather than the presence of a landfill. Secondary and cumulative impacts are discussed and addressed in Section 1.4 of the DEIS.
11.86 The DEIS has incorrectly concluded there is no significant impact under the EIS Rules. Clearly the DEIS has not met its burden to overcome the assumption of significant impacts for a public works project such as this.		There is no "assumption" of significant impacts for the proposed expansion of WGSL. Additionally, the DEIS concluded that when appropriate mitigative measures or other actions are undertaken, that potentially significant adverse impacts can be reduced to acceptable levels that would not constitute an adverse effect.
11.87 Hawaii Law - There will be finding of significant impacts because in order for an EIS to stand the test under Hawaii law, it must be, 1) compiled in good faith; 2) met statutory requirements; and 3) provided sufficient information for the decision maker to make an 'environmentally-informed choice.		The contract between Waste Management and the City is a publicly available document. Amendment No. 5 to the contract, dated May 1, 1999, provided for the expansion of the Waimanalo Gulch site. Subsequently, the prior City administration decided on a five-year limit for the use of the site. The contract was not amended to a shorter term because the exact date of termination could not have been determined. Furthermore, Amendment No. 5, reads, in relevant part:

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1. The EIS Was Not Compiled In Good Faith. The supplemental EIS's contents must comply with the requirements of an EIS. HAR § 11-200-14. An EIS is "meaningless" if it is self serving and rationalizes an outcome. The Ninth Circuit has identified this concern as 'timing.' Idaho Sporting Congress, Inc. v. Alexander, 222 F.3d 562, 568 (9th Cir. 2000). In Idaho, the ninth Circuit reversed the district court's denial of an injunction and discussed the timing of the agency's action and the fact that the process shall not be used to rationalize or justify decisions already made. In Metcalf v. Daley, 214 F.3dc 1135, 1143 (9th Cir. 2000), the Ninth Circuit found another violation of the timing requirement and looked to the fact that the EIS process had begun after the agency had signed an agreement making the process one that rationalized the decision. This is exactly what has occurred here. There are three specific examples of the bad faith. One is the contract of 1999 which has been entered into by WMI and the City. The DEIS should have included this document in that it is critical in understanding how this outcome has been manipulated. The contract is incorporated by reference herein.		Contractor shall increase the existing Landfill footprint and operate the Landfill for a period of fifteen (15) years from the date of receipt of all permits for the initial operation of the additional landfill area, hereinafter called the Permit Date, or until the landfill is completely filled as determined by mutual agreement of the parties, or closed by regulatory requirement imposed by a state or federal agency, whichever occurs first. (Emphasis added). Thus, the effective term of the contract could have been shortened if closed by regulatory requirement, such as a failure to extend the SUP. Additionally, the City retains control of the contract and can terminate it at any time when it is in the best interest of the City. As provided in Contract Special Provision 29, the contract can be terminated "in whole or in part, whenever the Director shall determine that termination of the contract, in whole or in part, is in the best interest of the City." Please also refer to the response provided to comment no. 4, above.
11.88 The second example is the reliance on the Blue Ribbon Commission and the flawed assumptions. This is especially true when R.M. Towill has been the consultant on almost all of the EISs and the consultant for the Blue Ribbon Commission. An excuse that they are unaware of the topography is absurd.		This comment is similar to prior comments nos. 3 and 4, contained in your letter. Please refer to the responses provided, above.
11.89 The third is the contents of the NOV.		It is unclear how the NOV's contents relate to alleged bad faith in drafting the EIS. The NOV was issued by DOH after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NOV was issued. On December 7, 2007, DOH, the City and Waste Management agreed to a settlement which concluded the NOV process. At that time, there was only a single remaining violation that had not been brought into compliance--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which addressed the grade exceedance issue. Thus all alleged violations have been addressed to the satisfaction of DOH. See section 2.3. The NOV also gave rise to several operational changes at WGSL. The current operating permit substantially increased oversight, monitoring and reporting requirements.
11.90 2. The Statutory Procedural Requirements Were Not Met. The EIS process is governed by HRS § 343. An EIS is: § 343-2 Definitions. As used in this chapter unless the context otherwise requires: .. . 'Environmental impact statement' or 'statement' means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects. The statute also sets forth what the Rules must contain, at minimum. HRS § 343-6. The legal effects of administrative rules are well settled in this jurisdiction. Administrative Rules are to be followed and given the full effect of law. Williams v. Hawaii Medical Service Association, 71 Haw. 545, 549, 7984 P.2d 442, 444 (1990). The Supreme Court has clearly stated that arbitrary and capricious application of the Rules will not be tolerated. Windward Marine Resorts v. Sullivan, 86 Haw. 171, 948 P.2d 592 (ICA 1997). HAR § 11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The "General Provisions" highlight the expectation of the EIS process.		The consultation process mandated by HRS Chapter 343 and Title 11, Chapter 200, HAR, was followed. The consulted agencies were disclosed in the EISPN and in the DEIS at Section 13. Section 3.4 of the DEIS described the community EIS scoping meetings. Public comments were solicited during these meetings and used to prepare the EISPN and subsequent DEIS. Comment letters regarding the EISPN and responses are included in section 15 of the DEIS.

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	. . . An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliestopportunity in the planning and decision making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision makers will be enlightened to any environmental consequences of the proposed action. HAR § 11-200-14. Title 11, Chapter 200, contain the "Environmental Impact Statement Rules" and the following are examples of Rules which were not met. a. Full consultation did not occur with the DEIS. HAR § 11-200-15 A sets forth the following requirements to satisfy the consultation process. In the preparation of a draft EIS, proposing agencies and applicants shall consult all appropriate agencies noted in section 11-200-10 (10) and other citizen groups, and concerned individuals as noted in sections 11-200-9 and 11-200-9.1. To this end, agencies and applicants shall endeavor to develop a fully acceptable EIS prior to the time the EIS is filed with the office, through a full and complete consultation process, and shall not rely solely upon the review process to expose environmental concerns. This provision is to be read with the foregoing General Provisions and the requirements of HAR § 11-200-22 A, which further emphasize meaningful public participation as follows: Public review shall not substitute for early and open discussion with interested persons and agencies, concerning the environmental impacts of a proposed action. Review of the EIS shall serve to provide the public and other agencies an opportunity to discover the extent to which a proposing agency or applicant has examined environmental concerns and available alternatives. . . These requirements are clear and unambiguous. Hawai'i case law has consistently held that when statutes or rules are clear and unambiguous, they are to be given effect in accordance with their plain and ordinary meaning. IBEW v. Hawaiian Tel., 68 Haw. 316, 323, 713 P.2d 943, 950 (1986); RGIS Inventory v. Hawai'i Civil Rights Comm., 104 Haw. 158, 160, 86 P.2d 449, 451 (2004). Under the Rules, the consultation process should have been implemented as soon as possible to engage the appropriate agencies and the public and not rely solely upon the review process.		
11.91	When the issue of the expansion was brought to the communities, the Mayor prohibited the participation of the elected officials in his meeting. This can hardly be deemed as compliance with the consultation process. In addition, there was no sense that the decision to expand was open for discussion. The discussion was simply, if you don't expand WGSL, then the landfill will go to Nanakuli. This is not a consultation process which is open to the public.		The meeting referred to above was not a part of the EIS consultation process.

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11.92 Moreover, the concerns of the NOV and the acts complained of therein should give rise to major environmental concerns and require thorough discussions. The DEIS merely dismisses it with the fact that a settlement has been reached. The violation and the fines were the largest in the Nation at that time.		The NOV was issued by DOH after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NOV was issued. On December 7, 2007, DOH, the City and Waste Management agreed to a settlement which concluded the NOV process. At that time, there was only a single remaining violation that had not been brought into compliance--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which addressed the grade exceedance issue. Thus, all alleged violations have been addressed to the satisfaction of DOH, and WGSL is currently in compliance with all laws. See section 2.3. of the DEIS. The NOV also gave rise to several operational changes at WGSL. The current operating permit substantially increased oversight, monitoring and reporting requirements.
11.93 b. The FEIS failed to comply with the requirement to address alternatives. HRS § 343-2 defines an EIS as one that discloses, among other items, the 'alternatives to the action and their environmental effects.' HAR §11-200-17, which sets forth the Contents requirement of a Draft EIS, addresses the requirement as to alternatives as follows: F. The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. Examples of alternatives include: .. (Emphasis added.) HAR § 11-200-17 F. 5 states that 'For any agency actions, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency.' In Westlands Water District v. U.S. Dept. of Interior, 376 F.3d 853, 866 (9th Cir. 2004), the Ninth Circuit reaffirmed that alternatives must be rigorously explored and that 'reasonable alternatives' include those not within the jurisdiction of the lead agency. Westlands, supra, at 868. The Ninth Circuit went on to say that '[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate.' Id.. citing to Morongo Band of Mission Indians v. FAA, 161 F.3d 569, 575 (9th Cir. 1998). The alternatives discussed by the City assumed the City would operate the landfill and therefore required the purchase of each site. No consideration was given to private landfills and its ability to operate as an alternative landfill location, or alternatively, a private/public partnership. The DEIS fails to address the how much money the City makes on landfill operations and the need to control 'flow' of MSW.		The DEIS discussed technical and other alternatives, as well as alternative public and private locations for the proposed action. Numerous sites were eliminated because they did not meet state requirements. An EIS is not required to explore alternatives that "are not significantly distinguishable from alternatives actually considered, or which have substantially similar consequences." Westlands Water District v. U.S. Dept. of Interior, 376 F.3d 853, 868 (9th Cir. 2004) (internal citations omitted). The choice of alternatives is "bounded by some notion of feasibility and need not include "remote and speculative alternatives." Id. (internal citations omitted). "The touchstone [of] inquiry is whether an EIS' selection and discussion of alternatives fosters informed decision-making and informed public participation." Id. (internal citations omitted). The DEIS for the proposed project helps to foster informed decision-making and informed public participation, as evidenced by your letter and similar comment letters. There was no assumption that the City would operate the landfill. In fact, the City does not currently operate WGSL--Waste Management, a private company, is the operator of WGSL under contract with the City. The City is tasked with the obligation to provide environmentally sound disposal services for solid waste. In that regard, the City currently works closely with various private entities, such as those operating the landfill, the Synagro bioconversion facility at Sand Island, H-POWER, and the processing of curbside recyclables. Private sites and public sites were considered for a municipal landfill. As explained in the DEIS, numerous sites were eliminated because they did not meet state requirements. Further, WGSL is the only permitted MSW landfill on the island. The City combines tip fee revenue from City transfer stations and the landfill. The revenue for FY06 was $14,051,214 as reported in the City and County of Honolulu Operating Budget, Detailed Statement of Revenues and Surplus, Solid Waste Special Fund (250) Disposal Charges. The revenue for FY07 and FY08 was $10,794,073.00 and $11,332,649.27, respectively. A small portion of the tip fee revenue is attributed to commercial accounts disposal at transfer stations. Most of the tip fee revenue is generated by commercial accounts disposal at the landfill. In accordance with Chapter 9, Section 9-4.2, Revised Ordinances of Honolulu ("ROH"), only businesses, and federal and state agencies' accounts are charged a landfill tip fee. Homeowners and eleemosynary organizations pay no fees. Your comment regarding flow control is addressed in the response to Comment 79.
11.94 The DEIS also fails to adequately address the delay in the Solid Waste Management Plan and the City Ordinance which states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill.		The City has an Integrated Solid Waste Management Plan, and an update of that plan was adopted by the City Council in December 1994 through Resolution 94-306, CD1. A new draft update to the City's Plan was sent to DOH on June 30, 2008, for review. DOH will determine its appropriateness prior to consideration by the City Council. The update to the Plan makes it clear that there will always be a need for a landfill in order to manage waste that cannot be further combusted, shipped, recycled or reused, to mange solid waste during natural disasters, and to provide for other contingencies. Please see section 2.6. City Plans Involving the Future Handling of Solid Waste, of the FEIS. Your citation to the City Ordinance is incorrect. The City Ordinance to which you refer is Section 9-1.1, which provides in relevant part:

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			Sec. 9-1.1 Findings--Determinations--Goals. (b) (1) In addition to the findings and determinations made under this section, the council establishes the following goals: (A) By the end of 2007, at least 65 percent of the solid waste generated within the city be recycled, reused, composted, used for the generation of power, fuel or electricity through a waste-to-energy or other alternative technology facility, or otherwise diverted from placement in a landfill; (B) By the end of 2010, at least 75 percent of the solid waste generated within the city be recycled, reused, composted, used for the generation of power, fuel or electricity through a waste-to-energy or other alternative technology facility, or otherwise diverted from placement in a landfill; and (C) By the end of 2015, at least 90 percent of the solid waste generated within the city be recycled, reused, composted, used for the generation of power, fuel or electricity through a waste-to-energy or other alternative technology facility, or otherwise diverted from placement in a landfill. (2) The percentage goals in this subsection shall be reviewed annually by the department of environmental services, which shall recommend to the council any necessary revisions. For the purpose of these goals, "solid waste" includes source separated waste generated in the city, but not introduced into the disposal system. Please note that these are goals, as opposed to mandates. Additionally, these goals are subject to revision as necessary.
11.95	Moreover as discussed above, there is no discussion of secondary impacts which is necessary in order for an DEIS to be adequate.		Secondary and cumulative effects associated with the subject project was discussed and addressed in Section 1.4, Secondary and Cumulative Effects, of the DEIS.
11.96	c. The purpose and need section limits discussion. HAR § 11-200-17 D requires the Draft EIS to 'contain a separate and distinct section that includes a statement of purpose and need for a proposed action.' It is a similar provision under NEPA, which is looked upon to guide the discussion on alternatives. Westlands, supra, at 866. In Westlands, the Ninth Circuit looked to whether the preparers had 'arbitrarily and capriciously' narrowed the scope of the statement, thereby affecting the discussion on the alternative.		The DEIS was prepared in accordance with HRS Chapter 343 and HAR, Title 11, Chapter 200. The DEIS contains separate and distinct sections regarding the purpose and need for the proposed project, located at Section 3.2 and Section 3.3 respectively. These sections reasonably define the objectives of the project.
11.97	In the preparation of the Draft Supplemental EIS for this proposed expansion, it is critical that the decision maker and the general pubic are made to understand why the promises of government need not be kept. There should also be an explanation as to why the City prepares this DEIS and the Final EIS will be accepted by another City agency. This is especially true when the accepting agency has attached to it, the Planning Commission which is expected to be called upon the make the decision as to whether an SUP should be recommended to the LUC or whether the process requires a boundary amendment.		Representations of officials may become law and be binding when appropriately enacted into law, or through other acts that have the force and effect of law. Subsequent Mayors and/or City Councils may, however, change prior law through appropriate legislative, regulatory or legal processes. The Mayor, in accordance with HAR § 11-200-4.A., is the final authority to accept the EIS: A. Whenever an agency proposes an action, the final authority to accept a statement shall rest with: 1. The governor, or an authorized representative, whenever an action proposes the use of state lands or the use of state funds or, whenever a state agency proposes an action within section 11-200-6(b); or 2. The mayor, or an authorized representative, of the respective county whenever an action proposes only the use of county lands or county funds. The Planning Commission will not be called upon to make any decision as to whether the City should seek a boundary amendment or SUP. For purposes of the expansion addressed herein, the City will decide to pursue either an SUP or a boundary amendment. This procedural decision does not impact the analysis contained in the EIS.
12.	Cynthia K.L. Rezentes	7/7/2008	
12.1	I respectfully oppose any lateral expansion of the current Waimanalo Gulch Sanitary Landfill located at TMK 9-2-3: Portion 72 and Portion 73.		This comment is acknowledged.
12.2	The Special Use Permit allowing a municipal solid waste landfill at this location should be concluded as of November 1,2009 and this landfill closed as per the intent of the State Land Use Commission which approved an 18-month extension to the current permit for this location. The current landfill should be closed per guidelines established by the State Department of Health and under guidelines recommended by EPA 40 CFR 258.		This comment is acknowledged, however, for the reasons cited in the DEIS this option is not available to the City. We note for clarification that the planned area of use will be within an area of the property that has not yet been permitted for use as a municipal sanitary landfill.

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12.3 Any further request for use of this property should be proposed under a completely new and independent application and EIS with the requisite new surface water management plans, stability analysis, groundwater monitoring system, gas collection system, odor management, litter management, etc.		The subject DEIS proposes the use of an area of the City owned property that has not yet been permitted nor used as a municipal sanitary landfill. The landfill infrastructure that is proposed for the subject project is based on utilization and integration with several of the environmental management systems that are already in place and operational. New management systems will be installed as appropriate to ensure proper environmental management and compliance. A new EIS for this project is not considered appropriate given the status of review for the current EIS process that is underway.
12.4 The current landfill has already exceeded the topographical and airspace request per the original EIS at which point said EIS stated that there was a limited amount of the 200 acres of property that was apropos for a landfill. The current landfill has gone beyond that original evaluation and request by not limiting itself to the natural topography but has developed a new topography for the receipt of municipal solid waste. Any further use of the property should be under a new application.		In addition to the comment above, it is noted that the City has requested an amendment to the current area of landfilling from the LUC to allow for use of the airspace that has exceeded the original area designated in the Special Use Permit. On March 14, 2008, the LUC amended Condition No. 12 of the permit as follows: "The 200-care Property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan by November 1, 2009, or until the approved area reaches its permitted capacity, whichever occurs first." While it is acknowledged that an appeal to the LUC regarding this decision is presently on-going, a date for the hearing of the appeal will be at a later date. This process, however, will involve the use of the existing area of landfilling. In contrast, the subject EIS is for the evaluation of uses for an area outside of the presently permitted landfill footprint.
12.5 With the development of a new topography with which to establish the airspace to allow a 15+ year usage of the property should come the onus to do so responsibly and without potentially increasing the complexity of the analysis of the current landfill stability with increasing loads placed above and to the rear of the landfill (at the highest level of original topography). As can be seen in the first attached photograph, the topography of the area that is being proposed to be expanded into is within a steep, narrow area of the gulch with a naturally occurring waterway leading directly towards the base of the current landfill. This configuration places more stresses from a narrower base leading into a broader base and thus should be structured to be able to handle its' own load without impacting the current landfill.		The design of the proposed Waimanalo Gulch expansion considers geotechnical, seismic and other factors appropriate to the island and to the area of the site. Detailed stability analyses by engineering professionals were completed during the project design. The design of the current SUP area and the proposed area of expansion will meet the EPA Subtitle D (40 CFR Part 258) standard for stability. The design of the expansion will be subject to review by appropriate City and State agencies when they evaluate the permit documents.
12.6 In addition to there being a need to completely separate the current landfill from the proposed expansion, there needs to be an explanation of what activities are or should be allowed to take place upon the landfill once the height limits are reached. As can be seen in the second attached photograph, rock crushing, "daily" cover and other activities besides filling of currently open cells with municipal solid waste occurs. What are the impacts of these activities taking place on supposed "full" cells? This should be projected as there will be less "virgin" land area and more area comprised of municipal solid waste the further into the gulch operations move. Where will these activities take place and how does that affect the analysis of the appropriateness of extending further into the gulch?		Sufficient space is expected to be available for the proposed project given that only a portion of the approximately 200 acres will be used for landfilling. Space for associated landfill support activities that include the stockpiling of cover material will be in locations approved by the DOH based on the required load bearing capacity and surface stability. Rock crushing is not currently performed at the landfill. Rock crushing that is planned will not be performed on landfill cells that have reached capacity.
12.7 The analysis of how the expansion of -37 acres of land equates to 15+ years of usage needs to be demonstrated. If one takes the 60.5 acres of landfill space that will be utilized by November of 2009 and does a strict ratio of the acreage proposed to be used for the landfill expansion (not taking into consideration the more complex nature of a narrower gulch to operate within) there should only be about 12 years worth of capacity beyond November 2009. The claims that there would be a minimum of 15 years life should be proven.		The linear comparison suggested is inappropriate since it does not take into account the factors that should be considered in engineering the lateral expansion of the site. These factors include geotechnical soils studies and reports to establish appropriate slopes to maintain safety and stability of the site, and hydrogeologic factors to establish safe excavation depths. Other industry and governmental regulatory standards will also be considered in the final design of the site. The engineering design for the site will be reviewed by the State DOH as part of the Solid Waste Permit for consistency of design.

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12.8 There continue to be numerous questions with regards to when, if ever, the City proposes to close this area to taking trash from the entire island. Where are the plans for what happens as this area is filled more rapidly than ever due to the expanding development being allowed and built on the island?		The City's long range plan will continue to involve the on-going adoption and use of waste reduction and recycling technologies and practices to reduce O'ahu's dependency on landfilling. However, as noted in the subject DEIS, there are no immediate alternatives including transshipment, that can completely eliminate the need for landfills. Each alternative will result in the generation of some form of waste that cannot be further recycled, reduced, combusted or reused. For these waste by-products landfilling remains the most viable and feasible alternative for disposal.
12.9 Until there is a real faith effort made in addressing the solid waste problems faced by the City and County of Honolulu, I will respectfully disagree with any plans to continue doing "business as usual" and continuing to "dump" on the Leeward Coast.		This comment is acknowledged. The City has in good faith pursued alternative technologies to waste reduction that are reliable, cost efficient and scalable, and issued an RFP for alternative technologies. In response to the RFP, the only qualified proposals received to date have been for existing mass burn technologies. The City is currently pursuing mass burn technology through the expansion of H-POWER. No alternative can completely eliminate the need for a landfill. WGSL is a strategic component of the City's solid waste management system and the final destination for certain solid wastes including MSW, recycling residue, and H-POWER generated ash, residue and unacceptable waste that cannot further be combusted, recycled or reused.
13. Henry Eng, FAICP, Director	7/7/2008	
Department of Planning and Permitting		
City & County of Honolulu		
13.1 A rockfall and vibration hazard assessment focusing on potential impacts to existing and proposed residential developments… should be conducted.		See Section 5.3.3. Potential Impacts and Mitigation Measures of the FEIS, relating to soils, for a description of the testing program that will be undertaken to address rockfall and vibration hazards as a result of the use of controlled blasting.
13.2 The Final EIS should include a view impact assessment that describes impacts of the construction and completion of landfill cells and accessory activities until final closure and landscaping from major public vantage points.		See Section 5.10.1. Scenic and Aesthetic Environment, of the FEIS, for further information on the assessment of potential viewplane impacts from major public vantage points.
13.3 The final EIS should clarify if faux rocks are still being considered for the final landscape plan.		Once the expansion is approved, the contractor will perform clearing and grubbing activities each time a new landfill cell is constructed. Surface rocks encountered during this process will be collected and stockpiled for use on the final cap during the closure process. During closure the final cap will be installed and vegetated with a combination of grasses and natural vegetation that is native to the area. These stockpiled rocks will be placed on the final cap after the revegetation process is completed in an attempt to make the final appearance of the landfill blend into the surrounding hillsides. No faux rocks will be needed based on the availability of surface rocks as cell construction moves up through the gulch.
13.4 Initial construction activities for the expansion of the existing landfill may require grubbing, grading, and stockpiling permits. In addition, a grading permit will be required for the final cover that will be placed prior to landfill closure.		This comment is acknowledged and was addressed in the DEIS, Section 12, Permits and Regulatory Approvals That May be Required.
13.5 The discussion on anticipated impacts should consider dust generated by blasting and any required mitigation measures.		This comment is acknowledged. Generally, the type of controlled blasting that is performed at the site has resulted in the minimal generation of dust. However, to further address this concern, personnel performing the blasting will inspect the site for any loose sediments or soils that can constitute a dust source following blasting. As required, the area of the blast will be wetted down to suppress dust. See Section 5.7.3. Potential Impacts and Mitigation Measures of the FEIS, relating to air quality, for a discussion on mitigative measures for dust control from the use of controlled blasting.
13.6 Figure 4-7 on page 4-13 should show the height of HECO transmission lines and the required clearances.		This figure has been revised and is provided in the FEIS.
13.7 Figure 8-1 on page 8-11 should show State Land Use District boundaries with their respective labels. The existing and proposed SUP areas should also be shown.		This figure has been revised and is provided in the FEIS.
13.8 Figure 8-2 on page 8-13 should highlight ALISH categories while de-emphasizing property boundaries. The existing and proposed SUP areas should also be shown.		This figure has been revised and is provided in the FEIS.
13.9 On page 9-80, the section on Makaiwa Hills should be updated to indicate that the project has an accepted EIS and that it is presently undergoing a zone change application process.		We acknowledge the present status of the Makaiwa Gulch project. This comment is addressed in Section 9.7.4.3. Makaiwa Gulch, of the FEIS.

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13.10 There should be a discussion on whether development on the H-Power third boiler would curtail pursuing alternate technologies in the near future or make it economically unfeasible to close the landfill sooner or later.		The proposed expansion of the H-POWER facility is considered to be independent of the selection of other alternative technologies that may help the City & County of Honolulu with its handling of municipal refuse. This means that the City will continue to evaluate refuse management alternatives whenever feasible and advantageous as part of its overall system for refuse management. See also Section 2.6. City Plans Involving the Future Handling of Solid Waste, in the FEIS.
13.11 A more detailed description of accessory activities, such as recycling, grading, rock crushing, stockpiling and their dust and noise impacts on surrounding uses, especially Makaiwa Hills residential development, and their mitigation measures should be provided.		General information is provided in the FEIS to describe the community drop-off center to handle residential refuse recycling and disposal in Section 4.1.2. Features of Construction of Lateral Expansion. Adverse effects to the planned Makaiwa Hills project are not anticipated based on the limited scale of this activity that will be restricted to a small area within the interior of the Waimanalo Gulch site. The potential effects of construction that include grading, rock crushing, and stockpiling, have taken into consideration the Makaiwa Hills development as well as surrounding properties that include Ko Olina and other residences that surround the landfill property. While the detailed operational practices associated with construction will not be determined until such time that the final project plans are prepared following the current EIS effort, Waste Management has already initiated contact with the developer of Makaiwa Hills and fully intends to coordinate its future work activities to minimize and mitigate the potential for adverse effects.
13.12 With respect to vendors' proposals in response to "Project to Construct and Operate Alternative Energy Facility and/or H-POWER Facility," January 16, 2007, there should be a table comparing how each vendor's alternate technology meet or do not meet the six (6) minimum requirements.		The procurement solicitation referred to, Competitive Sealed Proposal No. 047, was cancelled on January 16, 2008 and is no longer under consideration by the City. Accordingly, a comparative table evaluating the proposals against the six minimum requirements was not prepared. However, a description of the City's requirements as they pertain to various alternative technologies has been provided in Section 9 of the DEIS and FEIS documents.
13.13 There should be discussion of the City's waste management plans for the years beyond 2024.		The Integrated Solid Waste Management Plan is presently under preparation and is scheduled for completion in early 2009. Information from a draft of the plan has been provided in the FEIS to describe future activities of the City in managing solid waste for the future. See also Section 2.6. City Plans Involving the Future Handling of Solid Waste.
14. Ken Williams, Vice President - Resort Operations	7/7/2008	
Ko Olina Resort & Marina		
14.1 The subject Draft EIS is flawed due to an inappropriate statement of need for the proposed project in Section 3.3. This statement of need is inappropriate due to the following reasons: -It attempts to use the EIS process to supersede site selection procedures required by the State Land Use Commission and initiated by the City Council and the previous City administration. While an EIS is a decision-making tool, Section 2 clearly documents the intent of the State Land Use Commission to use a formal site selection process. The EIS process cannot equal the level of detailed evaluation, dialogue, deliberation and community input that a process dedicated to selecting a landfill site can achieve. - It attempts to circumvent the State Land Use Commission's intent of establishing a deadline for the site selection process to determine a long-term landfill site. The proposed lateral expansion of the WGSL could defer closure of the WGSL by as much as 15 years or longer. This is contrary to the intent of the State Land Use Commission. Such a lengthy deferral should not be justified by merely reciting failed efforts to select a long-term site.		The subject DEIS has appropriately stated the need for the project which is consistent with Chapter 343, Hawai'i Revised Statutes (HRS), Environmental Impact Statements. According to Section 343-2, Definitions: "Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects. Each of these requirements defining the EIS, including its use for the purpose of environmental disclosure, has been documented for the Waimānalo Gulch Sanitary Landfill as the preferred alternative for the disposal of O'ahu's municipal solid waste and H-POWER ash and residue. It is further noted that the subject DEIS provides for the evaluation of alternatives that include potential landfill sites as well as technology based alternatives and other methods, such as waste transshipment, to address the need for the future disposal of O'ahu's municipal refuse. The DEIS, therefore, provides an important source of information for the LUC in evaluating the reasons why the City considers Waimānalo Gulch as the most viable and feasible alternative for our island. This effort to evaluate and provide environmental disclosure information that is relevant to the decision making process is clearly in the public interest.
14.2 Based on the situation described in Section 2-Project Background, the statement of need should be for an interim solution to dispose solid waste in the event that the City cannot meet the November 1. 2009 deadline. There is a need to determine how future violations of State and federal laws pertaining to landfill operations can be avoided.		This comment is noted. However, for reasons stated in the DEIS, the preferred alternative is for the use of the Waimānalo Gulch Sanitary Landfill Lateral Expansion site until the area has reached capacity, which under the present conditions is estimated to be approximately 15 years.

Commenting Party/Itemized Comments	Date of Letter	FEIS Section Reference and Comments*
		It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimānalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaiʻi are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality). It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk and we anticipate that based on these procedures that sufficient safeguards will continue to maintain public health and safety.
14.3 Throughout Section 5. 6 and 7 the cumulative impacts of the existing WGSL operation are not consistently nor systematically described in each category of environmental setting, public services and socioeconomic setting... Examples of anticipated impacts that will be cumulative include those on flora, fauna, cultural resources and visual/aesthetic.		The potential for secondary and cumulative impacts have been described separately in both the DEIS and FEIS, in Section 1.4, Secondary and Cumulative Impacts.
14.4 Section 6-Public Services, Potential Impact and Mitigation Measures fail to quantitatively and/or qualitatively discuss impacts in each category. For example, historic statistics on fire and police responses to the WGSL should be provided as a baseline for demands created by current operations. These should be compared to anticipated demands following termination of operations on November 1 2009 and anticipated changes in demand should interim operations be continued at WGSL. Another example is the existing impacts of odors and windblown trash on public and resort facilities from the current operation. These need to be documented by records of complaints, anecdotal reports and prevailing wind conditions as a baseline for assessing termination of operations on November 1 2009 and an interim continuation of operations, including the viability of proposed mitigation measures. The demands on the services of the State Department of Health should also be assessed due to the history of violation at the WGSL.		The Waimanalo Gulch Sanitary Landfill maintains appropriate and responsive relationships with the local fire and police departments, as well as the Department of Health and other relevant city and state agencies. See Section 15, Comments and Responses to the EISPN, which lists the fire and police comment letters regarding their belief that expansion of the WGSL will not adversely affect the level of commitment that these important institutions provide in maintaining public health and safety. The Waimanalo Gulch Sanitary Landfill maintains an active litter and odor control program which is described in the DEIS. See Section 4.2.2. Operational Controls. An odor complaint file is maintained on-site. According to Waste Management, less than 5 complaints were received about odor and/or litter within the last 12 months. Not all of those complaints were verified. Comments from the DOH regarding potential issues associated with the proposed project is a part of the EIS process. A copy of the DOH comments and the responses to their comments are provided in Section 16, Comments and Responses to the DEIS, which a part of the FEIS. Based on the comments received no adverse impacts to DOH services are anticipated.
14.5 Alternatives to the Proposed Action is flawed due to the inappropriate statement of project need, as discussed in item 1, above. Since an interim alternative is not a commitment to a long-term solution, the range of potential alternative sites and methods, or combinations thereof, available for evaluation is greatly expanded.		The statement of need for the project has been properly prepared and is consistent with the requirements for the preparation of a Chapter 343, HRS, compliant EIS. The alternatives evaluated for the proposed project, as well as the preferred alternative, do not involve the consideration of an interim solution.
14.6 Due to the flawed statement of need, the proposed project, assessment of impacts and consideration of alternatives is also flawed. The Draft EIS was crafted around a pre-determined solution to an impasse in selecting a long-term landfill site. As a result, it does not comply with the rigorous decision-making rationale required by Chapter 343, HRS. Therefore, a new DEIS based on a more appropriate statement of need should be prepared.		Please refer to the responses to Items 1, 3, and 5, above, concerning the preparation of the subject document in accordance with the requirements of Chapter 343, HRS. The subject DEIS does not have a predetermined outcome based on the nature of the document which serves the purpose of environmental disclosure. A new DEIS is therefore neither planned nor appropriate for preparation.
15. Ernest W. Lau, Public Works Administrator	7/9/2008	
Department of Accounting and General Services		
State of Hawaii		
We support the City and County of Honolulu's efforts in resolving the issues related to the island of Oahu's municipal refuse. We have no additional comments to offer at this time.		We appreciate your statement of support and acknowledge that you have no additional comments to offer.

Commenting Party/Itemized Comments	Date of Letter	FEIS Section Reference and Comments*
16. Abbey Seth Mayer, Director	7/10/2008	
Office of Planning; Department of Business, Economic Development & Tourism		
State of Hawaii		
16.1 The Office of Planning believes that the Draft EIS does adequately disclose potential impacts, alternatives, mitigating measures, and the secondary and cumulative impacts of those areas cross-cutting state concern that we requested be addressed in our comments on the EIS Preparation Notice.		We appreciate your review of the subject document and acknowledge your statement.
16.2 The Office of Planning defers to the State Department of Health on whether impacts relating to public health and safety of the proposed lateral expansion have been adequately disclosesd.		We acknowledge your deferral of potential issues involving public health and safety to the State Department of Health (DOH) and will respond to any concerns identified by the DOH concerning the DEIS in a separate letter.
17. Morris M. Atta, Administrator	7/11/2008	
Department of Land and Natural Resources		
State of Hawaii		
17.1 Engineering Division: Our comments dated December 23, 2006 for the subject, which were incorporated and attached at the Draft Environmental Assessment document, still apply.		We acknowledge that the comments of the Engineering Division dated December 23, 2006, have been incorporated into the DEIS document.
17.2 Division of Forestry and Wildlife, Land Division: We have no comments.		We acknowledge that the Division of Forestry and Wildlife and the Land Division have no comments.
18. Clyde W. Namuo, Administrator	7/11/2008	
Office of Hawaiian Affairs		
State of Hawaii		
18.1 While OHA understands the need and pressures that surround this proposed action, OHA is concerned that this document focuses too narrowly on the isolated issue of expanding a landfill. We wish to see more of a pro-active and far-reaching effort centering on sustainable waste management.1 This DEIS focuses on the 15 - year window of breathing room that the proposed action buys, and does not offer insight into finite planning for waste in Hawai'i. OHA is disappointed that this proposed project is not coordinated in any way reducing the current waste stream into the landfill.2 There is a demonstrated need to explore how other communities are efficiently dealing with their waste streams. An active recycling program, incentives, taxes, alternative technologies and regulations are just of the few low-hanging fruit that should be taken advantage of.		The purpose of the DEIS is to address Chapter 343, HRS, requirements relating to the preparation of an Environmental Impact Statement for the planned lateral expansion of the WGSL. The City's Integrated Solid Waste Management Plan is currently being updated and will provide policy guidance with regard to the overall use and relationship between landfilling and waste reduction strategies such as recycling, alternative waste reduction or elimination technologies, and waste transshipment. Although all options will continue to be pursued by the City, the use of landfilling remains the single most viable option for the disposal of MSW and H-POWER generated ash and residue. According to the DEIS (Section 9.7. Preferred Alternative), "There are several alternative technologies and the transshipment of waste that show promise toward reducing the need for landfills. The generation of MSW that exceeds the processing capacity of H-POWER as well as the generation of ash and residue, however, requires that facilities such as a municipal waste landfill be a part of the City's long term waste management system."
18.2 In November of 2006, OHA commented, "We also recommend that you conceive of the project area as a portion of a larger traditional cultural landscape; and, that the possible presence of one or more Traditional Cultural Properties (TCPs) is considered in your CIA (Cultural Impact Statement)."		The evaluation of the stone uprights as a "TCP" will be based on a review of these features in accordance with the requirements of applicable federal and state law for this designation. This evaluation will be performed by a qualified archaeological and cultural resource consultant and reviewed by the State Historic Preservation Division (SHPD) for applicability.
OHA has made a field visit to the project site and we noted three significant cultural features that were still intact in the project area. We are also aware of the probable existence of others yet to be discovered in the project area. OHA is further saddened that the larger setting that this project sits in is one that has been highly developed and degraded. Therefore, what TCPs that remain must be protected.		We add that while this evaluation will be performed, it has always been the City's intent that the stone uprights be treated in a manner consistent with its future preservation. See our comment below.
We appreciate that a cultural assessment has been made; however, it is important to note that OHA has consistently recommended that the three large upright boulders potentially used as trail markers that constitute State Inventory of Historic Properties (SIHP) site # 50-8012-6903 should be preserved in place. These features would likely be determined to be significant due to information content (criteria D) and traditional cultural significance (criteria E) under the Hawai'i Register of Historic places.		The restatement of OHA's position that the stones be preserved in place is noted. At this time the City is continuing to work with the SHPD and members of the community that have been identified by SHPD as important parties to the process. The final decision regarding the manner of preservation for the uprights will be determined by the SHPD.

Commenting Party/Itemized Comments		Date of Letter	FEIS Section Reference and Comments*
	Not only OHA, but also all the cultural consultants contacted by the applicant recommend the same course of action.4 If the uprights are removed as the applicant first proposes on page 1-22 of the DEIS, then what they mark will be lost as well. There is little point on making them more accessible, as is also proposed, because they are thought to be boundary markers; it is what the stones delineate, not the stones themselves that is more relevant in this place. Access for cultural practitioners should also be considered as is indicated on page 1-31 of the DEIS. OHA objects to the determination made on page 7-82 of the DEIS which states "Considering the use of the site as a landfill, preservation in place (of site # 50-8012-6903) is not thought to be an appropriate mitigation treatment for the stones, considering their cultural sensitivity." Using the very significance of the stones to destroy their relevance is callous and unfair. OHA also finds it odd that this DEIS repeatedly calls to remove site # 50-8012-6903 (see also pages 7-123 and 124) yet then on page 1 1-1 sites the preservation of the stone uprights as an unresolved issue to "develop and define an appropriate course of preservation." Once again, OHA states that due to the admitted cultural significance of site # 50-8012-6903, they should be preserved in place.		
18.3	The DEIS mentions environmental injustice on page 1-15 and indicates that "Leeward O'ahu is on the receiving end of many of O'ahu's burdens." The Environmental Protection Agency (EPA) defines this concept as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies." Table 7-1 of the DEIS shows that Wai'anae county has a resident population of 42, 259 while 'Ewa has 68,696. OHA notes that the Native Hawaiian populations in those two counties are among the highest on O'ahu at 65% and 61 % respectively. We express concern that Native Hawaiian populations are bearing a disproportionate amount of adverse health and environmental effects in this area stemming from what this DEIS on page 1-13 lists as odor, windblown litter, and visual impacts. The DEIS on page 7-21 states that within a 10-mile radius of the project area there are two separate landfills, two existing electrical power plants, a proposed new power generator plant, a deep draft harbor, and an industrial park all of which service the entire island. This is the very definition of environmental injustice. OHA points out there is also a large number of homeless people that have settled there from other areas of the island as well, which this community is now supporting. The DEIS does little to compensate for these inequalities and even states that "condominium analysis shows a significant correlation of increased value and proximity to the landfill." As such, OHA inquires as to whether or not the applicant actually asserts that living next to the landfill is more beneficial in terms of property value, health, and aesthetics.		According to the DEIS, Section 9, Alternatives to the Proposed Action, a major part of the reason for identifying Waimānalo Gulch as the preferred alternative from the standpoint of its physical location, is based on the assessment of: EPA Exclusionary Criteria involving physical features advantageous to the siting of a landfill; alternative sites that are located in areas which have since been developed or which are closed landfills with no further expansion potential; Board of Water Supply and Department of Health considerations that involve the need to protect our groundwater supply; and other factors involving the life of the site. The selection of Waimānalo Gulch as the preferred alternative due to the presence of residents with selected characteristics was never a part of the evaluation process. The correct reference to the presence of public and private facilities is on Page 7-28 of the DEIS. The context for citing this information is that, "A number of interviewees point out that Leeward Oʻahu has been and continues to remain on the receiving end of many of Oʻahu's burdens." The current Administration recognizes this as a major concern of the community and as noted in the DEIS, has provided $2.7 million in 2007 as part of a community benefits package with a further distribution of $2.0 million in 2008. They expect that participation and the benefits provided will continue to evolve as they gain experience in working with the community. (Page 7-20). Other mitigative measures to further address the potential for impacts to the surrounding community have also been identified in Section 7.1.5., Socioeconomic Mitigation Measures.
18.4	The applicant claims on page 1-32 of the DEIS that "The proposed project provides for the safe and effective disposal of municipal refuse for all the communities of O'ahu." However, OHA notes that this landfill has been in violation with both state department of health and federal EPA regulations. Further, the landfill was supposed to have ceased operations in May of this year and not benefited from a 2007 application to amend the Special Use Permit which eventually allowed this landfill to remain in operation. The proposed action will only add further burdens to our beneficiaries in these areas.		It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimānalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaiʻi are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality). It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk and we anticipate that based on these procedures that sufficient safeguards will continue to maintain public health and safety.

Commenting Party/Itemized Comments	Date of Letter	FEIS Section Reference and Comments*
		The purpose of the recent amendment to the Special Use Permit which allows Waimānalo Gulch Sanitary Landfill to remain in operation is to allow for the necessary disposal of MSW and H-POWER associated ash and residue. Without this capability the City would be left with no viable means of disposing of O‘ahu's refuse. Please refer to the response to Item 3, above, concerning the City's community benefits package.
18.5 There are further impacts as well, such as the potential for run-off from the site to effect water quality in the area, including the velocity of the run-off. The DEIS on page 1-7 directly states that "There is potential for leachate entering brackish groundwater from the landfill." Additional retention basins, leachate and gas systems are needed as well as the accompanying monitoring that they require. After the fact permit modifications should no longer be granted. OHA is also concerned about the effect that the leachate has on the wastewater treatment plant in the area as well as the eventual final outflow that results from it.		The potential for leachate entering brackish groundwater is provided in the DEIS, Section 5.5.5. Potential Impacts and Mitigation Measures. This section acknowledges that potential impacts to groundwater resources involve the possible release or entry of leachate entering brackish groundwater. Mitigation to address this concern is provided by use of a Leachate Collection and Removal System. Other measures associated with the protection of groundwater resources are described. The description and use of retention basins, leachate recovery, and gas control systems that serve to mitigate potential impacts are provided in the DEIS and describe both the existing and proposed future features of the landfill. Further detail can be found in the DEIS sections.
18.6 Additionally, OHA would also like to suggest that the current project area (and future if permitted) be landscaped with drought tolerant native or indigenous species that are common to the area. Any invasive species should also be removed. Doing so would not only serve as practical water-saving landscaping practices, but also serve to further the traditional Hawaiian concept of mālama ‘āina and create a more Hawaiian sense of place. This would also help to reduce the amount of impervious surfaces in the project area, thereby reducing runoff as well. OHA also recommends tree and landscape planting used to shade parking areas and provide shade and cooling to building elements and outdoor use areas. The final plans for this project should include restoration of the native environment.		Existing and future planned landscaping will incorporate the use of drought tolerant species as much as possible as a water conservation measure. As applicable, native species will be used and plantings of trees to provide shade for the parking and building areas of the landfill will be provided. The removal of alien species to completely restore the native environment, however, is not considered feasible. As noted in the DEIS, Appendix E, Botanical Resources Report for Alternative Municipal Refuse Disposal Sites on the Island of O‘ahu, "The results of all botanical surveys and searches of pertinent sources of information indicate that there are no special concerns or legal constraints related to botanical resources on any of the proposed sites. Non-native or introduced species of plants clearly dominate the natural vegetation in all areas proposed for landfill use, and the remnants of native vegetation extant on or near these sites consists of generally sparse growth of a limited number of species that remain relatively common in all undeveloped lowlands around O‘ahu."
19. Clifford Lum, Manager and Chief Engineer	7/14/2008	
Board of Water Supply		
City & County of Honolulu		
19.1 We have no objections to the proposed project.		We acknowledge that you have no objections to the proposed project.
20. Steve Y.K. Chang, P.E., Chief	7/15/2008	
Department of Health, Solid Waste Section		
State of Hawai‘i		
20.1 In our comments on the Waimanalo Gulch Landfill Expansion Preparation Notice, the SWS noted its concern over the designated 100-foot buffer on the boundary with the proposed Makaiwa Hills residential development. In your letter of May 12, 2007 you noted nuisance control measures to be implemented along that border in addition to the 100-foot buffer without actually increasing the size of the buffer zone. We maintain our position that the 100-foot buffer is inadequate to sufficiently ameliorate landfill impacts on the proposed residential development and instead recommend a 750 to 1,000-foot buffer. Such a buffer would be more effective in containing the impacts of landfill activities within the facility boundaries.		The 100-foot buffer was initially suggested to us as a minimal buffer to provide for mitigation of potential nuisances. In some instances an increased area of buffer may be warranted to allow for landscaping and other mitigative control measures. This area of buffer however, should not be arbitrarily assigned given that grading and excavation will be required to establish cells and other structural elements of the landfill. In these instances, while some earthwork will be required within proximity to the 100-foot buffer, the completion of this initial work will make possible two important features: (1) the establishment of proper landfill slopes will make possible the implementation of improved mitigative control measures such as landscaping, such that the area of buffer would exceed the minimum 100-feet, e.g., landscaping is expected to be facilitated on newly excavated soils rather than the existing unworked soils; and (2) the area of landfill use will be maximized thereby promoting the efficient use of the site.
20.2 Table 4-1, page 4-1. The DOH recommends amending this table to reflect expansion and soil usage estimates for MSW and ash cells separately.		The detailed configuration and location of the individual MSW and Ash cells within the expansion area are identified in the DEIS. The soil usage estimates for construction of these cells will be dependant on the final field configuration of the individual MSW and ash disposal cells. While these specific estimates of use are not known at this time, it should be noted that the amount of excavated material produced during the expansion will result in a surplus of available cell construction and daily cover material.

Commenting Party/Itemized Comments		Date of Letter	FEIS Section Reference and Comments*
20.3	Section 5.4.1, page 5-11. Figure 5-3, Surface Water Plan: Figure 5-3 shows the Western Drainage System with the detention basin above the present landfill. The accompanying discussion indicates that this depiction is applicable for the preferred expansion. This is incorrect and would leave a question as to whether or not a detention basin is still being contemplated. The DOH recommends a later version of the Western Drainage System be used that reflects the deletion of the detention pond.		Thank you for noting this error. A correct copy of the surface water control system will be provided in the forthcoming Final EIS for this project. As you have noted the detention basin has been deleted.
21.	Kirk S. Tomita, Senior Environmental Scientist	7/16/2008	
	Hawaiian Electric Company		
21.1	Engineering/Transmission & Distribution Division (Hsun Jou, 543-7527). HECO has existing overhead facilities within the subject property and will require continued access for maintenance purposes. Should it become necessary to relocate HECO's facilities, please immediately submit a request in writing and we will work with you so that construction of the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule. We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities, and address any conflicts between the proposed plans and HECO's existing facilities. Please forward the pre-final development plans to HECO for review.		We acknowledge your comments and need for continued access to overhead facilities. Although the relocation of HECO facilities is not anticipated and will not be required at this time, any future requirements will be coordinated with HECO. The prefinal plans for the proposed project will be submitted to you for review.
21.2	Engineering/Telecommunications Section (Dixson Lau, 543-7543). Section 6.4.1, Power and Communication Facilities (p. 6-12) of the DEIS states, "A separate easement crossing the present landfill access road is also held by HECO for periodic maintenance of the overhead lines." The document is not definitive as to whether this easement is the same easement used by HECO to gain access to its existing telecommunications facility at Kahe Point near Battery Arizona. The easement for this access crosses over Ash Cell 4, Ash Cell 5, MSW Cell 48 and MSW Cell 5. This telecommunications facility provides critical communications interconnectivity for our Kahe Power Plant to the rest of the HECO system. As such, access to the site is required year-round, 24/7. We would appreciate that this concern be addressed in the final EIS. Please keep us informed in the same manner as requested above by our Transmission & Distribution Division. We request that the development plans reflect and highlight any conflicts that will affect access to our Kahe Point telecommunications facility.		We appreciate this point of clarification concerning your easements near Battery Arizona that also cross the Ash and MSW cells. This will be addressed in Section 6.4.1. Power and Communications Facilities, in the FEIS. Project activities that have the potential to affect the Kahe Power Plant facility will also be coordinated with your Engineering Department.
21.3	Engineering/Structural Division (Roy Noda, 543-7067). The planned expansion is further mauka of the existing landfill and near the top of the ridgeline, which will impact our Kahe Power Plant as follows: (i) airborne debris from wind gusts will carry over the ridge and come down on HECO's 138kV Switching Station and other plant facilities; and (ii) the bird population may grow and result in increased nesting and littering problems within the plant facilities.		We acknowledge your comment and will address these concerns in the Final EIS. In general, the control of windblown litter will continue to be addressed as provided in Section 4.2.3. Environmental Controls, subsections on Litter and Cover Soil, in the FEIS. The control of birds will also continue to be provided by promoting the immediate covering of odorous waste with soil cover to discourage foraging. While current efforts have been effective it is recognized that continued diligence will be necessary to maintain the safety of the Kahe Power Plant facility.
21.4	Construction & Maintenance (Paul Nakagawa, 543-7062). We will need continued access to our facilities for maintenance purposes, as covered by our existing easement(s). Should relocation or additional facilities be required, a formal request should be submitted and coordinated through appropriate HECO department(s).		We acknowledge the existing easements and need for access for maintenance purposes. Should any future relocation or additional facilities be required a formal request will be submitted to the appropriate HECO departments by the City or operator.

Section 2
Project Background

2.1. Project Background

The Waimānalo Gulch Sanitary Landfill (WGSL) is an essential and necessary City & County of Honolulu facility that provides municipal and solid waste disposal for all the communities of O‘ahu. Refuse that is disposed of at the landfill includes Municipal Solid Waste (MSW); recycling residue; and, Honolulu Program of Waste Energy Recovery (H-POWER) ash and residue. The landfill has been in operation since 1989 and has capacity remaining with the unused 92.5 acres of the approximately 200 acre site for an estimated minimum life of approximately 15 years[1]. This period of use is expected to increase as the City's recycling efforts and use of proven alternative technologies divert more materials from landfill disposal. However, even with the present adoption of new technology based solutions and increased use of recycling, WGSL will remain a vital and key part of the City's waste management system.

The proposed project to expand the use of the Waimānalo Gulch Sanitary Landfill will extend the use of the site beyond November 1, 2009[2], the date after which the amended State Special Use Permit prohibits its further acceptance of solid waste.

This section provides the background of the project including the events that have influenced and affected the City's determination that an extension of use of the site for landfilling is required. A summary of the current situation, compliance violations, historical background of the State Special Use Permit, future City plans for refuse management, and prior Chapter 343, HRS, documents filed for WGSL are provided.

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[1] Based on no unforeseen circumstances including natural or other disasters that would require disposal of clean up or recovery related debris. In such an event space at the landfill could be exhausted sooner.

[2] In March 2008, the State Land Use Commission approved the extension of time for the State Special Use Permit extending the use of the current area of landfilling from May 1, 2008 to November 1, 2009.

2.2. Events Affecting the Decision to Expand Waimānalo Gulch

On ~~December 24, 2002~~ January 10, 2003, the Final Supplemental EIS (FSEIS) for a 14.9 acre expansion of the Waimānalo Gulch Sanitary Landfill was ~~approved~~ accepted. The FSEIS supported the expansion of the site from 86.5 acres to 101.4 acres. The final landfilling of the last cell was planned to be completed at the end of 5 years based on statements of the prior city administration, from the initial use of the expansion area to accept waste.

On June 9, 2003, a State Special Use Permit (SUP) application for the expansion area was approved. The SUP application identified the specific area requirement at 21 acres which included the space needed for excavation, storage and stockpiling of daily cover material, and other earthwork necessary to support the landfill. The total expansion area was adjusted to 107.5 acres, and the SUP required that on May 1, 2008, that the landfill would be restricted from accepting any further waste material and be closed in accordance with an approved closure plan[3].

Since the filing of the 21 acre expansion was approved in June 2003, the City filed an SUP Amendment requesting an extension of time for use of the site beyond the May 1, 2008 date. A major reason for the request was the capacity remaining within the 21 acres that could still be used for landfilling. In March 2008, the SUP Extension was approved with a new termination date of November 1, 2009.

Four important events have occurred since approval of the FSEIS and the 2003 SUP ~~Extension~~ Amendment that are relevant to the background of this EIS. Difficult issues were addressed by several important elected and appointed officials regarding Oahu's need and requirement for a landfill. These events, however, also point to the difficulty

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[3] Docket No. SP87-362, Decision and Order Approving Amendment to Special Use Permit For An Amendment to the Special Use Permit Which Established a Sanitary Landfill on Approximately 86.5 Acres of Land Within the State Land Use Agricultural District at Waimānalo Gulch, Hono‘uli‘uli, Ewa, Oahu, Hawai‘i, TMK No. 9-2-3: Portion 72 and Portion 73 (fka TMK No.: 9-2-3: Portion 2 and Portion 13), June 9, 2003.

and infeasibility of selecting a new landfill site to meet the condition of the SUP Amendment and the honoring of the commitment by the prior administration that the site would be closed in 2008. These events include the proceedings of the Mayor's Advisory Committee on Landfill Site Selection; Council Resolution 04-348; Council Bill 037; and the issuance of two separate notices of violation from the State Department of Health (DOH) and the U.S. Environmental Protection Agency (EPA) over landfill operations at the WGSL.

2.2.1. The Mayor's Advisory Committee on Landfill Site Selection

A Mayor's Advisory Committee (Committee) was formed by the previous City administration to comply with Condition No. 1 of the SUP that required that the Committee recommend a new landfill site to the City Council by December 1, 2003.

The Committee was comprised of 15 members selected by the prior mayor from various communities on O‘ahu. The Committee deliberated between June and December 1, 2003.

A major concern of the Committee during its deliberations involved the prior City administration’s commitment to close the existing Waimānalo Gulch Sanitary Landfill in five years, or by 2008, without regard to the fact that it had remaining capacity. The Committee chose to consider a possible expansion of Waimānalo Gulch in its deliberations. The Committee developed and used a double blind methodology to consider its ranking of the potential sites. This methodology meant that the Committee members were not aware of the identity of the sites being ranked and the consultant also was not allowed to see the identity of the sites as they applied the weighted criteria adopted by the Committee. The result of this process was that the Waimānalo Gulch Expansion was identified as the highest ranked site. This led to a division in the Committee which resulted in the decision-making process being changed from a consensus to a voting basis. This led to the resignation of four of the members of the Committee and a change in the decision making process to decision making by vote. With the resignation of four of the members of the Committee, the Waimānalo Gulch site was unanimously removed from the list of sites under consideration. The final action of the Committee was concluded with the delivery of its report to the City Council on December 1, 2003.[4]

The final Committee recommendation included four potential landfill sites and other recommendations for future consideration by the City and Council. The four sites were: Ameron Quarry; Māʻili Quarry; Makaiwa Gulch; and Nānākuli B. Other Committee recommendations were that: (1) the City Administration and City Council should not zone or permit any site unless a Host Community Benefits package is negotiated with the affected community where a landfill is sited; and, (2) the City is encouraged to land bank sites to reduce the potential for future land use conflicts when another landfill is needed.

2.2.2. Council Resolution 04-348, CD1, FD1, Selecting a Site for a New City Landfill

On December 1, 2004, Resolution 04-348, CD1, FD1, calling for the selection of the Waimānalo Gulch Landfill as the new landfill site was adopted by the City Council. The purpose of the resolution was to address a requirement of the approved SUP Amendment calling for the Council to render a decision on the selection of a new landfill site by December 1, 2004[5].

In preparing for the resolution, the Council's Committee on Public Works and Economic Development (PWED) submitted its <u>Summary Report on its Findings During its Landfill Site Selection Process</u>, November 16, 2004. Potential landfill sites reviewed included Ameron Quarry; Māʻili Quarry; Makaiwa Gulch; Nānākuli B; and Waimānalo Gulch. Information concerning these sites was obtained from the Department of Environmental Services (ENV), the Mayor's Advisory Committee Report, landowners and lessees, other departments and agencies, and the public. As a part of its deliberations the PWED

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[4] Report of the Mayor's Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection, December 1, 2003, City & County of Honolulu, Prepared by the Committee's Report Subcommittee, Pacific Waste Consulting Group and R.M. Towill Corporation.

[5] On April 1, 2004, the LUC approved an amendment to extend the deadline for the City Council to select a new landfill site from June 1, 2004 to December 1, 2004.

Committee held two public meetings, one in Windward and one in Leeward Oahu, attended by well over a hundred concerned citizens.

The Summary Report did not include recommendations for a specific site, but provided background information for the PWED Committee and Council. It noted that regardless of which site was selected that it would have to go through the EIS process and comply with all Federal and State landfill siting requirements. Environmental concerns raised at that time would need to be addressed during the EIS process.

The notes to the Summary Report indicated that originally,

> *"Waimanalo Gulch was not included as a recommended site in the final report of the Mayor's Blue Ribbon Committee on Landfill Site Selection. The Office of Information Practices then ruled that this final report was void due to violations of the sunshine law which occurred when the Waimanalo Gulch was taken off the recommended list. The PWED Committee, out of respect for the OIP's decision and in order to preserve the open process had included the Waimanalo Gulch as one of the options available for the next landfill site."*

The Summary Report and Council Resolution 04-348, CD1, FD1, adopted following the Report, noted that while the Council must select a landfill site, it recognizes there are promising new methods and processes to reduce the amount of municipal solid waste going into a landfill. The Council resolved that,

> *"…the city must employ sustainability concepts in the handling of its municipal solid waste so that the maximum recyclable materials, energy and alternative products are extracted before any waste is placed in our landfills; and", "…that the council will work with the incoming mayor and his administration to devote all available resources to ensuring the maximum use of recycling and the development of alternative technologies for disposal of municipal solid waste with the intention to effectively eliminate, to the extent possible, the need for a landfill by 2008;" and,*

> *"… in accordance with the conditions set forth by the state land use commission, that the Waimanalo Gulch site is selected as the site for the city's landfill because:*
>
> *(1) The site currently has over 15 years capacity left with further expansion, and this capacity can be further extended should the city be successful in reducing the amount of waste currently entering the landfill through recycling and the use of new technologies;*
>
> *(2) The city already owns the property and the infrastructure is already in place, making the site the most economical and least expensive to develop and maintain as a landfill;*
>
> *(3) Other sites will require a large capital outlay by the city to acquire the land through condemnation and to develop and construct the site and required supporting infrastructure;*
>
> *(4) A landfill management contract is already in place for 15 years;*
>
> *(5) This is the only site where the costs and revenues for a landfill are known factors; and*
>
> *(6) The current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impact, odors, airborne waste, litter and dust control;"*

The resolution concluded with a request that the City Administration immediately contact the Planning Commission, the State DOH, and the LUC to satisfy any necessary requirements for the use of the selected landfill site; and, the transmittal of the resolution to the State LUC, DOH, the Mayor, the Managing Director, ENV, and the City Planning Commission.

2.2.3. Mayor's Message 037, Calling for a Veto of Bill 37 (2005), CD2

Council Bill 37 (2005), CD2, was prepared by the City Council to address solid waste and ensure compliance with (1) the provisions of Chapter 342G, HRS, relating to solid waste, and (2) the previously approved SUP permit for the use of Waimānalo Gulch Sanitary Landfill until May 1, 2008. The bill passed the third reading of the Council on February 15, 2006. In particular, the Bill 37 provisions noted,

> *"SECTION 2. Section 9-1.1 ("Findings—Determinations—Goals"), Revised Ordinances of Honolulu 1990, is amended by amending subsection (a) to read as follows:*
>
> *(a) The council of the City and County of Honolulu (the "city") makes the findings and determinations set forth in this section:*
> *(7) Waimanalo Gulch Landfill.*
> *(A) After May 1, 2007, it is in the best interests of the city and its residents to permit the disposal into the Waimanalo Gulch landfill of only: (i) processed solid waste; (ii) any other material of a nonhazardous nature that cannot be converted into processed solid waste solely because such a conversion method does not exist; and (iii) any non-hazardous material that must be disposed of to protect the health and safety of the public due to an emergency or disaster declared by the council. After May 1, 2008, it is in the best interests of the city to comply with the state land use commission's special use permit granted to the city, the terms and conditions of which require that no additional waste be deposited at that facility and that the facility be closed in accordance with an approved closure plan.*
>
> *(B) In addition to facilitating the city's compliance with its special use permit granted by the state land use commission, the disposal parameters established in paragraph (A) are needed to: (i) eliminate litter, odor, and vector problems in*

> *the area surrounding the landfill caused by the disposal at the landfill of refuse and other types of municipal solid waste: (ii) alleviate the aesthetics problem to some degree; and (iii) set the city on the path towards: (aa) operating and maintaining disposal facilities capable of reducing the volume and complexity of refuse and other solid waste prior to landfill disposal; (bb) intensifying the effort to recycle or reuse solid waste that cannot be combusted, gasified, or vitrified: and (cc) exploring other means to address solid waste disposal."*

And,

> *"SECTION 4. Section 9-1.7, Revised Ordinances of Honolulu 1990, is amended to read as follows:*
>
> *Sec. 9-1.7 Acceptable and nonacceptable refuse and other solid waste at disposal facilities.*
>
> *(g) After May 1, 2007, the director shall permit the disposal into the Waimanalo Gulch landfill of only:*
> *(1) Processed solid waste;*
> *(2) Any other material of a non-hazardous nature that cannot be converted to processed solid waste solely because such a conversion method does not exist: and*
> *(3) Any non-hazardous material that must be disposed of to protect the health and safety of the public due to an emergency or disaster declared by the council.*
>
> *Material produced from the recycling or processing of refuse or other solid waste may be used to cover processed and other solid waste disposed of at the landfill.*
>
> *(h) After May 1, 2008, the Waimanalo Gulch landfill shall be closed."*

Section 5 of the Bill further directed the City to submit to the Council by December 31, 2006, its plan to comply with the ordinance and noted that at a minimum, the City administration shall include in the plan the strategies for and costs of compliance.

On February 28, 2006, the Mayor having reviewed and evaluated the contents of Bill 37, vetoed it citing that it would "cripple" the City's ability to responsibly carry out its municipal solid waste obligations since the expiration of the SUP permit would mean that the City could no longer legally use the Waimānalo Gulch landfill. Mayor's Message No. 037, dated February 28, 2006, noted:

> *"…given the indisputable facts that (1) the City cannot have a new landfill in operation by May 1,2008, and (2) for the foreseeable future, the City needs a landfill on island,[6] the Bill's requirement that the Waimanalo Gulch landfill be closed after that date exposes the City to an untenable choice in 2008 between (1) continued illegal operation of the landfill, thereby subjecting the City to possible regulatory fines, injunctions, and other lawsuits, or (2) the cessation of any landfill activity, which will mean no collection of municipal solid waste, island-wide. Neither alternative is acceptable to me, nor to you and your constituents. As such, Bill 37, C.D. 2, cannot be allowed to become law."*

And,

> *"…even if a new landfill site is selected this year, the reality of our current situation is that the City will not be able to cease use of the Waimanalo Gulch landfill by May 1, 2008. The planning, permitting and construction of an alternate landfill location will take longer than the two years remaining before that deadline. Other alternatives such as shipping off-island or new technologies have many issues, familiar to the Council, which will not be resolved before May 1, 2008. However reluctantly, the City must therefore seek to extend the permits for operating the Waimanalo Gulch landfill in any event. If Bill 37, C.D. 2, becomes*

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[6] "We are not aware of any company that has obtained USDA approval to ship waste off-island, nor are we aware of any technology that can eliminate our solid waste without residue that needs disposal." Mayor's Message No. 037, February 28, 2006.

> *law, please understand that the City would be prohibited by its own law from pursuing regulatory approvals to operate the Waimanalo Gulch landfill beyond 2008, even for extensions of a limited duration or scope. Consequently, we will be further hampered in our efforts to resolve this difficult and long-standing matter."*

Mayor's Message No. 037 identified a number of actions taken to address and improve management of the solid waste all of Oahu's citizens and visitors produce, including the search for an alternative site for a new landfill.

> *"In addition to all these efforts, I was personally committed to reexamining the city's options for locating a new municipal landfill to ensure that no viable alternative sites had been overlooked. In both the final report of the Mayor's Blue Ribbon Panel in 2003 and the 2004 updated Solid Waste Integrated Management Plan, five of the eight final sites evaluated were on the Waianae Coast. I have consistently stated that it is patently unfair for the Leeward Coast to be the sole repository for the island's opala.*
>
> *…we reexamined all the potential landfill sites on this island, trying to determine if there were realistic options elsewhere on Oahu. We looked at Kapaa Quarry on the Windward side, and had discussions with Ameron, which operates the quarry there. We looked at Poamoho Gulch on the North Shore. We looked hard at all the possible sites that would enable the City to relocate its municipal landfill operations and thereby bring a measure of fairness to the Leeward Coast. Ultimately, none of those sites was without serious impediments.*
>
> *Regrettably, we are compelled to reaffirm the conclusion reached by the Council in Resolution No. 04-348, C.D. 1, F.D. 1, that the Waimanalo Gulch landfill is the most viable, least expensive alternative for the citizens of Honolulu beyond May 2008."*

In closing, the message noted that while a landfill is of vital necessity on Oahu, that a reduction of this dependency requires the efforts of both the City and the Council.

> *"It is clear that reducing the need for a landfill remains a goal of my Administration and the Council, but we will need your cooperation to advance that goal. I ask your cooperation in working with my Administration to deal with the solid waste disposal challenge in a constructive manner for the benefit of all our constituents."*

The content of Mayor's Message 037 established the reason for the veto of Council Bill 37, and the selection of Waimānalo Gulch. However, the events involving the Mayor's Advisory Committee, Council Resolution 04-348, and the veto, do not obviate the requirements of Hawai‘i's Environmental Impact Statement law and regulation, Chapter 343, Hawai‘i Revised Statutes (HRS), and Chapter 11-200, Hawai‘i Administrative Rules (HAR). The preparation and filing of the subject EIS is intended to address these requirements.

2.3. Environmental Compliance Violations

Notices of violation over the operation of the WGSL were issued by the State DOH on January 31, 2006, and the U.S. Environmental Protection Agency (EPA) on April 4, 2006. <u>While it is acknowledged that this occurred because of delays in implementing the required regulatory controls, procedures were in place to ensure proper notification to the State DOH and EPA regarding the operational performance of the landfill. At no time was the public at any risk due to this delay in implementation.</u>

The following provides a summary of the DOH and EPA notices and current efforts that are underway to address the notices.

2.3.1 State Department of Health

The DOH NOV and Order, Docket No. 05-SHW-SWS-004, cited eighteen alleged violations of state law pursuant to Hawai‘i Revised Statutes (HRS), Section 342H-7, and Hawaii Administrative Rules (HAR), Chapter 11-58.1, Solid Waste Management Control Rules (**Appendix A**). The following is a summary of the eighteen counts:

Count I - Exceedance of permitted grades
Count II - Failure to submit annual operating reports in a timely manner
Count III - Failure to place daily cover on the active face of MSW landfill
Count IV - Failure to place intermediate cover material on the ash monofil
Count V - Exceedance of leachate head on the liner in ash monofill
Count VI - Exceedance of leachate head on liner in MSW Cell E-1 sump
Count VII - Failure to measure leachate levels and to maintain records on leachate levels in cell 4B sump
Count VIII - Failure to measure leachate levels and to maintain records on leachate levels in the ash monofill sump
Count IX - Failure to notify DOH of noncompliance on equipment blockage in MSW Cell 4-B leachate lateral line and inability to measure leachate levels
Count X - Failure to notify DOH on noncompliance in a timely manner on the exceedances of permit grades and submission of the annual operating reports
Count XI - Unauthorized storage of material on the ash monfil
Count XII - Failure to manage and ban the acceptance of special waste
Count XIII - Failure to maintain records and record location of asbestos disposal at the landfill
Count XIV - Failure to cover a dead animal
Count XV - Failure to submit annual surface water management plan
Count XVI - Failure to control the generation of dust from vehicular traffic
Count XVII -Failure to minimize free litter generation in the landfill
Count XVIII - Failure to monitor explosive gases and maintain monitoring records

Of the eighteen counts in the NOV, sixteen were already corrected when the NOV was issued. One of the other two counts (Count VII, failure to measure and maintain records of leachate levels in one sump due to a blockage caused by broken equipment) was resolved through final installation of the required equipment on September 27, 2007.

The remaining count (Count I, exceedance of permitted grades) was addressed through the submission of an application to the DOH for a permit modification to increase the maximum final grades of the ash monofill. The application was submitted in February 2006 and a draft solid waste management permit, authorizing an increase in the height of the ash monofill up to 275 feet above msl, was issued by the DOH in November 2007 with input from WMH and the City. Public comments were solicited and a public hearing on the draft permit modification was held on December 11, 2007. ~~The permit modification was approved by the DOH.~~ After extensive review and a stability analysis, the grade modification was approved by the DOH on February 20, 2008.

On December 7, 2007, WMH, the City and DOH signed a settlement agreement which fully and finally settled all issues arising from and related to the NOV. The settlement agreement mandates corrective actions and new compliance requirements regarding:

1. screening of waste
2. groundwater and leachate monitoring
3. daily cover
4. weekly cover
5. cover of inactive ash and MSW areas
6. leachate collection sump and discharge riser
7. removal of leachate from the landfill
8. grade survey control markers
9. an asbestos management and disposal plan
10. perimeter gas monitoring

In addition, the settlement agreement requires either the (a) payment of $1.5 million in cash to the DOH, or (b) payment of $520,000 in cash to DOH, a contribution of $637,500 to a supplemental environment project fund to benefit the Leeward Coast or other areas on Oahu, and construction of a community solid waste/recyclable drop-off center near the WGSL scale house costing at least $450,000. The settlement agreement concludes the DOH NOV and the associated contested case which was dismissed.

As a result of the NOV and new regulations and requirements, additional provisions have been included in the revised landfill solid waste operating permit. The DOH has greatly increased the frequency of site inspections and review of the required operating documents submitted for the project. For example, a ground survey is performed on a bi-monthly basis to compare existing grades with approved grades. DOH enforces these provisions and determines the frequency of its inspections.

City ENV staff is in constant contact with WMH to address issues that may arise on a daily basis. City staff initially screens the refuse when refuse delivery vehicles arrive at the WGSL scale house. WMH does further screening as the waste is disposed of at the working face of the landfill. The City co-authors or receives copies of all reports submitted to the DOH.

2.3.2. U. S. Environmental Protection Agency

On April 5, 2006, the EPA announced by press release that Waste Management of Hawaiʻi, Inc. (WMA) and the City & County of Honolulu (CCH) were alleged to have violated certain provisions of the Clean Air Act at the WGSL. A summary of the violations indicated the following (**Appendix B**) (EPA Press Release, April 5, 2006, Letter from U. S. EPA, Region IX, and Finding and Notice of Violation, Docket No. R6-06-06):

> *Finding of Violation*
>
> *8. The Waimanalo Gulch Landfill is owned by CCH and operated by WMH,*
>
> *9. The Waimanalo Gulch Landfill commenced modification after May 30, 1991.*
>
> *10. Beginning March 12, 1996, the landfill became subject to NSPS Subpart WWW.*

11. On March 12, l996, the Landfill had a design capacity < 2.5 million megagrams (Mg) and 2.5 million cubic yards (m^3).

12. On June 9, 1996, WMH submitted an Initial Design Capacity Report and Initial NMOC [non methane organic compounds] Emission Rate Report (collectively, "Initial Report") for the Landfill to EPA pursuant to 40 C.F.R. §§ 60.757 (a)(1), 60.757(a)(2) and 60.757 (b).

13. The Initial Report for the Landfill, submitted by WMH to EPA on June 9, 1996, is the first report in which the Landfill had an NMOC emission rate > 50 Mg/yr.

14. WMH or CCH was required to either submit a design plan to EPA within 1 year of June 9, 1996, or by June 9, 1997, or perform Tier 2 measurements that show NMOC emissions < 50 Mg/yr and report such results to EPA by December 19, 1996.

15. WMH and CCH failed to submit a design plan to EPA by June 9, 1997.

16. WMH and CCH failed to submit Tier 2 results to EPA by December 9, 1996.

17. WMH and CCH violated Section 111 of the Act, 40 C.F.R. §§ 60.752 (b)(2)(i) and 60.752 (c) by failing to submit a design plan to EPA by June 9, 1997 or submit Tier 2 recalculations to EPA by December 9, 1996.

18. WMH or CCH was required to install a GCCS [gas collection and control system] for the Landfill within 30 months of June 1996, or by December 9, 1998.

19. WMH and CCH failed to install a GCCS for the Landfill by December 9, 1998.

20. WMH and CCH violated Section 111 of the Act and 40 C.F.R. §§ 60.752(b)(2)(ii) by failing to install a GCCS for the Landfill by December 9, 1998.

21. On August 1, 2005, full operation of a GCCS for the Landfill began. However, the GCCS has not complied with, and does not comply with, the design and operation requirements of 40 C.F.R. § 60.752(b)(2). Therefore, WMH and CCH have been in violation, and are considered to be in violation, until WMH and/or CCH establishes continuous compliance with 40 C.F.R. § 60.752(b)(2).

Enforcement

22. Section 113(a)(3) of the Act provides that whenever EPA finds that any person has violated, or is in violation of, any requirement or prohibition of, inter alia, subchapter I or V of the Act, including, but not limited to, any requirement or prohibition of any rule promulgated under Sections 111 or 502 of the Act, EPA may,

> - *issue an administrative penalty order pursuant to Section 113(d) for civil administrative penalties up to $32,500 per day of violation, or*
> - *issue an order requiring such person to comply with such requirement or prohibition, or*
> - *bring a civil action pursuant to Section 113(b) for injunctive relief and/or civil penalties of not more than $32,500 per day for each violation.*
>
> *42 U.S.C. § 7413(a)(3), as amended by Pub. L. 104-134.*
>
> *Furthermore, for any person who knowingly violates a requirement or prohibition of Sections 111 or 502 of the Act, Section 113(c) provides for criminal penalties or imprisonment, or both. In addition, under Section 306(a), the regulations promulgated thereunder (40 C.F.R. Part 32), and Executive Order 11738, facilities to be used in federal contracts, grants, and loans must be in full compliance with the Act and all regulations promulgated pursuant to it. Violation of the Act may result in the subject facility being declared ineligible for participation in any federal contract, grant, or loan.*

WMH and the City have been working closely with the EPA to resolve the EPA NOV, which resulted from self-reporting of the late installation of a landfill gas collection and control system (installed and operational by November 2005). That system is already in full operation at the landfill, and discussions with the EPA have focused on resolving the monetary fines and a final agreement on a plan to address elevated underground temperatures at the landfill, which are higher than normally expected, but which are not indicative of underground combustion conditions (i.e., fire).

Waste Management continues to monitor and evaluate the potential causes of the elevated gas temperatures and has provided documentation to EPA and DOH to demonstrate that the Landfill can be safely operated at these higher temperatures. Waste Management will continue to coordinate appropriate measures to maintain compliance with all regulations as required by law.

2.4. Summary of Current Status

The situation involving the issuance of the NOVs by the DOH (now resolved and settled) and EPA (resolution pending further discussion) have resulted in efforts by the City and WMH to address the concerns raised and to implement improved management reporting procedures to prevent a similar situation from recurring.

To evaluate operations performance, the City hired a third-party engineering consultant to evaluate landfill operations. They concluded that WMH was performing at a satisfactory level. WMH has also contracted with another third-party engineering consultant to evaluate the effect landfill operations may have on neighboring areas and has shared data with the City. The City’s staff meets weekly with WMH staff to discuss landfill operations. In addition, the City’s Refuse Disposal Engineer is in daily contact with WMH’s General Manager regarding operations at WGSL.

The situation involving the continuing need for landfill space since the veto of Council Bill 37, however, has not changed. The present effort by the City to maximize landfilling space that is remaining within the existing permitted WGSL area is anticipated to extend the usable life of the site by approximately one to two years. While this provides for more efficient use of the site, this capacity will eventually become exhausted.

The shortage of space for the disposal of MSW and ash will be addressed by the City by use of the approximately 92.5 acres of the property that remain unused. The potential capacity of this area is expected to allow for a site life of not less than approximately 15 years based on current rates of waste disposal at approximately 1,400 tons per day. This addition of space will be used for the benefit of all the communities of the island of O‘ahu.

The planned expansion of the landfill will not be considered alone by the City. The City will continue to utilize all feasible alternative technologies to landfilling, adopt recycling/reuse programs, and use of waste transshipment to support extending the useful life of the site. However, while it is possible to extend the life of the lateral expansion of the landfill, it is not possible to entirely eliminate the need for a municipal sanitary landfill. Factors that will continue to influence the complete elimination of the landfill include: (1) the need for a site capable of accepting the disposal of emergency debris generated as a result of a natural or man-induced disaster, e.g., hurricane, tsunami, major industrial or public works accident, or act of terrorism; and (2) there are no alternative waste disposal technologies which do not themselves result in the generation of residual material that cannot be further recycled, reused, or otherwise recovered for other purposes. For these types of waste generated in the City & County of Honolulu a municipal sanitary landfill remains the most viable option for disposal.

2.5. Historical Background of the State Special Use Permit

A. 1987 - Special Permit for the establishment of WGSL granted.

On October 17, 1985, the Director of Land Utilization, City & County of Honolulu (now known as DPP), accepted the Final Revised EIS which discussed probable adverse environmental effects and proposed mitigation measures for the establishment of a landfill at Waimānalo Gulch, Honouliuli, 'Ewa, O'ahu, Hawai'i.

On February 4, 1987, the Planning Commission approved the SUP application to establish WGSL on approximately 60.5 acres of land within the Agricultural District, subject to six conditions. The application was submitted by the Department of Public Works, City & County of Honolulu (now known as the Department of Environmental Services [ENV]).

Because the SUP was for land greater than fifteen acres, on April 20, 1987, the LUC also approved the issuance of the SUP to establish WGSL.

B. 1989 - Amendment to SUP to expand WGSL by 26 acres granted.

On July 26, 1989, the Planning Commission approved an amendment to the SUP to expand WGSL by 26 acres. The amendment had been requested because 26 acres had been inadvertently left out of the original SUP. The additional 26 acres was necessary to allow enough land area for the proposed administration building, weighing station, drainage structures and access roads.

On October 31, 1989, the LUC also approved the SUP amendment to expand the existing approved area by 26 acres.

C. 2003 - Amendment to SUP to expand WGSL by 21 acres granted.

On January 10, 2003, the Department of Planning and Permitting accepted the Final Supplemental EIS (FSEIS), which covered a proposed 21-acre expansion of WGSL.

On March 13, 2003, the Planning Commission granted ENV’s application to expand WGSL by 21 acres, which, at that time, was projected to extend the life of WGSL by 5 years. The proposed expansion included four cells for disposing MSW (E1 through E4), berms, detention and silting basins, drainage channels and access routes. In its Findings of Fact, Conclusions, and Decision dated March 13, 2003 (the "2003 Planning Commission Decision"), the Planning Commission recommended that ENV submit an alternate landfill site, or sites, to the City Council by December 31, 2003. The Planning Commission did not, however, condition its approval on this recommendation.

With its approval of the 21-acre expansion, the Planning Commission imposed two additional conditions. One of the conditions, Condition No. 10, required ENV to stop accepting waste material within 5 years from the date of the SUP amendment approval or the date of the Solid Waste

Management Permit approval, whichever occurred later, but not beyond May 1, 2008.

On June 9, 2003, the LUC issued its Decision and Order Approving Amendment to Special Use Permit (the "2003 LUC Decision"). The 2003 LUC Decision adopted Condition No. 10 of the 2003 Planning Commission Decision as Condition No. 12 of the 2003 LUC Decision:

"Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan."

Because the LUC issued its 2003 LUC Decision on June 9, 2003, and Solid Waste Management Permit approval (permit renewal No. LF-0054-02) was issued on May 15, 2003, the SUP Permit was set to expire on May 1, 2008.

The LUC also imposed Condition No. 1, among others, requiring the City and County of Honolulu to select a new landfill site by June 1, 2004, or the SUP would immediately expire on that date.

D. Extension of Deadline to Select a New Landfill from June 1, 2004, to December 1, 2004.

On March 25, 2004, ENV filed a Motion to Amend and/or Stay the 2003 LUC Decision. ENV requested (1) an extension of the deadline to select a new landfill site from June 1, 2004 to December 1, 2004 (i.e., an amendment to Condition No. 1 of the 2003 LUC Decision); and (2) clarification from the LUC as to whether WGSL could be considered by the City Council as one of the available landfill sites.

By Order dated May 10, 2004, the LUC granted ENV's Motion in part. The Commission granted the extension of the deadline to select a new landfill site from June 1, 2004 to December 1, 2004, subject to the condition that the City Council submit monthly progress reports to the LUC to include, among other things, updates on the City's efforts to select a new landfill site and to find alternative technologies to reduce or eliminate landfilling.

The LUC did not, however, issue a decision as to whether the WGSL could be considered by the City Council as one of the available landfill sites because such matter "was not within the jurisdiction of [the LUC]." All other conditions of the SUP remained in effect, including Condition No. 12 which required WGSL to stop accepting waste by May 1, 2008.

E. December 2004 - Resolution Adopted by City Council Selecting WGSL as its future landfill site.

On December 1, 2004, the City Council selected WGSL as its future landfill site.

F. 2008 - Extension of Waste Acceptance Deadline to November 1, 2010.

On July 6, 2007, ENV filed an application with DPP to amend Condition No. 10 of the 2003 Planning Commission Decision and Condition No. 12 of the 2003 LUC Decision, by extending the deadline to accept waste at WGSL from May 1, 2008, to May 1, 2010, or until WGSL reaches its permitted capacity, whichever occurred first (the “Application”).

Colleen Hanabusa, Esquire, and Ko Olina Community Association (KOCA) filed petitions to intervene. On November 14, 2007, the Planning Commission held a public hearing at the Mission Memorial Auditorium, City Hall Annex, in Honolulu, Hawai‘i. The Planning Commission granted both requests to intervene. The Planning Commission subsequently closed the public hearing and scheduled the matter for a contested case hearing.

On December 7, 2007, the Planning Commission conducted a contested case hearing on the Application at Kapolei Hale, Conference Rooms A and B, in Kapolei, Hawaiʻi. On January 16, 2008, the Planning Commission granted ENV's Application to amend Condition No. 10 of the 2003 Planning Commission Decision to extend the waste acceptance deadline by two years, or until WGSL reaches its permitted capacity, and issued its Findings of Fact, Conclusions of Law, and Decision and Order (the "2008 Planning Commission Decision"). The Planning Commission recommended that the LUC similarly amend Condition No. 12 of the 2003 LUC Decision.

On January 31, 2008, the LUC received the 2008 Planning Commission Decision and complete record of the Planning Commission's proceedings on the Application. On February 21, 2008, the LUC met to consider the Application. Following the receipt of public testimony, the LUC deferred the matter to its March 6, 2008 meeting. On March 6, 2008, the LUC resumed its meeting on the Application, and recognized Colleen Hanabusa and KOCA as intervenors in the LUC's proceeding based on their intervenor status before the Planning Commission.

On March 7, 2008, the LUC resumed its meeting on the Application. At that meeting, the LUC adopted the Planning Commission's recommendation with an amendment to waste acceptance deadline from May 1, 2010, to November 1, 2009, with an additional condition requiring ENV to report to the LUC every six months on the actions taken to alleviate further use of WGSL. The LUC issued its Findings of Fact, Conclusions of Law, and Decision and Order adopting with Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit (the "2008 LUC Decision") on March 14, 2008.

Thus, Condition No. 12 of the SUP now reads as follows:

"The 200-acre Property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan by November 1, 2009, or until the approved area reaches its permitted capacity, whichever occurs first."

G. Appeals by Intervenors

On February 12, 2008, Colleen Hanabusa and KOCA (collectively, “Intervenors”) filed a Notice of Appeal to Circuit Court, appealing the 2008 Planning Commission Decision. See Ko Olina Community Association v. Planning Commission, Circuit Court of the First Judicial Circuit, State of Hawaii, Civil No. 08-1-0313 (Agency Appeal). On February 15, 2008, Intervenors filed an Amended Notice of Appeal to Circuit Court, naming the Planning Commission, ENV and DPP as Appellees.

On April 10, 2008, Intervenors filed a Notice of Appeal to Circuit Court, appealing the 2008 LUC Decision. See Ko Olina Community Association v. Land Use Commission, Circuit Court of the First Judicial Circuit, State of Hawaii, Civil No. 08-1-0727 (Agency Appeal). Intervenors named ENV and the LUC as Appellees.

The two appeals were consolidated on June 25, 2008. On October 1, 2008, the Circuit Court heard oral argument from the parties on the consolidated appeals. On October 3, 2008, the court entered its order affirming the LUC’s decision in Civil No. 08-1-0727-04, and dismissing as preliminary and not appealable the Planning Commission’s decision in Civil No. 08-1-0313-02, but maintaining the consolidated appeals and records on appeal. On October 7, 2008, the court entered an amended order correcting two internally inconsistent errors in its October 1, 2008 order. Final judgment had not been entered as of October 8, 2008.

2.6. City Plans Involving the Future Handling of Solid Waste

Policy guidance on the future management of Oʻahu's solid waste for the period beyond the projected life of the WGSL is provided in the City's Integrated Solid Waste Management Plan, which is presently under preparation by R. W. Beck. The schedule for completion of this plan is in early 2009, when it will be reviewed for adoption by the Honolulu City Council. A draft working copy of the plan has identified a number of strategies over the next five year period to help guide solid waste management and development activities (R. W. Beck, 2008). The final plan will identify the City's initiatives for a longer projected period of 20 or more years.

The current status involving the H-POWER expansion and the proposed use of transshipment are included as provided by Pacific Waste Consulting Group, Inc. (PWCG, 2008).

2.6.1. Transfer Stations

The City has completed an evaluation of its transfer stations to identify how current operations could be improved and what would be required to meet future needs at each of the facilities. Between 2009 and 2011, the Keehi, Kawailoa, and Kapaʻa Transfer Stations will be modified to accommodate facility and maintenance upgrades. (R.W. Beck, 2008).

Keehi Transfer Station – In 2009, the City will assess whether to convert this transfer station to a top loading facility. Other planned projects at the Keehi Transfer Station include fuel station renovations which will install an automated electronic card reader system and relocating of the existing fuel station to enable fueling on both sides of the pump. The project is scheduled to be completed by 2010.

Kawailoa Transfer Station – When the next modification of the solid waste permit application is submitted in 2010, the City will consider requesting an increase in the permitted capacity for the transfer station to address anticipated growth on the part of the island served by this transfer station.

The planned site improvements will include paved parking, staging, and circulation areas; an extended tipping area with a new green waste receiving bay; a mulch distribution area; new water main; new sewer main; and a new operations building. The 330-square-foot operations building will consist of an office, a restroom, equipment storage, and circulation space. The upgraded transfer station will receive and transfer green waste separately. The primary traffic pattern will not change at the improved facility. The present mulch distribution area is located at the rear of the site and is not easily accessible to residents. The upgraded mulch distribution area will positively change the traffic pattern for residents picking up mulch at the site. The project is scheduled to be completed by 2011.

Kapaa Transfer Station - Expansion of the Kapaa Transfer Station should not be necessary with the present average daily receipt of MSW at less than one half of its permitted design capacity. However, since its age is approaching 20 years old, the facility now requires major repairs and replacements. The project is scheduled to be completed by 2012.

The City will continue to reevaluate the adequacy of processing capacity of its transfer stations to identify any capacity, operational or infrastructure deficiencies, and where required provide for appropriate upgrades or modifications.

2.6.2. Waste to Energy (WTE) Capacity

The City is in process of working with Covanta Energy to add a third unit to H–POWER. When permitted, the third unit will have a capacity of 300,000 tons per year (TPY) and will be a mass burn facility. The existing H–POWER Units #1 and #2 are refuse derived fuel units in which the waste is processed to remove metals and other difficult to combust materials before incinerating the waste. The new mass burn facility will accept waste without pre-processing and convert it to energy. (PWCG, 2008).

The additional capacity is scheduled for on-line service by 2011. The added capacity is expected to reduce the demand on the existing plant by more efficiently distributing the workload among three rather than two boilers. The lifespan of the H-POWER expansion is expected be in excess of 25 years and will increase the generation of electricity derived from MSW.

The plant is intended to reduce the amount of disposal in the WGSL. It will further reduce the Island of Oahu's greenhouse gas footprint by increasing from five to eight percent the amount of electricity produced from solid waste, a renewable fuel. (PWCG, 2008).

The plant will have an economic life, but it can be upgraded when technical improvements are available. When constructed, it will have emission controls among the best of any energy from waste plant in the country. The plant will be the most modern in operation. As with H–POWER units #1 and #2, future upgrades are expected to keep the plant technologically current and provide needed disposal capacity for the foreseeable future. (PWCG, 2008).

2.6.3. Landfill Capacity

The City is currently processing an EIS for the WGSL. The EIS process is scheduled to be completed by November 2008. Upon acceptance of the EIS, the City will seek all necessary land use permits through a process requiring public hearings.

In 2011, the City will begin the process of identifying a new landfill beyond the capacity of the planned lateral expansion of the WGSL. The reasons for initiating this process early involve: (1) the selection of a new landfill should involve early community consultation and input; (2) a number of factors will need to be considered by the City that involve land use, environmental, and socioeconomic issues; (3) locations that are available on O‘ahu for the siting of a municipal landfill have become increasingly constrained by development pressures that have reduced the availability of alternative locations for a landfill; (4) a municipal sanitary landfill is anticipated to be required for the foreseeable future, e.g., there are no alternative waste disposal technologies which do not themselves result in the generation of residual waste that cannot be further recycled, reused, or otherwise recovered; and (5) the capacity that is provided by a municipal sanitary landfill may be called upon during periods of natural or man-induced disasters.

As much as practicable, the new MSW landfill is intended to avoid areas situated west of Makakilo. A major part of this effort will involve the use of a Landfill Siting Committee in 2011. The Committee will be assigned the responsibility of adopting a similar process used in 2003 to identify the site for a new RCRA Subtitle D MSW landfill. The work of the Committee is anticipated to be completed by 2012. In 2013, the City Council will review the Committee’s findings and take action regarding the Committee’s recommendation(s).

The lifespan of the future planned landfill will be based on the physical characteristics of the site, the projected rate of waste disposal that is needed, and other factors that involve the integration of the landfill as part of the City's waste management system. At present, the lifespan of WGSL is projected for a minimum period of 15 years.

2.6.4. Waste Transshipment to the Mainland

The City plans to award a contract to a service provider for the baling, shipment, unloading, transportation and disposal of City-provided MSW to a mainland landfill. The process of annually transshipping 100,000 tons of MSW is tentatively scheduled for 2009.

To assure flow control by the City, the service provider will be required to provide the City with sufficient space for the placement of a City-owned scale and scale house, as well as associated equipment and vehicle access. The Refuse Division, ENV, will direct select MSW to the scale house as part of its flow control plan for the City. All waste will be delivered to the service provider only after it has been accepted and weighed at the City-owned scale facility.

The City only plans to transship waste to the mainland on an interim basis, until adequate WTE capacity becomes available with the scheduled operation of the third H-POWER boiler, tentatively scheduled for on-line service in 2011. (R. W. Beck, 2008).

Current Status of Transshipment

On June 16, 2008, bids were opened for the City's Request For Bids for interim shipping of MSW to the mainland United States. Three bids were received. Three procurement protests were then filed on behalf of the two higher bidders. The City is working to resolve these protests. They are being evaluated with input from various City agencies. After the City issues final rulings on the protests, the parties will have the right to an appeal. Until any such time that the appeals are resolved, the City is prohibited by State law from awarding any contract. (PWCG, 2008).

~~2.5. Previously Filed Environmental Impact Statement Compliance Documents~~

2.7. Previously Filed Environmental Impact Statement Compliance Documents

Chapter 343, HRS, and Chapter 11-200, HAR, environmental compliance documents have been previously filed for the use of this site. These documents include the: Revised Environmental Impact Statement for the Leeward Sanitary Landfill at Waimanalo Gulch Site and Ohikilolo Site, City & County of Honolulu, March 1984, filed to utilize an area of approximately 60.5 acres for landfilling.

The Revised Draft Supplemental Environmental Impact Statement for the Waimanalo Gulch Sanitary Landfill Expansion, City & County of Honolulu, June 2001, was initially filed to utilize the remaining space of the landfill, but was subsequently revised reducing both the timeframe and the area that would be used in the final published version of this document. See below.

The Final Supplemental Environmental Impact Statement for the Waimanalo Gulch Sanitary Landfill Expansion, City & County of Honolulu, December 2002, was prepared to utilize only a limited area of the landfill that ~~would expire~~ was expected to reach capacity within 5 years, or by 2008. This document was supported by the prior City administration's commitment to begin closure of the site at the end of 5 years.

The Environmental Impact Statement Preparation Notice for the Waimānalo Gulch Sanitary Landfill Expansion, City & County of Honolulu, November 2006, was prepared to utilize the remaining 92.5 acres of the site for a period of not less than 15 years. This document was filed based on the then pending expiration of the SUP on May 1, 2008.

The Draft Environmental Impact Statement for the Waimānalo Gulch Sanitary Landfill Lateral Expansion, City & County of Honolulu, May 2008, was filed for the subject project and published by the OEQC on May 23, 2008. The public and agency comments received from the filing of this document have been used in the preparation of this document.

Section 3
Introduction

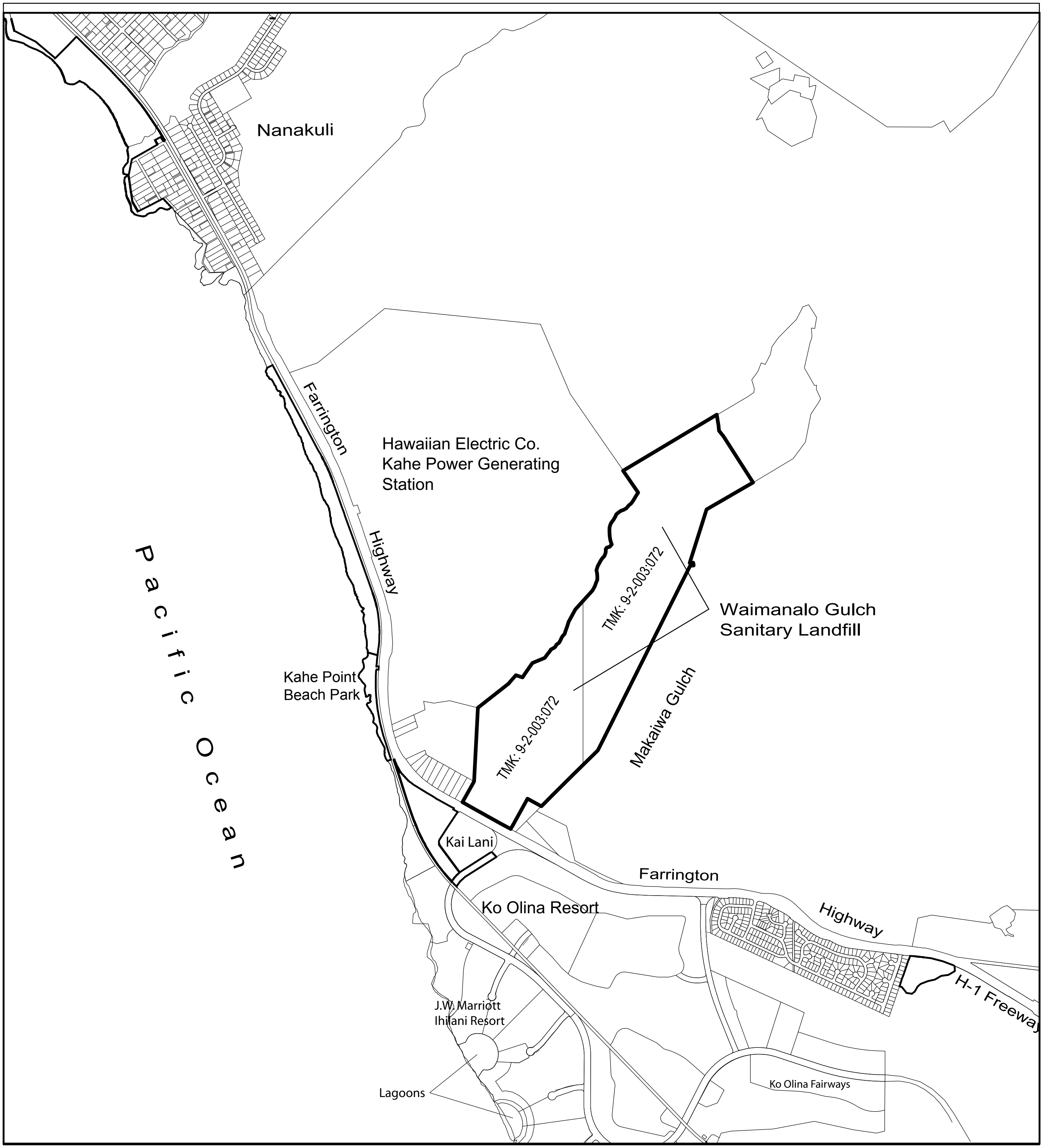
3.1. Project Location and Area of Use

Waimānalo Gulch Sanitary Landfill (WGSL) is located in Waimānalo Gulch, on the Island of Oʻahu. The property is owned by the City & County of Honolulu, and under jurisdiction of the Department of Environmental Services (ENV). The landfill is operated for ENV by Waste Management of Hawaiʻi, Inc. (WMH).

The landfill became operational in September 1989 and the property comprises an area of approximately 200 acres (**Figure 3-1, Waimānalo Gulch Landfill Property**). According to records for the project filed with the Department of Planning and Permitting (DPP), approximately 107.5 acres of the site are comprised of used landfill area, operational and maintenance area, internal roadway area, and the current permitted space in use for landfill operations. The remaining acreage of the site comprising 92.5 acres is proposed to be used for the future expansion of the site (**Figure 3-2, Waimānalo Gulch Sanitary Landfill Lateral Expansion Site, Figure 3-3, Waimānalo Gulch Sanitary Landfill Aerial Photograph**). A breakdown of this site acreage is provided in **Table 3-1**, below:

Table 3-1
Existing and Proposed Use of Waimānalo Gulch Property

Acreage	Description
60.5	Used Landfill Area, Scheduled for Closure
20.0	Administrative and Operational Support
6.0	Roadway and Drainage Area Improvements
86.5	Subtotal
21.0	2003 Expansion Area
107.5	Subtotal
92.5	2008 Planned Expansion Area (Approximately ~37 Acres Active Landfill Cells Plus Related Uses, e.g., roads and infrastructure)
200.0	Total Approximate Area of Site



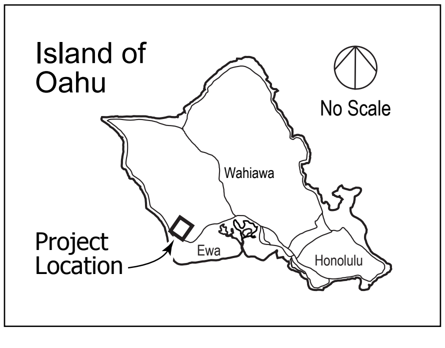
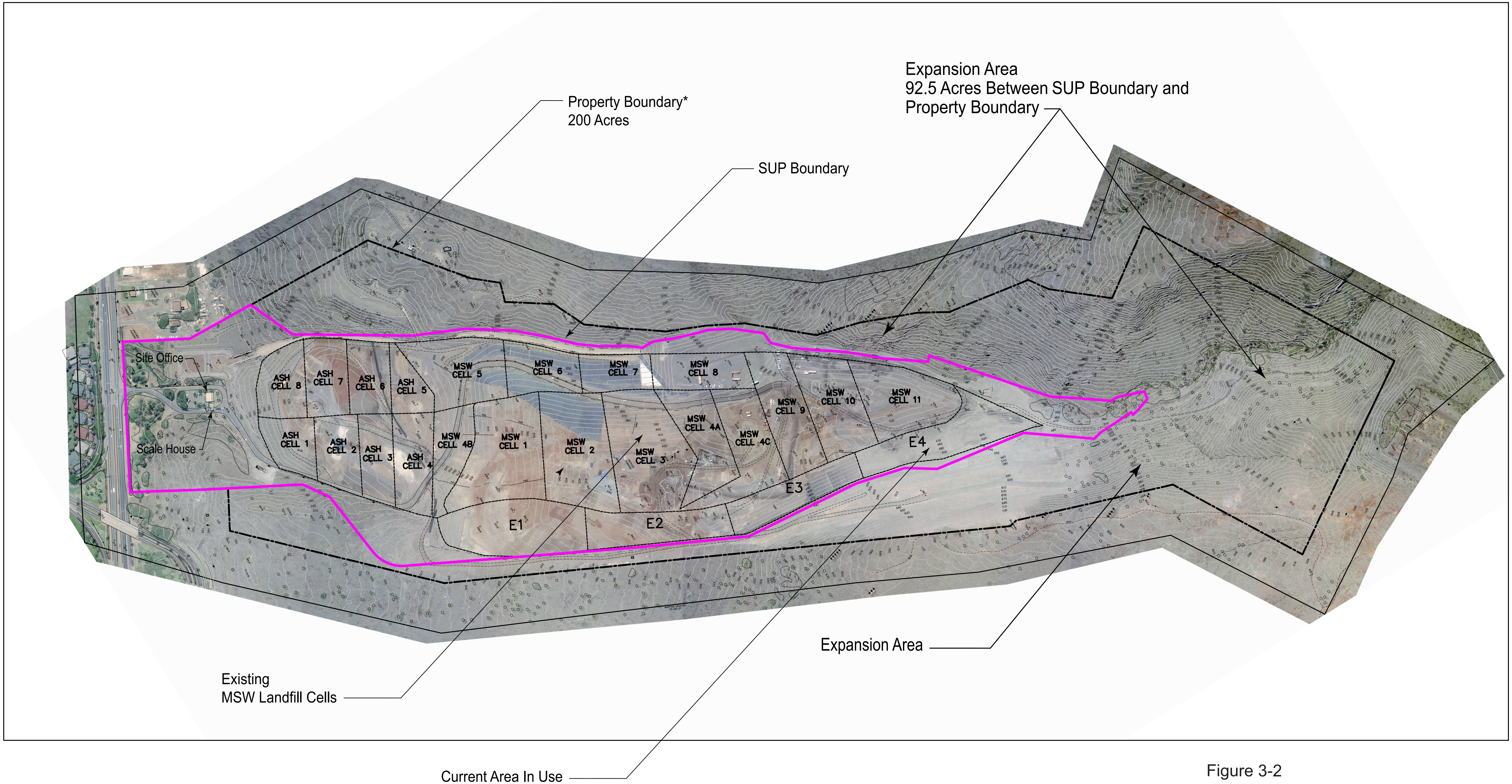


Figure 3-1
Waimanalo Gulch Landfill Property
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION March 2008



Note: *Proposed expansion project is subject to a
100 foot buffer from the property boundary.

Source: Base Drawing - GeoSyntec Consultants, Site Plan
and Topography, Waimanalo Gulch Landfill, Ewa Beach
Oahu, Hawaii, April 2007

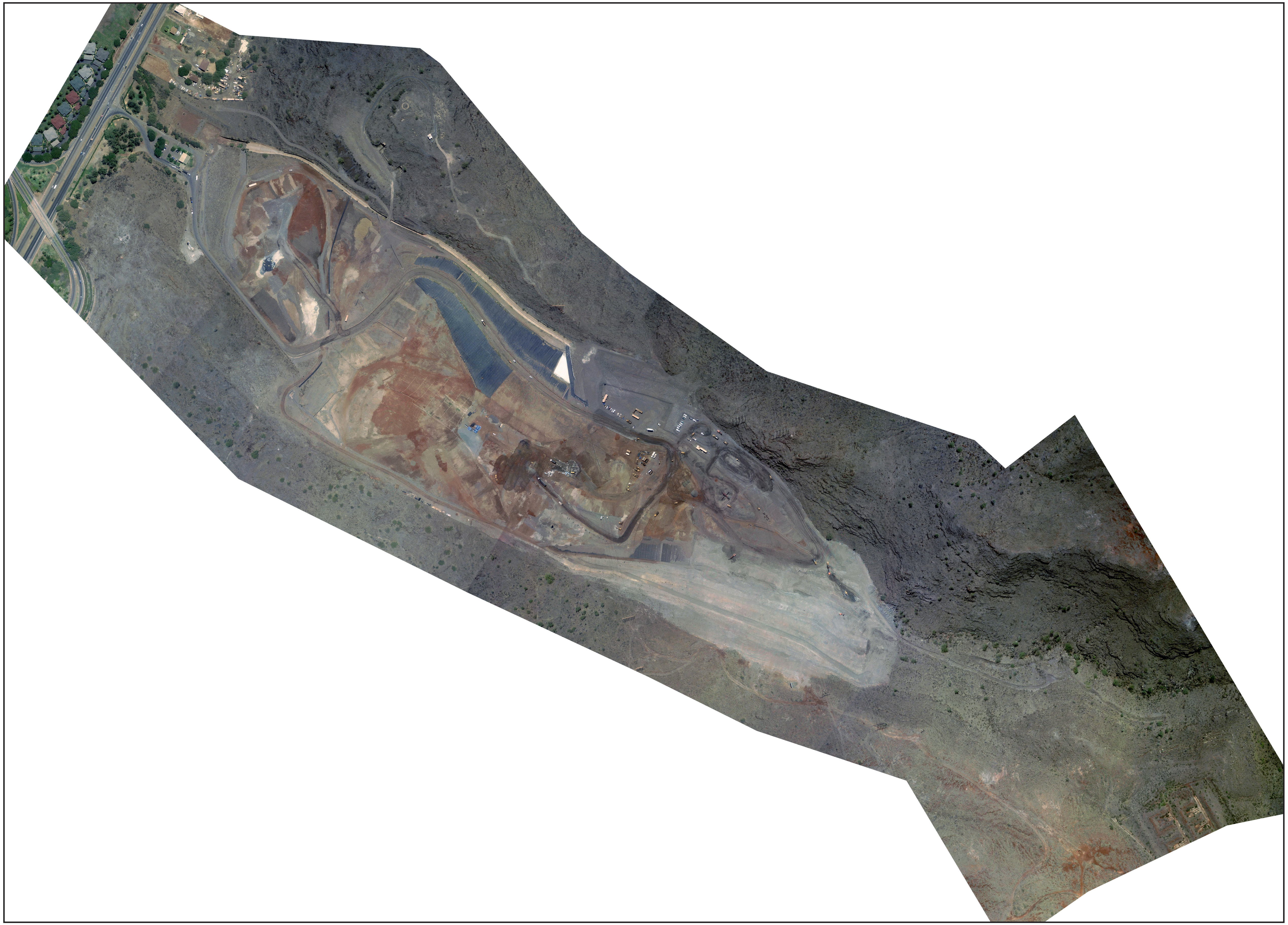
Figure 3-2
Waimanalo Gulch Santiary Landfill
Lateral Expansion Site

Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 500 Feet 1000

R.M. TOWILL CORPORATION

March 2008



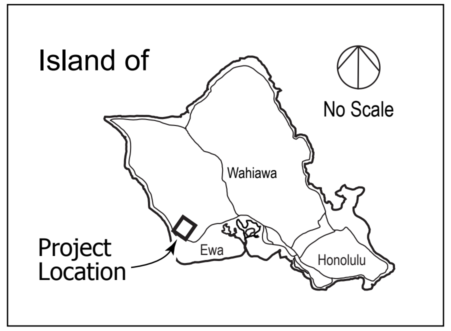


Figure 3-3
Waimanalo Gulch Sanitary Landfill
Aerial Photograph

Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

No Scale

R.M. TOWILL CORPORATION March 2008

The 92.5 acre area is proposed for uses that include construction of landfill cells; earthwork to support construction of an access roadway, drainage controls, berms and stability slopes; and excavation and stockpiling of cover material. The proposed expansion project will be subject to a minimum 100 foot buffer inside of the perimeter of the property boundary to reduce the potential for impacts to neighboring properties. The buffer is intended to remain in an undeveloped condition.

3.2. Purpose of the ~~Draft~~ Final Environmental Impact Statement

This ~~Draft~~ Final Environmental Impact Statement ~~(DEIS)~~ (FEIS) is prepared pursuant to the content requirements of Chapter 343, Hawaiʻi Revised Statutes (HRS), and Chapter 11-200, Hawaiʻi Administrative Rules (HAR), and in compliance with actions that require the preparation of an EIS document. These specific actions involve: (1) the use of state or county lands or funds; and (2) the proposed action involving the construction and operation of a landfill.

According to the regulations:

> Chapter 343, HRS, Environmental Impact Statements:
> "§343-5 Applicability and requirements.
> (a)(1) Propose the use of state or county lands or the use of state or county funds, other than funds to be used for feasibility or planning studies for possible future programs or projects that the agency has not approved, adopted, or funded, or funds to be used for the acquisition of unimproved real property; provided that the agency shall consider environmental factors and available alternatives in its feasibility or planning studies; provided further that an environmental assessment for proposed uses under section [205-2(d)(10)] or [205-4.5(a)(13)] shall only be required pursuant to section 205-5(b);"
>
> "(a)(4) Propose any use within any historic site as designated in the National Register or Hawaii Register, as provided for in the Historic Preservation Act of 1966, Public Law 89-665, or chapter 6E;"

"(a)(9) Propose any: (C) Landfill;"

Chapter 11-200, Environmental Impact Statement Rules:
"Subchapter 5, Applicability
§11-200-5 Agency Actions:"

"B. The applicability of chapter 343, HRS, to specific agency proposed actions is conditioned by the agency's proposed use of state or county lands or funds. Therefore, when an agency proposes to implement an action to use state or county lands or funds, it shall be subject to the provisions of chapter 343, HRS, and this chapter."

"C. Use of state or county funds shall include any form of funding assistance flowing from the State or county, and use of state or county lands includes any use (title, lease, permit, easement, licenses, etc.) or entitlement to those lands."

The Environmental Impact Statement Preparation Notice (EISPN) for this project was published by the State Office of Environmental Quality Control (OEQC) on November 23, 2006. The DEIS was published by OEQC on May 23, 2008.

This ~~DEIS and the forthcoming~~ Final Environmental Impact Statement (FEIS) ~~will~~ provides information and evaluation of the potential for environmental impacts on the natural and built environment associated with the planned 92.5 acre lateral expansion of the WGSL. ~~This DEIS will also inform interested parties of the proposed project and seek public comment on subject areas that should be addressed during the EIS process.~~

3.3. Need for the Proposed Project

The proposed project is required to address the municipal waste disposal needs of the island of O‘ahu. A condition of the approved State Special Use Permit (SUP), Docket

No. SP87-362, had required closure of the site from the acceptance of refuse on or before May 1, 2008. In March 2008, this period of time was extended by the State Land Use Commission for a period of 18 months or November 1, 2009, to allow for use of the remaining capacity within the approved 107.5 acres, contingent on no unexpected events that would prematurely exhaust this capacity[1]. Although the extension of time will allow for more efficient use of the space remaining within the existing area, it will eventually reach capacity.

WGSL receives solid waste from all of O‘ahu. As an annual ~~acreage~~ average, approximately 800 tons[2] per day from municipal solid waste (MSW) and recycling residue, and approximately 600 tons per day from ash and residue, from the Honolulu Program of Waste Energy Recovery (H-POWER), for a total of approximately 1,400 tons daily, is accepted or delivered[3]. Actual annual tonnages can ~~very~~ vary significantly depending on whether H-POWER is operating. The closure of the landfill upon the exhaustion of the existing area of use without a means of disposal of municipal, recycling, and H-POWER refuse is not practical because it would fail to provide for the islandwide sanitary treatment of municipal generated waste essential to the maintenance of public health and safety.

ENV, which is responsible for the disposal and management of refuse in the City & County of Honolulu, proposes to address this requirement by utilizing the remaining 92.5 acres of the existing Waimānalo Gulch for future landfilling. This area of expansion will extend the life of the site for an estimated minimum period of 15 additional years.

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[1] These unexpected events primarily include a hurricane, tsunami, or earthquake induced event where the landfill would be utilized in an emergency to serve in the cleanup and recovery effort for the disposal of storm and disaster generated debris.

[2] This includes a small amount of recycling residue associated with waste generated from the recycling effort. Department of Environmental Services, August 2006.

[3] Figure is approximate. In FY 2006, WGSL averaged 930 tons per day of MSW and 460 tons per day of ash and residue.

3.4. Community EIS Scoping Meetings

3.4.1. Background

ENV convened a series of four EIS Community Scoping Meetings between July 10 and August 10, 2006 to obtain community input on environmental issues that the public feels should be addressed in preparation of the EIS for the expansion of the Waimānalo Gulch Sanitary Landfill. Waimānalo Gulch is located in proximity to the boundaries of the Nānākuli and ʻEwa regions of Oʻahu, but is used islandwide by all Oʻahu communities for the disposal of municipal refuse. The public scoping meetings were held to obtain input from the communities closest to the landfill, as well as other communities that are important users of the facility. The meetings were held on the following dates and at the following locations:

Mtg. No. 1	July 10, 2006	Nānākuli High and Intermediate School 98-980 Nānākuli Avenue Waiʻanae, Hawaiʻi 96792
Mtg. No. 2	July 11, 2006	Benjamin Parker Elementary School 45-259 Waikalua Road Kāneʻohe, Hawaiʻi 96744
Mtg. No. 3	July 27, 2006	Mission Memorial Auditorium 550 South King Street Honolulu, Hawaiʻi 96813
Mtg. No. 4	August 10, 2006[4]	Kapolei Hale 1000 Uluohia Street Kapolei, Hawaiʻi 96707

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[4] The date for this meeting was changed from July 26, 2006 which conflicted with the Neighborhood Board No. 34, Makakilo/Kapolei scheduled meeting.

3.4.2. EIS Public Scoping Meeting Agenda

Each of the four scoping meetings was conducted by a meeting facilitator who explained that the purpose of the meetings is to obtain community input on environmental issues the public feels should be addressed in preparation of the project EIS. The same agenda was used for all meetings and included:

A. A statement of purpose for the meeting;
B. A statement by ENV concerning the need for the project and the events that have transpired since 2003 when the last EIS for the expansion of Waimanalo Gulch was approved;
C. Time was allotted during the meeting to hear community concerns on issues or subject areas that they felt should be addressed in the EIS;
D. The facilitator summarized the input provided by the community during the last 15-30 minutes of the meeting; and
E. The facilitator and ENV thanked the community for its attendance and the meeting adjourned.

3.4.3. List of Participants

Participants who signed the attendance sheets for this series of meetings are provided in **Appendix C - EIS Public Scoping Conducted for the Proposed Expansion of the Waimānalo Gulch Sanitary Landfill**.

3.4.4 Summary of Issues and Concerns Raised

A number of issues and concerns were raised by the community during the series of scoping meetings. The following list is a consolidation of all issues and comments received when the comment period ended on August 30, 2006. The comments have been taken into consideration, as appropriate, in the preparation of the subject document and the requirements of Chapter 343, HRS, and Chapter 11-200, HAR.

Note: Issues that are in **bold** are those that were received in writing by August 30, 2006, and are not duplicative of what was already stated by the community during the course of the meetings.

General

- The 2001 EIS should not be used as the basis for this EIS
- EIS needs to clearly illustrate what expansion is taking place
- Need to provide number of years of continuing operation as well as the number of acres the expansion will take
- Need to clarify the location, size of the area and what the current zoning is. Documents need to be very clear and specify the boundaries
- Need to look at mainland sewage sludge studies
- New ash area that is covered in EIS needs to be specified where and size
- Impact of other new proposed private sites such as Nānākuli B – do not need both
- Need to identify impacts to RFP process
- Need to consider federal draft rules for shipping of waste
- Need to look seriously at all sites available around the island
- Need to discuss worst case scenario contingencies including earthquake etc.
- Need to determine how the DEIS will tie-in to the City's comprehensive, Solid Waste Integrated Management Plan (SWIMP) update that the city is supposed to prepare
- There is a need to be aware that other areas of the island have hosted landfill sites in the past until their capacity was reached i.e. Aikahi, Kawaianui Marsh, Kapa`a Quarry etc. – they have not all been on the Leeward side
- The EIS needs to reflect the current status at the landfill not the preferred status
- There was a concern expressed about the ability of a local planning firm to be neutral on this issue with all the political pressure
- Need to include all Federal, state and local laws that affect landfill operations
- Need to address Waste Management's 1999 contract with Mayor Harris
- Need clarity between airspace and landfill
- Need to explain why the community should believe the City at this point and why promises have not been kept
- HPOWER has never failed an EPA test on its ash – need to know why DOH has not approved reuse for concrete etc.

- Need to deal with the reality that because of our tourist economy or per person generation of waste is 7 pounds per day instead of the national average of 4 pounds
- Need to consult the County of Hawai`i who has just completed review of 61 alternatives and chosen 3 proven technologies to address this same issue
- **EIS needs to comply with all EIS rules and statutes – including those that require "good faith"**
- **Must not just address expansion but cumulative impacts since the 1980s**

Closure of Landfill

- EIS needs to focus on closing of Waimānalo Gulch now or as soon as possible – should not just go for life of area but should have a plan to reduce waste stream as quickly as possible to provide for closing sooner rather than later
- Review all alternatives available to reduce the waste stream with the intent of closing the landfill as soon as possible
- Need to consider the fact that many landowners and developers were fully aware of the landfill's existence pre-development of their current homes and projects and moved in anyway
- Landowners in the area maintain that they were told the landfill would close in '08 when they bought and had depended on these representations in making their decisions
- Need for active recycling program that would cut down the need for a landfill; need for a sensible plan that would allow for the earliest possible closure of the landfill
- Need for finite planning – Hawai`i should be at the cutting edge and shouldn't worry about costs to keep it a paradise
- City must explain why we are here – other meetings have been held in the past which promised closure of the landfill by 08 and it is still open
- EIS needs to provide factual/historic information for the issue of the promised closure in 2008 and the issuance of an operating permit that required closure in '08
- **Need a comprehensive closure plan for the existing Waimānalo Gulch landfill site irrespective of the proposed closure date**
- **Need to address the State Land Use Commission Decision and Order calling for closure in 2008**
- **Need to address the conflicting position of the 1984/1985 EIS which stated that only 57+/- of the 200 or so acres owned were feasible for utilization as a landfill due to the slope angles of the hillsides.**
- **Close it and put it somewhere else on the island**

Environmental

- Need to explain what the relationship will be between the newly created topography of the expanded landfill, and the prevailing wind patterns of the area including any impact on ocean currents and near shore water temperatures as well as any impacts the new topography may have on adjacent landowners (including the slope integrity along shared property lines, and heights and distances along these lines)
- Need to review Hawaiian Electric Company's wind study and explain the logic of the increase in height of the landfill in light of the wind energy study
- Need an assessment of the static stability of the landfill both ash and solid waste areas including consideration of past history as well as the dynamic stability of the landfill recognizing the fact that we live in a seismically active area
- Need to address how much of the mountain land space is being shaved for the landfill and discuss blasting or grading setbacks that are necessary
- Need to address environmental impacts of potential hazards
- Need to understand how 20 years of further capacity will be provided without excavation as previously stated – if there is excavation need to address where the soil will go
- Need to review recent State of Hawai`i Supreme Court case (Hōkūli'a) regarding State DOH responsibility for water quality in relation to how it is being affected by the landfill e.g. ocean run off
- If expansion moves forward, storm water retention basins, leachate and gas monitoring systems are needed
- Address future ash monofills
- Need to know chemical composition of ash
- The location of potential hazards such as asbestos within the landfill need to be identified
- **Address unknown effects to the land, water, and air**
- **Need to address odor issues – will the expansion take sludge and if so for how long**
- **How is the liner tested and how secure is it needs to be addressed**
- **The ability of the rock berm to handle the expansion needs to be discussed**
- **Needs to address the need for a surface water management plan**
- **Need fugitive trash plan designed to end this problem**

Infrastructure

- Impact to landfill when H-POWER is down is an issue
- Impact on highway; road blockages, etc.
- Maintenance issues along Farrington Highway with heavy truck use – standards for adequate maintenance of this highway
- Any new access points and their impacts on adjacent property owners

Economic Issues

- Economic impacts
- Costs of closing landfill
- Need a solution to address lost revenues to the city should the solid waste go to a private landfill – tipping fees

Explore Alternatives

- Need to look at all alternatives that are appearing (i.e., Plasma ARC gasification, etc.) and determine how these alternatives fit in with everything else that the City is doing – including how they can reduce the waste stream to allow for the earliest closing possible of the landfill
- Need to explore all viable alternatives
- Need to look at other places, especially Europe, and how they dispose of their waste, the kinds of incentives/taxes/sanctions they use to reshape people's attitudes at the curbside
- Expansion should be limited to a specific time and coupled with a plan to reduce the waste stream
- Need to address things that can be done to reduce the amount of waste that goes to the landfill – curbside recycling, alternative technologies, partnerships with the business community to promote recycling and reuse, etc. Need to get innovative and creative.
- Need to increase HPOWER and explore reuse of ash – HPOWER type facilities could be decentralized and built anywhere
- Need to address trans-shipping of waste
- Need to address providing a funding stream to address alternatives
- Need to speed up action on alternatives
- **Plasma Arc Gasification – Jacoby Inc.**
- **Need to address the implementation of the comprehensive and mandatory island-wide recycling program (proposed to be done by December 2006)**
- **Alternatives looked at must be explained including why they are rejected – the exploration must be rigorous**

Facilities Management

- Need to look at as a facilities management problem and apply technologies correctly (especially as pertains to smells and debris)
- The EIS should address the status of all violations and what has been done regarding violations – need to close violations prior to new EIS and permit
- Hours of operation need to be clear and adhered to – the community recently expressed concerns about night operations taking place and the impact of the lighting on houses and neighborhoods

- Need to address overfilling of landfill site
- Need to look at rubbish control and sludge issues
- Need a specific operational plan for soil cover
- **Explain the contracts between the city and Waste Management Inc and the timing of these contracts.**
- **There should be a clearly identified, separate (physically divided) MSW and ash monofill cells for the expansion**
- **A separate area should be identified for asbestos disposal**
- **A full discussion of all management techniques must be included**
- **Impact of expanded operations on adjacent property owners including line of sight issues**

Monitoring and Enforcement

- Need to provide for air quality monitoring, testing as it corresponds to traffic at the site, and along the route to/from the site
- Need to examine enforcement capability and capacity of DOH – including the lack of resources required for monitoring, enforcement, reporting, and accountability
- Major dirt and dust issues; monitoring doesn't work – need for more data collection
- Need to consider past problems with the landfill (i.e., EPA violations, leachate collection system) and be sure the DEIS identifies ways to assure that they do not happen again
- Need to address and explain the $2.8 million fine that has been imposed on the landfill by the Department of Health and assure that these types of practices/violations do not continue in the expansion
- Need to assure that a system is in place to hold the operator accountable
- Monitoring should be adequate so that after the fact permit modification should not happen – example the permit modification needed for the leachate sump pump system
- Need to monitor methane gas levels
- Need to have rigid standards and adequate monitoring to ensure the health and safety of the community
- Need regular monitoring by the Department of Environmental Services
- Need to address who will be responsible for enforcement of things in the EIS and what guarantees will be made in the EIS
- Need to include status of compliance with current permit – by modifying the permit, are we negating prior violations which should not be allowed
- **Need to assure timely reporting by the operator and public access to these reports – consider webcam on site for monitoring purposes**

Leachate

- Need to also address leachate and its impact to groundwater, runoff to ocean, subsidence and slippage resulting from seismic activity, methane fires, and EPA violations relating to gas collection systems
- Need to look back and forward – what has been/will be done to take care of leachate problems and make sure these do not reoccur in the future
- Need to address leachate pumped out to the sewer treatment plant and what happens to it and what is its effect on the final outflow water quality from the sewer treatment plant
- Need to discuss comprehensively the leachate management system – including possible failure of the geomembrane lining system and how it will be taken care of

Environmental Justice

- Need to address "environmental justice" along the Leeward Coast and as it pertains to this landfill, including the multitude of existing private and proposed sites in the area

Health Impacts

- Need to include discussion of potential health hazards
- Who is liable for the health costs to residents should the landfill cause health problems
- When considering expansion, need to discuss EPA finding regarding gas collection system issues
- Compensation to neighbors for health impacts
- Impact of multiple landfills, both public and private, on air quality needs to be addressed
- Higher standards are needed for dust and debris and possible impacts to health

Community Issues

- The DEIS needs to deal with the lack of sensitivity to cultural sites and issues
- What communities will benefit - who will be selected and how will the compensation benefits committees be set up also needs to be addressed
- Need to include impact of non-closure of Waimānalo Gulch on for-profit businesses in the area or planning to locate in the area
- Smells, trash escape, floating dust, truck traffic and speeding, trash on road, visual blight all need to be addressed
- Landfill should not be going above the ridge lines, which can be seen from Waiʻanae

- **One of the conditions of the permit was to allow for ridgeline and site views being maintained**
- **No trucks should be parked on Farrington Highway waiting for entrance to the facility**
- **Trucks should be cleaned when leaving facility so the there is no mud or dirt dropped on the highway**
- **Route along Farrington Highway should be kept clean of rubbish or dirt generated by the facility**
- **There should be identification of how the Waimānalo Gulch Sanitary Landfill will be maintained facing Farrington Highway, landscaped to reflect surrounding areas, park-like upkeep, greenbelt, setbacks, etc.**

Section 4

Project Description

4.1. Construction Activities

4.1.1. Project Location

Waimānalo Gulch Sanitary Landfill is located in Waimānalo Gulch, O‘ahu. The property is owned by the City & County of Honolulu, and is under the jurisdiction of the Department of Environmental Services (ENV). The landfill is operated for ENV by Waste Management of Hawaii, Inc. (WMH). The operations of the landfill are consistent with or exceed the requirements of EPA Subtitle D, Resource Conservation and Recovery Act (RCRA) and the State of Hawai‘i regulations.

The Waimānalo Gulch Sanitary Landfill (WGSL) is located near the community of Kapolei; approximately 15 miles northwest of Honolulu International Airport; and two miles southeast of Nānākuli. The WGSL property begins at the north side of Farrington Highway just southeast of Kahe Point and extends approximately 1.2 miles inland up Waimānalo Gulch. The site location is identified on **Figure 3-1, Waimānalo Gulch Landfill Property**.

The WGSL property encompasses approximately 200 acres with a dimension of approximately 7,000 feet in length and 820 feet in width along the Farrington Highway frontage widening to approximately 1,900 feet at its widest point. Farrington Highway (FASP No. S-900(4)), is under jurisdiction and management of the State Department of Transportation (DOT), Highways Division. Approximately 92.5 acres of the 200 acre property are proposed for landfill expansion and accessory uses (**Figure 3-2, Waimānalo Gulch Sanitary Landfill Lateral Expansion Site**).

Elevation of the site at the access road off of Farrington Highway is approximately 60 feet above mean sea level (msl). At the northeastern corner of the property the elevation rises to 990 feet above msl. Terrain on the lower end of the site slopes upward at about 8 percent, increasing to approximately 18 percent on the upper end. The current maximum fill elevation is 513 feet above msl. A depiction of the general site topography is provided on **Figure 3-2**.

A small area within the proposed expansion area was graded during the construction of Cell E-4 to maintain slope stability and to allow safe filling of Cell E-4. No waste has been placed in this area nor will further work take place until completion of the EIS process and the State Special Use Permit boundaries are modified or a State Land Use District Boundary Amendment is obtained. This work was performed over a period of approximately 3 months starting in October 2006.

4.1.2. Features of Construction of Lateral Expansion

The proposed project is intended to provide for the future development of landfill cells at WGSL. According to the Engineering Report for Landfill Expansion, Draft, prepared by GeoSyntec Consultants in February 2008, the proposed lateral expansion was designed to: (1) accommodate the expected waste stream; (2) provide a landfill base lining and leachate collection and recovery system to meet the regulatory requirements of RCRA Subtitle D (40 CFR Part 258); (3) meet typical slope stability design criteria at final build out conditions based on industry accepted MSW, ash, and base and side slope line interface shear strength properties; and (4) meet the vertical separation requirement for the overhead power lines used by the Hawaiian Electric Company (HECO) (GeoSyntec Consultants, 2008).

In addition to expanding the active landfill area, the proposed project will involve the development of support infrastructure including drainage, access roadways, landfill gas and leachate collection systems, perimeter monitoring systems, and other related features.

Also proposed are:

- A part of the landfill expansion, a community Drop-Off Center, will be constructed at the landfill. This location may be moved during detailed engineering design but will remain between the front face of the landfill and Farrington Highway. The purpose of the Drop-Off Center will be to allow members of the public to conveniently and safely deliver solid waste and/or recyclables to the Landfill for disposal and/or recycling without entering areas of the landfill where active filling is taking place. The facility will likely consist of 4 or more roll off containers set below grade for easy access and screened from view from Farrington Highway.

Drivers delivering drop off center refuse would go to the scale house for visual inspection to verify that the loads qualify for disposal at the drop off center. The bins containing refuse will be transferred and discharged at the working face of the landfill when they are full. Operational procedures in place for the inspection of loads prior to landfilling will be applied to the drop off center refuse. Loads containing recyclables will be transported to third party recyclers.

- A landfill gas to energy (LFGTE) system may be installed to convert landfill gases to electricity. As with the proposed drop off center, specific details are under development by WMH and ENV. The electricity generated from landfill gas will help to reduce dependency on imported oil used to generate electricity.

4.1.3. Waste Stream, Soil Excavation, and Soil Usage

Preliminary volume estimates for the preferred expansion master plan have been prepared indicating the amount of soils usage and airspace provided by the project (**Table 4-1, Preliminary Estimate of Expansion Quantities (Cells E-5 through E-11)**).

4.1.4. Geologic Considerations

WGSL contains an ephemeral stream, which remains dry except during heavy rainfall. According to GeoSyntec Consultants, the subgrade consists of alternating layers of relatively dense lava flow followed by more fractured and porous clinker seams. The layers dip gradually down toward the coastline. The rock materials appear to be variably weathered throughout the height of the exposed hill slopes. Very little alluvial/colluvial soil deposits were observed. However, a 3- to 5-ft thick dark brown clayey soil deposit was noted at the ground surface along the top of the exposed hill slopes. No significantly-sized lava tubes or cave features at the site were observed by consultant Geolabs Hawai‘i, during a seismic refraction survey in 2000. (GeoSyntec, 2008).

Table 4-1
Preliminary Estimate of Expansion Quantities
Cells E-5 through E-11

Expansion Footprint (Cells)	~37 acres
Footprint of Landfill After Expansion	115.8 acres
Total Expansion Airspace Increase[1]	7,923,980 cubic yards

Soil Usage[2,3]

Cell Excavation	3,103,165 cubic yards
Fill[4]	147,830 cubic yards
Soil Buttress	518,315 cubic yards
Used as part of Liner System (4' thick on floor & 3' thick on side slopes)	263,545 cubic yards
Final Cover Material (3.5 feet over 36.2 acres)	204,410 cubic yards
Estimated Daily Cover Soil	1,567,923 cubic yards
Excess Excavation Material[5]	401,142 cubic yards

Source: Eng. Rpt. for Landfill Expansion, Waimānalo Gulch, Geosyntec Consult., 2008.
Table Notes:

[1] Available gross volume above currently-permitted grading plan for expansion area only.

[2] A positive number means soil available on-site. A negative number means soils required.

[3] Shrinkage and swell factors not included in soil usage calculations.

[4] To meet grade at certain locations; exclude the soil buttress.

[5] As indicated, a soil surplus results. The soil surplus may be influenced with future changes to the landfill slopes that are excavated. Surplus materials may be left in place in stockplile sites or used for other purposes.

The regional groundwater level for this portion of the island is lower than the elevations of the project site. However, some groundwater seepage may be anticipated following rainfall due to percolating groundwater. For the previous landfill cells El through E4, a subdrain system was constructed along the base of the cells to intercept and convey any seeping water. The subdrain system consisted of a High Density Polyethylene (HDPE) perforated pipe encapsulated in a gravel-filled trench. A similar system will be constructed for the expansion cells, if seeps are encountered during construction. (GeoSyntec, 2008).

4.1.5. Liner and Final Cover Systems

The existing liner system design for the existing area is provided in **Figure 4-1** and **4-2**. The liner system for the proposed lateral expansion area is provided in **Figure 4-3**.

The lateral expansion liner system for both ash and MSW cells will consist of the following as indicated from bottom to top (GeoSyntec, 2008):

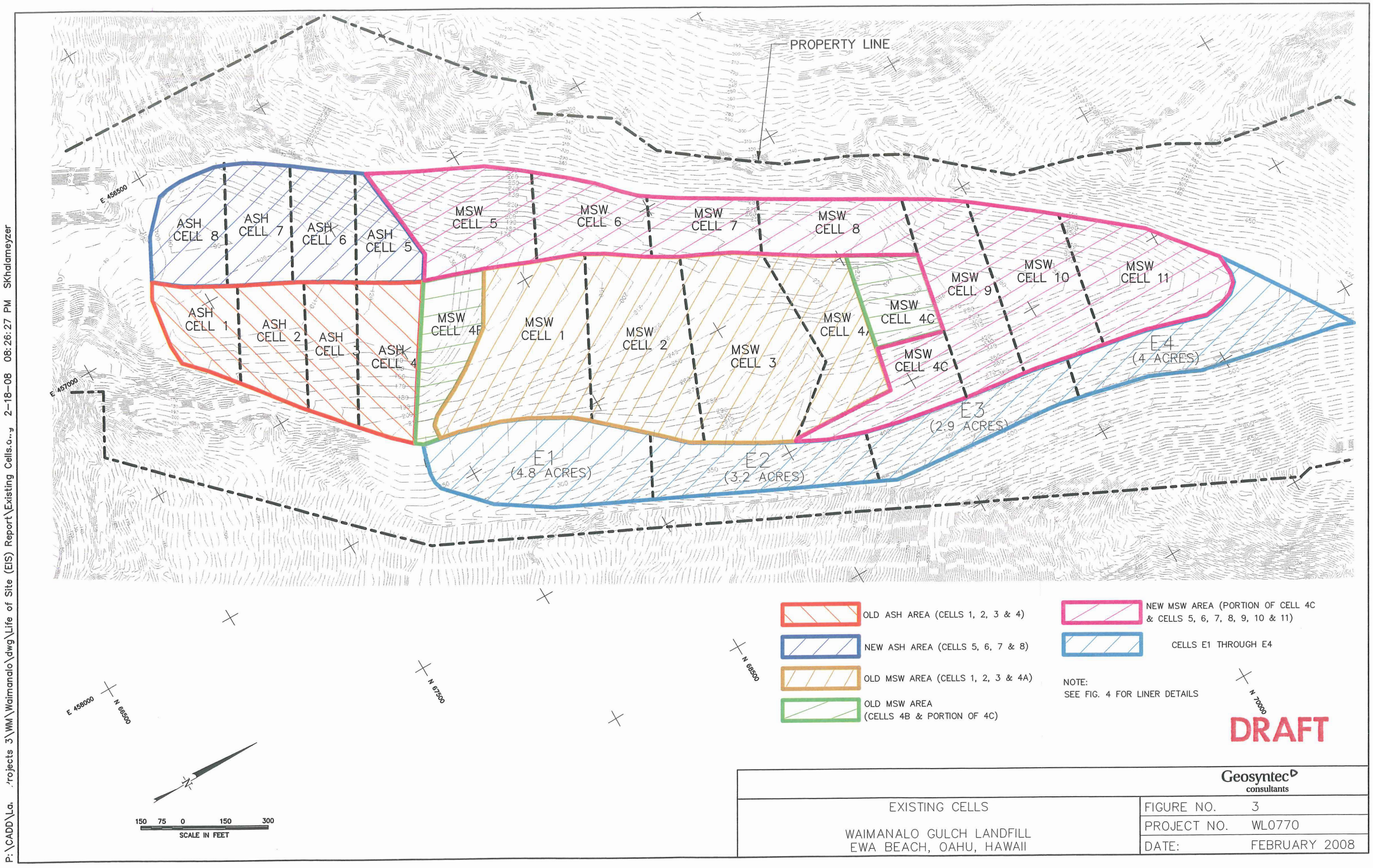
- Prepared subgrade
- Soil cushion layer
- 40-mil-thick backing HDPE geomembrane (textured on both sides)
- Geosynthetic clay liner (GCL)
- 60-mil-thick primary HDPE geomembrane (textured on both sides)
- Cushion geotextile
- 1 foot of gravel (maximum size of 1 inch)
- Filter geotextile
- 2 feet of Operations layer.

To collect leachate on the landfill base, a perforated, HDPE collection pipe will be placed within the drainage layer. The leachate will drain down the cells toward one or more lined sumps furnished with a riser pipe (WMH, 2008).

Figure 4-4, shows potential locations for the Leachate Collection and Removal System (LCRS) collection pipe and sump for the expansion. These locations may be changed during final design.

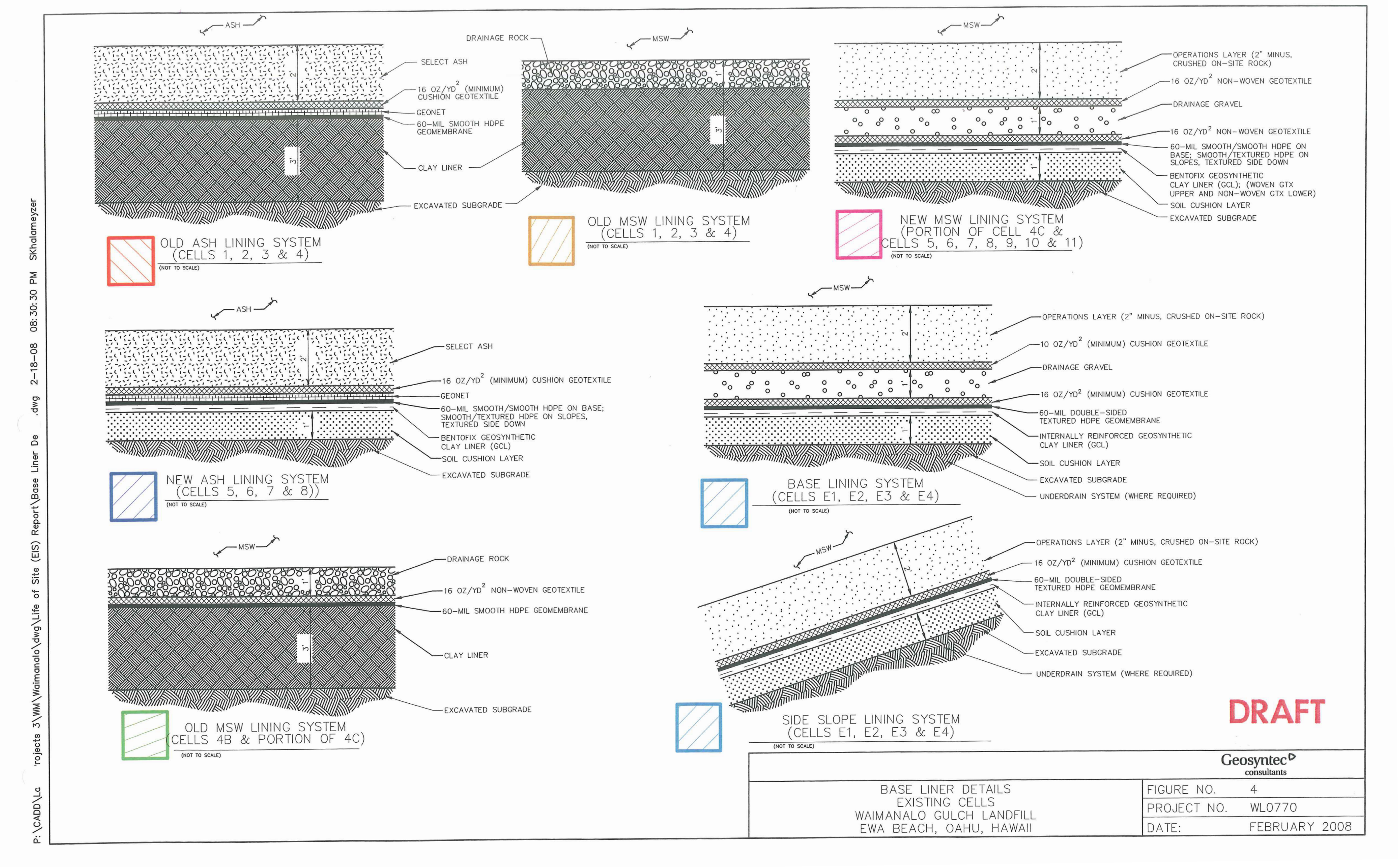
4.1.6. Final Cover

Figure 4-5 shows the final cover system currently proposed for the existing and expansion areas, this section may be modified during final design as approved by the Department of Health. As can be observed, the proposed final cover above ash or MSW consists of (from bottom to top) (GeoSyntec, 2008):



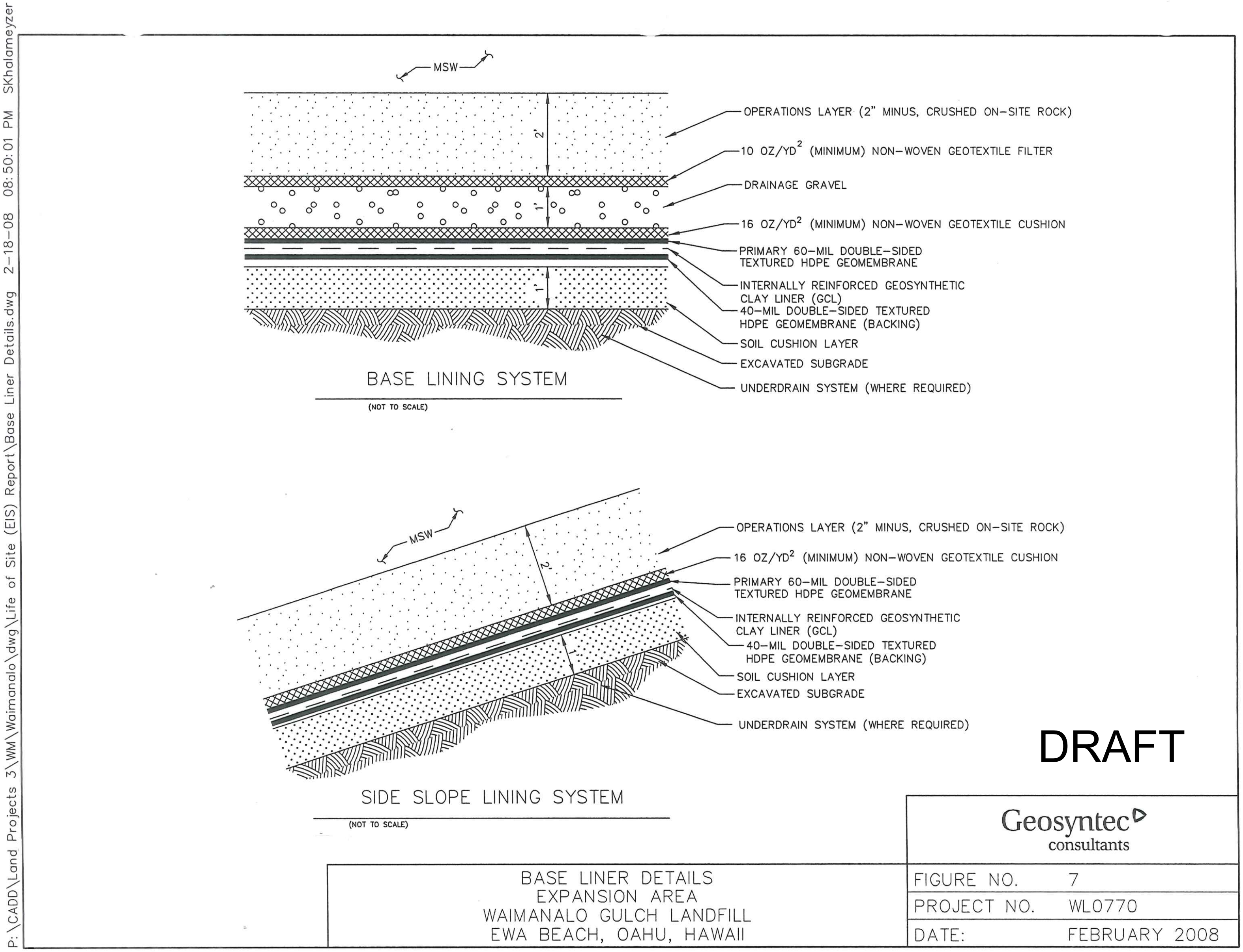
Source: Engineering Report for Landfill Expansion, Draft,
Waimanalo Gulch Landfill, Geosyntec Consultants,
12 February 2008

Figure 4-1
Existing Cells
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services



Source: Engineering Report for Landfill Expansion, Draft, Waimanalo Gulch Landfill, Geosyntec Consultants, 12 February 2008

Figure 4-2
Landfill Liner Detail-Existing Cells
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services



Source: Engineering Report for Landfill Expansion, Draft, Waimanalo Gulch Landfill, Geosyntec Consultants, 12 February 2008

Figure 4-3
Landfill Liner Detail-Expansion Area
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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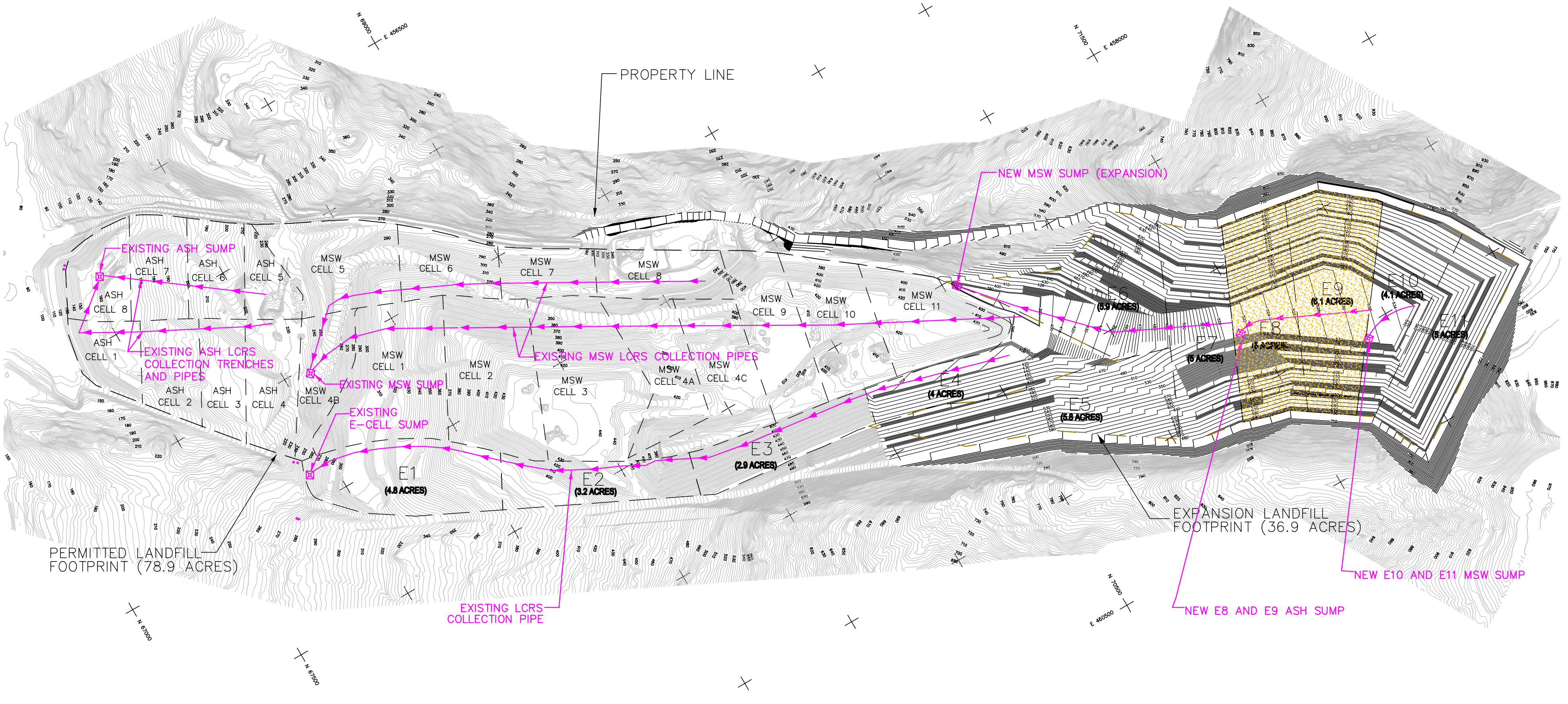
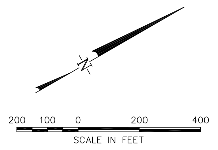




LEGEND

— · — PROPOSED LANDFILL EXPANSION LIMIT
◈ LCRS SUMP
→ LCRS PIPING WITH FLOW DIRECTION
▨ PROPOSED UPPER CANYON ASH EXPANSION CELLS (E8 AND E9)

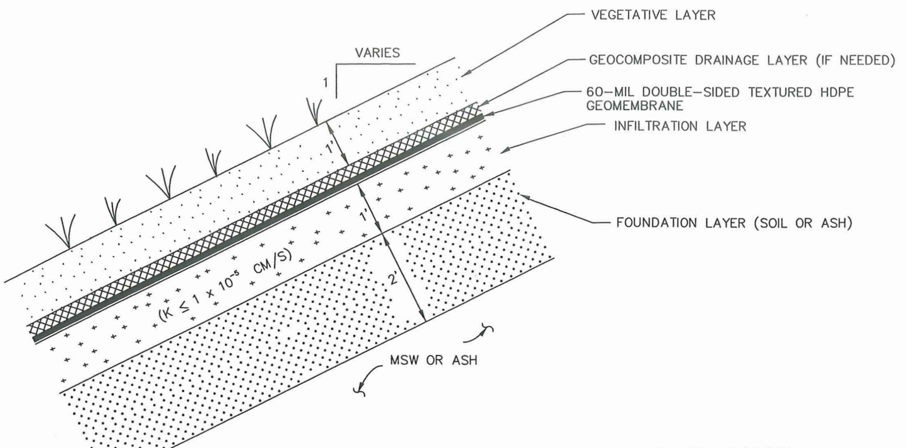
Geosyntec consultants

LEACHATE COLLECTION SYSTEM
EXPANSION PLAN
WAIMANALO GULCH LANDFILL
EWA BEACH, OAHU, HAWAII

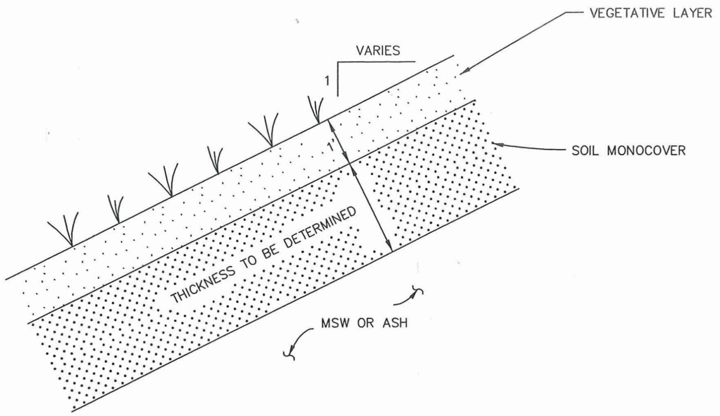
FIGURE NO.	9
PROJECT NO.	WL0770
DATE:	APRIL 2008

Figure 4-4
Leachate Collection System
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

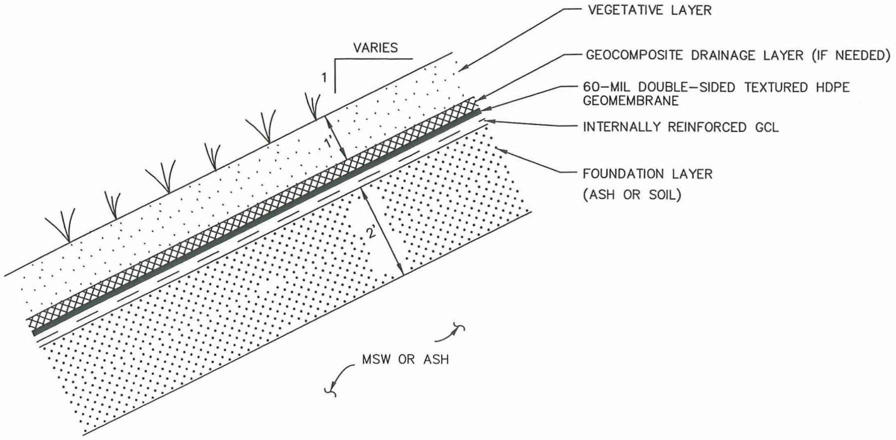
R.M. TOWILL CORPORATION May 2008



OPTION 1: MSW EXPANSION AREA FINAL COVER
(NOT TO SCALE)



OPTION 3: MSW EXPANSION AREA FINAL COVER – MONOCOVER
(NOT TO SCALE)



OPTION 2: MSW EXPANSION AREA FINAL COVER
(NOT TO SCALE)

NOTE: THESE SYSTEMS WILL ALSO BE USED
OVER THE NEW ASH CELL IF DEVELOPED

DRAFT

Geosyntec
consultants

FINAL COVER DETAILS
EXPANSION AREA
WAIMANALO GULCH LANDFILL
EWA BEACH, OAHU, HAWAII

FIGURE NO. 10
PROJECT NO. WL0770
DATE: FEBRUARY 2008

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Source: Engineering Report for Landfill Expansion, Draft, Waimanalo Gulch Landfill, Geosyntec Consultants, 12 February 2008

Figure 4-5
Proposed Final Cover Details
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

- 2-foot-thick compacted foundation layer 1' (to be consistent with soil usage calculations, GeoSyntec assumed that 6 inches of this material would be intermediate soil cover placed as part of operations)
- 1-foot-thick infiltration (barrier) layer[1]
- 60-mil-thick primary HDPE geomembrane (textured on both sides)
- Drainage geocomposite or gravel layer (as needed)
- 1-foot-thick vegetative (or soil erosion layer) amended to maintain vegetation.

The site may request the DOH permit an alternative cover in lieu of the Subtitle D prescriptive cover described above.

An alternative cover that is being considered involves use of a thicker layer of soil cover to handle the root systems of the types of trees being considered at the landfill. The tree types used will be similar to those found on the surrounding terrain. Trees with a long tap root, such as evergreens, will not be used. Also, boulders may be added to enhance the appearance of the site.

4.1.7. Proposed Landfill Grades

Figure 4-6 shows the proposed grading plan (GeoSyntec, 2008); **Figure 4-7** shows a typical section including the location of the HECO power lines crossing the WGSL property.

4.2. Facility Operations

4.2.1. Waste Accepted at Landfill

Municipal Solid Waste

The WGSL is permitted to receive municipal solid waste (msw) collected by the City & County of Honolulu and private waste haulers. According to Hawaii Administrative Rules (HAR), Title 11, Department of Health (DOH), Chapter 58.1, Solid Waste Management Control, the WGSL is defined as a Municipal Solid Waste Landfill Unit, which can receive various forms of MSW:

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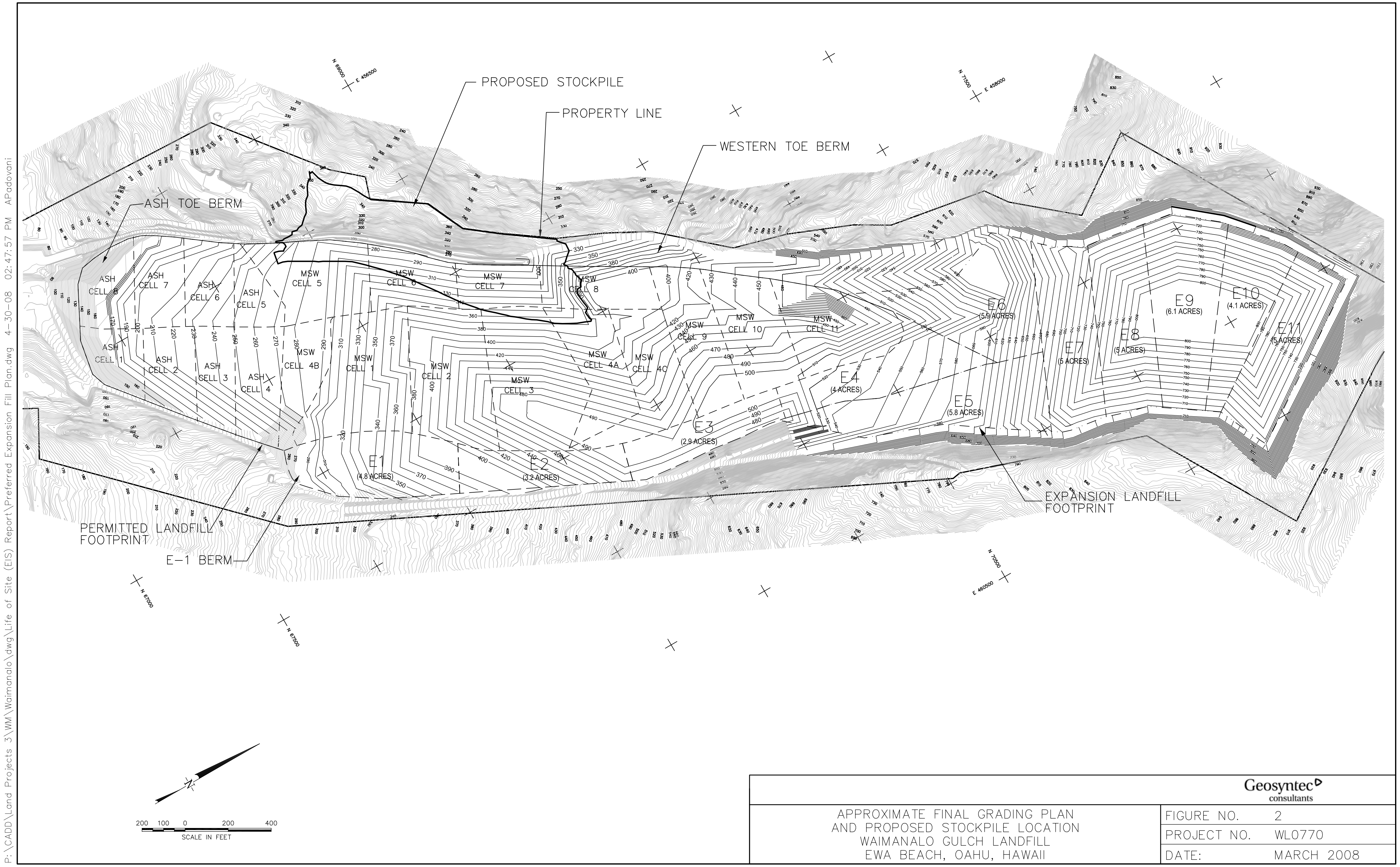
[1] If ash has a hydraulic conductivity less than or equal to 1 x 10" cm/second, the operator will request HDOH to allow the use of ash in the barrier layer.



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APPROXIMATE FINAL GRADING PLAN AND PROPOSED STOCKPILE LOCATION WAIMANALO GULCH LANDFILL EWA BEACH, OAHU, HAWAII	FIGURE NO.	2
	PROJECT NO.	WL0770
	DATE:	MARCH 2008

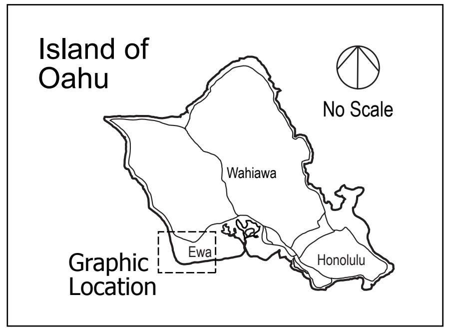
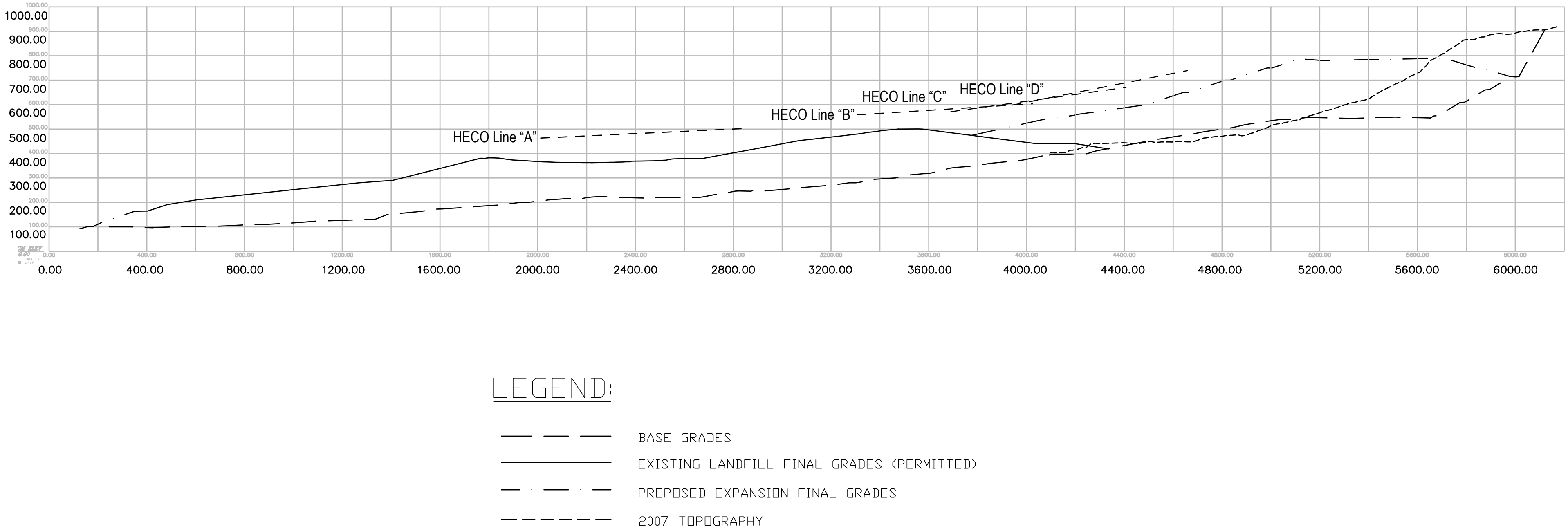


Figure 4-6
Proposed Final Grading Plan
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Note: Proposed grades address General Order No. 6, Rules for Overhead Electric Line Construction in Hawaii. Conductor to ground clearance will be at least 30 feet for vehicles and 25 feet for areas accessible by pedestrians only. Locations of power lines shown are approximate.



Geosyntec consultants

TYPICAL LONGITUDINAL SECTION THROUGH LANDFILL WAIMANALO GULCH LANDFILL EWA BEACH, OAHU, HAWAII	FIGURE NO.	1
	PROJECT NO.	WL0770
	DATE:	30 APRIL 2008

Figure 4-7
WGSL Typical Section
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

> [The]…"MSWLF unit" means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR section 257.2. A MSWLF unit also may receive other types of RCRA subtitle D wastes, such as commercial solid waste, non-hazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. The landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion."

Regulatory guidance for the waste that can be accepted at the landfill is provided in the Revised Ordinances of Honolulu (ROH), Chapter 9, Collection and Disposal of Refuse, Subsection 9 1.7, Acceptable and nonacceptable refuse at disposal facilities. According to the ROH:

> "(a) Except as directed by the director or the director's authorized representative and as provided otherwise under the mandatory recycling program for city government established under Section 9-1.11, the division shall accept or cause to be accepted the following solid waste within the disposal system: paper, cardboard, yard trimmings, bottles, cans, plastic, garbage, lumber and tree branches less than five feet long and less than nine inches in diameter. Except during a suspension by the director of the requirements of Section 14-5A.2(a) and/or (b), and as authorized by the director during the suspension, the division shall not accept into the disposal system any commercial cooking oil waste or commercial FOG waste.
>
> (b) The division may conduct an examination of any truckload of refuse or other solid waste delivered or transported to a disposal facility:
>
> (1) At any time that the division has cause to believe that the truckload contains (A) 25 percent or more of those recyclable materials designated by the director or (B) any commercial cooking oil waste or commercial FOG waste; or
>
> (2) Periodically and on a random basis to determine compliance with the prohibition of subsection (a).
>
> (c) The division shall accept the following types of solid waste only at specific disposal sites designated by the chief: large household appliances, tree

trunks, dirt, rock, concrete, reinforcing steel, metal pipe, metal roofing, automobile parts and bed springs.

(d) The division shall not accept deliveries of any refuse or recyclable materials which are not made during hours of operation as posted at each facility.

(e) The chief may divert all or part of the incoming refuse away from a disposal facility, or limit the area to be served by a disposal facility when, in the chief's judgment, such action is necessary to undertake repairs or to maintain the facility, or where the facility lacks the continued capacity to handle the incoming refuse, or so as to prolong the life of the facility.

(f) The director, or the director's authorized representative, may designate from time to time those disposal facilities or private disposal facilities, or a combination thereof, and the methods for the processing and disposal of solid waste generated in the city constituting a part of the disposal system created by this chapter. The director or the director's authorized representative may require that all solid waste, whether transported by the division, licensed collectors, businesses or individuals, be disposed of at specific disposal facilities or private disposal facilities within the disposal system as designated by such person if it is found to be in the best public interest; provided, that agricultural solid waste and source separated waste transported for recycling purposes shall not be subject to the provisions of this section; and provided further, that if regional transfer stations are designated, transportation to the stations shall be considered so as to minimize the operating costs of the collector. The best public interest shall be found if disposal at the designated disposal facility or private disposal facility within the disposal system shall:

(1) Result in reusable materials being recovered from solid waste;

(2) Achieve the solid waste volumes necessary to meet a resource recovery facility's minimum operating requirement;

(3) Lessen the demand for landfill sites; or

(4) Conserve natural resources. (Sec. 9 1.6, R.O. 1978 (1987 Supp. to 1983 Ed.); Am. Ord. 89 113, 89 117, 02-14, 04-10)"

The MSW received at the site is non-hazardous solid waste from residential, commercial and industrial sources. While some construction and demolition (C&D)

waste is accepted, the majority of C&D waste is required to be disposed of at the PVT Landfill.

Ash and Residue

The landfill accepts the disposal of ash and residue from the City's H-POWER facility. The ash and residue is received on a 24 hours per day basis, 7 days per week. Currently, as an annual average, the WGSL receives approximately 600 tpd of H-POWER related waste and approximately 800 tpd of MSW on a 7 days/week basis. It is anticipated that as the City proceeds with the development of new systems and improved methods to handle waste, that these volumes will be adjusted with the amount of ash increasing and MSW volumes decreasing, e.g., an expansion of H-POWER, waste recycling, transshipment, or the development of new alternative technologies to reduce waste.

Other Waste Accepted at Landfill

The WGSL also receives other forms of waste that are managed under special operating procedures. These other wastes include wastewater treatment associated solids sludge, septic tank and cesspool pumpings, and asbestos materials as regulated under RCRA. Wastewater treatment sludge is currently processed and dried for beneficial uses at the Sand Island Wastewater Treatment Plant (SIWWTP). ~~It is expected that while the performance of the dried wastewater derived solids treatment system has improved, that some wastewater derived solids will require disposal at WGSL at this time. The plan is for the solids to eventually be diverted from disposal and to be used for agricultural or other related purposes.~~

The sludge from the SIWWTP, previously disposed of at WGSL is currently undergoing treatment in a waste digester where the sludge is turned into fertilizer pellets. The process of drying sludge into fertilizer pellets began in March 2007.

In June 2007, due to a fire, operations at the SIWWTP pelletizing facility ceased until September 2007. During that time 763 tons of de-watered sludge from SIWWTP was landfilled at WGSL. For the entire 2007 year, approximately 3,122 tons of stabilized, de-watered sludge (pelletized and nonpelletized) from the SIWWTP were disposed of at WGSL. At present, all of the de-watered sludge from SIWWTP is turned into fertilizer pellets, and on average, 85% of the pellets is being used for golf course construction and soil manufacturing. The remaining amount of pellets, approximately 15% on average, is disposed of at the WGSL. All regulatory requirements have been met to allow beneficial use of the pellets. As the process matures and marketability increases, it is anticipated that there will be a decrease in the amount of pellets requiring landfilling. Due to unforeseen circumstances, however, such as the June 2007 fire at the pelletizing facility, there may be times when stabilized, de-watered sludge from SIWWTP will need to be landfilled at WGSL.

Besides some of the fertilizer pellets from the SIWWTP, stabilized, de-watered sludge from the Honouliuli, Wai‘anae, Kailua Regional, and Kahuku Wastewater Treatment Plants, as well as sludge from private (non-City) sources is still being landfilled at WGSL. For the entire 2007 year, the following approximate amounts of stabilized, de-watered sludge were disposed of at WGSL from the following City waste water treatment plants: Honouliuli WWTP - 4,192 tons; Kailua Regional - 766 tons; Waianae WWTP - 277 tons; and Kahuku WWTP - 1 ton. In addition to the significant reduction of sludge from the SIWWTP being landfilled, the City is in the process of seeking beneficial uses for the stabilized, de-watered sludge from the Honouliuli Wastewater Treatment Plant. The ultimate plan is for the solids to eventually be diverted from disposal and to be used for agricultural or other related purposes.

Waste Disposal Summary

The WGSL is the only municipal sanitary landfill on the Island of O‘ahu accepting refuse from the eight districts of ‘Ewa, Wai‘anae, Koolaupoko, Ko‘olauloa, the Primary Urban Center, East Honolulu, Central O‘ahu, and the North Shore. The landfill also accepts overflow refuse from other island landfills (private and military), residual ash and residue from the H-POWER facility, and rubbish that exceeds the H-POWER facility’s capacity.

The following sections are based on the Site Operations Manual, Waimānalo Gulch Sanitary Landfill, Volumes I and II (Waste Management of Hawaiʻi, Inc., October 2007). It should be noted that this manual is updated as required from time to time.

4.2.2. Operational Controls

Hours of Operation

~~The WGSL is open seven days/week~~ WGSL's operational hours are between ~~the hours of~~ 7:00 a.m. and 4:30 p.m. seven days/week, and is closed only on Christmas and New Years Day. In addition to WGSL's operational hours, ~~I~~incinerator ash is received 24 hours/day by special arrangement with the H-POWER facility.

Access Control

The front of the WGSL perimeter is enclosed by a 6 foot chain link fence. Twenty-four hour security further prevents unauthorized access or dumping.

Traffic Control

Signs at the WGSL entrance direct customers from the front gate to the scale house located approximately 500 feet from the entrance at Farrington Highway. Fifteen to 20 vehicles, depending on the mix of vehicles are able to queue in line between the front gate and the scale house. After weighing of refuse hauling vehicles, signs and landfill personnel will direct customers to the designated areas for unloading. Signs are posted to inform customers of on-site speed limits (10 miles per hour (MPH)). Spotters are posted at key locations as needed to direct traffic to the MSW or ash disposal areas, as well as to direct customers to specific locations for unloading at the active disposal face. A public drop off area is planned.

All main access roads used by customers are maintained as all-weather roads by surfacing with rock, asphalt or concrete rubble. Roads are graded and watered as needed to maintain a smooth and dust-free condition.

4.2.3. Environmental Controls

Litter

The WGSL uses portable screens, permanent litter fences, and routine site cleanup operations to prevent wind-blown litter from leaving the landfill premises and creating nuisance conditions in the area. Also of concern is the proximity of the adjoining Kahe Power Generating Station. Wind-blown litter from the landfill could travel from across the Waimanalo Gulch ridgeline and fall onto the power plant switching station and other facilities if not properly managed. The litter control program elements to address these concerns include the following:

- Portable litter screens are typically 12 feet high and 20 feet wide. They are located in downwind locations near the active MSW disposal area as the first line of defense against wind-blown litter. The screens are positioned as necessary as the active area moves across the WGSL site.
- Approximately 600 lineal feet of 6-foot high temporary litter fencing is installed between the ash monofill and the MSW fill area as the second line of defense.
- The chain link fence at the front of the WGSL property provides a final level of physical containment of any litter that leaves the active working area.
- Routine site cleanup and litter collection are the final elements of the litter control program. The WGSL personnel remove litter from portable screens and permanent fences daily, clean haul roads weekly, and pick up litter when present on other areas of the site. In the event of a major wind storm in which excessive litter is created, temporary personnel are brought in on an as-needed basis to collect litter, both on and off the WGSL property. Additional personnel are also made available on an as-needed basis during the time periods when the H-POWER facility shuts down for maintenance and MSW volume increases above normal levels.
- Information is included in the site's daily operating log to document unusual litter problems or control activities. This includes instances when temporary personnel are used to collect or control litter on- or off-site.

Litter control activities are recorded daily and maintained in the WGSL's operating record.

Odor

The odor control program at the WGSL consists of the following elements:

- Identification and special handling of odorous wastes
- Effective application of daily and intermediate cover
- Installation and operation of an odor neutralization system
- Management of landfill gas.

Waste capable of creating off-site odor problems are given special handling. Odorous materials include:

- Sewage sludge (wastewater treatment solids) and grit
- Rendering plant wastes, dead animals, and offal
- Grease trap pumping waste
- Bulk shipments of off-specification foods and food wastes

Waste that is considered odorous is generally handled under the site's special waste program; upon arrival to the scale house, they are designated as odorous loads and directed to a designated part of the active disposal area. Disposal then occurs as follows:

- A bulldozer excavates a trench or pit in a place previously known to contain non-odorous waste. The pit is large enough to contain approximately twice the anticipated volume of the odorous load.
- The odorous load is discharged into the trench or pit.
- The bulldozer immediately covers the odorous material with excavated non-odorous solid waste. The disposed of material is compacted firmly.
- Daily cover soil is placed and compacted above the solid waste.

Daily scale house records reflect the receipt of odorous loads designated for special handling.

Cover Soil

The most effective means of preventing odors from solid waste is the application of cover soil to the disposed MSW. The use of soil cover will also reduce the attraction of the landfill from birds that may be considered a nuisance to area residents and a potential hazard to the nearby Kahe Power Generating Station (also see above for special handling of odorous waste). A minimum of six inches of soil is placed daily over active MSW disposal areas and compacted by a compactor or track-walked by a bulldozer. Intermediate cover, consisting of at least an additional six inches, further controls odors in areas where additional waste will not be added for 30 days or more. Regular inspection and maintenance of cover soil to seal and eliminate cracks and fissures in cover soil is practiced to further control odors from buried solid waste.

Odor Neutralization Systems

Waste Management of Hawai‘i, Inc. (WMH) has an existing spray system installed at the entry of the landfill to dispense odor neutralizing solution. The system is similar to systems that have been installed at numerous other landfills across the mainland U.S. Supplementing this system the odor neutralizer can be deployed from on-site tanker trucks by mixing the solution with water. The tanker trucks can be sent to site specific locations of the landfill to be used on an as-needed basis.

The spray system is normally configured with stations spraying 12-15 gallons per hour of a finely atomized odor neutralizing solution into the air. The chemical neutralizing solution is a proprietary polymeric formulation that combines with sulfuric and nitrogen-based compounds at the molecular level to eliminate odorous properties. The chemical neutralizing solution is non-toxic and has been approved by health authorities for this specific application.

The odor neutralizing spray system is operated on an as-needed basis during normal operating days (seven days/week) and is capable of deploying odor neutralizing solution on a timer during periods when the landfill is closed. The spray system is generally not used during periods of strong southerly winds associated with winter storms to prevent any potential transport of solution spray to populated areas makai of the landfill.

Landfill Gas Control

Landfill odors are frequently associated with the uncontrolled release of landfill gases that are the result of decomposing organic matter. A landfill gas extraction and treatment system was installed in 2005/2006 and upgraded in 2007 and 2008. Additional wells will be installed as waste is placed. The system controls the emission of methane and trace compounds in landfill gas associated with nuisance odors. In addition to minimizing surface emissions, the gas system is intended to prevent offsite migration of landfill gases.

4.2.4. Material Acceptance

Introduction

If the attendant at the WGSL scale house has any concern regarding the acceptability of the material a vehicle is transporting, site supervisors are summoned to the scale house to inspect the load and determine whether or not it will be accepted for disposal. Once the material is determined to be acceptable, the load is weighed, data is entered into the scale house records, and the customer is directed to the appropriate disposal area.

An Unacceptable Waste Exclusion Program is used to prevent the disposal of unacceptable wastes including hazardous waste; PCB contaminated waste, pesticide containers, liquid waste, or improperly packaged asbestos waste.

Special Waste Screening

The following types of special waste require a special waste application. Applications are reviewed and approved by WMH before acceptance for disposal. These materials include:

- Asbestos
- Materials separated from water, such as from car and equipment washes that generate sludge and residue
- Sewage sludge
- Off-specification and outdated products

- Underground storage tank and other related sludge
- Resins and chemical debris
- Petroleum and other contaminated soils (non-liquid)
- Diesel fuel contaminated debris (non-liquid)
- Used oil debris (non-liquid)
- Gasoline, jet fuel, and kerosene contaminated debris (non-liquid)
- Sandblast grit
- Baghouse dust
- Inorganic filter cake
- Dried paint waste from removal, construction and demolition
- Treated utility poles and lumber
- Empty containers
- Treated medical waste

Customers proposing to dispose of special waste at the WGSL must submit a special profile sheet characterizing the waste prior to delivering the material to the landfill. All special waste shipments must be accompanied by a manifest. The manifest is checked by the scale house operator against the approved special waste profile sheet. Undocumented special waste loads are rejected at the scale house from disposal.

4.2.5. Special Procedures for Contaminated Material

The acceptance procedures outlined in this section are used for the following categories of special wastes:

- Soil, debris and other materials contaminated with petroleum or other chemical products as listed above under Special Waste Screening
- PCB-contaminated soils that, due to very low concentration of PCBs, are not regulated by the EPA

For these categories of special waste, the special waste profile sheet and application for disposal must include a Notice of Contaminated Material Approval form. The form meets requirements of the City & County of Honolulu and the DOH. Before these categories of special waste are accepted for disposal, the completed form with the approval document from the City and signature of the individual wishing to dispose of the waste, must be submitted to the WGSL. The WGSL provides a copy of the Notice of Contaminated Material Approval form to the DOH, Solid and Hazardous Waste Branch.

4.2.6. Unacceptable Waste Management Program

Categories of Unacceptable Waste

The WGSL operates an active program to prevent the disposal of the following categories of waste at the landfill:

- Toxic materials, such as insecticides or poisons
- Radioactive materials
- Materials designated as hazardous under 40 CFR Part 261
- PCB wastes as defined in 40 CFR Part 761
- Untreated infectious wastes
- Bulk or non-containerized liquids as provided in HAR 11-58.1-15(i)

Screening and Excluding Procedures

Procedures to prevent disposal of these materials at the WGSL include:

Customer Notification

Customers are informed that the WGSL does not accept hazardous or liquid waste through means of published information and the sign at the entrance to the landfill.

Scale House Monitoring and Inspection

Scale house personnel question every incoming customer as to the source and contents of their load. If any suspicious waste or unusual loads are observed, the scale house attendant will reject such wastes or summon trained site personnel to determine whether or not the waste is acceptable for disposal. The vehicle in question may be directed to the side, the load uncovered, and the contents examined. If hazardous or unacceptable waste is found or observed in a vehicle during a visual inspection at the WGSL scale, landfill personnel will reject the entire load and complete a load rejection form. When possible, educational information on proper disposal of rejected wastes is provided to the customer.

Random Inspections

A minimum of two random load checks are performed daily. The load check spotter will randomly choose the vehicle for the random load check. The vehicle is directed to an area off to the side of the main working area. After the load is dumped, the waste is cordoned off using traffic cones and at least one lane on either side of the area is kept clear of any traffic. A second spotter is present to ensure no traffic is allowed in the area.

The load check spotter fills out a Random Load Check Form, asking the appropriate questions of the vehicle driver and then walks around the waste looking for any unacceptable waste. After the initial walk around, the spotter will signal for a bulldozer to spread out the waste. After the bulldozer has left the area, the load check spotter uses a rake, or other appropriate tool, to inspect the load for prohibited wastes.

If hazardous waste is discovered after a load has been dumped and spread out, the hazardous materials are returned to the vehicle when possible. If the waste cannot be returned to the vehicle, landfill personnel transport the waste to the temporary hazardous material storage area located on-site. The waste is then identified, logged into the waste volume tracking record book, placed in drums or separated onto pallets, labeled, and transported by a licensed hauler for management as required by federal and state regulations.

Landfill Working Face Inspections

Equipment operators and spotters at the WGSL working face visually observe the unloading of refuse to determine the presence of prohibited wastes to prevent it from being landfilled. If suspicious looking materials are discovered, trained personnel are called upon to inspect the material. If the waste is determined to be unacceptable waste, the waste handling and agency notification procedures described below are followed.

Management of Unacceptable Waste

If hazardous or prohibited wastes are detected at the working face and the individual having transported the waste is unknown, WGSL personnel will identify the generator or transporter. If either of these parties can be identified, they are held responsible for removing the unacceptable waste from the landfill for proper disposal. If neither the generator nor the transporter can be identified, the following steps are taken:

- If the hazardous or unacceptable waste is a general household hazardous waste (i.e., paint, solvents, motor oil, insecticides, pesticides, automobile batteries, etc.), trained site personnel will remove these from the working face and transport them to the temporary hazardous waste storage area. This waste is later packed and transported off-site for proper disposal in accordance with federal and state laws.
- If the characteristics of the waste is unknown, or the waste is perceived to be a safety hazard, the following steps are taken:
    - The site supervisor is notified of the situation;
    - The immediate and surrounding areas of the waste is secured to establish a safe zone. Other vehicles are directed to dispose of their waste in another area;
    - The site manager contacts a licensed emergency response contractor to manage the removal and proper disposal of the waste; and
    - All required agencies are notified of the incident.

If household hazardous wastes are discovered at the load check site and cannot immediately be returned to the hauler or generator[2], trained personnel will package, label, mark, and store the waste in a manner consistent with applicable local, state, and federal waste regulations. Waste will be stored in the temporary hazardous waste storage area and will be tracked and stored for a maximum period of 90 days after the accumulation of 220 pounds or more. <u>The safe accumulation of this type of waste prior to transport to an approved disposal facility is to minimize the number of trips involving the transport of hazardous materials.</u>

Hazardous wastes are removed from the site by a licensed hazardous waste hauler with proper manifest documentation. The hazardous waste is then disposed of or treated at a permitted facility.

Agency Notification

In the event that regulated hazardous or PCB waste is discovered during a random load check or at the working face, a written report is sent within 24 hours to the DOH, or the next working day. The report includes the following:

- Date of discovery
- Type and volume of waste
- Generator and transporter, if known
- Environmental or safety issues, if any, and mitigating measures by the WGSL
- Disposition of the waste

Training

WGSL personnel responsible for load checks and inspections receive training on the identification of hazardous wastes, worker safety, and procedures to follow if hazardous wastes are found. This training is included in the landfill's annual employee training program.

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[2] A possible source of this type of waste is a self-hauler or individual.

4.2.7. Waste Unloading and Compaction

Introduction

After process at the scale house, commercial and industrial haulers follow designated routes, directed by signs, barriers, cones, and traffic spotters, to the working face. At the working face, landfill spotters direct the haulers to unload at a specific area. Landfill personnel responsible for traffic control and directing customers are equipped with two-way radios to facilitate coordinated and safe traffic control.

WGSL personnel observe disposal operations at the working face to ensure safe operations and to monitor for unacceptable materials being disposed of in the landfill. Landfill personnel also prevent customers from salvaging waste, which is prohibited at the WGSL. Random load checks are performed at the working face to prevent such activities.

Waste unloaded at the working face is spread out and compacted by compactors and bulldozers in layers a maximum of two feet thick. Successive layers are compacted to form lifts 12 to 20 feet thick across the working face. Trucks deliver daily cover to the refuse disposal area. The daily cover is applied by bulldozers.

Special Waste Procedures

Specialized procedures are used to manage the categories of special waste described in this section.

Incinerator Ash

The following special procedures are followed for the disposal of incinerator ash:

- Areas where ash is disposed of receive a minimum of six inches of soil cover if the area is not covered with additional ash within a period of seven days.
- Only ash created from the incineration of MSW, industrial, or commercial waste is accepted for disposal. Ash from medical or veterinary waste incinerators is not accepted. Before ash is accepted from any source, the

WGSL will review samples and laboratory data to ensure the ash material has been entirely incinerated and that it does not contain free water that would classify the ash as liquid waste.

Contaminated Materials

Contaminated soils and debris are not only subject to the acceptance protocol for Special Waste Screening Procedures, but the following disposal requirements as well:

- Contaminated soils may be used as daily cover in either the MSW landfill or ash monofill areas. Materials other than soil will be disposed of as general solid waste in either the MSW landfill or ash monofill areas.
- All trucks delivering contaminated material must be covered.
- Disposal of such material will not take place during periods of heavy rain or during sustained wind speeds in excess of 30 miles per hour.
- During dry or windy conditions, a water truck is used to suppress dust while contaminated materials are disposed.
- A Special Waste Disposal Report will be filled out and placed in the operating record for each load of contaminated materials. The report will include the following information:
  - ▫ Type, source, and volume of material
  - ▫ Disposal date
  - ▫ A general description and GPS coordinates to the disposal location including northing, easting, and elevation
  - ▫ Weather conditions at the time of disposal (i.e. wind direction and speed, rainfall, etc.)

Asbestos

Special procedures for asbestos are detailed in the Asbestos Disposal Plan. The plan ensures that national emission standards are met at the WGSL. Once asbestos waste transporters comply with all procedures, they are allowed into the site at a pre-scheduled time. Loads are inspected to ensure all packaging requirements have been met. The asbestos waste transporter then proceeds to a prepared disposal trench and discharges the load. All asbestos waste is covered with MSW and six inches of daily cover. The site's permanent operating record contains all documentation of asbestos disposal. Documentation includes date, time, name(s) of the waste generator and the waste transporter, and the location where the asbestos waste was disposed of.

Dead Animals and Offal

Dead animals and offal (hides, intestines, and other waste from slaughtered animals not subject to human consumption) is not subject to special waste acceptance procedures; however, it will be identified by the transporter at the scale house. Loads containing dead animals and/or offal are disposed of by excavating a pit in the MSW at the working face, dumping the load, and filling the hole back in with MSW. Any areas receiving dead animals and/or offal are covered with daily cover soil at the end of the working day.

Medical Waste

Only medical wastes that have been rendered non-infectious by incineration or sterilization (by autoclaving) are accepted for disposal.

In the event that waste suspected of being non-treated medical waste is discovered at the working face or found in a random load check, the material is moved to a safe location, using care to avoid exposure of WGSL personnel to the waste or to needles potentially inside the bagged waste. Procedures for Management of Unacceptable Wastes are then employed.

Treated medical waste is handled and covered in the same manner as other MSW.

Storage and Disposition of Non-Disposable Waste

The WGSL does not accept the following categories of materials for disposal. These categories are prohibited by DOH solid waste regulations:

- Bulk green waste (should be sent for composting)
- Scrap vehicles (should be sent to a metal recycler)
- Tires (should be sent to a tire recycler)
- White goods (major appliances) (should be sent to a metal recycler)

Bulk green waste loads and scrap vehicles identified at the scale house are turned away from the site. Tires and white goods are occasionally encountered in mixed loads after being dumped at the working face. When these materials are discovered at the working face, WGSL personnel remove them and send them to a designated area on-site for temporary storage. The following guidelines are implemented for such materials:

- Tires are placed in a roll-off bin and stored until the bin is full at which time the bin is transported to an approved tire recycler. Roll-off bins may be covered with a tarp to keep out rain.
- White goods are stored in a designated area until an approved recycler comes to the WGSL to remove them. Appliances are handled and stored in a careful manner to prevent spills or the release of oil, lubricants and/or CFCs.

Records are maintained and placed in the operating record of off-site shipments of tires and white goods.

Inclement Weather Operations

Each year, prior to the start of the rainy season, a wet weather pad area and roadway improvements are implemented based on the filling plan progress and approximate waste volume expected during the season. The wet weather pad and roadway area are covered with crushed concrete and/or asphalt demolition base material, allowing the area to be used when rainy weather does not permit vehicle access to the normal working face, or when mud could be a nuisance if tracked onto Farrington Highway.

Cover Plans

Most soil used for daily and interim cover will come from material excavated during cell construction. However, soil received at the landfill for disposal may also be used. The active MSW disposal area is covered at the end of each day with a minimum of six inches of daily cover soil. Intermediate cover, consisting of a minimum 12 inches, is placed over disposal areas where additional wastes will not be placed for 30 days or more. The intermediate cover is graded to promote surface drainage. When additional waste is placed over these areas, the upper section of the intermediate cover is removed and reused to cover other portions of the landfill requiring cover.

4.2.8. Special Procedures for Ash Monofill

Ash monofill will be disposed of in designated areas of the landfill. Currently, no other materials are permitted in the ash monofill section.

Acceptable Ash Monofill

Only ash created by the incineration of MSW, industrial, or commercial waste is accepted for disposal at the WGSL.

Cover for Ash Monofill

The DOH permits the disposal of ash and requires that it be covered once every seven days with six inches of soil cover material. The area of the site used for the disposal of ash is managed so that any deliveries of ash are regularly smoothed out to prevent the ash from accumulating in tall piles.

Equipment

A minimum of one bulldozer and one bucket loader are available to manage the spreading and covering of ash during peak periods of disposal.

Excavation and/or Removal of Ash

Ash material and cover soil placed in the ash monofill section is left in an undisturbed state as much as practicable. In the event that the ash monofill section requires excavation or the removal of ash, the WGSL must notify the DOH of the proposed action and must wait for approval of the request prior to disturbing placed ash.

Use of Filled Areas

Filled or developed areas of the ash monofill are not used for any other active landfilling purposes. Specifically, these areas are not used for the storage of green waste, tires, white goods, or unacceptable waste removed from the MSW portion of the landfill. Only temporary soil stockpiling may be undertaken on the ash monofill area provided that there is a layer of intermediate soil cover placed over the ash monofill.

4.3. On-Site Roads

All on-site roads used by WGSL customers are maintained as all-weather roads. The roads are paved with rock, gravel, or concrete/asphalt rubble, and are graded and watered as needed to maintain them in a smooth and dust-free condition.

4.4. Dust and Mud

Personnel at the WGSL are responsible for the prevention of excessive fugitive dust blowing from the landfill. Water trucks are used to spray water onto on-site roads and other areas that generate wind-blown dust. The volume and frequency of the water spraying is increased as needed, especially during particularly dry and windy conditions.

During wet weather, measures are implemented to minimize the tracking of mud onto public roads. Wet weather tipping areas are constructed out of rock or asphalt and concrete rubble to minimize the exposure of customer vehicles to excessively muddy conditions. As customers exit the WGSL, their vehicles cross a “rumble strip” which vibrates mud from wheels and tires before exiting the site onto Farrington Highway.

Operations personnel will be responsible for maintaining these features and providing clean up, if it is required.

4.5. Safety Procedures and Record Keeping

4.5.1. Safety Procedures

WMH provides training and strict enforcement of a comprehensive program to ensure safety of customers and employees. On-site roads are clearly marked and an on-site speed limit of 10 miles per hour is enforced. Customers are directed by spotters to specific locations for unloading and traffic is managed to avoid accidents.

Employees are equipped with personal protective gear including reflective vests and hard hats. Safety devices on landfill equipment include seat belts, roll-over protective cabs, audible reverse warning devices, and fire extinguishers.

4.5.2. Record Keeping

Daily Operating (Scale House) Records

Each load of refuse delivered to the WGSL is documented in terms of the customer identity, type of waste, source of waste, and weight. Records of each load are maintained daily and accumulated for monthly and annual reports. Scale house records, including waste manifest forms, are archived and maintained on-site for a minimum of three years.

Daily Log

Any unusual occurrence on-site is documented in a daily log record maintained at the WGSL. Unusual occurrences include incidents of unacceptable waste identified in incoming loads, accidents, severe weather conditions, fires, or other unusual events. Operation personnel are trained to report and document these events. Daily logs are maintained on-site for a minimum of three years.

Records Related to Hazardous Waste Exclusion

The WGSL maintains records of the date, content, and names of employees attending annual training events related to the hazardous waste exclusion program. Any reports or other detail related to waste load inspections or incidents of unacceptable waste discovered at the landfill, in addition to information in the daily log, are placed in the hazardous waste exclusion files of the operating record.

Groundwater and Gas Monitoring Data

All results of groundwater monitoring and explosive gas monitoring at the WGSL are maintained for a minimum of three years in the operating record.

Climatic Data

Daily climatic data, including rainfall, temperature, solar radiation, evaporation, wind speed, and wind direction and humidity, are collected daily and maintained in a data base for evaluation of potential leachate generation.

Closure and Post-closure Plans and Data

The operating record includes copies of the current closure plan and post-closure plan, including records related to any actual closure or partial closure activity. Such records include engineering plans, construction inspection reports and certifications related to closure activities. Additionally, records pertaining to financial assurance for closure and post-closure are maintained, including cost estimates and documentation of financial assurance mechanisms.

Location Restrictions Demonstration

WGSLF will maintain a copy of its solid waste permit application documents containing analyses of the site location in relation to siting criteria listed in HAR 11-58.1-13, including airport safety, floodplains, wetlands, fault areas, seismic impact zone, unstable areas, tidal wave zone and local zoning ordinance consistency.

Access Control Documentation

Daily sign-in sheets for public visitors and other records documenting how the WGSL controls access to the site and prevents unauthorized dumping are maintained.

Liquids Restrictions Documentation

The WGSL does not accept liquid wastes for disposal. Records are maintained of liquid waste loads rejected during the special waste screening process or during load checks. This information may be incorporated in records of the hazardous waste exclusion program.

Training Records

Copies of employee training program agendas and attendance sheets are maintained. Applicable training programs include those related to hazardous waste exclusion, safety, environmental compliance, emergency procedures and other elements of facility operation.

Vector Control Records

Periodic (daily, weekly and monthly) inspection reports are maintained including observations of insects, rodents, birds or other potential disease vectors at the site. In addition, records of special inspections or abatement activities by pest control contractors providing services to the WGSL are maintained.

Litter Control Records

A daily record is kept of litter control activities and maintained in the operating record. The log contains information on the wind conditions each day, the number of litter control personnel on-site, and the volume of litter collected.

Asbestos Disposal Records

The WGSL is required by permit to maintain a record of each load of asbestos waste disposed at the site. Information recorded includes the type of waste, and source and location (preferably by GPS or survey coordinates) of its disposal location in the landfill.

Asbestos disposal records may be incorporated in the records of the hazardous waste exclusion or special waste screening programs.

Emergency Condition Reports

Any emergency incident or condition at WGSLF is required to be documented in an incident report that will be maintained in the operating record. Emergency conditions include fires, hazardous material spills, injury accidents, natural disasters such as floods or violent storms, and any other event that threatens the safety or security of personnel and facilities.

Adequate Storage Procedures

The WGSL is required by permit to maintain records documenting secure storage and handling of any green waste, scrap vehicles, tires or white goods brought to the site. Documentation must show that these materials, which are prohibited from disposal, were stored, managed and removed from the site in accordance with applicable regulations. Records should include documentation of any removal or management of oil, grease, CFCs or other fluids from vehicles and white goods prior to removal from the site to recycling facilities.

4.6. Stormwater Management

4.6.1. Drainage Control System

Stormwater is managed by controlled grading on the surface of the WGSL and a maintained engineered system of drainage ditches, channels, pipes, and basins. The stormwater drainage control system is managed to:

- Prevent run-on of surface water to the active disposal face or uncovered refuse
- Minimize erosion in all sections of the WGSL to address run-off/run-on
- Maintain roads and other ancillary facilities in useable condition under all weather conditions

- Prevent excessive runoff or sedimentation impacts to neighboring properties

The WGSL in areas being used for active disposal of refuse is graded at a slope of 2 to 5 percent away from the disposal area. Earthen berms are constructed upgradient of the active disposal areas if needed to prevent runoff from mixing with the leachate control system and to divert drainage around areas susceptible to erosion. Earthen berms are also constructed downgradient of locations that may be susceptible to erosion.

The landfill stormwater management system is designed and constructed to manage runoff from a 25-year, 24-hour storm. Runoff is collected in a system of surface ditches, channels, pipes and ponds.

Design Criteria

According to GeoSyntec, RCRA Subtitle D requires that the surface water control features at landfills be designed to control both run-on and runoff from the 24-hour, 25-year storm. The 24-hour, 25-year storm at WGSL is 9.2 inches based on information presented by the State of Hawaii (1984) and is used as the basis to evaluate the performance of the sedimentation/detention pond and estimate runoff for the landfill grading plan. (GeoSyntec and WMH, 2008).

Proposed Improvements

There are two surface water control systems are proposed for WGSL (GeoSyntec, 2008):

- Western Bypass Channel. GEI Consultants (GEI) prepared the Western Bypass Channel (off-site stormwater conveyance) for the upper canyon and western areas flows adjacent to the Landfill. The system will capture the upper watershed’s flows and route them around the landfill so that they do not mix with the surface water runoff from the landfill. The water will flow via large diameter pipes and/or concrete-lined channel(s) and discharge at a point south of WGSL's existing sedimentation basin.

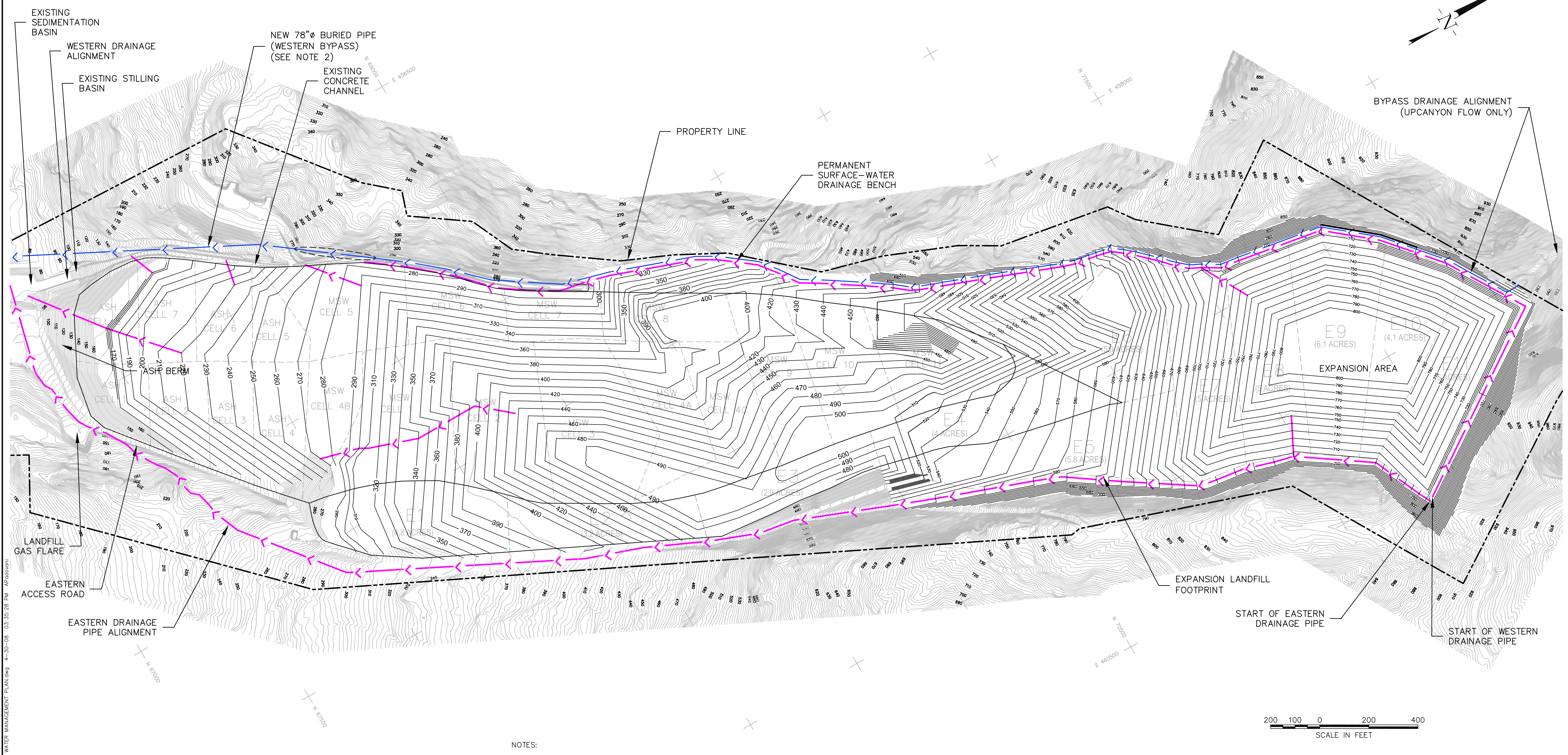
- Onsite Stormwater Management System. This system has two components that capture: (i) flows from the western side of the landfill (primarily landfill runoff with minor amounts of run on); and (ii) flows from the eastern side (both landfill runoff and run on). Both flows will discharge stormwater to the existing sedimentation basin.

Figure 4-8 shows the alignment for the landfill's eastern and western systems and general details for the pipe and collection channels for the preferred expansion. Pipes and channels will be sized when construction drawings for the expansion are prepared. (GeoSyntec, 2008).

GeoSyntec evaluated the existing sedimentation basin configuration (i.e., emergency spillway, etc.) for flood control and for water quality requirements in the County of Honolulu Drainage Standards (City and County of Honolulu, 2000). GeoSyntec also used information presented by Shimabukuro et al. (1986) and EarthTech (2006) (e.g., dimensions, riser elevations, infiltration trenches, spillway, etc.). GeoSyntec's evaluation concludes that the existing basin meets the requirements for flood control and for water quality provided upstream run-on is diverted around the basin. (GeoSyntec, 2008).

Surface Water During Operations

During operations, surface water will be controlled by temporary pipes and ditches that will be moved as necessary to address stockpiles, active fill areas, the extent of each cell, and fill sequencing. Since the size of each cell may vary depending on the waste stream at the time, surface water details will be designed as part of preparing the construction drawing package for each cell. (GeoSyntec, 2008).



NOTES:

1. EXISTING TOPOGRAPHY BASED ON 22 JUNE 2007 AERIAL SURVEY, CONVERTED INTO LOCAL COORDINATE SYSTEM AND PROVIDED BY OWNER.

2. LOCATION OF PLAN APPROACH CHANNEL AND NEW 78"ø BURIED PIPE FROM DRAWING C–7 "OPTION –1 PLAN, PROFILE AND DETAILS" DATED 12 APRIL 2007, PREPARED AND PROVIDED BY GEI CONSULTANTS OF OAKLAND, CALIFORNIA.

LEGEND

— - - — - - —	PROPERTY LINE
—<—	C/L OF SURFACE–WATER DRAINAGE PIPE WITH FLOW DIRECTION (APPROXIMATE ALIGNMENT)
—<—	C/L OF WESTERN BYPASS SURFACE–WATER DRAINAGE ALIGNMENT WITH FLOW DIRECTION (APPROXIMATE, SEE NOTE 2)

Geosyntec consultants

SURFACE WATER MANAGEMENT PLAN PREFERRED AND ALTERNATIVE GRADING PLANS WAIMANALO GULCH LANDFILL EWA BEACH, OAHU, HAWAII	FIGURE NO.	14
	PROJECT NO.	WL0770
	DATE:	MARCH 2008

F:\CADD\Land Projects 3\WM-Waimanalo\dwg\Life of Site (EIS) Report\SURFACE WATER MANAGEMENT PLAN.dwg 4-30-08 03:35:28 PM ATabayon

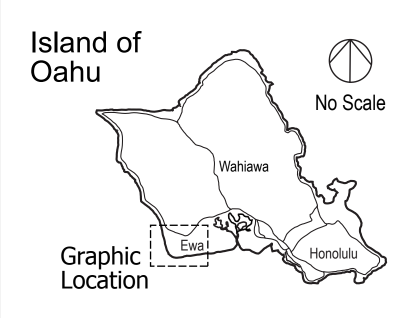


Figure 4-8
Proposed Surface Water Plan
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

4.6.2. Erosion Controls

Erosion is primarily controlled by the drainage control system to control and reduce the velocity of runoff. The system incorporates diversion berms, temporary letdown piping, and other similar measures. Side slopes are inspected periodically and eroded areas are repaired. Silt fences are installed on slopes subject to erosion on bare slopes. Areas of the WGSL not scheduled to receive additional waste for a year or more are seeded with grass to provide additional erosion control.

4.6.3. Prevention of Pollutant Discharges

Surface water management involves the prevention of discharges of pollutants into the nearby coastal waters to ensure against violating state water quality regulations by:

- Preventing runoff of surface water that has been in contact with waste. Any water that contacts waste is treated as leachate and is not discharged to the sedimentation basin.
- Controlling erosion to prevent loss of cover or washout of refuse
- Retaining and removing silt from surface water before it is discharged from the WGSL

In addition, the WGSL implements a Spill Prevention Control and Countermeasure (SPCC) Plan to prevent the discharge of petroleum products used on-site into surface waters.

4.6.4. Stormwater Quality

The WGSL manages stormwater to ensure that surface water discharged from the site meets the water quality standards set forth in Hawai‘i Administrative Rules, Title 11, Chapter 54. The standards prohibit the following in stormwater:

- Materials that settle to form sludge or bottom deposits
- Floating debris, oil, grease, scum, or other materials

- Substances in amounts sufficient to produce taste in the water, detectable off-flavor in the flesh of fish, or objectionable color, turbidity or other conditions in the receiving waters
- High or low temperatures; biocides; pathogenic organisms; toxic, radioactive, corrosive, or other depleting substances in combination or at levels sufficient to be harmful or toxic to human, animal, plant, or aquatic life, or in amounts sufficient to interfere with any beneficial use of the water
- Substances or conditions, in combination or solo, in concentrations which produce undesirable aquatic life
- Excessive soil particles resulting from erosion

Additional HAR standards governing toxic and hazardous constituents by specified levels of concentration expressed in milligrams or micrograms per liter are also identified.

4.6.5. Annual Update of Surface Water Management Plan

The WGSL prepares and submits to the DOH an annual update to its surface water management plan prior to the first day of September every year. The annual surface water management plan contains the following update information:

- The results of surface water management features and facilities inspections with a description of recommended maintenance and changes;
- Updated drawings of the surface water management system;
- Engineering calculations confirming the capacity of the system; and
- Updates to the WGSL’s SPCC Plan.

4.7. Regulation of Air Quality

Operations at the WGSL are subject to state and federal requirements for air pollution control. Activities conducted in relation to air programs include:

- Asbestos waste management in conformance with federal requirements for hazardous air pollutants (NESHAPS)
- Prohibition of open burning and implementation of programs to detect, prevent, and suppress fires in solid waste loads
- Monitoring for emissions of landfill gas
- Control of dust and odors

The DOH has been delegated authority from the EPA to enforce rules limiting the ambient emissions of non-methane volatile organic compounds (NMOCs) from solid waste landfills (40 CFR Parts 51, 52, and 60, Standards of Performance for New Stationary Sources and Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills). Under this rule, landfills with a design capacity of over 2.5 million metric tons (2.76 million tons) are limited to 50 metric tons (55.1 tons) per year of NMOC emissions. The design capacity of WGSL is approximately 6 million tons and is therefore subject to the federal New Source Performance Standards, 40 CFR Part 60, subpart WWW. WMH monitors the emission of landfill gas from the WGSL.

4.8. Emergency Preparedness

4.8.1. Explosive Gas

Monitoring for the gases methane and hydrogen are conducted at the landfill office building and at the landfill property boundary. Detection of the gases will be through monitors placed within the office building and monitoring of installed permanent gas probes in accordance with RCRA Subtitle D regulations, HAR 11-58.1-15(d), and the WGSL Solid Waste Permit, as regulated by the DOH.

The EPA and DOH require~~s~~ that methane concentrations not exceed 25 percent of the lower explosive limit (LEL) in any inhabited structure or exceed the explosive limit at the landfill property boundary. Hydrogen monitoring is conducted similarly to maintain safe levels below the LEL.

In addition to monitoring structures, both methane and hydrogen concentrations are monitored at the property boundaries. In accordance with Subtitle D and HAR regulations methane cannot exceed a concentration of 5 percent and per the site DOH permit hydrogen cannot exceed a concentration of 4.7 percent. Monitoring conducted to date has not detected either gas at action levels.

If hydrogen or methane is detected, either in a building or at the landfill perimeter, the DOH will be notified and actions such as increasing vacuum on gas extraction wells to pull more gas from the landfill or adding gas extraction wells will be taken.

4.8.2. Fire

WGSL personnel at the scale house and unloading areas are trained to notice smoldering or burning material from incoming waste loads. If smoldering or burning material from an incoming waste load is spotted, WGSL personnel dump the load out in an area located away from the working face, spread it out, and extinguish it. Fire extinguishers are provided in all buildings and vehicles at the site for use in extinguishing small fires, while equipment or water is used to put out larger fires from incoming waste loads. Should a fire occur at the working face, the waste is initially covered with soil to smother the burning material. The material is then excavated and completely extinguished with water.

In the event of a structure fire or large fire in uncovered waste, the Honolulu Fire Department is summoned to assist in putting out the fire.

4.8.3. Emergency Procedures

The WGSL maintains a detailed Emergency Management Manual that provides detailed procedures to be followed by site personnel in the event of an emergency. Specific procedures are established for different types of emergencies, including medical emergencies, fires on and off the site, spills, bomb threats, natural disasters, and general emergencies. The emergency manual outlines chains of command and communication, preparatory activities, response procedures, personnel evacuation procedures, and recovery activities. The manual is updated as needed to respond to personnel changes or site conditions.

Severe Storms

The following measures are taken to protect against excessive erosion, flooding and wind damage before and during severe storms.

WGSL personnel inspect all on-site drainage structures and verify they are in working order prior to the arrival of a forecast storm. Excessive silt in ditches and basins are removed on a regular basis. However, in the event of a storm the ditches and basins will be subject to additional inspection and clearing if it is required. The condition of pipes and discharge structures from basins will be verified. Diversion berms are constructed around the current disposal area as needed to prevent run-on from upgradient areas entering the waste fill, as well as to prevent run-off from the waste fill to downgradient areas of the landfill. Interim cover is placed over exposed waste at the end of the working day prior to the beginning of the forecast storm.

At the discretion of WMH, the site may be closed for business during storm periods. In this event, the working face will be closed and covered with daily cover, graded to discharge runoff to the site surface water drainage system. Temporary diversion berms are constructed as necessary to prevent run-on to any areas of exposed waste.

Facility personnel periodically inspect site drainage systems during prolonged storms involving extensive rain, and correct or repair, as needed, any conditions with potential to cause damage to on- or off-site facilities.

Earthquake

In the event of a significant earthquake, the following procedures are implemented:

- Immediately cease or limit landfill operations
- Promptly conduct a visual survey of the site to identify any slope failures, fires, landfill gas system failures, or other conditions that could threaten worker and/or public safety
- Follow the procedures set forth for Fires, if any fires occur.
- Follow the procedures set forth if any injuries occur.

A significant earthquake is defined as an earthquake having a magnitude 5.0 or greater that originates from a source within a 100 kilometer (60 mile) radius from the site, or an earthquake having a magnitude 7.0 or greater originating anywhere within the major Hawaiian Islands (the triggering event). (WMH, 2008).

In the event telephone systems are inoperable, notification of the appropriate agencies/businesses will be accomplished in the most expedient manner available (cellular phones, person to person, overnight mail, etc.). In the event power is lost, landfill personnel will notify the appropriate local utility companies.

Hazardous Materials Spills

The WGSL has a low potential for spills of hazardous materials; however, incidents are possible in the event of vehicle accidents or malfunctions causing spills of coolant, fuel or lubricants. Actions that will be taken in the event of a spill are described below.

The first step in responding to oil or other substance spill is to keep the material separated from water. This minimizes migration of the spilled substance and exposure to WGSL personnel, customers, and environment. Every effort should be made to prevent spills and emphasize substance containment at the source rather than resort to separation of the material from expanded portions of the environment or downstream waters.

Discovery of a Release

The following actions are taken immediately by the WGSL personnel (discoverer) discovering a release of material from operating equipment, a container, or tank:

- Extinguish any sources of ignition. All potential sources of ignition are removed until the leaked material is identified as non-flammable. Vehicles are shut off. If the ignition source is stationary, an attempt is made to relocate the leaked material away from the ignition source. Movement that would create sparks or static electricity is avoided.
- Attempt to stop the release at its source. The discoverer assesses that no danger to human health exists. Simple procedures, such as turning valves or plugging leaks, are attempted if no health or safety hazard exists and reasonable certainty exists to the origin of the leak. WGSL personnel will not come into contact with an unknown or hazardous substance illegally brought into the landfill.
- Initiate spill notification and reporting procedures. The discoverer will immediately report the incident to a supervisor. If there is an immediate threat to human life (e.g. fire or fumes), an immediate alarm will be sounded to evacuate the building and the fire department will be called. If

an uncontrollable spill has occurred and/or if the spill has migrated beyond the site boundaries, assistance from the fire department will be requested.

Containment of a Release

The following actions are taken immediately by the WGSL personnel to contain the released materials:

- Attempt to stop the release at the source. If the source of the released material has not been found; if special protective equipment is necessary to approach the release area; or if assistance is required to stop the release, the fire department will be called in to halt the discharge at its source. WGSL personnel will be on hand to guide the fire department's efforts.
- Contain leaked material released into the environment. The spill should be contained by absorbent materials and dikes using shovels and brooms. Consult applicable material safety data sheets for material compatibility, safety, and environmental precautions.
- Outside contractors will be obtained, if necessary, to clean up the spill.

Spill Cleanup

The following actions are taken immediately by the WGSL personnel to cleanup the released materials:

- Recover or cleanup released materials. Leaked material is recovered as much as possible and reused where appropriate. Non-reusable material is declared waste. Liquids absorbed by solid materials are shoveled into top, 55-gallon drums; or if the size of the spill warrants, into roll-off container(s). Drum lids are then secured and drums are appropriately labeled (or re-labeled) identifying the substance, date of spill/cleanup, and the facility name and location. Combining non-compatible materials has the potential to cause dangerous chemical and/or physical reactions or may severely limit disposal options. Compatibility information is found on material safety data sheets.

- Cleanup of spill area. Surfaces contaminated by the release are cleaned by an appropriate substance or water. Cleanup water is minimized, contained and properly disposed. Occasionally, porous materials (such as wood or soil) are contaminated; such materials require special handling for disposal.
- Decontaminate tools and equipment. Even if tools and equipment used in the cleanup are dedicated to such cleanup efforts, they are decontaminated before being put back in the spill control kit.
- Arrange for proper disposal of any waste materials. Waste material from the cleanup is categorized, transported, and disposed of according to State and Federal regulations.

Injury Accidents

Site management personnel are identified immediately in the event of an accident. First aid kits are maintained in site offices and vehicles for use as needed. If the extent of an injury requires additional treatment, the local emergency response provider is notified by dialing 911. The individual making the call will inform the operator of the extent and location of the emergency, what first aid measures have been initiated, and the need for any special equipment (i.e. hazardous materials response, confined space rescue, or vehicle extraction).

Persons with major injuries are never to be moved without professional assistance. Major injuries include second or third degree burns; unconsciousness; severe bleeding; obviously broken limbs; and any head, back, or neck injury.

Additional details on procedures for preventing and responding to accidents are contained in the Employee Safety Plan.

Records of all site accidents and first aid treatments given are maintained at the WGSL office. Accident reports are filed with insurance companies and State agencies as required.

After the accident situation has been stabilized, site management arranges for an investigation into the cause of the accident. A complete investigation report should be completed within seven days of the accident. The report includes a review of the actions leading up to the accident, factors that contributed to or mitigated the severity of the accident, and provide recommendations to prevent reoccurrence of such an accident.

4.9. Closure of Existing Landfill Area

The existing area of the landfill will require closure as the planned lateral expansion area is used. Final cover will be placed and final grades will be established. The final cover will be designed and placed in accordance with 40 CFR, Part 258, Subpart F, Criteria for Municipal Solid Waste Landfills, Closure and Post Closure Care, and the approved facility Closure Plan. The final cover will consist of a layer of compacted soil overlain by an impermeable HDPE flexible membrane liner. A vegetative/erosion control layer will be placed over an infiltration barrier in all areas of the landfill. Material for revegetation will come from stockpiled materials suitable for final cover or on-site excavated material will be used.

Final grading will not exceed the maximum permitted elevation of 513 feet. The top deck of the existing area of the landfill will be graded at a minimum 5 percent slope to promote drainage while allowing for future settling at the surface. Final grades for slopes will be designed at an approximate 3:1 maximum ratio (vertical height).

The existing ash fill section will have a high point of approximately 275 feet on the top deck, graded at a minimum 5 percent slope. Final grading for slopes is designed at an approximate 3:1 ratio (vertical height).

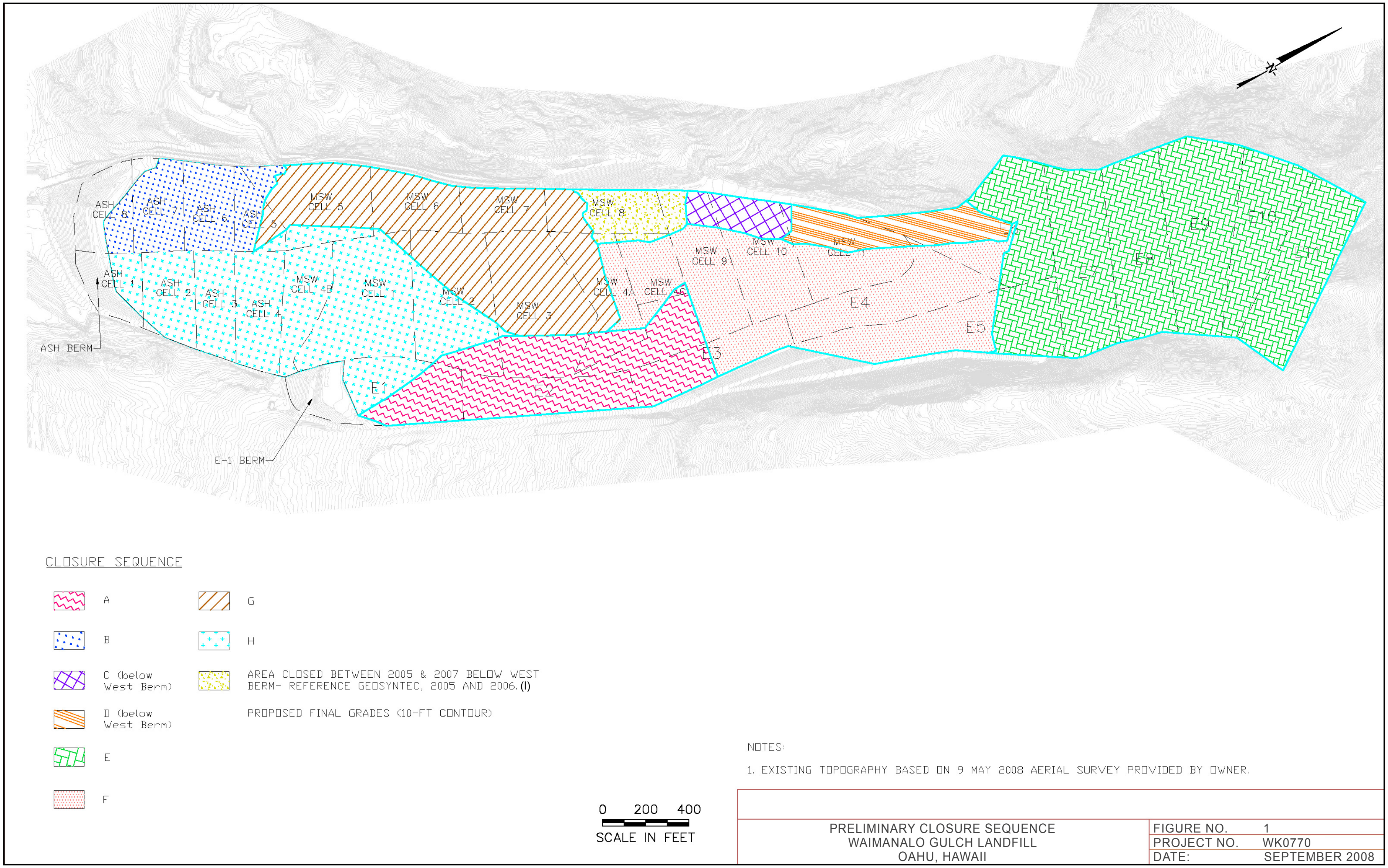
4.10. Closure of Lateral Expansion Area

The closure of the area of lateral expansion will be similar to closure activities for the existing landfill site. Final cover will be placed on cells that have been filled to capacity. The final cover will be designed to minimize infiltration of rainwater and a vegetative/ erosion control layer will be placed over an infiltration barrier in all areas of the closed expansion area. The preliminary closure sequencing plan for WGSL is shown in **Figure 4-9**. The plan will be modified as required to meet operational, safety and landscaping requirements.

Landscaping will be placed according to the location and characteristics of the vegetative/erosion control layer. The present plan is to continue filling along the west side of the landfill as the final phase of filling. These operations will start at the west stability berm and continue to the area of the ash monofil. It is important to recognize that the face of the ash disposal area has largely been covered with an interim soil cover, and portions have been planted with natural vegetation. As that vegetation matures and becomes fully established, and as the operator places rocks on the face to emulate the nearby undisturbed ground, even the ash monofill will be much less distinguishable from the surrounding land. Additional landscaping to the front area of WGSL is planned.

The final vegetative cover will consist of plants similar to those of the surrounding terrain and area. These plant materials are expected to include koa haole and related low lying drought tolerant plant species.

Soils used for final cover will be selected to match the surrounding terrain adjacent to the landfill site. Surface rocks that have been stockpiled during the active working phase will be used on the final cap during the closure process. The final cap will be installed and vegetated with a combination of grasses and natural vegetation that is native to the area. Rocks will be placed on the final cap after the revegetation process is completed to make the final appearance of the landfill blend into the surrounding hillsides.



Source: Waste Management of Hawaii,
Waimanalo Gulch Landfill, Oahu, Hawaii, September 2008

Figure 4-9
Preliminary Closure Sequence
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Once the site is closed monitoring equipment will be placed to measure leachate and gas generation; vegetative and other natural materials will be established; and the site will be monitored for a period of not less than 30 years.

The completion of closure activities will include the demobilization of construction activities by the contractor. Demobilization will include:

> Restoration or modification to existing utilities such as power lines or water sources associated with the termination of service.
>
> Roadways providing access to the site and surrounding areas shall be cleared of construction equipment, materials, and debris. Any damage to the surrounding roadway system, as a result of closure activities, will be repaired. As required, exposed ground areas will be grassed, seeded, or otherwise replanted with appropriate vegetative material.

4.11. Project Schedule and Cost

The proposed project is scheduled to begin upon approval of the necessary land use entitlements. Each cell of the lateral expansion area will be developed on an as-needed basis. Construction may therefore be limited to work on one cell at a time, except during periods of transition when one cell is being closed and a new cell is being prepared for use, or multiple cells have interdependent excavation features. Closure of the final cell is anticipated to occur at the end of approximately 15 years, upon the exhaustion of the final cell. Follow-up procedures involving post-closure landscaping, vegetation, and landfill monitoring would occur at that time.

The following are estimated costs in 2008 dollars associated with the proposed project:

Total Landfill Associated Costs	
Capping Cost	$27,800,000
Excavation and Liner Cost	$60,800,000
Common Site Costs	$29,200,000
Permitting Costs	$900,000
Total Cost	**$118,700,000**
Costs Associated with Completed Area of Landfill	
Common Costs Associated with Completed Areas	$1,000,000
Current Capping Costs Associated with Completed Areas	$18,300,000
Total Cost	**$19,300,000**
Total Cost Associated with Proposed Project	**$99,400,000**
(Total Landfill Associated Costs - Costs Associated with Completed Area of Landfill)	

Source: Waste Management , Inc., March 2008

Section 5
Environmental Setting
Potential Impacts and Mitigation Measures

5.1. Climate and Rainfall

5.1.1. Climate and Rainfall

WGSL is located in a region of Oʻahu that is relatively arid when compared to the rest of the island due to the "rain-shadow" effect of the Waiʻanae Mountain Range. Average annual rainfall in the lowland area is approximately 20 inches, while stations in nearby mountains experience significantly higher rainfall averages (Hokuloa gauge, elevation 2,200 feet mean sea level [msl], average annual rainfall is 42 inches).

The Waimānalo Gulch area receives approximately 20 to 30 inches of rainfall annually. The Waiʻanae weather station, located near the WGSL offices, sits at an elevation of 10 feet above msl and receives an average of 20 inches of rain per year, with extreme temperature records of 45° Fahrenheit (F) and 96°F. Rainfall increases substantially with elevation, reaching an average of 75 inches at the top of Mt. Kaʻala, 4,003 feet above MSL. According to an on-site rain gauge, located at the weather station, the average rainfall at the WGSL is approximately 15 inches per year.

Winds at the WGSL are predominantly the prevailing Hawaiian tradewinds. These tradewinds are channeled along the Nānākuli coastline by the Waiʻanae and Koʻolau Mountains in a southeast to northwest direction at an average speed of approximately 10 knots. Between October and April, the WGSL experiences southerly winds associated with Kona storms or approaching storm fronts.

Typically, daily temperatures range from the low 60's to upper 70's during the winter season and from the lower 70's to upper 80's during the summer season.

5.1.2. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to result nor constitute a source of impact to the climate or rainfall resources of the project area or region.

Secondary or cumulative impacts are not anticipated or expected. While the proposed scope and scale of the project are not sufficient to influence these resources, greenhouse gases (GHG) such as methane and carbon dioxide generated from the landfill could be a potential contributing factor to global warming. An investigation of alternatives to the use of landfills in Section 9 and Appendix K, found that WGSL in combination with the use of landfill gas for the generation of electricity, and the use of the site for the disposal of H-POWER ash, are expected to contribute to fewer GHG emissions than use of the site solely as a landfill with no provision or support for the recovery of energy.

5.2. Topography

5.2.1. Topography

The regional topography near the WGSL is dominated by the moderate to steep Wai‘anae Range, a northerly trending volcanic mountain complex that is characterized by narrow valleys separated by steeply sloping hills and ridges. The range extends northward from the site approximately 20 miles and is up to approximately 4 miles in width. WGSL is located at the southern toe of this range in a typically steep and narrow valley (gulch). Elevations along the main mountain ridgeline range from about 1,000 to 3,600 feet msl. Elevations drop dramatically away from the main ridgeline. Lateral slopes along the Wai‘anae Range are asymmetrical, with steeper slopes to the west. Typical slopes on the sides of the range drop some 2,600 feet over distances of two miles or less. Near the WGSL, the mountains of the Wai‘anae Range transition to low lying coastal plains. Elevations abruptly diminish from 2,300 feet msl (Pu‘u Manawahua) to sea level in a lateral distance of two miles in the WGSL vicinity (RUST, September 1993).

The WGSL is located in a relatively narrow gulch with a steeply sloping valley floor and sides. At the mouth of the gulch, the elevation of the valley floor is approximately 50 feet msl and rises to 450 feet msl over a distance of 4,800 feet (up to an 18% slope). Relative elevations between the valley floor and the tops of the adjacent ridges range from about 60 feet to 240 feet. Waimānalo Gulch is approximately 1,000 feet wide from ridge to ridge at its widest point, and is about 500 feet wide at its narrowest point (near the confluence of the upstream tributaries). Site elevations vary from a low of about 70 feet msl in the southeast corner to a high of about 940 feet msl in the northern portion of the property. Site topography of the landfill property is shown on **Figure 5-1, WGSL Topography**.

5.2.2. Potential Impacts and Mitigation Measures

Adverse impacts to topography, geology, or soils are not anticipated. See Section 5.3., Geology, Subsection 5.3.3, Potential Impacts and Mitigation Measures, which addresses the potential for adverse effects to topography, geology, and soils at the project site.

5.3. Geology

5.3.1. Geologic Setting

The island of Oʻahu represents the eroded remnants of two shield volcanoes, Waiʻanae and Koʻolau. The Koʻolau volcano was active after the Waiʻanae volcano became dormant, and its flows backed against the Waiʻanae volcano shield to form the Schofield Plateau. After a long quiescent period during which erosion cut canyons several thousand feet deep, another series of lava flows, the Honolulu Volcanic Series, formed cinder and cones primarily along the southeastern portion of the island.

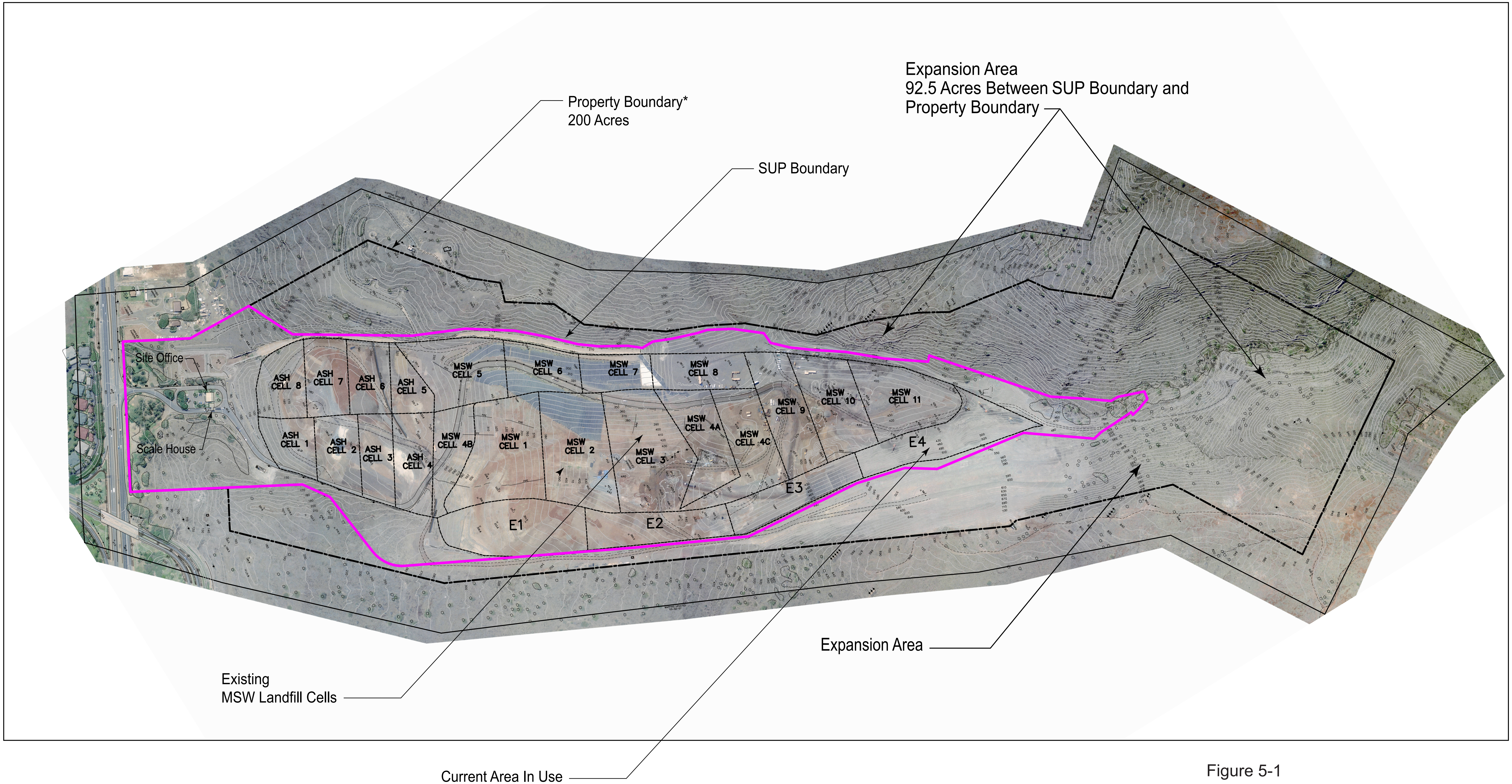


Figure 5-1
Waimanalo Gulch Santiary Landfill
Topography
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Note: *Proposed expansion project is subject to a 100 foot buffer from the property boundary.

Source: Base Drawing - GeoSyntec Consultants, Site Plan and Topography, Waimanalo Gulch Landfill, Ewa Beach Oahu, Hawaii, April 2007

0 500 Feet 1000

R.M. TOWILL CORPORATION

March 2008

The Waiʻanae Volcanic Series was formed during the Tertiary time and forms the majority of the Waiʻanae Range. This series is divided into lower, middle and upper members originally by Streans and Vaksvik (1935) and Streans (1940). Sinton (1986) renamed the shield-building, caldera filling and post-caldera stages of the Waiʻanae volcanics. Currently, the lower member has been remapped as the Lualualei Member, the middle member is now the Kamaileunu Member and the post-caldera lavas known as the upper member are now the Palehua Member (Mink & Yuen, Inc. and Knight Enterprises, Inc., 2006). The Lualualei Member consists of sequenced lava flows and associated pyroclastic rocks up to 2,000 feet thick, which makes up the majority of the Waiʻanae shield volcano. The rocks of this member are mostly thin-bedded pahoehoe that are locally intruded by dikes in the southwestern portion of the island (Takasaki, 1971).

The Kamaileunu Member of the Waiʻanae Volcanic Series is in unconformable contact with the Lualualei Member and consists of rocks that accumulated in the caldera and, as such, are thick (on the order of 2,000 feet) and generally horizontally bedded (Macdonald, 1940). This member resembles the lower member but contains more a'a flows than in the lower member. The Kamaileunu Member also is locally intruded by dikes in the southwestern portion of the island (Takasaki, 1971).

The Palehua Member is about 2,300 feet thick, and is mostly massive a'a flows that issued from large cinder cones (Takasaki, 1971). Dikes also locally intrude the upper member in the southwestern portion of the island, but fewer dikes are present in the upper member than in the lower two members. The valleys of the Waiʻanae Range typically contain moderately thick deposits of alluvium and colluvium.

Erosion has removed most of the western slope of the Waiʻanae shield and exposed the internal structure of the volcano. The shield was built by eruptions that took place along three rift zones. The two principal rift zones trended northwestward and southward from the summit, while a lesser one trends northeastward (Takasaki, 1971). A rift zone of an active volcano is characterized by parallel to subparallel fissures and a line of cinder and spatter cones. These features are absent in older, dormant volcanoes such as the Wai‘anae volcano where rift zones are identified by erosion-exposed dike complexes (Takasaki, 1971). The dikes are generally basalts and diabases and are aphanitic or have only a small content of phenocrysts and are typically orientated subparallel to the rift zone. The dikes typically have glassy chilled margins and show a gradual steady increase in grain size from rim to center. Near surface lava in Hawai‘i typically contains high numbers of cooling joints, vesicle partings, flow-unit boundaries, rubble layers and other planes of weakness (Walker, 1987). Dikes cutting near surface flows can be highly irregular in shape. Dikes are common in the western and southwestern Wai‘anae Range. They are sparse in the less permeable, massive, thick-bedded flows of the upper member and more numerous in the highly permeable, thin-bedded flows of the lower member of the Wai‘anae Volcanic Series (Takasaki, 1971).

"Caprock”, which consists primarily of alluvium, terrigenous and marine clays, and fossilized coral reef with associated calcareous detritus, overlies the volcanic sequences along much of the O‘ahu coastline. Portions of the caprock are important local coastal aquifers, such as in the ‘Ewa Plain. However, much of caprock is less permeable than the sequences of volcanic rocks so it acts a confining unit above the volcanic aquifer sequence (Hufen et al, 1980; RUST, September 1993).

5.3.2. Soils

According to the Soil Survey of Islands of Kauai, O‘ahu, Hawai‘i, Molokai, and Lanai, State of Hawai‘i (U.S. Department of Agriculture, 1972), there are primarily two soil associations found at the current WGSL and existing expansion area: Lualualei-Fill Land-Ewa Association, and Rocky Land-Stony Steep Land Association.

- Lualualei-Fill Land-Ewa Association: consists of deep, nearly level to moderately sloping, well-drained soils that have a fine textured or moderately fine textured subsoil or underlying material, and areas of fill land, on coastal plains. This soil association is primarily located from coastal areas to approximately ±1,500 feet mauka of Farrington Highway, within the landfill property.

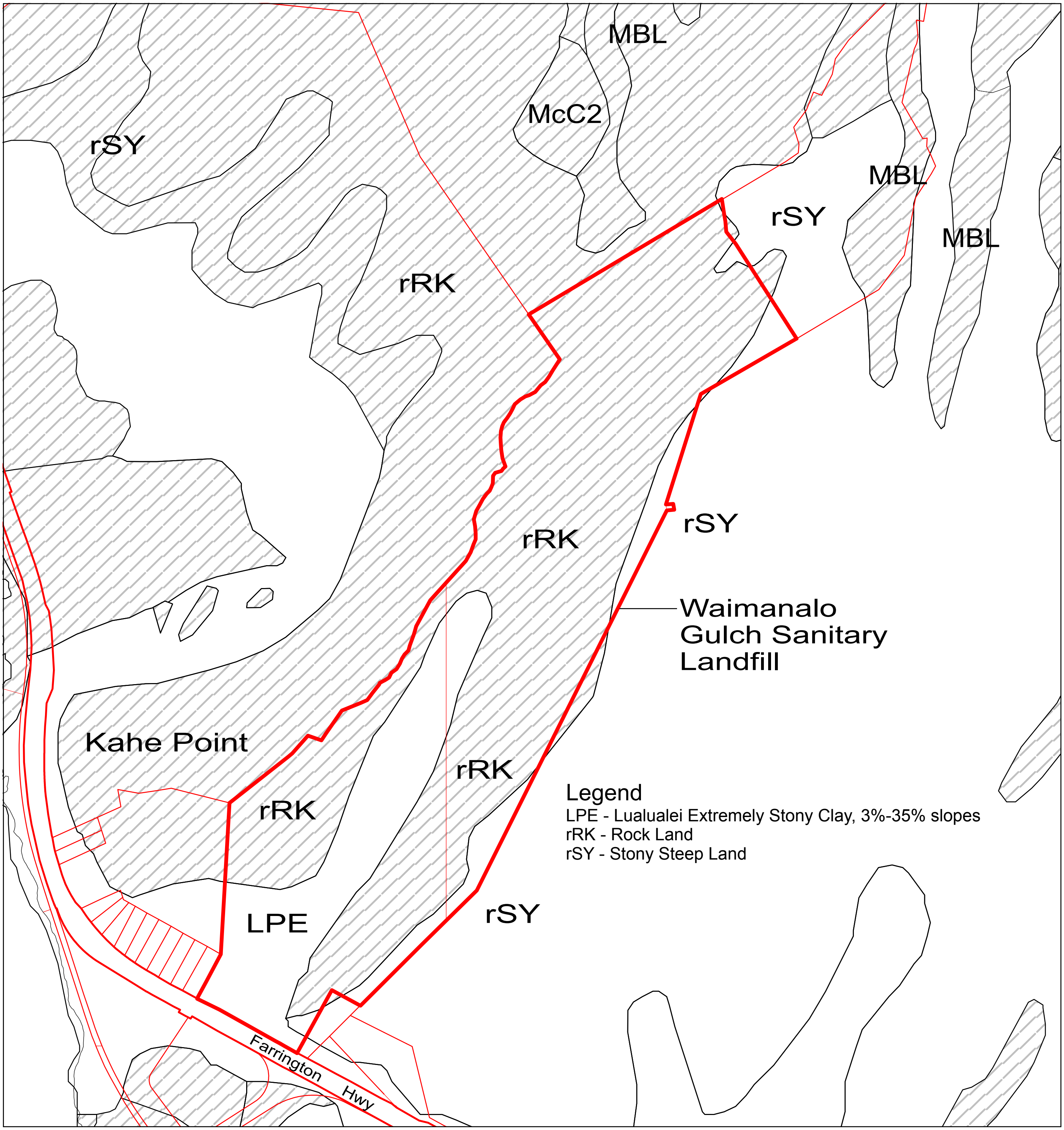
- Rocky Land-Stony Steep Land Association: Consists of steep to precipitous, well-drained to excessively drained, rocky and stony land. This soil association is located within the remainder of the ±200 acre landfill property (USDA, 1972).

Most of the soil at the project site consists of Rock Land (rRK) with small amounts of Stony Steep Land (rSY) (**Figure 5-2, Soils Map**). According to the U.S. Department of Agriculture the general characteristics of these soils consist of the following:

- Rock Land (rRK), is a type of soil where exposed rock covers 25% to 90% of the surface. Rock outcrops and very shallow soils are the main characteristics. The rock outcrops are comprised primarily of basalt and andosite. This land type is nearly level to very steep. Soil materials associated with the rock outcrops are very sticky and very plastic, and have a high shrink-swell potential when moisture-laden.

- Stones and boulders usually cover 50 to 90 percent of the surface. There are usually small amounts of soil among the stones that provide a foothold for plants. The natural vegetation consists of kiawe, koa haole, and grasses.

- Rock land soil properties are not conducive to urban development. Intensive land use development on this soil type is usually difficult and costly because of construction restraints and requirements. Foundations for buildings and structures require additional construction effort to achieve a stable base for development, which are provided for the administrative buildings within the existing landfill site. (U.S. Department of Agriculture, 1972).



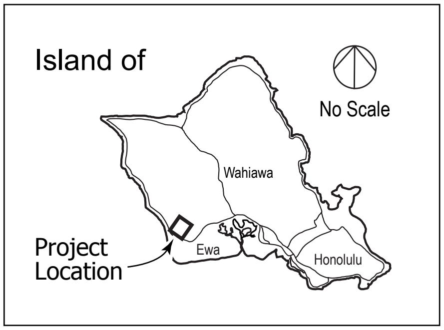


Figure 5-2
Soils Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 1000 Feet 2000

R.M. TOWILL CORPORATION March 2008

5.3.3. Potential Impacts and Mitigation Measures

The proposed project will involve an approximately 92.5 acre expansion of the existing permitted landfill area that currently comprises 107.5 acres. The potential impacts to topography and geology of the site are anticipated to involve changes to the landforms of the remaining undeveloped portions of the Waimānalo Gulch and the underlying soils and geology of the site.

Since construction of the site in 1989, major changes have modified the gulch. This has included excavation and grading to construct landfill cells, access roadways, drainage control features, and building structures to support administration, operation, and management of the site. These prior activities were primarily completed in the forward and eastern portions of the landfill property closest to the adjoining Farrington Highway.

In 2007, the report, Engineering Report for Grading Plan Modification, December 2005, Revision 3, Waimānalo Gulch Landfill, ‘Ewa Beach, O‘ahu, Hawai‘i, was completed to reassess and identify measures to maintain the soils and geologic integrity of the area of use (GeoSyntec Consultants, Inc., Revised February 8, 2007). Factors that were assessed for the design included:

- Static slope stability analyses
- Seismic slope stability analyses
- Seismic deformation analyses
- Drainage and surface water control system analyses
- Leachate collection and removal system (LCRS) design studies
- Liner system design studies
- Landfill gas collection system design studies[1]

The results of the report were submitted to the DOH to verify the basis for the design and to meet regulatory requirements of the Solid Waste Management Permit.

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[1] Initial work for the landfill gas collection system design was undertaken by Shaw Environmental with follow-up work performed by Environmental Information Logistics (WMI, 2008).

Mitigation to address the proposed area of lateral expansion will involve updates to these studies, or additional studies as needed, to maintain the soils and geologic stability of the site as required by the DOH as the project progresses. One additional study proposed is an examination of the potential for rockfall hazards associated with the use of controlled blasting. According to the report, Blasting Effects on Rockfalls and Vibrations, Waimanalo Gulch Landfill (Geosyntec Consultants, September 2008) (**Appendix M**):

> "Prior to starting the full-scale blasting program for production, WM plans to conduct a [Controlled] Blast Test Program at the site. The program will consist of monitoring particle velocity and frequency of vibration with distance from the blast source for the known blast charge. Based on the Blast Test Program, the site-specific constants β and H can be determined. Once these site-specific constants are established, equation (1) can be used to establish the distance from the blast beyond which the impact from the blast will be safe. Similarly the frequency-distance attenuation relationship will also be established based on the test program.
>
> The above program will help establish the charge weights per delay that will be used during production blasting operations so that blasting does not adversely impact the residential developments.
>
> In addition to the above, as a part of the above Blast Test Program, WM will also monitor the potential for rockfalls during blasting. If a potential for rockfalls is identified, WM will use barriers (e.g., nets) to mitigate the potential rockfall issues."

Based on the results of the ~~study~~ studies and updates, an appropriate design will be prepared and reviewed by the Department of Environmental Services, the DOH, and other regulatory agencies as required by law. ~~The final design will be modified as required in accordance with agency comments to meet safety and engineering standards. Adverse impacts to topography, geology, or soils are not anticipated.~~

The final design will be modified based on maintaining the stability of all cut slopes and will be reviewed by registered professionals during construction. All slopes will be excavated to meet required factors of safety and work will be done in accordance with all OSHA requirements. The DOH engineers and staff are expected to review all aspects of the construction during the permit review and while construction is in progress.

Adverse impacts to topography, geology, or soils are not anticipated based on the use of the mitigation measures as described above.

Secondary or cumulative impacts are not anticipated or expected. The site has been in operation for approximately 18 to 19 years and has been subject to ongoing technical studies and evaluations by independent technical consultants for the topographic, geologic and soils resources of the site to ascertain the performance and environmental safety of the facility. During this period the technical studies that have been completed have been used to improve the capacity, capability, and safe use of the site for a landfill.

The evaluation of WGSL through the preparation of technical studies and reports will continue to be used for further improvements and modifications, as required, through the mitigative measures provided in this EIS document.

5.4. Surface Water

Surface water at the site is limited by the existing dry and arid conditions of the site. There are no natural perennial streams located within the project site. After heavy rainfall events, overland surface water flows occur in Waimānalo Gulch and are directed to surface water drainage systems constructed at the landfill.

5.4.1 Drainage Control System

In 2003, GeoSyntec Consultants, Inc., prepared the report, Revised 14.9 Acre Landfill Expansion Master Plan, Waimānalo Gulch Landfill, for WMH. The purpose of the report was to fulfill the permitting requirements for the landfill involving the prior expansion area which included composite lined disposal cells E-1 through E-4 that were added to the original footprint of the landfill along the eastern and northern sides of the existing landfill footprint. The development of cells E-1 through E-4 included the construction of a stability berm along a portion of the western side of the landfill to provide stability for the cells.

According to the 2003 report, the new western berm extends over and blocks a portion of the existing concrete lined channel. In order to replace this conveyance, the western surface water control system was to be modified to include an upper detention basin and two 42 inch pipes buried below the western berm (GeoSyntec, 2003). Water from the northern portion of the landfill property would flow into the detention basin to be constructed upstream of landfill cell E-4. Water temporarily stored in the detention basin would then flow into the two pipes, and discharge into the downstream portion of the western drainage channel that was unaffected by the construction of the western berm. Stormwater flows in excess of the capacity of the two pipes would be stored in the detention basin and would be released as the flows decreased. However, the detention basin was not included in the prior State Special Use Permit application limits and therefore, was not constructed. (GeoSyntec, 2007).

According to the GeoSyntec 2003 landfill master plan, the surface water at the site would be controlled by two drainage systems: (1) the eastern drainage system; and (2) the western drainage system. Conceptual details for both systems were presented in Appendix E of the GeoSyntec 2003 landfill master plan. Both drainage systems collect water from the landfill and offsite areas. However, the western drainage system collects surface water from a significantly larger area than the eastern drainage system.

The plan for the eastern drainage system consisted of a combination of rip rap swales, headwalls and piping to carry drainage from the eastern side of the landfill to the sedimentation basin. The eastern drainage system plans were submitted to the DOH in the 2006 Surface Water Management Plan but has not been constructed. Modifications to the drainage system to address use of the remaining landfill cells E-1 through E-4 have been prepared and were submitted to the DOH. (GeoSyntec, 2007).

The planned western drainage system will consist of a channel that will divert run-on from the watershed upstream of the landfill property around the landfill bypassing the existing sedimentation basin. A pipe and open channel system will collect runoff from the landfill and carry it to the existing sedimentation basin. (GeoSyntec, 2007, and WMH, 2008).

In 2006, as part of the MSW cell E-3 construction, WMH constructed two temporary 48-inch diameter corrugated metal pipes (CMP) to carry water from the area immediately upstream of the landfill under the west stability berm. These pipes will be extended up canyon as the Western Berm is increased in size. Use of these pipes will be phased out as the landfill is extended up the canyon and replaced with permanent drainage structures.

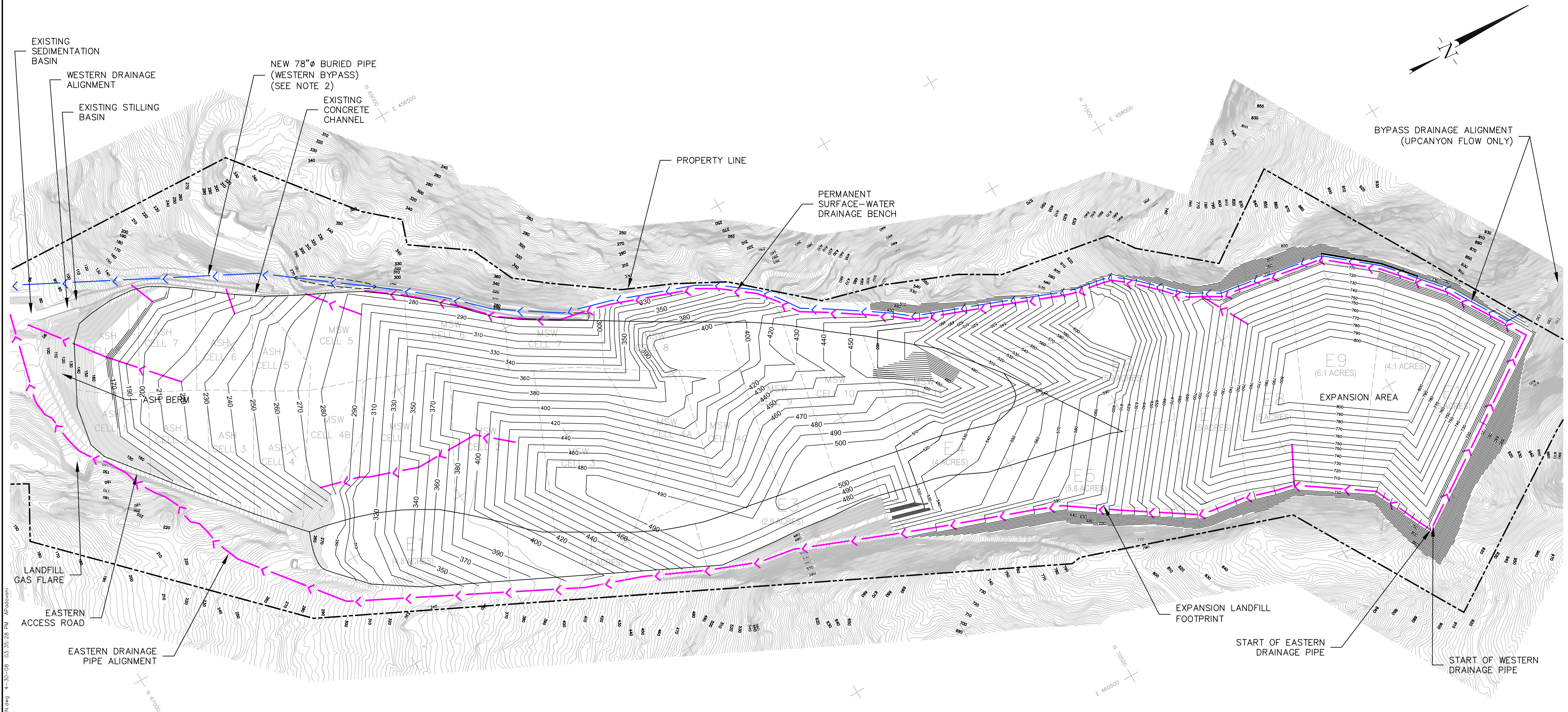
Figure 5-3, Surface Water Plan, shows the alignment for the landfill's eastern and western systems and general details for the pipe and collection channels for the preferred expansion. Pipes and channels will be sized when construction drawings for the expansion are prepared. (GeoSyntec, 2008).

5.4.2 Potential Impacts and Mitigation Measures

The potential for adverse impacts to surface water are not anticipated. The proposed lateral expansion will involve review of the existing drainage system and its capacity to handle the planned area of expansion. The design, engineering and construction of the system will receive similar review and analyses to maintain proper control of stormflows including Clean Water Act regulatory concerns as managed by the State DOH, Clean Water Branch including National Pollutant Discharge Elimination System (NPDES) standards to maintain protection of the coastal class "A" waters along the Waiʻanae Coast.

<u>See Section 5.5. Groundwater and Hydrology for further discussion of secondary and cumulative impacts to surface water.</u>

The system will be constructed upon satisfactory review by state and City & County of Honolulu regulatory agencies and completion of all required environmental and construction permit applications and documents addressing control of erosion and stormwater.



NOTES:

1. EXISTING TOPOGRAPHY BASED ON 22 JUNE 2007 AERIAL SURVEY, CONVERTED INTO LOCAL COORDINATE SYSTEM AND PROVIDED BY OWNER.

2. LOCATION OF PLAN APPROACH CHANNEL AND NEW 78"ø BURIED PIPE FROM DRAWING C-7 "OPTION -1 PLAN, PROFILE AND DETAILS" DATED 12 APRIL 2007, PREPARED AND PROVIDED BY GEI CONSULTANTS OF OAKLAND, CALIFORNIA.

LEGEND

-·-·- PROPERTY LINE

—<— C/L OF SURFACE-WATER DRAINAGE PIPE WITH FLOW DIRECTION (APPROXIMATE ALIGNMENT)

—<— C/L OF WESTERN BYPASS SURFACE-WATER DRAINAGE ALIGNMENT WITH FLOW DIRECTION (APPROXIMATE, SEE NOTE 2)

Geosyntec consultants

SURFACE WATER MANAGEMENT PLAN PREFERRED AND ALTERNATIVE GRADING PLANS WAIMANALO GULCH LANDFILL EWA BEACH, OAHU, HAWAII	FIGURE NO.	14
	PROJECT NO.	WL0770
	DATE:	MARCH 2008

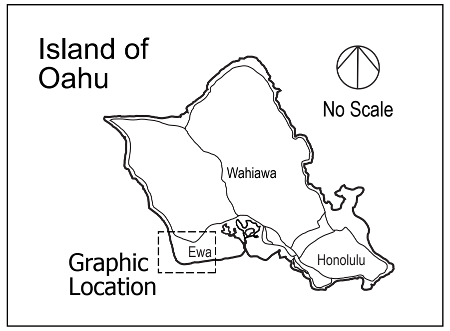


Figure 5-3
Proposed Surface Water Plan
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

5.5. Groundwater and Hydrology

Information provided in this section is from (1) Hydrologic Setting and Groundwater Monitoring, Waimānalo Gulch Sanitary Landfill, Kahe Valley, Island of O‘ahu, Hawai‘i, by WMI and GeoSyntec, 2006 (**Appendix D**); and (2) Basalt Dikes Influence on Groundwater Flow, Waimānalo Gulch Sanitary Landfill, O‘ahu, Hawai‘i, by Golder Associates Inc., 2007 (see References).

5.5.1. Regional Hydrogeology

On a regional scale, fresh groundwater in aquifers on O‘ahu is similar to other islands, and occurs as a lens floating above and displacing saline groundwater. Generally, the fresh water lens is thickest at the center of the island and thins toward the edges of the island at sea level (e.g. Hufen and others, 1980).

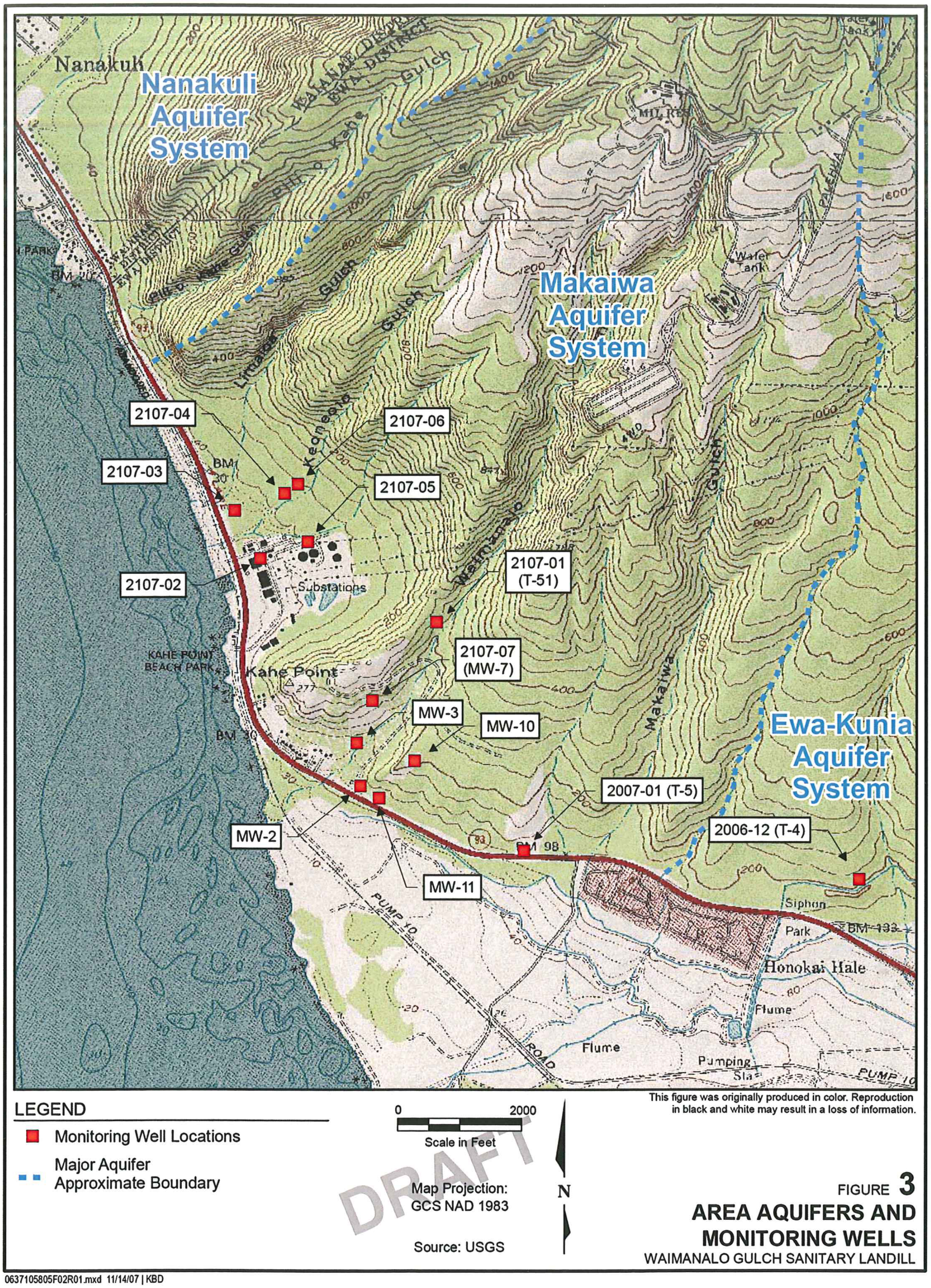
In the southwestern portion of the Wai‘anae Range, the principal groundwater aquifer system is the Kamaileunu and Lualualei Members of the Wai‘anae Volcanic Series. The volcanic aquifers are recharged by infiltration of rainfall and surface runoff originating in the Wai‘anae and Ko‘olau Ranges. Flows of the Palehua Member are largely above the water table and contain only a small perennial supply. Permeability of a volcanic aquifer is generally high due to presence of pahoehoe lava tubes and loose clinker zones and rubble between lava flows. However, permeability is highly variable on a local scale and the low-permeability dense interiors of a'a lava flows and cross-cutting near-vertical volcanic dikes can function as hydraulic barriers that locally partition groundwater both vertically and horizontally. Groundwater gradients in portions of the Wai‘anae Range have been shown to be step-like rather than smooth due to the presence of dikes that act as barriers to groundwater flow (Takasaki, 1971; Hufen and others, 1980).

Groundwater generally flows from inland areas outward toward the coast. However, locally, discharge of groundwater to the sea is limited by low permeability “cap rock” that overlies the volcanics along much of the coast of O‘ahu. Locally, the caprock prevents the free discharge of groundwater to the ocean, and diverts groundwater flow parallel to the coastline toward areas without confining cap rock where the groundwater discharge to the sea is unimpeded.

Waimānalo Gulch is located in the Makaiwa Aquifer System as defined by the Commission on Water Resource Management (CWRM) Water Resource Protection Plan, Volume II (George A. L. Yuen & Associates, 1990). This aquifer has not been assigned a sustainable yield by CWRM, though it is adjacent to the ‘Ewa-Kunia Aquifer System to the east and the Nānākuli Aquifer System to the northwest. The estimated sustainable yield of the ‘Ewa-Kunia Aquifer System is 16 million gallons per day (mgd); while the Nānākuli Aquifer System is assigned one (1) mgd for sustainable yield.

Although no groundwater is developed in the Makaiwa Aquifer System and near Waimānalo Gulch, several monitoring wells and test holes have been drilled in the lower part of the valley and the neighboring Kahe Point area.

Present water levels encountered in the ‘Ewa-Kunia Aquifer System, east of Waimānalo Gulch, are greater than 13 feet above msl. Near Makaiwa Gulch, just east of Waimānalo Gulch, a hydrologic discontinuity occurs where water levels drop to less than 6 feet above msl (see Stearns, 1940, p.36). U. S. Geological Survey test holes T-4 (2006-12) in the ‘Ewa-Kunia Aquifer System and T-5 (2007-01) in the Makaiwa Aquifer System are only a mile apart and reflect the discontinuity (CWRM well database). **Figure 5-4, Well Location Map**, is a well location map that also depicts the approximate location of wells T-4 and T-5 and the boundary between the ‘Ewa-Kunia and Makaiwa Aquifer systems. When originally drilled in 1938, the water levels for T-4 and T-5 were 17.0 feet and 6.5 feet above msl, respectively (Stearns, 1940). The last water level measurement for T-4 was 13.73 ft above msl (December 6, 2001, Honolulu Board of Water Supply measurement). Well T-5 was previously abandoned and sealed (Mink & Yuen, Inc., and Knight Enterprises, Inc., 2006).



Source: Hydrologic Setting and Groundwater Monitoring, Waimānalo Gulch Sanitary Landfill, Kahe Valley, Island of O‘ahu, Hawai‘i, WMI, 2008 and Geosynthec, 2006

Figure 5-4
Well Location Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Regular monthly water levels were measured from 1940-1953 and ranged from 1.60 feet to 3.14 ft above msl. The average water level for the period of record was 2.0 feet above msl. Chlorides varied from 86 to 119 milligrams per liter (mg/L) (Mink & Yuen, Inc., and Knight Enterprises, Inc., 2006).

Hydraulic conductivities in dike-free basaltic lavas on O‘ahu typically range between 1,000 and 2,000 feet per day (ft/d). A value of 1,500 to 2,000 ft/d is commonly used in analytical and numerical groundwater models (Mink, 1980; Oki, 1997). The hydraulic gradient for dike-free lava flows is typically 1-foot per mile, which is the value found in the adjoining ‘Ewa-Kunia Aquifer System.

For dike-impounded aquifers, the hydraulic conductivity depends upon dike spacing, their distribution and continuity, and depth of penetration into the aquifer. In an aquifer where there are more than 100 dikes per linear mile, or as used by Takasaki and others (1969) as constituting 5 percent or more of the country rock, the hydraulic conductivity is generally low (<1 percent), typically ranging between 1 and 100 ft/d. While in the marginal dike zone where dike occurrence is much less, the conductivity values typically range between 100 and 1,000 ft/d (Takasaki and Mink, 1982; Takasaki and Mink, 1985).

Wells, test holes, and monitoring observation wells were drilled in the lower valley as part of a regular monitoring program and for the proposed expansion plan. Wells are sampled regularly and used to determine groundwater gradients. The wells listed below in **Table 5-1** are located near Makaiwa Gulch, Waimānalo Gulch, and Kahe Valley. Well data are from the CWRM database and data for the monitoring wells are provided by Waste Management of Hawai‘i, Inc.

The wells shown in **Table 5-1** are located in lava flows defined by Stearns (1940) as “Lower and Middle Members' of the Wai‘anae Volcanic Series. **Figure 5-4, Well Location Map** identifies the location of wells and also depicts the location of T-15.

Table 5-1
Wells in the Kahe Point/Waimānalo Gulch Sanitary Landfill Area
(Source: CWRM Well Database and Waste Management, Inc.)

Well No.	Old Name	Init. WL (ft amsl)	Init. Cl (mg/L)	Grnd El. (ft amsl)	Bot. Hole Elevation (ft. bmsl)	Casing Diameter (in.)	Length Screen Interval (ft)
2007-01*	T-5	5.5	484	80	-20	6	15
2107-01*	T-51	3.2	492	203	-7	4	11
2107-02	T-128	2.1	N/A	22	-182	N/A	N/A
2107-03	T-129	1.7	6750	28	-176	N/A	N/A
2107-04	T-130	5.8	362	62	-65	N/A	N/A
2107-05	T-131	1.9	3300	40	-51	N/A	N/A
2107-06	T-68	2.1	2410	58	-67	N/A	N/A
2107-07 (MW07)[a]		3.82	890	202.4**	-14.6	2	30
MW02[a]		3.88	1400	73.82**	-8.8	2	15
MW03[a]		3.84	1100	77.14**	-7.5	2	18
MW10		N/A	N/A			2	
MW11		N/A	N/A			2	

Source: Mink & Yuen, Inc., and Knight Enterprises, Inc., 2006.

*sealed and/or lost

**top well head

a – data from Quarterly Monitoring Report for January–March 2006 at the WGSL

The quality of groundwater in the volcanic aquifers is generally good, except where proximity to the ocean results in elevated salinity (Takasaki, 1971). Other sources of lower quality groundwater include leaching of hydrothermally altered volcanic rocks in the central vent area and of carbonate rocks above or adjacent to the volcanic aquifer (i.e., caprock; Takasaki, 1971). Total dissolved solids concentrations in wells to the northwest of the WGSL range from about 200 to about 2,000 mg/l. Chloride concentrations in these same wells range from about 10 to greater than 10,000 mg/l[2].

---

[2] In similar wells, chlorides are not expected to be much higher than the values for total dissolved solids concentrations (Waste Management Inc., 2008).

A summary of the results of studies related to site geology, hydrogeology, and geochemistry that have been performed at the WGSL since the early to mid 1990s indicate the following:

> The sequence of volcanic rocks encountered in borings and exposed on slopes at the WGSL is the lower member of the Waiʻanae Volcanic Series (e.g. TNWRE, August 7, 1993). The lava flows include both a'a and pahoehoe flows ranging from aphanitic[3] to porphyritic[4]. Coloring of the rock material varies from grey to reddish grey to red, and the texture varies widely from highly vesicular to dense and fine-grained.
>
> Based on observations made during drilling and down-hole video logs of borings drilled in October 2006 for monitoring wells MW-10 and MW-11, lava flows range in thickness from 3 to 20 feet thick, and loose clinker zones between flows comprise approximately 20 percent of the volcanic sequence (GeoSyntec, December 7, 2006).
>
> U. S. Geological Survey (USGS) personnel identified a near-vertical dike striking between about 15 and 20 degrees west of north, located at the approximate midpoint of the WGSL property. Furthermore, dikes have been documented to exist through visual observation from site personnel during excavation activities. Two dikes were documented during the construction of Cell E1 (A-Mehr Inc, 2003). In addition, recent geologic reconnaissance has confirmed the presence of dikes to the north of the site (Mink & Yuen and Knight Enterprises, 2006). The trends of the dikes are predominantly north/northwest, and when projected to the southwest, intersect portions of the northern and northeastern cells of the existing landfill. The approximate location of near vertical dikes in the vicinity of the WGSL that cross-cut the sequence of basaltic lava flows are shown on **Figure 5-5**.

---

[3] Textural term used to describe igneous rocks having such fine-grained nature that individual mineral constituents are not visible to the naked eye, but are visible under magnification (http://www.taranis.us/Glossary.htm).

[4] Of, having to do with, containing, or resembling porphyry; of the nature of structure characteristic of prophyry; containing distinct crystals embedded in a compact groundmass (http://www.memphisgeology.org/glossaryoq.htm).

NOTES:

1. EXISTING TOPOGRAPHY BASED ON 30 DECEMBER 2005 AND 29 DECEMBER 2001 AERIAL SURVEY PROVIDED BY OWNER USING LOCAL COORDINATE SYSTEM.

2. LOCATIONS OF DIKES D1, D2, AND D3 ARE BASED ON HISTORICAL REPORTS (E.G. RUST, 1993, 1997; EARTH TECH, 2006A) BUT NO EVIDENCE OF REPORTED DIKES D1, D2, AND D3 IS VISIBLE IN THE SLIDE SLOPES OF WAIMANALO GULCH. LOCATIONS OF DIKES D3, D4, AND D5 ARE BASED ON RECENT GEOLOGIC RECONNAISSANCE MAPPING AND GPS COORDINATES (MINK & YUEN AND KNIGHT ENTERPRISES, 2006).

GEOSYNTEC CONSULTANTS

SITE PLAN (Showing Near Vertical Dikes)
WAIMANALO GULCH LANDFILL
OAHU, HAWAII

FIGURE NO. 2
PROJECT NO. WR0935
DATE: DECEMBER 2006

P:\GIS\Waimanalo\AI\August2007\Figure 2 Site Plan with MWs.ai

Source: Geosyntec Consultants, December 2006

Figure 5-5
Near Vertical Dikes at the WGSL
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

5.5.2. Site Groundwater and Hydrogeology

Groundwater under the WGSL is present within the lower and middle members of the Wai‘anae Volcanic Series that dips slightly towards the coast (southwest). In the vicinity of the WGSL, the water table occurs at an elevation of approximately 4 to 5 feet above msl and is very flat[5]. As a consequence of the topographic relief, depth to groundwater at six monitoring wells ranges from 55 to 468 feet. **Table 5-2, Monitoring Wells at WGSL** provides depths and screened interval information.

Table 5-2
Monitoring Wells at WGSL

	Northing (feet)	Easting (feet)	MP Elevation (ft above MSL)	approximate casing stickup (ft above gs)	screen		10/20/2006 depth to gw (ft below MP)	10/20/2006 gw elevation (ft above MSL)	11/20/2006 depth to gw (ft btoc**)	11/20/2006 gw elevation (ft above MSL)
					top (ft bgs)	bottom (ft bgs)				
MW-2	66,879.36	456,496.80	73.85	1.9	82.6	82.6	69.62	4.25	69.66	4.19
MW-3	67,383.32	456,311.18	77.18	1.0	84.6	84.6	72.94	4.26	73	4.18
MW-7	68,092.04	456,724.17	202.42	2.3	217	217	198.31	4.13	198.28	4.14
MW-10	67,186.53	457,050.04	123.48	0.0	135	135	119.11	4.37	119.14	4.34
MW-11	66,570.31	456,821.29	61.13	3.5	67	67	56.68	4.45	56.775	4.36
MW-12***	68,155.77	1,600,156.52	457.48	2.59	466	486	470.61	4.87	471.26	4.87

Notes:

MW-2, 3, 7, 10 & 11 monitoring wells are Schedule 40 PVC casing.

MW-2, 3, 7, 10 & 11 monitoring wells Surveyed by Park Engineering 24 October 2006.

Surveyed MP (measuring point) is top of PVC casing (TOC).

Oct 20, 2006 depth to water at MW-2, MW-3, and MW-7 was measured from top of cap for pump assembly, which is 3.16 inch (0.0156 ft) above top TOC.

**Pump assemblies at MW-2, MW-3 & MW-7 were removed prior to 11/20/2006 measurements so depth to water was measured from TOC for all wells.

Water levels in monitoring wells are tidally influenced. Water levels reported here do not include averaging or compensation for tidal influence.

***MW-12 data represents new 490 ft. monitoring well data as of October 2007.

The marine sediments of the ‘Ewa Plain to the south and east forms a low permeability caprock that inhibits groundwater discharge to the ocean south and east of the WGSL. However, the caprock is reported to be generally absent along the coast to the west and northwest of Waimānalo Gulch, in the area of the Kahe Park. The distribution of confining caprock is interpreted to control the westward flow of groundwater and unimpeded discharge to the sea west to northwest of the WGSL.

---

[5] All the groundwater elevation at WGSL, including at MW-12, is at 4 to 5 feet above msl (Waste Management, Inc., 2008).

Salinity measurements of ocean water along this stretch of coastline performed by the USGS and TNWRE in 1991 are consistent with major discharge of fresh groundwater in this area (RUST, September 1993, 1997; Earth Tech, 2006). **Figure 5-6** shows an aerial photo of the general vicinity of the WGSL with approximate groundwater elevations at wells. This data supports a general northwest direction of groundwater flow toward the Kahe Beach coastline.

In the upper portion of the WGSL, three near-vertical, north-northwest to south – southeast trending basaltic dikes (designated Dike #1, 2, and 3) have been mapped during a site geologic reconnaissance (Mink & Yuen, Inc. and Knight Enterprises, Inc., 2006). The geologic reconnaissance observed moderate dike density ranging from 10 dikes per mile, which is indicative of locations near the margins of rift zones. The dikes strike at from north-northwest to north.

A hydrogeological investigation (Golder, 2007) has been conducted to evaluate the potential influence of the dikes on groundwater flow in the upper portion of the WGSL. In other aquifers containing intruded dikes on O‘ahu, groundwater has been observed to be compartmentalized with higher water levels on the up-gradient side of the dikes. Dike #1 was chosen to study groundwater on the hydraulically up-gradient side of the dike with MW-12 borehole. Dike #1 had a strike of N 18.90 W (or 341 degrees) and a dip angle of about 85 degrees to the northeast from horizontal.

The aquifer hydraulic data suggest that Dike #1 has little influence on groundwater flow. The static groundwater level in MW-12 was 4.9 feet above msl, which is less than 1 foot higher in elevation to basal aquifer monitoring wells farther down Waimānalo Gulch. The hydraulic gradient is approximately 1.4 foot per mile, which is within the range of hydraulic gradients normally observed in basal aquifers without dikes. The groundwater levels in MW-12 are consistent with the water levels and the hydraulic gradient observed in the monitoring wells in the lower portion of the WGSL and does not indicate a dramatic gradient change that would be caused by dike compartmentalization of groundwater.

Source: Geosyntec Consultants, December 2006

Figure 5-6
Groundwater Elevations at Wells
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

~~The aquifer hydraulic data suggest that Dike #1 has little influence on groundwater flow. The static groundwater level in MW-12 was 4.9 feet above msl, which is less than 1 foot higher in elevation to basal aquifer monitoring wells farther down Waimānalo Gulch. The hydraulic gradient is approximately 1.4 foot per mile, which is within the range of hydraulic gradients normally observed in basal aquifers without dikes. The groundwater levels in MW-12 are consistent with the water levels and the hydraulic gradient observed in the monitoring wells in the lower portion of the WGSL and does not indicate a dramatic gradient change that would be caused by dike compartmentalization of groundwater.~~

A hydraulic pump test was performed on MW-12 to compare hydraulic aquifer properties with other aquifers on the island. Lower hydraulic transmissivities and conductivities have been documented to occur in dike-influenced aquifers with higher dike occurrence frequencies, and which are in closer proximity to the associated caldera. From the pump test, the aquifer at MW-12 in the Waimānalo Gulch had a hydraulic transmissivity and conductivity comparable to aquifers without dikes on the Island of O‘ahu. Although drawdown in pumped water levels was small, negative boundaries such as a barrier-type dike that may be in the immediate area were not noticeable.

The groundwater flow direction was measured and varied between 210 and 290 degrees, which is approximately the axis of the Waimānalo Gulch. Since Dike #1 strikes at 341 degrees, groundwater flow is approximately perpendicular toward the strike of Dike #1. If Dike #1 had a strong influence on basal groundwater flow direction, groundwater flow would be expected to be more parallel along the strike of the dike. This groundwater flow direction is consistent with groundwater flow directions determined by groundwater elevations using other basal groundwater monitoring wells at the WGSL.

Dike #1 appeared to have little or no influence on horizontal basal groundwater flow. The static basal groundwater level observed in MW-12 does not indicate groundwater is being compartmentalized with higher water levels behind Dike #1 or other dikes west of MW-12 that do not have a surface exposure. The groundwater flow direction and water level gradient are consistent with groundwater patterns observed in the lower portion of the WGSL where dikes are not present. Dike #1 may have undergone post-intrusion fracturing or faulting and may have sufficient horizontal fracture permeability to not act as a groundwater barrier.

5.5.3. Project Site in Relation to Protected Groundwater Areas

Groundwater found below and surrounding the WGSL is not designated as a groundwater recharge area by the City and County of Honolulu Board of Water Supply. **Figure 5-7, BWS Groundwater Protection Zones**, indicates areas identified by BWS which may be acceptable for sanitary landfill development.

Prior to 1987, groundwater recharge areas for O‘ahu were identified by BWS. Since 1987, DOH has administered the No Pass Program. The proposed expansion area and adjacent existing sanitary landfill facility are outside the groundwater recharge zone, in the area designated as “Pass Zone.” The Pass Zone is an area where sanitary landfills and shallow waste disposal systems are generally permitted.

The areas designated as “No Pass Zone” are areas where sanitary landfills and waste disposal systems are not permitted.

The proposed expansion area is consistent with the State Department of Health (DOH), Underground Injection Control (UIC) program established in 1984. Rules for the UIC program are promulgated in Hawai‘i Administrative Rules (HAR), Chapter 11-23. The purpose of the program is to protect the State’s drinking/potable groundwater resources from pollution by subsurface wastewater disposal. The program regulations are accompanied by UIC maps which demarcate a WGSL boundary line known as the “UIC Line.” Lands that are makai of this line are not restricted from subsurface wastewater disposal by underground injection (**Figure 5-8, UIC Line**).

Figure 5-7
BWS Groundwater Protection Zones
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 6 Miles 12

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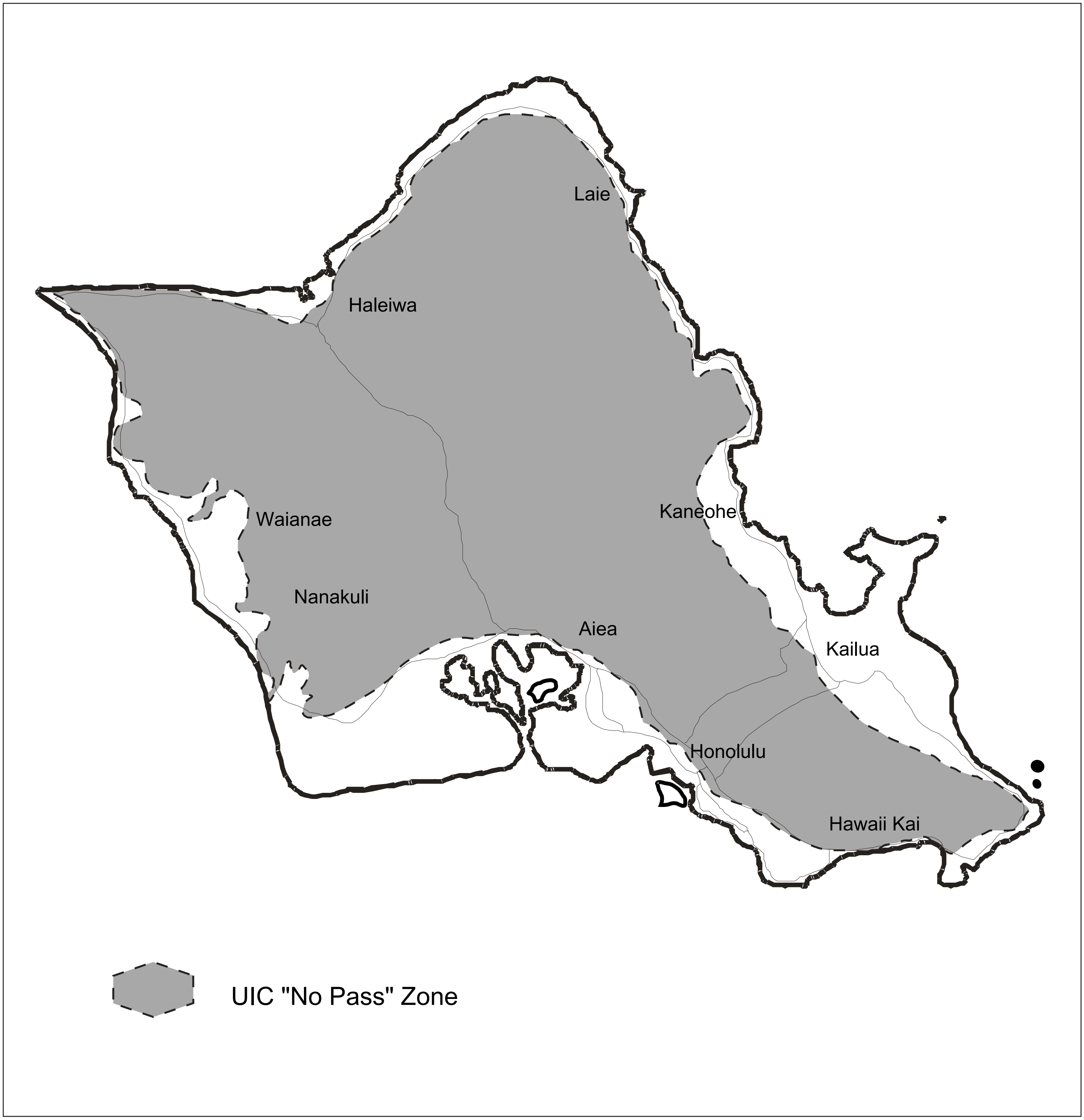

Figure 5-8
Underground Injection Control (UIC) Line
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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5.5.4. Site Groundwater Hydrogeochemistry

The inorganic geochemistry of groundwater beneath the WGSL is fairly complex, reflecting both the facility's coastal location and its proximity to the coastal cap rock. Groundwater monitoring wells at the WGSL are screened within a transitional groundwater zone in which there is mixing between freshwater and seawater. Groundwater from each of the WGSL monitoring wells is a sodium-magnesium-calcium-chloride (Na-Mg-Ca-Cl) type water which generally reflects this mixing of freshwater and seawater. Total dissolved solid (TDS) concentrations in Monitoring Wells 03M and 07 are consistently lower than TDS concentrations in Monitoring Well 02M, a condition that is also consistent with the facility's position within the coastal transition zone. The relative percentage of dissolved calcium in groundwater from Monitoring Well 02M is slightly higher than that in groundwater from Monitoring Wells 07 and 03M. This is likely related to the fact that Monitoring Well 02M is located nearer the cap rock (primarily calcium carbonate) than are Monitoring Wells 07 and 03M.

The most comprehensive study of groundwater chemistry was conducted in 1992 (by the former Waste Management Environmental Monitoring Laboratory in Geneva, Illinois). The purpose of that study was to establish the degree of hydraulic continuity across the WGSL and to further establish if the groundwater on either side of the dikes was hydraulically connected. The results of the geochemical study were consistent with little to no barrier to lateral groundwater flow between the downgradient edge of the landfill and the ocean west of the WGSL. This is further corroborated through the results of the tidal study described above which show hydraulic continuity between all monitoring wells at the WGSL with the sea. This also is consistent with the concept of transition-zone groundwater (RUST, 1997).

Basal groundwater quality obtained during the October 2007 quarterly sampling period shows that groundwater at MW-12 is a sodium-chloride type water as is the groundwater from other monitoring wells near the bottom of the WGSL. The major ion content of groundwater at MW-12 appears to be caused by the same source or by the same aquifer mineralogy and represents a younger upgradient groundwater that would be anticipated to evolve to the chemistry observed in the groundwater from the other WGSL monitoring wells. The major ion chemistry supports that the groundwater from MW-12 is upgradient along the flow path of groundwater from the other site wells (Golder, 2007).

5.5.5. Potential Impacts and Mitigation Measures

The potential for adverse impacts to groundwater and hydrogeological resources are not anticipated. Appropriate and sufficient mitigative measures and controls will be applied consistent with sound engineering and operating practices.

The marine sediments surrounding the WGSL property consists of low permeability caprock inhibiting groundwater discharges to the ocean south and east of the project site. However, west and northwest of the WGSL in the area of Kahe Park, the presence of caprock is absent allowing for some groundwater flow toward coastal waters.

Potential impacts to groundwater resources involve the possible release or entry of leachate entering brackish groundwater. Mitigation to address this potential will be addressed through the existing LCRS design. The existing system is based on the use of a series of monitoring wells sited according to hydrogeological analyses as indicated above. The wells are regularly sampled to collect information on the condition of the site and to detect potential changes in groundwater quality.

The existing leachate collection and removal system for the MSW portion of the landfill cells consists of a 1 foot thick gravel drainage layer with a perforated, HDPE collection pipe placed within the drainage layer. The leachate drains down the lined canyon (gulch) walls toward a sump furnished with a riser pipe and clean-out pipe.

The leachate collection and recovery system for the ash monofil portion of the landfill consists of piping to collect the leachate. The sump in the ash area of the landfill is approximately 3 feet deep. The sump for the MSW portion of the landfill is similar but is located approximately 4 feet deep. The site operator adjusts the leachate handling capacity and disposal of the leachate to an appropriate facility, as required, to maintain the leachate head.

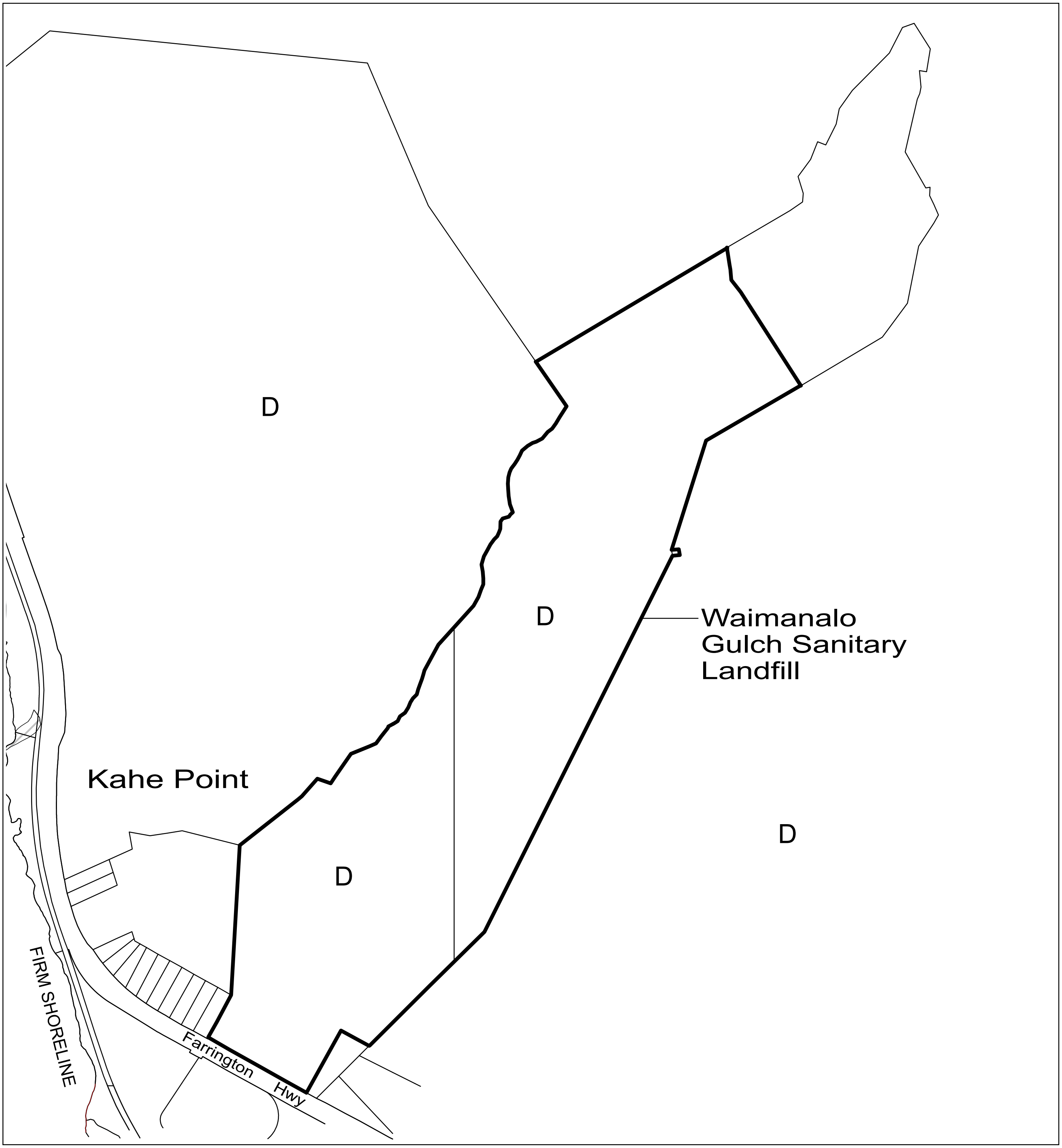
This existing system will be extended for use in the lateral expansion area of the landfill. Once the new LCRS is installed, it will become part of the overall site system to monitor and manage the generation of leachate. This system, as with all other control systems of the planned lateral expansion will be submitted to the DOH for review and approval, and will be modified as required.

Secondary or cumulative impacts to surface water, groundwater, and hydrological resources at the WGSL and region are not anticipated. The proposed practices, procedures and mitigative measures provided in this EIS have been designed to maintain the use of the site for a landfill for a period of not less than 15 years. Long term monitoring and inspection of the site by WMH will be further provided through a EPA required post closure plan for not less than 30 years following the closure of the site. These measures, which are designed to mitigate against potential primary impacts associated with stormwater erosion and discharges of refuse and leachate to the surface water, groundwater, and hydrologic resources of the site and the surrounding region, would serve as the principal means of avoiding the occurrence of secondary or cumulative impacts.

5.6. Natural Hazards

5.6.1. Flood Zone

The Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) identifies the landfill property as within “Zone D,” an area in which flood hazards are undetermined, but possible (**Figure 5-9, Flood Map**). The West Side Drainage Diversion Channel will be designed to pass run-on ~~from the 100 year storm around the landfill~~ in accordance with applicable standards. Run-on from areas outside the footprint on the east side of the landfill is relatively minor and will be carried along with run-off from the landfill via a buried HDPE pipeline to the existing sedimentation basin.



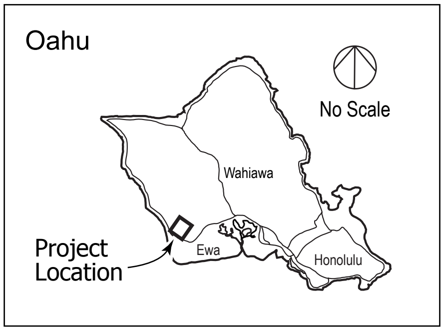


Figure 5-9
Flood Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 1000 Feet 2000

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March 2008

5.6.2. Hurricanes

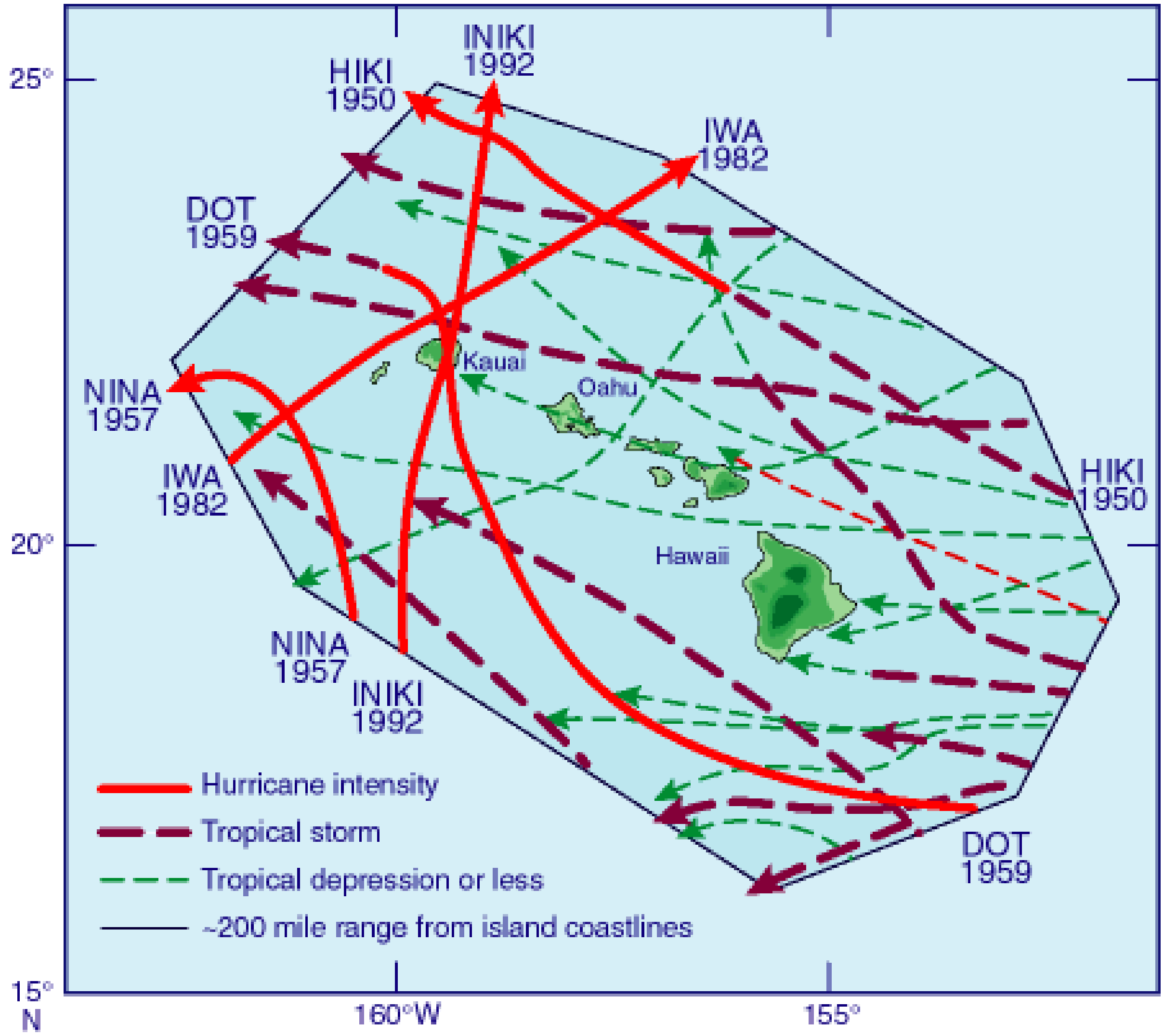
Hawai‘i’s annual “hurricane season” is from June through November. Hawai‘i has experienced the full effects of five hurricanes since 1949. The first (Hiki, 1950) moved from east to west, north of the islands. The other four, Nina, (1957), Dot (1959), Iwa (1982) and Iniki (1992), all traveled on more-or-less northerly headings and affected the Wai‘anae Coast with high winds and storm surge. Except for Hiki, the storms moved across, or very close to, Kaua‘i, about 90 nautical miles west-northwest of O‘ahu.

Nina remained southwest and west of the islands. **Figure 5-10, Hurricane Tracks** depicts the tracks of the five hurricanes while in the vicinity of the Hawaiian Islands (U.S. Navy, 2002).

The primary impacts of past hurricanes in the WGSL region resulted from high waves. Because the WGSL facility is set far back from the shoreline and the working face is at a relatively high elevation, waves and/or storm surge from future hurricanes will not affect the integrity of the landfill.

High wind conditions, however, could be of concern for active landfill cells in use. Mitigation against widespread wind impacts are handled by standard operating procedures involving the covering each day's MSW fill with soil effectively provides a blanket that reduces the potential for debris becoming airborne.

The ash fill operation requires cover approximately once per week. The rate of ash disposal and routine 24 hour a day deliveries make daily cover operations impractical. Portions of the ash fill area, therefore, could be impacted in an ultra-high wind, hurricane situation with minor amounts of dust occurring prior to rainfall. This is somewhat addressed by the stable nature of the ash material itself which arrives on-site with a relatively high moisture content that is generally resistant to becoming airborne in high winds.



All tropical cyclone tracks passing within 200 miles of the coast of the Islands of Hawai'i during the period 1949 to 1997.

Source: University of Hawai'i, School of Ocean and Earth Science and Technology

http://www.hawaii.gov/dbedt/czm/wec/html/weather/storm.htm

Figure 5-10
Hurricane Tracks
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Intermediate cover is placed over MSW and ash monofill areas that are not actively worked. Intermediate cover is compacted to a minimum of one (1) foot of depth and graded to promote runoff in a controlled manner. The process of compacting the solid waste and soil material increases the surface stability of the site. In the case of a hurricane, exposed fill would be consolidated and covered with compacted soil.

5.6.3. Seismic Activity (Earthquakes)

Seismic stability was evaluated in terms of acceptable levels of seismic deformation. The RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities notes that permanent acceptable seismic displacements of up to 12 inches are typically used in practice for the design of liner systems (U.S. EPA, 1995). GeoSyntec estimated seismic deformations using the procedures developed by Newmark (1965) as modified by Makdisi and Seed (1978). Using this method, the estimated seismic deformation is less than or equal to 6 inches for both the MSW and ash disposal areas. Therefore, the proposed expansion design is “acceptable” in terms of potential seismic deformations at the expansion final grades (GeoSyntec 2002, and WMH 2008).

The Island of O‘ahu is an emergent portion of several basaltic shield volcanoes that rise from the ocean floor. Some the earthquakes that strike O‘ahu are related to the injection of magma into the volcanic edifice (shape of the volcano), whereas others maybe due to gravitational collapse of the flanks of the volcano (Yeats et al., 1997). In general, the earthquakes that impact O‘ahu are relatively shallow crustal (shallow, in the earth’s crust) events (GeoSyntec, 2002).

The Uniform Building Code scale is rated from Seismic Zone 0 through Zone 4, with 0 the lowest level for potential seismic-induced ground movement. All of the WGSL site is designated in Seismic Zone 2a (United States Geological Survey, 1997).

In 2002, consultant GeoSyntec evaluated the seismic hazard at the 200-acre WGSL site using the most recent United States Geologic Survey (USGS) probabilistic seismic hazard maps for the State of Hawaiʻi (Klein et al., 1998). Such seismic-hazards analysis combines:

1. Earthquake rates known from the historical record;
2. Information about how strong ground shaking dissipates with increasing distance from the earthquake; and
3. Determination of the probabilities that specified levels of ground motion will occur in a specified time period (U.S. Geological Survey, 1997).

As required by the State of Hawaiʻi regulations, the seismic-hazards analysis considered seismic motions with a 2 percent probability of being exceeded in 50 years (Note: this is equivalent to 10 percent probability of exceedance in 250 years). The consultant established the “design earthquake” (strength of an earthquake that WGSL is designed to withstand) for the site to have a moment magnitude (M_w) of 5.0 to 6.0 for local events and 6.8 M_w for distant events (GeoSyntec, 2002 and WMH 2008).

To select representative earthquake acceleration time histories (called “accelerograms”) for use in design, GeoSyntec selected a suite of three time histories for the western United States that were similar in magnitude, tectonic environment, and PHGA (peak horizontal ground acceleration). GeoSyntec selected the following analyses from the catalog of shallow crustal earthquakes in the western United States for the site:

1. To represent a local, low-magnitude event, GeoSyntec selected the 27 June 1966, Magnitude 6.3 Parkfield, California earthquake.
2. To represent a far-field (distant from site), high-magnitude event, GeoSyntec selected the 29 November 1975, Magnitude 7.2 Island of Hawaiʻi earthquake.
3. To represent both the local and distant design events due its large magnitude and short site-to-source distance, GeoSyntec selected the 28 June 1992, Magnitude 6.7 Big Bear, California earthquake. (GeoSyntec, 2002).

As required by Subtitle D (40 CFR Part 258), a “seismic deformation” (movement along a defined plane) analysis was performed to assess the performance of the landfill under the 7.0 M_w “design earthquake.”

The seismic site response of the landfill was evaluated using the equivalent-linear, seismic response program SHAKE91 developed by Schnabel et. al. (1972) and Idriss and Sun (1992). The waste/base liner/bedrock profile was modeled using three earthquake time histories to represent the design ground motions at the site. For each seismic ground motion time history, the SHAKE91 model was used to generate shear stress time histories at the level of the base liner and to determine maximum acceleration along the top of the landfill (umax). The landfill was modeled as consisting of (GeoSyntec, 2002):

1. A 90-foot high ash column to represent the ash fill disposal area; and
2. 150-foot and 200-foot high MSW columns to represent the MSW cells.

The results of the modeling show the landfill is stable under seismic conditions and exhibits less deformation then allowed. The structural integrity of the landfill and supporting infrastructure was most recently tested when a magnitude 6.7 earthquake occurred about 10 miles north-northwest of Kailua-Kona at 7:07 a.m., on October15, 2006. Power outages occurred throughout the Hawaiian Islands and initial damage estimates were placed at $73 million, primarily on the Island of Hawai‘i.[6] According to WMH an inspection following the earthquake indicated there was no damage to the landfill and supporting infrastructure as a result.

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[6] http://earthquake.usgs.gov/eqcenter/eqinthenews/2006/ustwbh/#summary

5.6.4. Tsunami Hazard

A tsunami involves the generation of a series of destructive ocean waves that can affect all shorelines. These waves can occur at any time with limited or no warning. Persons in low lying shoreline or beach areas are advised to immediately go to higher ground.

According to the Oʻahu Civil Defense Agency, the evacuation boundary for the project area runs along Farrington Highway. The location of the project site mauka of the highway is considered to be safe from wave action and is not identified as a location subject to inundation by a tsunami.

5.6.5. Potential Impacts and Mitigation Measures

Flood Zone

Drainage controls to handle storm events have been implemented for the portions of the site used for landfilling. The drainage controls were designed to accept peak flows from ~~a 100-year design storm from~~ a tributary area of 622 acres. Future control of storm and flood flows will be designed by the City and WMH to be consistent with the requirements for control of storm water runoff by the State and City & County of Honolulu. With the mitigation measures proposed, the potential for adverse impacts associated with flooding are not anticipated.

Hurricanes

Work procedures that are practiced within the existing area of landfilling will be practiced within the area of lateral expansion. The measures identified above are designed to reduce the potential for loss of soils, MSW, and ash due to a hurricane related storm. With the mitigation measures proposed, the potential for adverse impacts associated with hurricanes are not anticipated.

Seismic Activity (Earthquakes)

Seismic risk at the project site is minimal. The design of both the current sanitary landfill and the proposed area of lateral expansion will meet the EPA Subtitle D (40 CFR Part 258) standard for stability. The design of the expansion will also be subject to review by appropriate City and State agencies when they evaluate the design documents. No further mitigation measures with regard to seismic activity are required or recommended.

Natural Hazards Summary

The potential for secondary or cumulative impacts associated with floods, hurricanes, earthquakes, and tsunami have been considered in the design and operating practices applied to the site. Potential adverse impacts are not anticipated. Safe engineering and design standards have been incorporated in the construction of the existing area of landfilling and will be applied to the proposed area of lateral expansion. The standards applied to the site are designed to maintain a reasonable level of long term safety and reduce or prevent secondary effects due to natural hazards from floods, earthquakes, or tsunami.

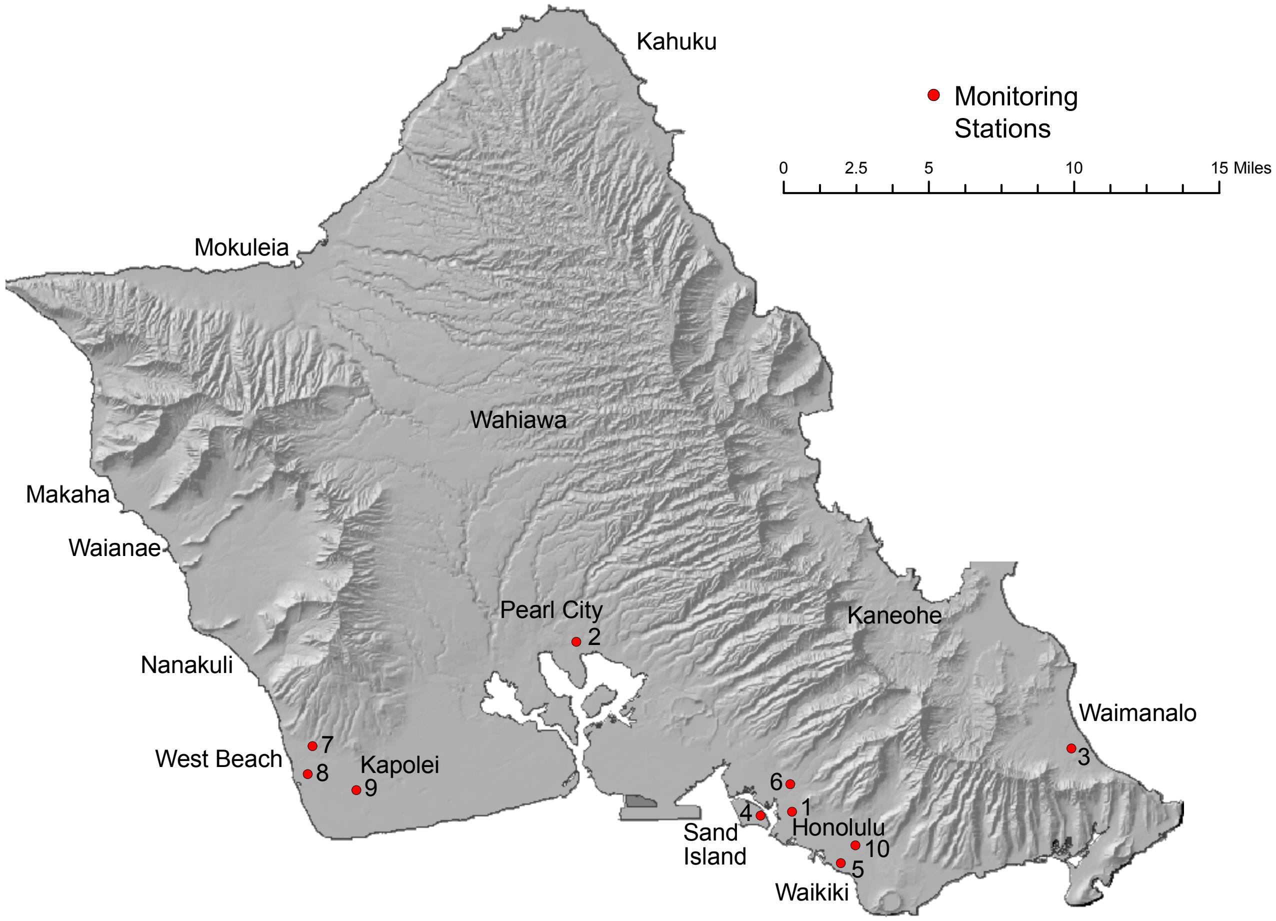
5.7. Air Quality

Air quality conditions at the WGSL are presented in the following: (1) overall air quality, and (2) landfill associated gas emissions.

5.7.1. Overall Air Quality

Ambient air quality on O‘ahu is monitored by the DOH for selected constituents at nine locations. Three of these stations are located in proximity to the WGSL: Stations 7-Makaiwa, 8-West Beach, and 9-Kapolei (**Figure 5-11, O‘ahu Air Quality Monitoring Stations**). The constituents monitored include carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM_{10} and $PM_{2.5}$) (DOH, 2006):

> **CO** is a colorless, odorless, tasteless gas under atmospheric conditions. It is produced by the incomplete combustion of carbon fuels with the majority of emissions coming from transportation sources.



Island of O‘ahu - Air Quality Monitoring Stations

Station #	Site Name	Description	PM10	CO	O3	SO2	PM2.5	NO2	Start Date
1	Honolulu	Center City/Commercial	N,C	N		S	S,C		1/1960
2	Pearl City	Center City/Residential	N				S,C		7/1980
3	Waimanalo	Rural/Agricultural	S						1/1972
4	Sand Island	Center City/Commercial			N		S		1980
5	Waikiki	Center City/Commercial		N					11/1980
6	Liliha	Center City/Mobile	N						1/1984
7	Makaiwa	Rural/Industrial				S			7/1989
8	West Beach	Rural/Commercial	S,C			S		S	2/1991
9	Kapolei	Rural/Industrial	S	S		S	S	S	2/1991
10	University	Center City/Commercial		S					11/2002

N = (NAMS) National Air Monitoring Station
C = Collocated Site
S = (SLAMS) State and Local Air Monitoring Stations

Source: Department of Health
Environmental Geographic Information System
July 2004

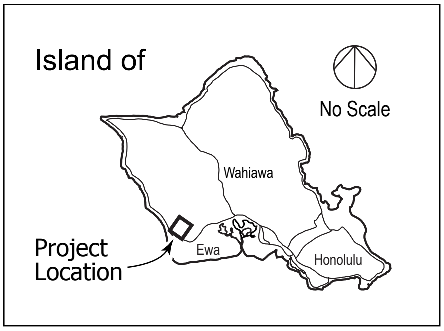


Figure 5-11
O‘ahu Air Quality Monitoring Stations
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

See Graphic Scale

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May 2008

NO_2 is a brownish, highly corrosive gas with a pungent odor. It is formed in the atmosphere from emissions of nitrogen oxides (NOx). Sources of nitrogen oxides include electric utilities, industrial boilers, motor vehicle exhaust and combustion of fossil fuels. NO2 is also a component in the atmospheric reaction that produces ground-level ozone.

SO_2 is a colorless gas that easily combines with water vapor forming sulfuric acid. When sulfur dioxide mixes with atmospheric moisture, the result is commonly known as acid rain. Emissions of sulfur dioxide are largely from sources that burn fossil fuels such as coal and oil. In Hawaiʻi, another major source of sulfur dioxide emissions is from the eruption of Kilauea Volcano on the Big Island.

Particulate Matter (PM) is any dispersed matter, solid or liquid, in which the individual aggregates are larger than the single molecules in diameter, but smaller than 500 microns. PM includes dust, soot, smoke, and liquid droplets from sources such as factories, power plants, motor vehicles, construction, agricultural activities, and fires.

PM_{10} is particulate matter that is 10 microns or less in aerodynamic diameter. These are considered “coarse” particles, generally from sources such as road and windblown dust, and crushing and grinding operations.

$PM_{2.5}$ is particulate matter that is 2.5 microns or less in aerodynamic diameter. Considered “fine” particles, these are generally a result of fuel combustion such as from motor vehicles, utility generation and industrial facilities. Fine particles can also be formed when gases, such as sulfur dioxide and nitrogen dioxide, are chemically transformed into particles.

Air quality data collected for the year 2006 (the most recent year for which data is available) was assessed in comparison to state and federal standards. The following graphs illustrate the 5-year trends for carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM_{10} and $PM_{2.5}$ for the period 2002 to 2006 at the state monitoring stations for those pollutants. The data is representative of the annual averages for each year and for each station. Annual averages are derived by calculating the arithmetic mean of all valid hours recorded in the year. Included in the graphs are the state and federal annual standard(s). See **Figures 5-12**, **Carbon Monoxide Monitoring; 5-13**, **Sulphur & Nitrogen Dioxide Monitoring**, and **5-14**, **Particulate Matter Monitoring**.

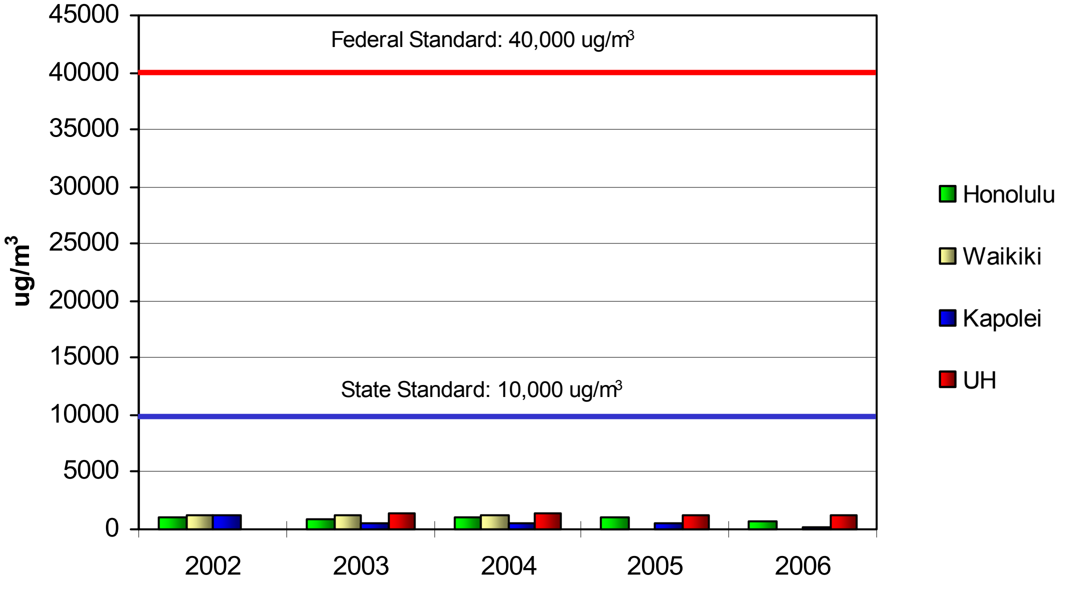
The figures for 1-hour and 8-hour carbon monoxide represent the average of the daily maximum 1-hour or 8-hour values recorded in the year. These values are obtained by taking the highest recorded 1-hour or 8-hour value for each day then calculating the arithmetic mean of all those hours to arrive at the annual maximum average.

Based on the results of the data collected the DOH concluded that, "Air quality in the State of Hawaiʻi continues to be one of the best in the nation, and criteria pollutant levels remain well below state and federal ambient air quality standards" (DOH, 2006).

5.7.2. Landfill Associated Gas Emissions

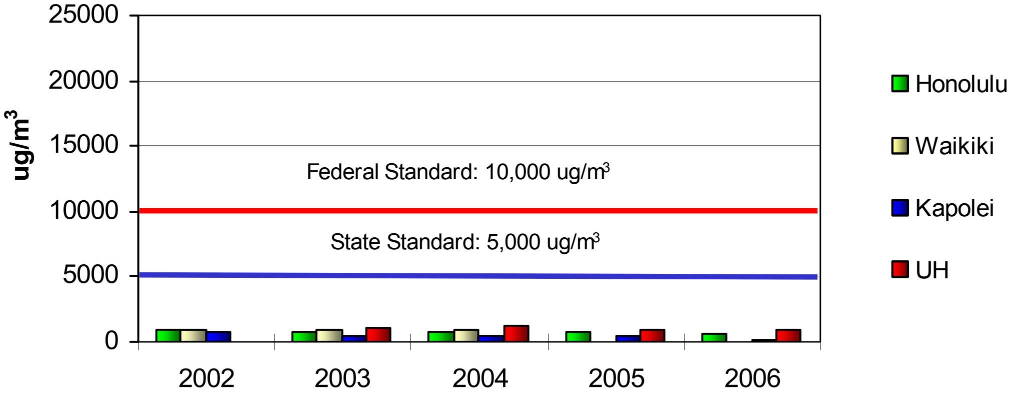
According to the EPA, municipal solid waste contains significant portions of organic materials that produce a variety of gaseous products when disposed of, compacted, and covered in landfills. Anaerobic bacteria thrive in the oxygen-free environment, resulting in the decomposition of organic materials and the production of primarily carbon dioxide and methane. Carbon dioxide is capable of leaching out of the landfill because it is soluble in water. Methane, which is less soluble in water and lighter than air, is likely to migrate out of the landfill (EPA, July 2007).

Average of Daily Maximum
1-Hour Carbon Monoxide 2002 - 2006
(Figure 7-6



Waikiki station closed 11/04; UH station began operation 11/02

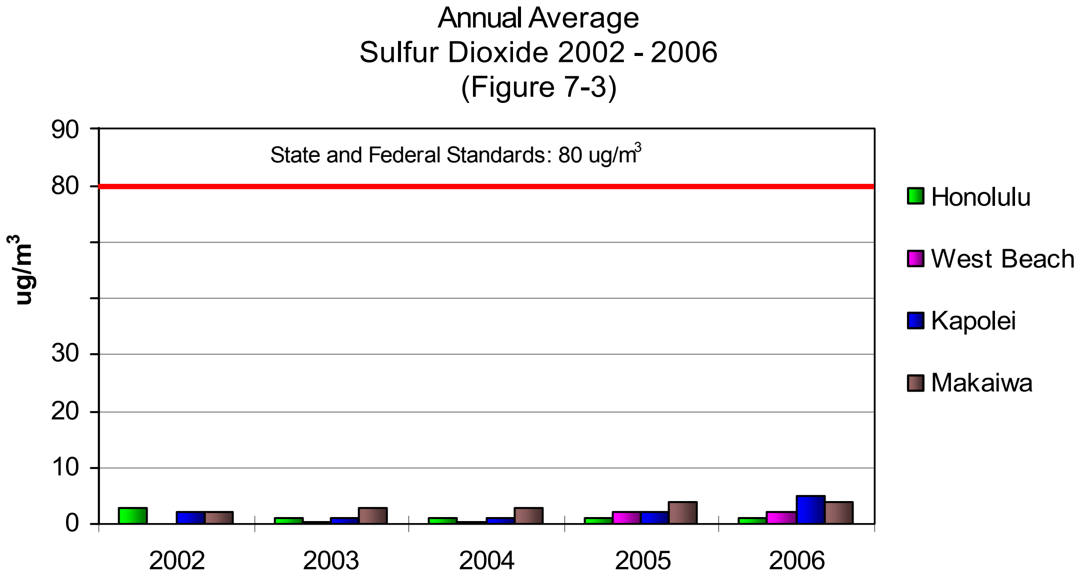
Average of Daily Maximum
8-Hour Carbon Monoxide 2002 - 2006
(Figure 7-7)

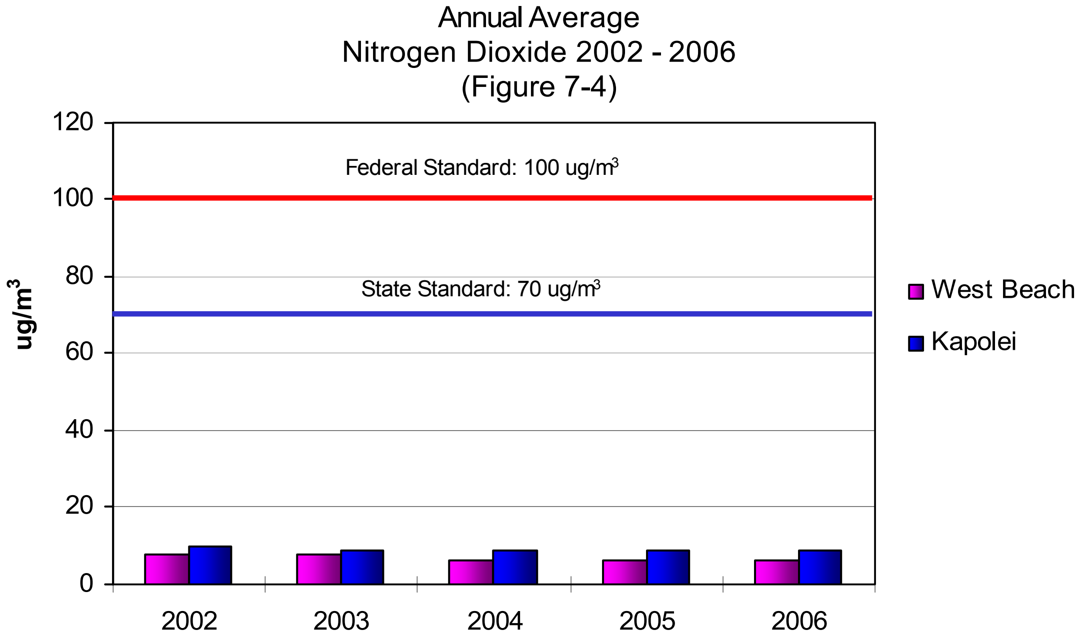


Waikiki station closed 11/04; UH station began operation 11/02

Source: Department of Health
Annual Summary 2006 Hawai'i Air Quality Data
Figure 7-6 and Figure 7-7

Figure 5-12
Carbon Monoxide Monitoring
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

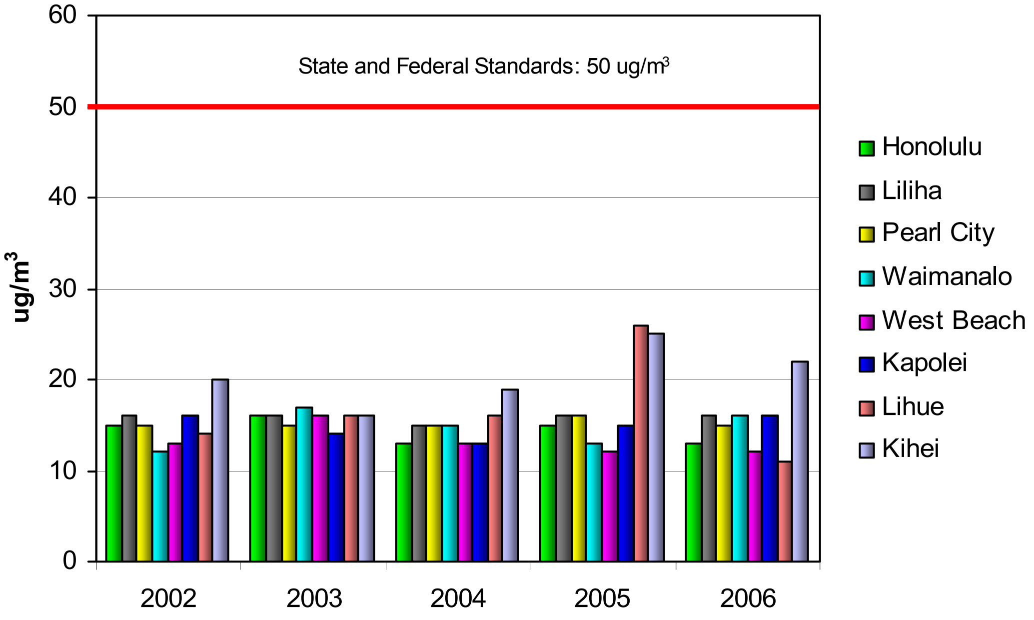




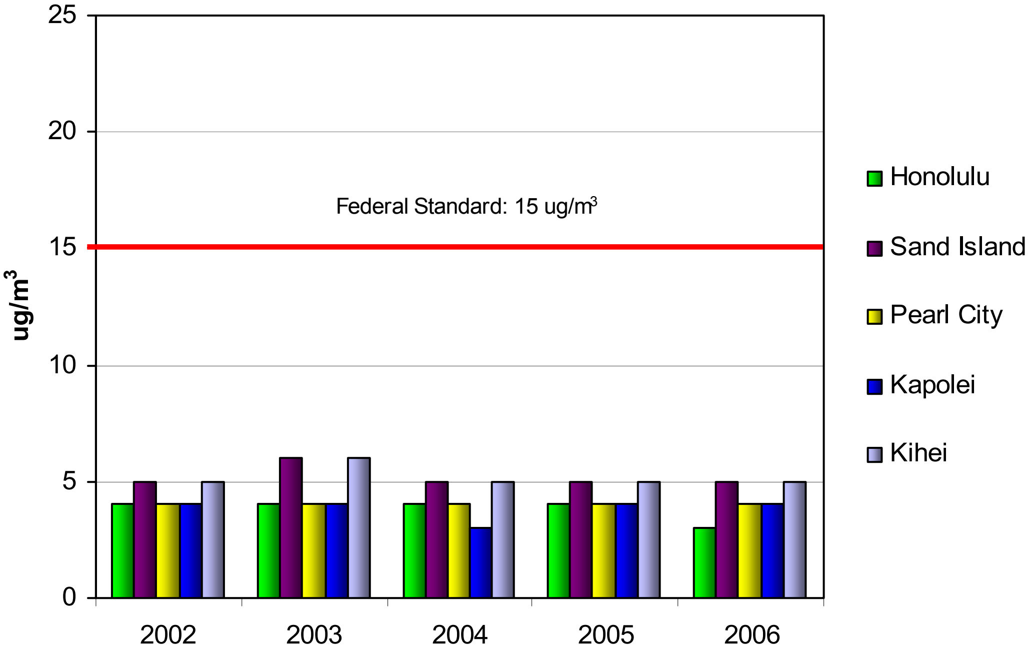
Source: Department of Health
Annual Summary 2006 Hawai'i Air Quality Data
Figure 7-3 and Figure 7-4

Figure 5-13
Sulfur & Nitrogen Dioxide Monitoring
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

PM$_{10}$ Annual Average 2002 - 2006
(Figure 7-1)



PM$_{2.5}$ Annual Average 2002 - 2006
(Figure 7-2)



Source: Department of Health
Annual Summary 2006 Hawai'i Air Quality Data
Figure 7-3 and Figure 7-4

Figure 5-14
Particulate Matter Monitoring
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Because of the organic material present in municipal solid waste landfills, there is the potential to produce odors as landfill gases are generated. Sulfides and ammonia are the most common sources of odor in landfill gas. Sulfides produce a strong, rotten-egg smell that humans can detect even at very low concentrations. Ammonia produces a pungent odor that many people are familiar with because it is often used in household cleaning products. Both are normally present in the air, regardless of the presence of a landfill (http://health.state.ga.us/pdfs/hazards/LandfillGas.bro.pdf).

The primary types of gases that may be produced in a landfill are identified in **Table 5-3**, **Typical Landfill Gas Components** (ATSDR, 2001).

The generation of landfill gas is normally accomplished through the bacterial decomposition of waste in four phases. The composition of the gas produced changes with each of the four phases. Landfills often accept waste over a 20- to 30-year period, so waste in a landfill may be undergoing several phases of decomposition at once. This means that older waste in one area might be in a different phase of decomposition than more recently disposed of waste in another area (ATSDR, 2001) (see **Figure 5-15**, **Landfill Gas Production Phases**):

> Phase I
>
> During the first phase of decomposition, aerobic bacteria consumes oxygen while breaking down complex carbohydrates, proteins, and lipids that comprise organic waste. The primary byproduct of this process is carbon dioxide. Nitrogen content is high at the beginning of this phase, but declines as the landfill moves through the four phases. Phase I continues until the available oxygen is depleted and can last for days or months, depending on how much oxygen is present when the waste is disposed of.
>
> Phase II
>
> Phase II decomposition starts after the oxygen in the landfill has been used up. Using an anaerobic process that does not require oxygen, bacteria convert compounds created by aerobic bacteria into acetic, lactic, and formic acids and alcohols such as methanol and ethanol. The landfill becomes highly acidic. As

the acids mix with the moisture present in the landfill, nutrients dissolve, making nitrogen and phosphorus available to the bacteria in the landfill. The gaseous byproducts of these processes are carbon dioxide and hydrogen. If the landfill is disturbed or if oxygen is somehow introduced into the landfill, microbial processes will return to Phase I.

Table 5-3
Typical Landfill Gas Components[7]

Component	*Percent by Volume*	*Characteristics*
methane	45–60	Methane is a naturally occurring gas. It is colorless and odorless. Landfills are the single largest source of U.S. man-made methane emissions
carbon dioxide	40–60	Carbon dioxide is naturally found at small concentrations in the atmosphere (0.03%). It is colorless, odorless, and slightly acidic.
nitrogen	2–5	Nitrogen comprises approximately 79% of the atmosphere. It is odorless, tasteless, and colorless.
oxygen	0.1–1	Oxygen comprises approximately 21% of the atmosphere. It is odorless, tasteless, and colorless.
ammonia	0.1–1	Ammonia is a colorless gas with a pungent odor.
NMOCs (non-methane organic compounds)	0.01–0.6	NMOCs are organic compounds (i.e., compounds that contain carbon). (Methane is an organic compound but is not considered an NMOC.) NMOCs may occur naturally or be formed by synthetic chemical processes.
sulfides	0–1	Sulfides (e.g., hydrogen sulfide, dimethyl sulfide, mercaptans) are naturally occurring gases that give the landfill gas mixture its rotten-egg smell. Sulfides can cause unpleasant odors even at very low concentrations.
hydrogen	0–0.2	Hydrogen is an odorless, colorless gas.
carbon monoxide	0–0.2	Carbon monoxide is an odorless, colorless gas.

Source: Tchobanoglous, Theisen, and Vigil 1993; EPA 1995

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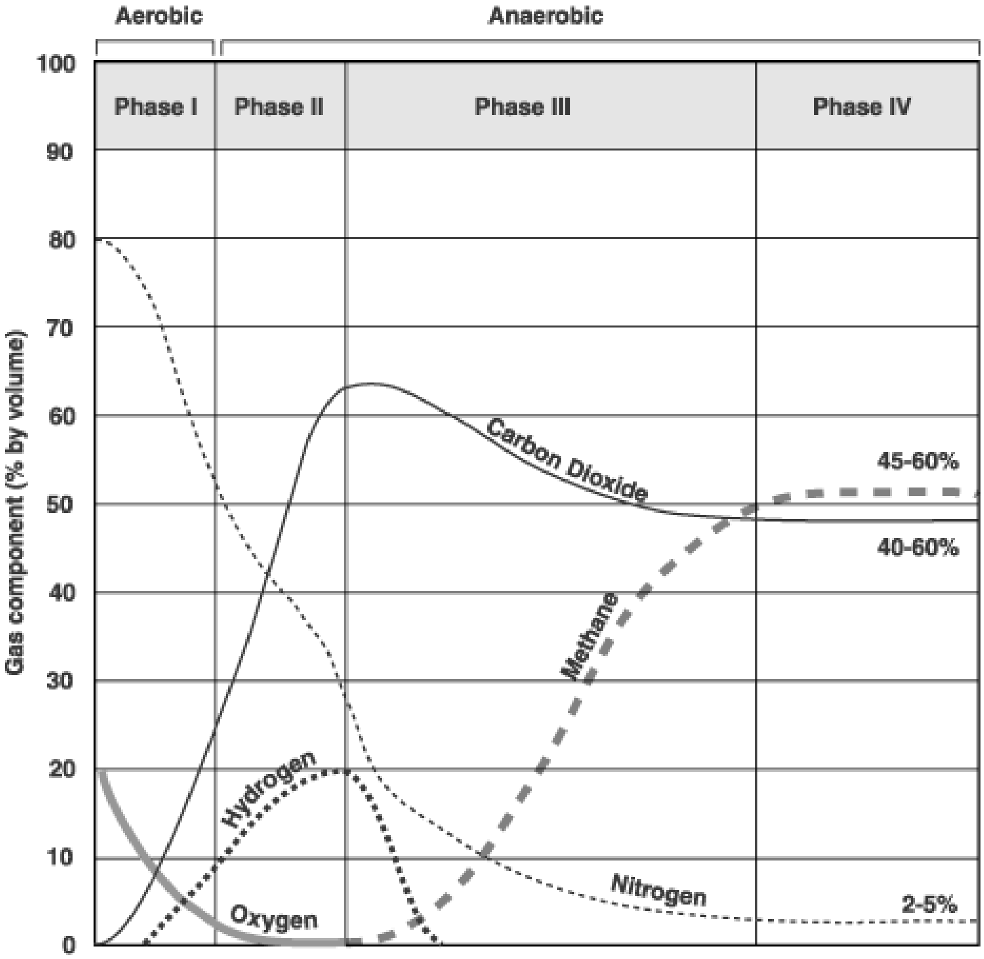
[7] The values presented are for a typical landfill. Composition at the WGSL flare (including all wells) is approximately 44% methane, 40% carbon dioxide, 0.1% oxygen, 5% hydrogen, 10% nitrogen, <0.005% carbon monoxide, <0.01% sulfides. Individual wells vary considerably from these values. (WMH 2008).



Note: Phase duration time varies with landfill conditions

Source: EPA 1997

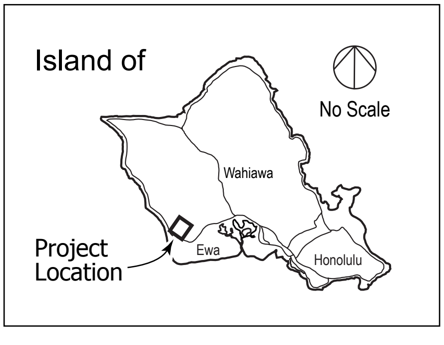


Figure 5-15
Landfill Gas Production Phases
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

Phase III

Phase III decomposition starts when certain kinds of anaerobic bacteria consume the organic acids produced in Phase II and form acetate, an organic acid. This process causes the landfill to become a more neutral environment in which methane-producing bacteria become established. Methane-and acid-producing bacteria have a symbiotic, or mutually beneficial, relationship. Acid-producing bacteria create compounds for the methanogenic bacteria to consume.

Methanogenic bacteria consume the carbon dioxide and acetate, too much of which would be toxic to the acid-producing bacteria.

Phase IV

Phase IV decomposition begins when both the composition and production rates of landfill gas remain relatively constant. Phase IV landfill gas usually contains approximately 45% to 60% methane by volume, 40% to 60% carbon dioxide, and 2% to 9% other gases, such as sulfides. Gas is produced at a stable rate in Phase IV, typically for about 20 years; however, gas will continue to be emitted for 50 or more years after the waste is placed in the landfill (Crawford and Smith 1985). Gas production might last longer, for example, if greater amounts of organics are present in the waste, such as at a landfill receiving higher than average amounts of domestic animal waste. (ATSDR, 2001).

5.7.3. Potential Impacts and Mitigation Measures

The proposed project will involve the use of an area of expansion within the existing property for the handling and disposal of municipal solid waste including ash and residue generated from the City's H-POWER facility. Sources of potential air quality impacts include:

Construction of the proposed project (including generation of vehicular exhausts)
Landfill associated odor
Landfill associated gases

Potential Impacts and Mitigation During Construction

Airborne dust will be the primary air pollutant generated from use of the planned area of expansion. Sources of this dust include earthwork (including controlled blasting and rock crushing), grading, excavation, stockpiling, and vehicles transiting to, from, and within the area of lateral expansion. To reduce and mitigate the potential for the release of fugitive dust from the site preventative measures will be practiced by the operator in accordance with the provisions of HAR, Chapter 11-60.1-33, Fugitive Dust. The measures that will be practiced include, but are not limited to, the following:

- The application of water during any earthwork or movement of vehicles that generates excessive levels of dust capable of migrating off of the landfill property. Only enough water will be used to sufficiently wet the surface of the ground to inhibit the generation of dust;
- Potential for generation of dust from controlled blasting is anticipated to be limited and isolated to only the immediate area of the blast. This is primarily due to the subsurface placement of micro charges arrayed in a grid configuration to only yield the amount of blast necessary to fracture rock facilitating its removal with a bulldozer. Control of potential dust will be addressed with the inspection of the site for any loose sediments or soils that can constitute a dust source. As required, the area of the blast will be wetted down around the immediate area just prior to setting off the charge;
- Potential for generation of dust from rock crushing will be limited to a relatively isolated location adjacent to the area of the planned working cells. On-site water spraying will be used to control any inadvertent releases of dust;
- All open bodied trucks transiting to or from the landfill will be covered except when discharging or filling loads, or during the on-site clean-up of truck beds;
- Surface roads within the landfill property shall be properly maintained with the prompt removal of earth or other materials that would constitute a source of dust; and

- Dust screens shall be erected in areas that are in active construction such as during excavation or grading to establish landfill cells.

Potential Impacts and Mitigation Associated with Landfill Odor

Odors associated with use of the planned area of lateral expansion include vehicular odor, odors from the hauling of waste to the landfill, and odors as a result of landfill gas emissions. The potential for adverse impacts are not anticipated based on the following measures that will be applied to the WGSL.

Vehicular Odors and Exhausts

Operation of the landfill will involve daily deliveries of municipal and commercial refuse vehicles, transfer trailers, and public self-haul vehicles. Bulldozers, water tank trucks, and related landfill vehicles will also be used. Air pollution from vehicle exhausts will be similar to existing conditions involving use of the current area of landfilling. Exhaust emissions are mitigated to some extent by compliance of the landfill operator, commercial, and private vehicle operators with HAR, Chapter 60-1, Air Pollution Control, Subpart 1.34, Motor Vehicles. The site operator will also ensure that all internal combustion powered vehicles and equipment associated with landfill operations are properly muffled and maintained in good operating condition.

Odors from Waste Hauling

Potential sources of odor from waste hauling primarily involve the delivery of refuse vehicles containing organic material including putrescible waste, sewage solids that cannot be processed by wastewater treatment plants and other types of putrescible organic waste including animal carcasses and food waste.

Odor management of these types of municipal waste involve: (1) refuse vehicle processing and control; and (2) use of an on-site odor neutralizing system.

Refuse vehicles entering the WGSL are directed to the scale house where loads are inspected and waste manifests reviewed prior to the weighing and delivery of the load to the landfill. In order to minimize the potential exposure of loads all incoming vehicle beds must be covered with a tarpaulin or equivalent cover sufficient in size to reduce the exposure of the load. All incoming loads must report directly to the scale house for processing; and refuse vehicles are prohibited from queuing along the Farrington Highway or any location outside of the landfill property.

The on-site odor neutralizing system involves the use of aerosol sprayers located at various points within the landfill property. The locations selected for placement of the aerosol sprayers are based on prevailing wind patterns and portions of the general roadway system that are used by refuse vehicles making deliveries to the landfill.

The odor neutralizing system is based on use of a sprayable non-toxic and non-hazardous solution to control the source of the odors. Odors associated with landfills are normally the result of aerobic and anaerobic processes that generate sulfides and other odor and non odor producing constituents.

~~Solid sewage sludge that was previously disposed of at the WGSL is currently undergoing treatment in a waste digester that was recently installed at the Sand Island Wastewater Treatment Plant (SIWWTP). The waste digester recycles the sewage sludge into fertilizer pellets for commercial and public uses. It is anticipated that as this system is brought to full operational capacity that the requirement for disposal of treated sludge solids will further decrease, eventually removing this source of odorous waste from the landfill.~~

Sludge from the Sand Island Wastewater Treatment Plant (SIWWTP) previously disposed of at WGSL is currently undergoing treatment in a waste digester at the SIWWTP where the sludge is turned into fertilizer pellets. The process of drying sludge into fertilizer pellets began in March 2007.

In June 2007, due to a fire, operations at SIWWTP pelletizing facility ceased until September 2007. During that time 763 tons of de-watered sludge from SIWWTP was landfilled at WGSL. For the entire 2007 year, approximately 3,122 tons of stabilized, dewatered sludge (pelletized and nonpelletized) from the SIWWTP were disposed of at WGSL. At present, all of the dewatered sludge from SIWWTP is turned into fertilizer pellets, and on average, 85% of the pellets is being used for golf course construction and soil manufacturing. The remaining amount of pellets, approximately 15% on average, is disposed at WGSL. All regulatory requirements have been met to allow beneficial use of the pellets. As the process matures and marketability increases, we anticipate a decrease in the amount of pellets that are landfilled at WGSL. Due to unforeseen circumstances, however, such as the June 2007 fire at the pelletizing facility at SIWWTP, there may times when stabilized, de-watered sludge from SIWWTP will need to be landfilled at WGSL.

Besides some of the fertilizer pellets from the SIWWTP, stabilized, dewatered sludge from the Honouliuli, Waiʻanae, Kailua Regional, and Kahuku Wastewater Treatment Plants, as well as sludge from private (non-City) sources is still being landfilled at WGSL. For the entire 2007 year, the following approximate amounts of stabilized, de-watered sludge were disposed of at WGSL from the following City waste water treatment plants: Honouliuli - 4,192 tons; Kailua Regional - 766 tons; Waianae - 277 tons; and Kahuku - 1 ton. Besides the significant reduction of sludge from the SIWWTP being landfilled, the City is in the process of seeking beneficial uses for the stabilized, de-watered sludge from the Honouliuli WWTP.

Landfill Gas Associated Odor

The generation of landfill associated gas at the WGSL is controlled by use of a landfill gas collection and control system (GCCS) that was installed in 2005. The GCCS is designed to collect gases generated as a result of decomposition processes and to prevent their uncontrolled release to the atmosphere. The GCCS is comprised of a number of subsystems that include: Landfill Gas (LFG) Collection System; Landfill Flare System; and a Condensate Collection System. (Shaw Environmental, Inc., 2006).

LFG Collection System. The LFG collection system includes all LFG conveyance components installed in the landfill, from the LFG extraction wells to the inlet of the condensate knock-out pot on the LFG blower skid. These components currently include the following (WMH, 2008):

- 27 vertical LFG extraction wells;
- 27 wellhead monitoring and LFG flow control assemblies;
- Approximately 1,100 feet of 12-inch LFG header piping, 5,000 feet of 8-inch LFG header piping, and 1,500 feet of 6-inch LFG lateral piping connecting extraction wells to the headers;
- 3 LFG header control valves; and
- 1 condensate sump.

Additional wells and associated components including well heads and piping will be added as waste is placed into the landfill.

A vacuum applied to the extraction well field extracts LFG from the refuse into the vertical wells, through the wellhead monitoring assemblies and 6-inch diameter lateral piping, into 8-inch diameter header pipes. At the southeastern corner of MSW Cell 1, the header pipes combine into a larger 12-inch diameter header pipe, which conveys the LFG to the inlet of a condensate knock-out pot located at the blower skid at the flare station.

The existing vertical extraction wells were connected with above grade piping to maintain a positive slope in the lines to avoid low areas that can trap condensate. Trapped condensate can prevent gas flow through the line. The extraction wells in the waste disposal areas will be maintained and operated through the post closure period until the gas flow decreases. Damaged and nonproductive wells and piping will be decommissioned, and replaced with new wells and piping, as necessary to maintain compliance. (Shaw Environmental, Inc., 2006, and WMH 2008).

Landfill Flare Station. The landfill flare station is located in the southeastern comer of the landfill, southeast of the landfill's main entrance road. The major components of the flare station are:

- Condensate knock-out pot (KOP) to prevent condensate from adversely impacting downline components;
- Two fan blowers;
- Two 6-inch arrestors, specifically designed for elevated levels of hydrogen;
- Flare and blower control and monitoring instrumentation, and
- Compressed air supply, including air compressor.

The enclosed flare is designed to collect and thermally destruct the LFG flow rates anticipated within the design life of the flare station equipment. The LFG blowers were sized to accommodate turn-down to the current low level of LFG flows (350 to 400 scfm). When the blower capacity is exceeded, an additional blower can be readily added in parallel to increase the system design flow to the required capacity.

Depending on gas flow rates WGSL may construct a landfill gas to energy facility to provide beneficial use of the collected landfill gas. The proposed facility would consist of one or more reciprocating engine powered generators (gensets). The proposed facility would be located adjacent to the flare station.

The current achievable LFG extraction is approximately 500 scfm (WMH, 2008).

Condensate Collection System. The condensate collection system for the GCCS includes the following components:

- A condensate sump located at the inlet to the flare station;
- Two 1,000 gallon condensate storage tanks with spill containment; and
- A condensate KOP on the blower skid that gravity drains to the condensate sump.

The purpose of the condensate collection system is to minimize LFG flow obstructions by capturing and removing free liquid from the LFG flow stream for thermal destruction. (Shaw Environmental, Inc., 2006, and WMH 2008).

According to WMH, the GCCS has performed satisfactorily but is atypical. The typical characteristics normally include:

- Similar concentrations of methane and carbon dioxide;
- A mesothermophillic (medium temperature range) bacterial environment; and
- Low hydrogen gas concentrations.

Characteristics exhibited at the WGSL from monitoring of the extraction wells indicate:

- Some wells with low methane to carbon dioxide ratios;
- Hyperthermophillic (very high temperature range) bacterial environment; and
- High hydrogen gas concentrations in isolated portions of the landfill.

The elevated temperatures exceed EPA designated levels:

40 CFR §60.753(c) states that each owner or operator of an MSW landfill with a [GCCS] shall:

Operate each interior wellhead in the collection system with a landfill gas temperature less than 55°C [i.e., 131°F] and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

Due to a combination of naturally occurring biological and chemical processes, the gas temperatures of some of the wells at the WGSL exceed the EPA's ~~specified maximum~~ standard operating temperature of 131° Fahrenheit. The wells with temperatures above 131° F average approximately 165° F. One well has had an isolated temperature reading of 184° F, which is the highest recorded temperature of any well at the landfill. ~~and have been approximately 165° F.~~ While the temperatures exceed the normal allowable under 40 CFR 60.753(c), WMH has shown that the elevated temperatures have not caused a fire (Evaluation of Combustion as a Possible Cause of Elevated Temperatures, Waimānalo Gulch Sanitary Landfill, Oʻahu, Hawaiʻi, GeoSyntec, February 29, 2008) nor have they significantly inhibited anaerobic decomposition by killing methanogens.

Since the New Source Performance Standards (NSPS) temperature threshold was established in 1996, numerous landfills operating at temperatures higher than 131°F have successfully demonstrated that a higher operating temperature is appropriate for some or all of the wells at a landfill. Most of these landfills have approved wellhead temperature limits in the 140°F to 155°F range. While Waste Management, Inc., has not attempted to survey all fifty states and all EPA regions to identify higher temperature limits at landfills, the company has identified 13 examples of landfills with EPA- or state-approved operating temperature limits greater than 155°F, including five landfills in the United States with temperature limits of 176°F or higher. The most recently approved is the Chambers Oakridge Landfill, South Carolina, with an operating temperature of 176°F.

Notification of the operating characteristics of the WGSL have been reported to the EPA to ensure sufficient monitoring and operating standards are carried out to maintain safety and security of the site, and to propose the granting of an alternate operating standard[8]. WMH is currently awaiting a response from the

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[8] Letter to EPA dated October 21, 2005, Requesting Alternate Wellhead Operating Standards and Compliance Procedures, New Source Performance Standards, Subpart WWW, State of Hawaiʻi Covered Source Permit No. 0489-01C.

EPA and will coordinate appropriate measures to maintain compliance with all regulations as required by law.

Potential Impacts and Mitigation of Landfill Associated Gases

The potential for adverse impacts from landfill associated gases are not anticipated. The following practices and measures will be applied to the proposed project.

Landfill gases at WGSL are monitored as required by with RCRA Subtitle D regulations, HAR Chapter 11-58, and the WGSL Solid Waste Permit (No.LF-0054-02) issued by the DOH Solid Waste Section (SWS). The purpose for the monitoring ~~I~~is to regularly assess the condition and performance of the landfill concerning the generation of gases and odor, and to prepare an appropriate response to address any exceedances in allowable standards. Gases monitored at WGSL include methane and hydrogen (Waste Management of Hawaiʻi, Inc., Revised October 2007):

- Methane is monitored as one of the primary gases generated by MSW landfills and is a colorless and odorless gas which is lighter than air. It is formed by the decomposition of organic carbons under oxygen poor (anaerobic) conditions and is commonly found in or near swamps and wetland areas, peat deposits, wood waste, and landfills. Under certain conditions, the mixture of methane in air can be explosive in a confined area. The explosive range is between 5% and 15% methane-in-air.

  The EPA requires that combustible gas concentrations must not exceed the lower explosive limit in soils at the property line or 25 percent of the lower explosive limit at or in structures. The lower explosive limit corresponds to 5% concentration of methane-in-air. In addition to the risk of explosion at lower concentrations of methane-in-air, higher concentrations are also of concern, since such higher concentrations can be flammable and may also lead to asphyxiation due to lack of sufficient oxygen in the methane-air mixture.

- Hydrogen is not ordinarily monitored as a landfill gas but is included based on monitoring data indicating that it is present. Hydrogen is a naturally occurring lightweight gas that is colorless, odorless and without taste. Hydrogen is highly flammable and produces water when burned in the presence of oxygen and is a reactive substance easily combined with other atoms. Hydrogen is abundant in the universe with an occurrence of approximately 75 percent by volume (NASA, 2008).

The standards governing methane gas requires that the landfill owner or operator must ensure that[9]:

> §258.23 (a)(I) and §11-58.1-15(d)(1)(A) "The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit (LEL) for methane in facility structures (excluding gas control or recovery system components)" and,
>
> §258.23 (a)(2) and §11-58.1-15(d)(l)(B) "The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary."
>
> §258.23 (b)(l) and §11-58.1-1 5 (d)(2)(A) "The type and frequency of monitoring must be determined based on the following factors:
> (i) Soil conditions;
> (ii) The hydrogeologic conditions surrounding the facility;
> (iii) The hydraulic conditions surrounding the facility; and
> (iv) The location of facility structures and property boundaries."

If methane gas levels exceed the RCRA Subtitle D regulations the owner or operator must:

A. Remonitor to verify the exceedance. Exceedances for methane are readings from probes at or above 5 percent methane by volume or hydrogen readings at or above 4.7 percent by volume.
B. If an exceedance is verified, then take all necessary steps to ensure protection of human health and notify the Director of the DOH;

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[9] RCRA Subtitle D Regulations 40 CFR §258.23, and HAR Title 11, Chapter 58.1-15(d).

C. Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health; and

D. Within sixty days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the director that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.

In addition, the DOH may establish alternative schedules for demonstrating compliance with items B and C.

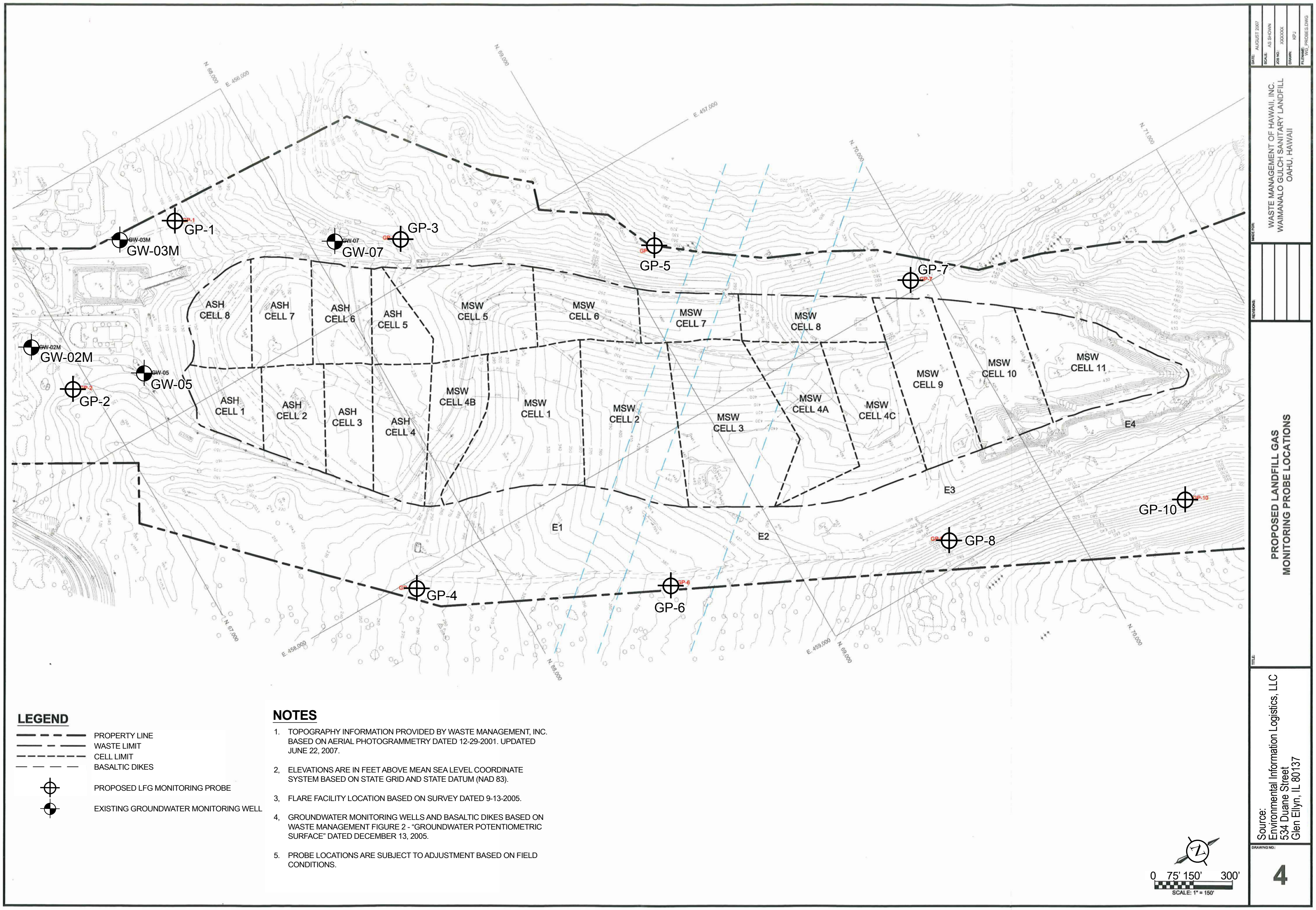
The prescription for the detection of hydrogen will be established based on further coordination with the EPA and will be adhered to by WMH to maintain safety and security of the site.

Gas Monitoring Network

The gas monitoring network is based on the use of ten monitoring probes for detecting gas migration from the WGSL (**Figure 5-16, WGSL Gas Monitoring Network**). The average spacing between probes along the network boundary is approximately 978 linear feet (an average of one probe for every 978 linear feet of the WGSL property line). Currently, permanent probes are installed near the western, eastern, and southern property lines of the WGSL. Additional probes will be added as the landfill is expanded up the gulch. Permanent gas probes were not proposed for the northern end of the currently permitted waste area due to the pending application for landfill expansion into this area (Waste Management of Hawaiʻi, Inc., Revised October 2007). Therefore, the installation of the probes will be implemented only upon satisfactory approval for the lateral expansion of the WGSL.

The information collected from monitoring will be furnished to DOH according to the reporting requirements of the DOH. The information will include methane concentrations and pressure at each probe location; hydrogen concentrations at each probe location; site conditions during the monitoring event including the date, time, barometric pressure, atmospheric temperatures, and general weather conditions; and personnel

Source: Perimeter Gas Monitoring Plan, Site Operations Manual
Waimanalo Gulch Sanitary Landfill
Environmental Information Logistics, LLC, August 2007



NOTES

1. TOPOGRAPHY INFORMATION PROVIDED BY WASTE MANAGEMENT, INC. BASED ON AERIAL PHOTOGRAMMETRY DATED 12-29-2001. UPDATED JUNE 22, 2007.

2, ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL COORDINATE SYSTEM BASED ON STATE GRID AND STATE DATUM (NAD 83).

3, FLARE FACILITY LOCATION BASED ON SURVEY DATED 9-13-2005.

4, GROUNDWATER MONITORING WELLS AND BASALTIC DIKES BASED ON WASTE MANAGEMENT FIGURE 2 - “GROUNDWATER POTENTIOMETRIC SURFACE” DATED DECEMBER 13, 2005.

5. PROBE LOCATIONS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS.

DATE: AUGUST 2007
SCALE: AS SHOWN
JOB NO.: XXXXXX
DRAWN: KPJ
FILENAME: WG_PROBES.DWG

MADE FOR:
WASTE MANAGEMENT OF HAWAII, INC.
WAIMANALO GULCH SANITARY LANDFILL
OAHU, HAWAII

REVISIONS:

TITLE:
PROPOSED LANDFILL GAS
MONITORING PROBE LOCATIONS

Source:
Environmental Information Logistics, LLC
534 Duane Street
Glen Ellyn, IL 80137

DRAWING NO.:
4

Figure 5-16
Gas Monitoring Network

names, instrumentation, and a brief description of the method used. All monitoring data will be maintained through the closure and post-closure.

Air Quality Summary

The potential for secondary or cumulative effects from landfill gas emissions and operational use of the site involving earthwork and deliveries of refuse exists at the site without the long term use of the mitigative measures provided in this EIS document, and the operational practices that are employed by WMH. Potential long term effects can include the migration of landfill gas, dust, and nuisance odors associated with the landfill and refuse deliveries.

Mitigation to address these concerns will serve to address and avoid the occurrence of potential secondary and cumulative impacts through on-going monitoring and operational practices that maintain the existing environmental safety of the site, such that it would avoid the opportunity for other larger impacts to occur. In some cases, these measures have already been implemented: a landfill gas collection and control system has been constructed and is operating to reduce uncontrolled releases of landfill associated gases; and a waste digester at the Sand Island Wastewater Treatment Plant has been constructed and in recent months has demonstrated improved performance with fewer deliveries of odor generating sewage solids.

5.8. Acoustic Characteristics

5.8.1. Noise Sources

The proposed project is anticipated to generate noise associated with the operation of equipment and vehicles, and controlled blasting. These sources of noise are not expected to result in acoustic levels greater than produced from current levels. This is based on the generation of noise from existing operations that are planned to shift to the lateral expansion area.

Sources of noise generated by the proposed project will be substantively similar to the existing area of use and will include the use of construction vehicles and internal combustion powered machinery such as bulldozers, scrapers, water tankers, generators and rock crushing equipment. Controlled blasting will be used to fracture rock and hard substrate that will be removed by construction equipment.

5.8.2. Potential Impacts and Mitigation Measures

The potential for adverse impacts associated with the generation of noise from the proposed project are not anticipated as provided by the following:

Construction Vehicles and Equipment

Vehicles and equipment will produce noise from the operation of engines and earthwork. Mitigation of short-term potential construction impacts will involve compliance with the provisions of Chapter 11-43, Community Noise Control, HAR. All internal combustion powered vehicles and equipment will be equipped with mufflers or other noise attenuation devices as required by federal, state, and City & County of Honolulu regulatory requirements.

Noise associated with construction activities are not anticipated to result in adverse effects to the surrounding area and region: (1) the majority of the work will be limited to the area of lateral expansion; (2) the work required will be substantively similar to existing work involving the use of construction vehicles and equipment in support of landfilling activities; and (3) the location of the work will be within a relatively isolated portion of the landfill that is distant from the Farrington Highway. Portions of the work that may affect the adjoining Makaiwa Gulch and the future planned Makaiwa Hills development, will be buffered by a ridge separating the two gulches.

Rock Crushing

Materials excavated from the landfill will be comprised of soils and rocky substrate. Most of these materials will be reused for cover material within the landfill. Rocks and boulders too large for use will be reduced in size with a rock crusher. The rock crushing operation will be located within proximity to the planned lateral expansion area.

The crushed rock and cover material will be used for daily and intermediate landfill cover, meet slope stability requirements, landscaping, and other purposes associated with the landfill. Surplus rock material that cannot be reused on site will be used for other purposes that may include other construction projects of the City & County of Honolulu.

Potential impacts associated with the rock crushing operation include:

- Generation of noise and dust as rocks are crushed and turned into usable material for landfill cover.
- Visual impacts that could result if views of rock crushing equipment and machinery are readily visible from across the Farrington Highway and coastal shoreline.

Generation of noise will be within a relatively isolated portion of Waimānalo Gulch that is located approximately 0.5 to 0.75 miles northeast of Farrington Highway. The ridge between Waimānalo Gulch and Makaiwa Gulch will also serve to help to reduce potential noise impacts from the planned future Makaiwa Hills development. Other mitigative measures to reduce noise will include: proper maintenance of all equipment with appropriate mufflers or other sound attenuation as required in accordance with federal, state and City & County of Honolulu regulations; and the scheduling of rock crushing during normal landfill operating hours to avoid possible disturbance to surrounding neighbors.

Generation of fugitive dust will be addressed by regular spraying of water, as required, to suppress dust as rocks are crushed and turned into usable fill material. Use of dust screens around the rock crushing machinery may be employed based on the ability to suppress dust using water.

Views of machinery associated with rock crushing will be minimized or effectively blocked from view by placement within or within close proximity to excavated areas within the planned lateral expansion area. Because this area will be at a lower elevation relative to the surrounding completed portions of the landfill, views toward rock crushing operations will be inhibited. Additional treatment with vegetative cover including trees and shrubs would be used to fill gaps in screening coverage.

Controlled Blasting

Controlled blasting is employed within the current area of landfilling to fracture rock and loosen hard substrate. Blasting is performed by a qualified and licensed blasting contractor governed in accordance with standards of the federal Mine Safety and Health Administration (MSHA). Preparation prior to blasting involves: (1) identification of the area for removal of rock or hard substrate using a grid pattern to control and localize the amount of rock fracture that is required; (2) drilling to the proper depth for the placement of explosives; and (3) reviewing the explosive charge yield needed and placement of the charges into the bore holes. The procedure just prior to the blast involves notification to all workers on the day of the blast. When the warning horn is sounded all workers on site are required to stop all activity. Following the blast, when the all-clear signal is given workers may resume their tasks.

Noise generated from prior controlled blasting at the site has been characterized as a small muffled explosion that is localized and relatively isolated within the area of the blast. From Farrington Highway, the intensity of sound generated from prior blasting at the landfill can be characterized as approaching that of the background noise generated from passing heavy vehicles or distant thunder, with the exception that it is a one time noise event of very short duration that occurs toward the end of the day.

Controlled blasting for the proposed project will involve not more than one blast per day on an infrequent basis consisting of approximately one to three days per week, also taking place in the late afternoon toward the end of the work day.

The use of controlled blasting will not be required for the entire anticipated life of the WGSL. It will only be required until the construction of the final cell. The use of controlled blasting does not impact the stability of the WGSL or any of its berms as the blasting will be used only to fracture and loosen the rock from the slope. The energy output is expected to be well below that produced by the design earthquake considered in the stability analysis performed to evaluate the safety of the landfill.

Potential noise effects associated with controlled blasting for the proposed project are not expected to affect the surrounding community along Farrington Highway or the planned Makaiwa Hills development. In the unlikely event that controlled blasting is required in locations within the landfill property with the potential to disturb surrounding neighbors, WMH will provide appropriate notification and undertake work practices to minimize any disturbance. No major issues or concerns associated with noise generated from blasting are known to have resulted from prior work.

Acoustic Characteristics Summary

While the potential for noise impacts associated with construction and operational activities including construction vehicles and equipment, rock crushing, and controlled blasting are not anticipated, mitigative measures have been proposed to address these concerns. Potential for secondary and cumulative impacts with regard to the planned Makaiwa Hills subdivision located next to the WGSL along its eastern boundary and other adjacent properties, are similarly not anticipated. Construction and earthwork within the landfill will be inhibited by a ridgeline separating the properties on either side of the landfill, and the location of lateral expansion will be at a distance of over a half mile from the Farrington Highway. Mitigation to address the potential for secondary and cumulative impacts will be similar to those designed to address the primary impacts. This will include proper maintenance of all equipment with appropriate sound attenuation as required in accordance with federal, state and City & County of Honolulu regulations, the scheduling of rock crushing during normal landfill operating hours to avoid possible disturbance to surrounding neighbors, and conducting controlled blasting in accordance with regulatory requirements.

5.9. Flora and Faunal Resources

5.9.1. Flora

In 2007, AECOS Consultants, Inc., prepared the report, Botanical Resources Report for Alternative Municipal Refuse Disposal Sites on the Island of O‘ahu (**Appendix E**). The purpose of the report was to evaluate five potential landfill sites to assess which, if any of the proposed locations, support (1) plant species that are either listed by the state and federal government under an endangered species program, or (2) plant assemblages that are substantially native in composition and unique to the Hawaiian

Islands. The sites investigated included: Māʻili Quarry, Nānākuli B, Waimanalo Gulch (lateral expansion), Makaiwa Gulch, and Kapaʻa.

The following is a summary of the report emphasizing the conditions at WGSL.

Introduction

The botanical survey utilized a *wandering pedestrian transect*, a standard protocol for discovery-type surveys. In basic terms, this involved a botanist hiking around the property in a manner that allows a visual survey of all of the various types of habitats present on the property. During the transect examination, each plant species is noted as it is encountered, material is collected where a field identification proves difficult, photographs are taken, and a sense of the relative abundance of each species on the property is developed.

According to the report,

> "The survey of the Waimanalo Gulch was conducted during the wet season (January 2007). Consequently, most of the plants encountered (including annuals) were growing well and were in flower, making positive field identifications relatively straight forward. Nonetheless, a one time survey cannot expect to list every plant species growing on a subject property. Some species are seasonal or opportunistic, while others might be present, but in such low numbers that they are simply not encountered. Every square foot of the land cannot reasonably be covered, and some areas—in this case dangerously steep portions of the gulch margins and high cliff faces—will not be accessed. The botanist attempts to reach all physiographic types characteristic of the property and reach plants appearing from a distance to be "unique". Steep but traversable portions of the gulch margins and smaller cliff faces serve as representative of the inaccessible habitats on the property." (AECOS Consultants, Inc., 2007).

Findings

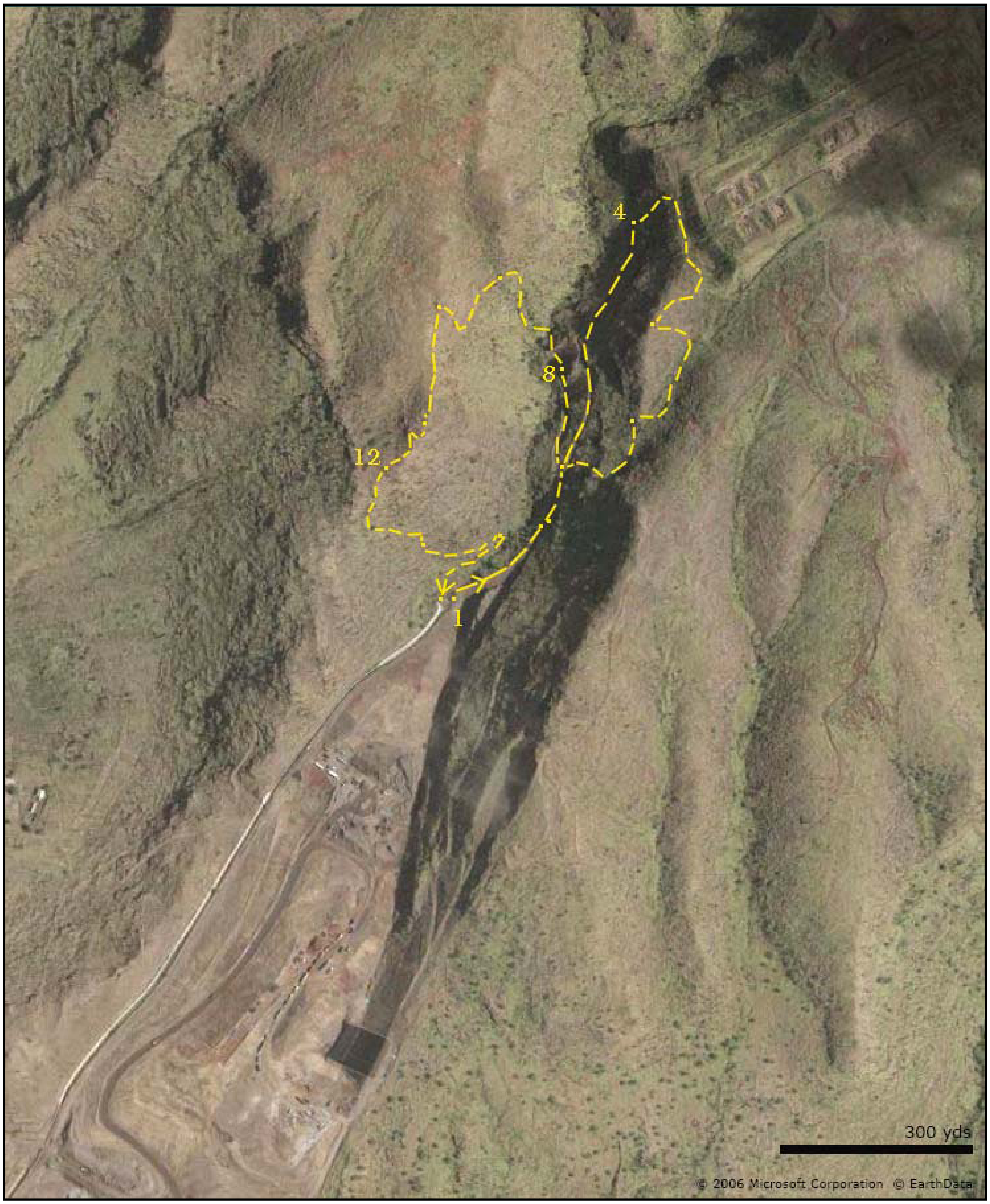
The proposed project site surveyed comprises approximately 60.5 acres of the property proposed for active landfilling and is located above the existing municipal landfill. The general route taken by the biological team is identified in **Figure 5-17, Botanical Survey Route**.

The survey results are summarized in **Table 5-4, List of Flora at Waimānalo Gulch**. According to the report,

> "A total of 50 species were recorded from the proposed Expansion Area. Of these, only 6 species (12%) are indigenous species (plants native to Hawai`i, but found elsewhere as natives as well). Lowland sites on O‘ahu typically have between 6 and 12% of the species present as natives. Thus, the percentage of natives in lower Waimānalo Gulch is better than might be expected, although not special. All of the species are widely encountered on leeward O‘ahu; none is considered rare or threatened. The only unusual botanical resource encountered was several large patches of pili grass across a broad shoulder of the ridge between Waimānalo Gulch and Kahe Gulch at the 600 ft (180 m) elevation. Pili grass may be locally abundant because there is no longer any grazing of cattle in this particular area." (AECOS Consultants, Inc., 2007).

In summary, the vegetation of the expansion area was found to be fairly homogeneous, consisting of grassed slopes with scattered kiawe trees. Along the bottom and eastern slope of the gulch the trees form an open forest transitioning to savannah. Grasses are mostly Guinea grass (Panicum maximum), although near the ridge lines, buffel grass (Cenchrus ciliaris) is the dominant species. In one area along the top of the western ridge, native pili grass (Heteropogon contortus) is abundant in large patches.

Kiawe, klu (Acacia farnesiana), and koa-haole dominate the scrub-shrub and tree components of the vegetation, which are relatively sparse on the upper slopes and made more so by recent fires that have burned across portions of the property destroying many of the kiawe trees. Crude roads have been bulldozed into the gulch, and these are marked by a diverse assemblage of weedy plants.



Source: Botanical Resources Assessment Report (Figure 9)
Waimanalo Gulch Sanitary Landfill (File: AC065.DOC)
AECOS Consultants, 20 February, 2007

Figure 5-17
Botanical Survey Route
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

See Graphic Scale

R.M. TOWILL CORPORATION May 2008

Table 5-4: List of Flora at Waimānalo Gulch

Species Listed by Family	Common Name	Status	Abundance	Notes
FLOWERING PLANTS				
DICOTYLEDONES				
AMARANTHACEAE				
Amaranthus spinosus L.	Spiny amaranth	Nat.	U	(1)
Amaranthus virdis L.	slender amaranth	Nat.	R	
ASCLEPIADACEAE				
Stapelia gigantea N.E. Brown	giant toad plant	Nat.	U	
ASTERACEAE (COMPOSITAE)				
Agerarum conyzoides L.	maile honohono	Nat.	U2	(1)
Bidens cynapiifolia Kunth	---	Nat.	R	
Emilia fosbergii Nicolson	pualele	Nat.	O2	(1)
Pluchia carolinensis (Jacq.) G. Don	sourbush	Nat.	U	
Sonchus oleraceus L.	sow thistle	Nat.	O2	
Tridax procumbens L.	coat buttons	Nat.	U3	(1)
Verbesina enceliodes (Cav.) Benth. & Hook.	golden crown-beard	Nat.	R	
CACTACEAE				
Opuntia ficus-indica (L.) Mill.	pänini	Nat.	R	
CHENOPODIACEAE				
Atriplex cf. suberects Verd.	saltbush	Nat.	R	
CONVOLVULACEAE				
Ipomoea obscura (L.) Ker-Gawl.	---	Nat.	U	
Merremia aegyptia (L.) Urb.	hairy merremia	Nat.	C	
CUCURBITACEAE				
Momordica charantia L.	balsam pear	Nat.	U	
EUPHORBIACEAE				
Chamaesyce hirta (L.) Millsp.	garden spurge	Nat.	O2	
Ricinus communis L.	castor bean	Nat.	U	
FABACEAE				
Acacia farnesiana (L.) Willd.	klu	Nat.	C	
Crotalaria incana L.	fuzzy rattlepod	Nat.	U	
Crotalaria pallida Aiton	smooth rattlepod	Nat.	O3	(1)
Desmanthus virgatus (L.) Willd.	virgate mimosa	Nat.	C	
Leucaena leucocephala (Lam.) deWit	koa haole	Nat.	C	
Indigofera suffruticosa Mill.	indigo	Nat.	U	
Macroptilium atropurpureum (DC) urb.	---	Nat.	C	(1)
Macroptilium lathyroides (L.) Urb.	cow pea	Nat.	U	
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	kiawe	Nat.	O	(2)
LAMIACEAE				
Hyptis pectinata (L.) Poit.	comb hyptis	Nat.	R	(1)
Leonotis nepetifolia (L.) R. Br.	lion’s ear	Nat.	A	(1)
MALVACEAE				
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	Nat.	O	
Abutilon incanum (Link) Sweet	ma‘o	**Ind.**	C	
Malvastrum coromandelianum (L.) Garck	false mallow	Nat.	U	(1)
Sida fallax Walp.	`ilima	**Ind.**	O	
NYCTAGINACEAE				
Boerhavia acutifolia (Choisy) J.W. Moore	alena	**Ind.**	U	
PLUMBAGINACEAE				
Plumbago zeylanica Lam.	‘ilie‘e	**Ind.**	U	
PAPAVERACEAE				
Argemone sp.	prickly poppy		R	(3)

Table 5-4: List of Flora at Waimānalo Gulch (Cont'd)

Species Listed by Family	Common Name	Status	Abundance	Notes
FLOWERING PLANTS				
DICOTYLEDONES (Continued)				
PASSIFLORACEAE				
Passiflora foetida L.	love-in-a-mist	Nat.	R	
PORTULACACEAE				
Portulaca oleracea L.	Pigweed	Nat.	U	
SOLANACEAE				
Nicandra physalodes (L.) Gaertn.	apple of Peru	Nat.	R	
Nicotiana glauca R.C. Graham	tree tobacco	Nat.	C	(1)
Solanum americanum Mill.	pöpolo	**Ind.**	R	
Solanum lycopersicum var. cerasiforme (Dunal) Spooner, G. Anderson,& Jansen	wild cherry tomato	Nat.	R	
STERCULIACEAE				
Waltheria indica L.	`uhaloa	Nat.	C	
VERBINACEAE				
Stachytarpheta jamaicensis (L.) Vahl.	Jamaican vervain	Nat.	R	
MONOCOTYLEDONES				
COMMELINACEAE				
Commelina benghalensis L.	hairy honohono	Nat.	R	
POACEAE				
Cenchrus ciliaris L.	buffelgrass	Nat.	AA	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat.	U2	
Heteropogon contortus (L.) P. Beauv, ex Roem. & Schult.	pili grass	**Ind.**	U3	
Melinus repens (Willd.) Zizka	Natal redtop	Nat.	O2	
Panicum maximum Jacq.	Guinea grass	Nat.	AA	
Paspalum sp.			R1	(1)

STATUS: Distributional status for the Hawaiian Islands:
- end. = endemic; native to Hawaii and found naturally nowhere else.
- Ind. = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
- nat. = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

ABUNDANCE AREAS: Expansion Area is treated as one plant assemblage or association.
ABUNDANCE CODES:
R – Rare; seen in only one or perhaps two locations.
U – Uncommon; seen at most in several locations
O – Occasional; seen with some regularity
C – Common; observed numerous times during the survey
A – Abundant; found in large numbers; may be locally dominant.
AA – Very abundant; abundant and dominant; defining vegetation type.

Numbers following an occurrence rating indicate clusters within the survey area. The ratings above provide an estimate of the likelihood of encountering a species within the specified survey area; numbers modify this where abundance, as encountered, tends to be greater than the occurrence rating:
1 – several plants present 2 - many plants present 3 - locally abundant

NOTES:
(1) – Especially abundant in disturbed areas as along rough graded road into valley.
(2) – Previously more common, but many burned trunks now present.
(3) – Plant lacking flowers or fruit.

5.9.2. Potential Impacts and Mitigation Measures

U. S. Fish and Wildlife Service Critical Habitat Designations

Critical habitat under the Endangered Species Act of 1973 (ESA) refers to special boundaries that are considered important to the conservation and recovery of species listed under the ESA. Although federal actions within a designated critical habitat area require consultation under Section 7 of the ESA, actions by other entities also come under this requirement if the action is funded or authorized by a federal agency. All entities are subject to provisions of the ESA based on actions that may impact a listed species, including "critical habit" whether the listed species is present or not. (AECOS Consultants, Inc., 2007).

A total of 55,040 acres of land on O‘ahu have been designated as critical habitat for 99 species of plants. The total number of separate units on O‘ahu representing designated habitats for these 99 species of plants is 36. (AECOS Consultants, Inc., 2007).

There are no critical habitat units in the vicinity of Waimānalo Gulch. The closest critical habitat to the site is Unit 16, encompassing most of the south slopes of Nānākuli Valley between about 400 and 1500 feet elevation, designated as critical habitat for Isodendrion pyrifolium, a species last seen on O‘ahu in 1870 (Wagner, Herbst, & Sohmer, 1990). The ridgeline representing the southernmost extent of Unit 16 is just over 1 mile from the northwest ridgeline bounding the Waimānalo Gulch property. No part of any proposed site overlaps into a critical habitat unit (Federal Register, 2003, and AECOS Consultants, Inc., 2007).

Endangered Species Act Listed Species

The results of the botanical survey indicate that the proposed project site is not located within any of the 36 designated critical habitat units on the Island of O‘ahu.

A number of species are known from individual specimens or populations evaluated in the botanical survey. A summary of these species is provided in the following (AECOS Consultants, Inc., 2007):

Marsilea villosa or ‘ili‘ihi is a small aquatic or semi-aquatic fern resembling a clover. This fern requires periodic flooding and drying of the ground to complete its short life cycle, and thus it is confined to shallow basins during the wet season. The following description is from the Recovery Plan for the Marsilea villosa as given by USFWS (undated):

"This fern requires periodic flooding for spore release and fertilization, then a decrease in water levels for the young plants to establish. It typically occurs in shallow depressions in clay soil, or lithified sand dunes overlaid with alluvial clay. All reported populations occur at or below 500 feet (150 meters) elevation. While M. villosa can withstand minimal shading, it appears most vigorous growing in open areas."

Only five populations of this species are known from three locations on O‘ahu: Koko Head (2), Lualualei Naval Reservation (2), and Kealakipapa (near Makapu‘u) (Palmer, 2003). A USFWS website confusingly lists 6 locations to account for “three currently occur[ing populations] on O'ahu… (USFWS, undated)[10]. Suitable habitat is not present at the Waimānalo Gulch, Makaiwa Gulch, or Kapa‘a sites.

Chamaesyce kuwaleana, is a species of ‘akoko listed as endangered (Federal Register, 1991). Critical habitat for this species has been designated in seven units. Unit 15 encompasses 454 acres of Pu‘u Haleakalā and is thought to presently harbor 300 individual plants (USFWS, 2003). Unit 15 lays upslope of the Nānākuli site. The plant is a small shrub between 0.2 and 0.9 meters (8 to 35 in) high, known only from “arid volcanic cliffs, 250 m [820 ft high], Wai‘anae Mountains, and also known from one specimen from Mokumanu, Kāne‘ohe, O‘ahu” (Wagner, Herbst, and Sohmer, 1990).

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[10] A USFWS website confusingly lists 6 locations to account for “three currently occur[ing populations] on O`ahu (USFWS, undated).

This species was not observed in the botanical survey of the Waimanalo Gulch site.

Hawaiʻi Natural Heritage Database

The Hawaiʻi Natural Heritage Program (HNHP) was accessed and maps showing data entries were reviewed covering the lands for at least 1 mile around each of the proposed sites covered in the survey. The database has no rare or listed species of native plants at or close to any of the five proposed landfill sites. Within a distance of 1.25 miles the database yields entries for some of the sites. (AECOS Consultants, Inc., 2007).

Within roughly 1 mile of the Waimānalo Gulch and Makaiwa Gulch properties, the data base indicates the now extirpated populations of ʻEwa ʻakoko (Chamaesyce skottsbergii var. skottsbergii) that once occupied land that is the Barbers Point Deep Draft Harbor and associated dredge tailings. This endangered variety is no longer present in this area (David and Guinther, 2006), but is being maintained at several sites in Kalaeloa (former Barbers Point Naval Air Station). (AECOS Consultants, Inc., 2007).

Conclusion

The results of the botanical survey and search of pertinent sources of information indicate no special concerns or legal constraints related to botanical resources at Waimānalo Gulch or any of the sites investigated. Non-native or introduced species clearly dominate the natural vegetation and the remnants of native vegetation extant on or near the sites investigated consists of generally sparse growth of a limited number of species that remain relatively common in all undeveloped lowlands around Oʻahu. Although some rare native plants, and in a couple of cases, endangered species or varieties of plants, can be found within 1.2 miles of the sites, there is no reason to believe that the operation of a landfill would have any adverse impacts on such species. (AECOS Consultants, Inc., 2007).

The operation of a municipal solid waste landfill, by its very nature and in compliance with the most modern environmental requirements designed to minimize and contain offsite movement of pollutants (including sediments), will require removal of the vegetation from the selected site. **Figure 5-18, Waimānalo Gulch Typical Operations Along Ridge** shows the use of the existing Waimānalo Gulch site during the setting up of cells into which refuse is permanently stored. This initial phase entails making cuts into the hillside to create room and obtain soils for cover material. (AECOS Consultants, Inc., 2007).

Figure 5-18, Waimānalo Gulch Typical Operations Along Ridge
Composite photo of the eastern side of Waimānalo Gulch showing the upper end of the permitted landfill area (right) with reshaping of the site underway

Whatever botanical resources are present will require removal up to the limits of the proposed design. Following grading and use of the site for landfilling, surface stabilization will involve structural as well as vegetative practices. As appropriate, native species will be used to the extent practicable.

It is generally the case that many rare native plants of interest (an exception is the fern, ‘ili‘ihi which might be found at sites other than Waimānalo Gulch) growing in the lowlands of O‘ahu will be confined to steep gulch slopes and cliffs.

In most cases, these habitats would tend not to be developed, although steep gulch slopes could be incorporated into the overall reshaping of the site to a greater degree than might be the case for most other kinds of land development. (AECOS Consultants, Inc., 2007).

Summary

The botanical survey is based on recent investigation of the Waimānalo Gulch site and data associated with previous investigations of the Nānākuli, Māʻili, Makaiwa, and Kapaʻa sites. There is no guarantee that some small number of specimens of a listed species might be present at the Nānākuli, Māʻili, Makaiwa, or Kapaʻa sites that have not been subjected to a recent survey (such as conducted by AECOS Consultants, Inc., for Waimānalo Gulch). Should one or more of these other sites be selected for landfill use, additional botanical surveys should be conducted as deemed practical to better establish the conclusion of no adverse impacts on listed species. The desirability of doing such a future survey or surveys will depend upon habitat present at the site, proximity of the site to known populations of endangered species, and how recently and completely past botanical surveys covered the other sites. According to AECOS the botanical report is expected to be sufficient to cover the environmental botanical concerns of the Waimānalo Gulch site. (AECOS Consultants, Inc., 2007).

Flora Resources Summary

The potential for secondary or cumulative adverse impacts to flora resources at the site are not anticipated. The proposed project will be limited to the use of the City owned property and no expansion outside of the property boundary is planned or proposed. While the planned use of the site will require the removal of vegetation to establish the lateral landfill expansion area, this constitutes a short term effect of a scope and scale that is limited to the Waimanalo Gulch landfill property. In the longer term, upon completion of work the site will be restored with vegetation similar to that found on the adjoining hill sides. Whenever possible, native species will be used.

5.9.3. Fauna

In 2006, Phil Bruner, Ph.D., prepared the report, Survey of the Avifauna and Feral Mammals for the Proposed Waimānalo Gulch Landfill Expansion Project, Oʻahu (**Appendix F**). The purpose was to provide the findings of a bird and mammal field survey. The same area of the site was previously surveyed in 1999 (Bruner, 1999) and data from this earlier survey is provided in the current study for comparison purposes. References to literature and unpublished reports since 1999 are included.

The field survey objectives were to: (1) Document bird and mammal species currently occurring on the property; (2) Provide comparative data on the relative abundance of each species; (3) Determine the presence or likely occurrence of native or migratory birds including species listed as endangered or threatened; and (4) Determine if the habitats on the site are comparable with those seen in 1999.

Introduction

The proposed expansion area is located in a narrow "V" shaped valley with a dry stream bed that only contains water during flash flood events. Introduced vegetation continues to dominate the plant communities at this site. Many trees present in 1999 were burned in the August 2005 fire that affected the region and most of the surviving trees are along the stream bed. Dry grass covers most of the site. Weather during the survey was clear and warm. Winds were from the east at 10-15 miles per hour. (Bruner, 2006).

The site was surveyed on foot using the same access road used in 1999. Field observations were made with the aid of binoculars and by listening for vocalizations. All birds seen or heard were tallied and observations of feral mammals were limited to visual sightings. No attempts were made to trap mammals to obtain data on relative abundance and distribution. Scientific names of birds and mammals used in the report followed those given in Checklist of the Birds of Hawaiʻi (Pyle 2002) and Mammal Species of the World (Honacki et al. 1982).

Survey Results

A summary of the species observed during the field survey are provided in **Table 5-5**.

Resident Endemic (Native) Birds

No native land birds were recorded which was similar to the survey in 1999. The Hawaiian Owl or Pueo (Asioflammeus sandwichensis) is listed as endangered on O'ahu by the state. This species was not recorded but may forage in the area. Bruner noted that since 1999 he has observed Pueo at locations only a few miles on either side of Waimānalo Gulch. Pueo hunt over grasslands as well as forests and nest on the ground in tall grass (Pratt et al. 1987, Hawai'i Audubon Society 2005).

Table 5-5
Avifauna Observed at Waimānalo Gulch Landfill
1999 and 2006

Alien (introduced) species of birds recorded on and near the site of the proposed Waimānalo Gulch Landfill Expansion, O'ahu during the 1999 and 2006 field surveys. Relative abundance estimates are based on total numbers of birds recorded:

A = abundant (30-50);
C = common (1 5-29);
R = rare (1 -4);
U = uncommon.
Species not recorded are indicated by a (-).

		Relative Abundance	
Common Name	Scientific Name	1999	2006
Cattle Egret	Bubulcus ibis	U	R
Erckel Francolin	Francolinus erckelii	R	-
Rock Dove	Columba livia	C	-
Spotted Dove	Streptopelia chinensis	A	C
Zebra Dove	Geopelia striata	C	U
Red-vented Bulbul	Pycnonotus cafer	A	R
Common Myna	Acridotheres tristis	A	U
Japanese White-eye	Zosterops japonicus	R	C
Northern Cardinal	Cardinalis cardinalis	R	R
House Finch	Carpodacus mexicanus	U	-
Common Waxbill	Estrilda astrild	A	C
Red Avadavat	Amandava amandava		R
Nutmeg Mannikin	Lonchura punctulata	U	-
Java Sparrow	Padda oryzivora	R	-

Migratory Indigenous (Native) Birds

No migratory shorebirds were recorded. The project area lacks suitable habitat.

Resident Indigenous (Native) Seabirds

No seabirds were observed. The White-tailed Tropicbird (Phaethon lepturus) can be seen soaring above valleys and ridges on O‘ahu. This species is not endangered or threatened.

Resident (Native) Waterbirds

The stream only contains water during flash floods and therefore no waterbirds would be expected at this site.

Exotic (Introduced) Birds

Only nine species of exotic birds were recorded during the course of the field survey compared with 13 species in 1999. These species are comparable to those observed on other surveys in similar habitat (Bruner 1989, 1990a, 1990b, 1992, 1993, 1996, 1999, 2000, 2001a, 2001b, 2002, 2003). None of these species are listed as endangered or threatened.

Feral Mammals

The only feral mammal observed was the Small Indian Mongoose (Herpestes auropunctatus). Two were seen in the stream bed. Rats (rattus sp.) and Mice (Mus musculus) were not seen but probably occur on site (as they do in the surrounding area and region). The endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) is rarely seen on O‘ahu (Tomich 1986, Kepler and Scott 1990). No bats were observed on the survey. This species is known to roost solitarily in trees and forages for flying insects (Jacobs 1993). They use a variety of habitats including native forests, ranchlands, ponds and bays as well as urban areas (Jacobs 1991, Reynolds et al. 1998).

5.9.4. Potential Impacts and Mitigation Measures

Potential for adverse impacts to the faunal resources of the WGSL are not anticipated. No mitigation measures are proposed and none are expected to be required.

Native and migratory birds were not observed at the property. This is not unexpected based on the elevation of the site and lack of available habitat for these species. It is possible that Pueo forage on occasion in the region. However, all bird species recorded in 1999 and in 2006 are non-native, introduced species. There were fewer alien species and lower relative abundance found on the 2006 survey which may be due to the August 2005 fire which had a major impact on this habitat. Other factors may also account for the differences in bird populations between 1999 and 2006 (Williams 1987, Moulton 1990). In conclusion, Waimānalo Gulch is not remarkable in the diversity of non-native and alien species, or in the number of birds and mammals found there. There are no unique habitats. Similar areas occur all along the leeward side of Oahu. (Bruner, 2006).

Faunal Resources Summary

The potential for secondary or cumulative adverse impacts to fauna resources are not anticipated. The proposed project will be limited to the use of the City owned property and no expansion outside of the property boundary is planned or proposed. While use of the site for a landfill may continue to attract bird species that might otherwise scavenge refuse as it is landfilled, work practices will remain to place cover material over the refuse as it is landfilled to reduce its attractiveness to avifauna. This existing procedure is designed to also reduce the incidence of other vectors such as rats and mice. While it is possible that the Pueo may overfly the landfill property in search of these food sources, the covering of refuse will help to reduce these vectors and any potential for impacts to Pueo within the landfill property.

~~The aquifer hydraulic data suggest that Dike #1 has little influence on groundwater flow. The static groundwater level in MW-12 was 4.9 feet above msl, which is less than 1 foot higher in elevation to basal aquifer monitoring wells farther down Waimānalo Gulch. The hydraulic gradient is approximately 1.4 foot per mile, which is within the range of hydraulic gradients normally observed in basal aquifers without dikes. The groundwater levels in MW-12 are consistent with the water levels and the hydraulic gradient observed in the monitoring wells in the lower portion of the WGSL and does not indicate a dramatic gradient change that would be caused by dike compartmentalization of groundwater.~~

A hydraulic pump test was performed on MW-12 to compare hydraulic aquifer properties with other aquifers on the island. Lower hydraulic transmissivities and conductivities have been documented to occur in dike-influenced aquifers with higher dike occurrence frequencies, and which are in closer proximity to the associated caldera. From the pump test, the aquifer at MW-12 in the Waimānalo Gulch had a hydraulic transmissivity and conductivity comparable to aquifers without dikes on the Island of O‘ahu. Although drawdown in pumped water levels was small, negative boundaries such as a barrier-type dike that may be in the immediate area were not noticeable.

The groundwater flow direction was measured and varied between 210 and 290 degrees, which is approximately the axis of the Waimānalo Gulch. Since Dike #1 strikes at 341 degrees, groundwater flow is approximately perpendicular toward the strike of Dike #1. If Dike #1 had a strong influence on basal groundwater flow direction, groundwater flow would be expected to be more parallel along the strike of the dike. This groundwater flow direction is consistent with groundwater flow directions determined by groundwater elevations using other basal groundwater monitoring wells at the WGSL.

Dike #1 appeared to have little or no influence on horizontal basal groundwater flow. The static basal groundwater level observed in MW-12 does not indicate groundwater is

5.9.5. Invertebrates

In September 2008, Steven Lee Montgomery, Ph.D., prepared the report, Survey of Terrestrial Invertebrate Resources in the Waimānalo Gulch, Oʻahu, Hawaiʻi: Sanitary Landfill Expansion Area (**Appendix L**). The purpose of the invertebrate survey was to report on the findings of a field investigation to ascertain the relative abundance and distribution of species found and likely to be found at the proposed project site, and to identify mitigation measures as appropriate.

Introduction

Invertebrates are often the dominant fauna in natural Hawaiian environments. The primary emphasis of the survey was to investigate terrestrial arthropods, particularly those that are endemic, indigenous, or threatened species, especially those having legal status under either, or both federal and state endangered species statutes (DLNR 1996, USFWS 2005a, 2008). (Montgomery, 2008).

Native Hawaiian plant, vertebrate, and invertebrate populations are often interdependent. Certain insects are obligatorily attached to specific host plants and are able to use only that plant as their food. Those insect - host relationships are ancient and intertwined. Invertebrates are the food of some birds and the pollinators of plants. Native invertebrates have proven inventive in adapting to opportunities in changed ecosystems. (Montgomery, 2008).

A number of native arthropod species survive even in degraded habitats. Nevertheless, the overall health of native Hawaiian invertebrate populations depends upon habitat quality and absence or low levels of predators introduced from the continents. Sufficient food sources, host plant availability, and the absence or low levels of introduced, continental predators and parasites comprise a classic native, healthy ecosystem. Consequently, where appropriate in the survey discussion, host plants, and some introduced arthropods were noted. (Montgomery, 2008).

Invertebrate Survey Methods

Previous Surveys and Literature Search

Prior to the field survey, a search was made for publications relating to invertebrates associated with the WGSL expansion area. A recent survey at the adjacent proposed Makaïwa Hills housing development provided a comparison to a similar environment (Montgomery 2006). University of Hawai‘i Library holdings, Bishop Museum library and data bases, and regional and national databases were also searched. These searches returned no records of invertebrate surveys in Waimānalo Gulch. (Montgomery, 2008).

Fieldwork

Field surveys were conducted in August 2008. A general assessment of terrain and habitats at the start of the survey was undertaken and surveying efforts were conducted at various times of day and night, a technique which is vital for a thorough survey. Native botanical resources identified by Char (1999) and Guinther (2007) were an important focus of the searches. The talus slopes of lichen covered rocks and older rock ledges were of special interest as undisturbed Hawaiian ecosystem habitat. These areas support a microflora of lichens and algae, food for a higher diversity and larger number of native invertebrates than other locations within the valley. (Montgomery, 2008).

Survey Limitations / Conditions

The investigator was limited / influenced by the following (Montgomery, 2008):

> *Common alien species*: No attempt was made to collect or completely document common alien arthropod species present in the area.
>
> *Collecting conditions*: Monitoring at a different time of the year, or for a longer period of time, might produce a longer or different arthropod list. Weather and seasonal vegetation play an especially important role in any survey of invertebrates. Many arthropods time their emergence and breeding to overlap or

follow seasonal weather or to coincide with growth spurts of an important plant food. Host plant presence/absence, and seasonal changes, especially plant growth after heavy rains, affect the species collected.

Weather was favorable for collecting during each day of collecting. This survey was conducted without the benefit of winter rains, however native dryland adapted vegetation was in a better than expected condition due to several summer rains. If vegetation displayed young tender or mature new growth, a different insect list might have resulted.

The moon did not present competition to light collecting efforts and should not have affected the number of insects attracted to the light. The steepness of slopes in some areas made access to some possible host plants difficult. Light censusing at night was some compensation for this hurdle.

Physical limitations: The steepness of slopes in some areas made access to some possible host plants difficult.

The size of the project area and the steepness of many slopes means that the survey was not comprehensive. The overall study strategy and site selections were designed to mitigate this recognized handicap. The resulting survey was representative and targeted in favor of locating and examining native host plants.

Findings

In addition to the observation of invertebrates, the investigator observed a Barn Owl (Tyto alba) pellet containing rat bones, confirming the expectation that the Owl would be present on the property (Bruner 1999). There was also evidence of dogs in the area but no signs of feral goats or pigs, which are common enemies of native host plants. Cattle in the upper shrub land above the Landfill property could be seen and heard. (Montgomery, 2008).

Native invertebrates found in this survey and significant non-native species are listed in **Table 5-6, List of Invertebrates: Waimānalo Gulch, Oʻahu**. Native species of note are discussed and information is provided on adventive species often misidentified by the public as native species. Also, information is provided on some medically important species (Montgomery, 2008):

Invertebrate Resources
Mollusca: Gastropoda Pulmonata
Succineidae: *Succinea caduca* or Hawaiian amber snail
This was the only native terrestrial mollusk encountered. Endemic Succinea snails were observed under stones and on rocky ledges that provide food and shelter from heat and desiccation. This species is endemic to O'ahu, but widely distributed. This distribution pattern is not uncommon in Succinea. This group of snails may be arboreal or ground dwelling, and occupies a wide range of habitats. They are not known to eat healthy, growing plants and poses no threat to home gardens or landscaping (R. Cowie, personal communication 2002). The group is under study by Dr. Cowie's lab at the University of Hawai'i (Cowie 2006).

Arthropods
Insecta
Lepidoptera
Cosmopterigidae: *Hyposmocoma*
Two species of Hyposmocoma, as caterpillars, were found on the rocky outcroppings and three species, in adult stage, came to light. Considering the population is likely at a low level due to the dry weather, the diversity is noteworthy. In the wet season it could be expected that a higher number of individuals and more species would be recovered.

Table 5-6: List of Invertebrates: Waimānalo Gulch, O'ahu

Species	Common Name	Status	Abundance	Recovered at/by
MOLLUSCA				
GASTROPODA				
PULMONATA	Snails and Slugs			
Succineidae				
Succinea caduca	Hawaiian amber snail	End	O	in rocky ledges
ARTHROPODA				
ARACHNIDA				
SCHIZOMIDA				
Scorpiones	scorpions			
Isometrus maculatus (De Geer)	lesser brown scorpion	Adv	O	at light
ARTHROPODA				
INSECTA				
COLLEMBOLA	springtails			
Entomobryidae				
undetermined sp.		?	O	under stones
LEPIDOPTERA				
Cosmopterigidae	case bearers			
Hyposmocoma alliterata Walsingham, 1907	broad, pointed case	End	U	at light
Hyposmocoma sp. 1	straight slender case	End	C	under stones
Hyposmocoma sp. 2	curved, broad case	End	O	under stones
Hyposmocoma sp. 3	black, pointed adult	End	C	at light
Hyposmocoma sp. 4		End	R	at light
Crambidae	micro-moths			
Mestolobes miniscula (Butler 1881)		End	U	at light
Mestolobes sp.		End	U	at light
Omiodes localis (Butler, 1879)	grass leaf roller	End	R	at light
Tamsica hyacinthina (Meyrick 1899)		End	A	at light
Tamsica floricolens (Butler, 1883) ?	black saddled grass moth	End	R	at light
Noctuidae	miller moths			
Ascalapha odorata (Linnaeus, 1758)	black witch moth	Adv	O	at light
Oecophoridae				
Thyrocopa abusa Walsingham, 1907		End	R	at light
Sphingidae	hawk moths			
Agrius cingulata (Fabricius, 1775)	sweetpotato hornworm	Adv	U	at light
Hippotion rosetta (Swinhoe 1892)	Boerhavia sphinx moth	Adv	O	at light

Table 5-6: List of Invertebrates: Waimānalo Gulch, O‘ahu (Cont'd)

Species	Common Name	Status	Abundance	Recovered at/by
ARTHROPODA				
INSECTA				
HOMOPTERA	planthoppers			
Cixiidae				
Oliarus discrepans Giffard, 1925	wild cotton planthopper	End	R	at light
HYMENOPTERA	wasps, bees, ants			
Apidae	bees			
Apis mellifera Linnaeus, 1758	honey bee	Pur	R	in flight
Formicidae ants				
Pheidole megacephala	big-headed ant	Adv	C	on soil
Solenopsis geminata (Fabricius, 1804)	fire ant	Adv	O	
Halictidae				
Dialictus sp. possibly *nevadensis* (Crawford, 1907)	mining bee	Adv	C	at *Sida* flowers
Vespidae wasps				
Polistes exclamans Viereck, 1906	common paper wasp	Adv	C	in rocky ledges
ODONATA	dragonflies and damselflies			
Libellulidae	skimmers			
Pantala flavescens (Fabricius, 1798)	globe skimmer			
CHILOPODA				
SCOLOPENDROMORPHA				
Scolopendridae	centipedes			
Scolopendra subspinipes Leach, 1815	large centipede	Adv	O	at light

Status:

End	End endemic to Hawaiian Islands
Ind	Ind indigenous to Hawaiian Islands
Adv	Adv adventive
Pur	Pur purposefully introduced
?	? unknown

Abundance = occurrence ratings for plants by area:

R	Rare	seen in only one or perhaps two locations
U	Uncommon	seen at most in several locations
O	Occasional	seen with some regularity
C	Common	observed numerous times during the survey
A	Abundant	found in large numbers
AA	Very abundant	abundant and dominant

Properly called "case bearers," the caterpillars are sometimes misleadingly called "bagworms." Very young caterpillars of case bearers find safety inside a leaf curl or similar hiding place, but when growth forces them out of that protection, they intricately weave a portable shell of their own silk from a lip spinneret. For camouflage, they add bits of their surroundings to the case using their silk: snips of dry grass or leaves, flakes of bark, maybe a little dirt. The case is then easily mistaken by a predator as another part of the landscape. They are dependent on their case, and die if removed – even if protected from predators and given food. They don't move far, but feed while partly emerged from the case, dragging along their protective armor by their six true legs.

With over 500 kinds, Hyposmocoma micro moths are the greatest assemblage of Hawaiian Island moths, showing astonishing diversity. After writing 630 pages on them, Dr. Elwood Zimmerman lamented the inadequacy of his study. He noted an enormous cluster of species with explosive speciation and diverging radiation (Zimmerman 1978).

Much remains to be learned about the life ways of this interesting group of insects now under study by University of Hawaii's Dr. Daniel Rubinoff and colleagues (Rubinoff et al. 2008). The UH lab will attempt to rear out the caterpillars to identify the species.

Noctuidae: *Ascalapha odorata*
The black witch moth found in the survey is widely distributed in the island chain. This large moth is occasionally mistaken for a bat when seen in flight in low light. It is most frequently seen at dawn or dusk. In cities it is seen resting under the eaves of roofs during the day. In rural areas it rests under foliage and against tree trunks.

The sweetpotato hornworm, a large and easily seen moth, is often confused by the public with the Blackburn's sphinx moth (*Manduca blackburni*). They are distinguished by their pink markings, as opposed to orange markings on Blackburn's sphinx moth. The species is widely distributed around the Hawaiian Islands.

Homoptera (Planthoppers)

Cixiidae *Oliarus discrepans* Giffard, 1925

Oliarus discrepans was previously listed by the US Fish & Wildlife Service as a "Species of Concern." (HBS 2002a) This designation has been abandoned by the Service. Five individuals of this native, lowland planthopper, rarely seen in the last 40 years, were recovered. *O. discrepans* is considered a founding species or ancestor for a large cluster of species.

Odonata (Dragonflies and Damselflies)

Libellulidae: *Pantala flavescens* Globe skimmer

This indigenous dragonfly was observed at the site and is among the most easily observed native insects. This dragonfly is large, easily approached by people, and graceful in flight. Any small amount of fresh water will attract globe skimmers and they often colonize human maintained water sources such as golf-course water hazards and ponds. It is widely distributed throughout the Hawaiian Islands, from Kure to Hawai'i Island and has even been found flying at sea (Howarth & Mull 1992).

Invertebrates Not Present

Plant and invertebrate populations are interdependent, meaning host plant presence previews invertebrate diversity. The absence of wiliwili (*Erythrina sandwicensis*) and ma'o or Hawaiian cotton (*Gossypium tomentosum*) and the low levels of 'ilima (*Sida* sp.) (Char 1999, Guinther 2007) contribute to the paucity of Hawaiian arthropods at Waimānalo Gulch. A longer survey after the winter flush of plant growth would surely have found several more frequently seen native arthropods as noted below.

Alien predatory ants are another major cause of low native arthropods. Both the fire ant (Solenopsis geminata) and big-headed ant (*Pheidole megacephala*), which prey on other insects (Zimmerman 1948-80), are present on the property. Ants are well documented as a primary cause of low levels of native arthropods at elevations up to 2,000 feet (Perkins 1913). On all nights during light collecting, ants quickly appeared and began attacking the resting moths and smaller insects at the light. Ants frequently do not overlap territories, but have separate territories, effectively apportioning the hunting grounds between themselves, offering few ant-free zones to native arthropods.

Mollusca: Gastropoda (Snails) Pulmonata

Achatinellidae

The Oahu Tree Snail (*Achatinella*), listed on the federal endangered species list, was not found (DLNR 1996; Federal Register 1981). The habitat (elevation, host plants, and moisture levels) make the area inappropriate for the snail.

Arthropoda Araneae

Lycosidae: *Lycosa* sp.

Native Lycosa or wolf spiders (18 mm) were not seen on the property, although they are probably present based on their distribution in similar habitat island-wide. These are quick, strong predators which give maternal care to their young. They hide alone by day and hunt by night in established individual territories. (Manning/Montgomery in Liittschwager & Middleton 2001).

Arthropoda Insecta

Diptera

Drosophilidae: *Drosophila*

No native Drosophila were observed on the property. The location does not provide appropriate habitat for any of the 12 native Drosophila species recently listed as endangered or threatened. (USFWS 2006a, b).

Heteroptera

Lygaeidae *Nysius* sp.

Although commonly found in dryland locations, this native seed bug which uses many host plants, alien and native, was not recorded by this survey.

Hymenoptera

Colletidae *Hylaeus* sp.

The yellow-faced bee was not found, but is likely present. This native, ground nesting bee is often found in dry habitats at similar elevations. *Ceratina smaragdula* (Fabricius, 1787), the small carpenter bee, was noted and is often confused with the yellow-faced bee as it is similar in size and often visits the same native plants. (Daly & Magnacca 2003).

Lepidoptera

Sphingidae: *Manduca blackburni*

Blackburn's sphinx moth (*Manduca blackburni*), an endangered species (Fed Reg 1999-2000) which favors drylands, was not found in this survey. The moth's native solanaceous host plant, 'aiea (*Nothocestrum* sp.), was not observed on the property in this survey or prior botanical surveys. The best alien host, tree tobacco (*Nicotiana glauca*), however, is present in many locations in the expansion area. Over 50 plants were searched without finding evidence of feeding or presence of caterpillars.

The moth has not been seen on O'ahu for many decades. The Recovery Plan (USFWS 2005b) for this large sphinx moth proposes only one Management Unit on O'ahu, at the Nature Conservancy's Honouliuli Preserve and relies on future reintroductions from other islands.

Medically Important Species

The Waimānalo Gulch Landfill Expansion area includes prime habitat for medically important species: centipedes, scorpions, and paper wasps. Widow

> spiders also may be present in the area. Paper wasps were plentiful and aggressively defensive on overhanging ledges. Honey bees were in low numbers, most likely the result of the recent introduction of the Varroa mite which is killing colonies.
>
> Employees should be alert for these species during their work. These species may pose a serious risk to some individuals, and supervisors should be aware of any special allergy by employees. Some individuals can experience anaphylactic reactions to venom. When dislodging stones or brush, use of gloves and long sleeves will greatly reduce the risk of accidental contact and bites or stings. See "What Bit Me?" (Nishida and Tenorio 1993).

5.9.6. Potential Impacts and Mitigation Measures

Potential Impacts on Federal or State Listed Species

No federally or state listed endangered or threatened species were noted in this survey (USFWS 2008). No anticipated actions related to the proposed project activity in the surveyed locations are expected to threaten entire species or entire populations. (Montgomery, 2008).

The invertebrate survey, however, recommends that it is possible to reduce the potential for adverse effects to invertebrate species through the improvement of the watershed, within an area that is beyond the property boundary of the WGSL. According to the survey:

> "It is important to manage the ahupua'a to reduce peak flooding, which can damage stream banks, culverts, and undermine waste storage cells. The presence of cattle in the watershed above the Landfill has had and will have negative impacts. For example, at Hawai'i Kai's Haha'ione Valley and Mānoa Valley, exceptional downpours on goat and pig disturbed mauka landscapes and have exacerbated extreme water runoff. Improving the quality of watershed on

> the property above the Landfill would reduce the intensity of flash flooding and the potential for damage. Removal of the cattle in the catchment area above the Landfill would improve vegetation and reduce erosion. Restoration of the watershed with selective planting of fire resistant plants intended to slow runoff (a mix of plant heights with a strong ground cover) would make a substantial contribution toward soil and water retention." (Montgomery, 2008).

Although the implementation of these measures will not be possible outside of the property boundary of the WGSL, stormwater management controls will be implemented within the site to ensure against the undermining of any landfill cells or landfill associated structures. Runoff that is generated from on-site will be properly managed with appropriate management, structural, and vegetative controls to address soil and sediment erosion in accordance with HAR, Chapter 11-54, (State) Water Quality Standards. (See also Section 5.4. Surface Water).

Invertebrate Resources Summary

The potential for secondary or cumulative adverse impacts to invertebrate resources are not anticipated. The proposed project will be limited to the use of the City owned property and no expansion outside of the property boundary is planned or proposed. While the planned use of the site will require the removal of soils and vegetation that may constitute habitat for the species identified in the survey,

There were no state or federally listed threatened or endangered species discovered at the site. Many species identified were relatively common and can be found in other locations of Oʻahu. Upon the completion of work the site will be returned to its existing vegetated condition that will include, as appropriate, native plant species that may serve as new habitat, i.e., "The absence of wiliwili (*Erythrinia sandwicensis*) and ma'o or Hawaiian cotton (*Gossypium tomentosum*) and the low levels of ''ilima (*Sida* sp.) (Char 1999, Guinther 2007) contribute to the paucity of Hawaiian arthropods at Waimanalo Gulch" (Montgomery, 2008).

5.10. Scenic and Aesthetic Environment

5.10.1 Scenic and Aesthetic Environment

The Hawaiian Electric Company's (HECO) Kahe Power Generating Station, located directly north and west of the WGSL, is a dominant landmark in the region marking a point of transition between the Wai'anae Coast and the 'Ewa Region. The plant's smokestack penetrates the view plane from various locations in the surrounding area and can be seen from Farrington Highway both north and south of Kahe Point (see Photos 1 and 3).

Farrington Highway traverses along the southern foot of the Wai'anae Mountain Range as it makes its way along coastal Wai'anae. Ridges and valleys in the area are covered with keawe trees, dryland grasses and other dryland scrub vegetation. During periods of high rainfall the hillsides turn green with new vegetative growth, however the typically arid conditions normally give the landscape a more yellowish-brown, dry appearance with scattered keawe trees providing most of the greenery. The higher elevations of the Wai'anae Range contain denser foliage and larger trees due to the availability of more moisture.

Approaching the project site from the southeast along the Farrington Highway, major views include the rugged slopes of the Wai'anae mountain range mauka of the highway, distant buildings and other structures associated with development in the 'Ewa Plain (i.e. City of Kapolei and Ko Olina Resort area), residences adjacent to the highway, the entrance and overpass structure to the Ko Olina Resort and intermittent views of the ocean. Continuous views of the ocean begin soon after passing the overpass/entrance to Ko Olina. The ridges of the Waimānalo Gulch block views from the southwest along Farrington Highway up to the Waimānalo Gulch stream crossing while direct views into the gulch from the highway are limited due to existing topography and vegetation fronting the site.

Kahe Point blocks most views into the WGSL from the northwest as the site is approached along the highway. Viewpoints near the Kahe Power Generating Station and the Kahe Point Beach Park (see Photos 1 and 2) show only the upper reaches of the eastern ridge. The only indications of activity beyond the ridgeline are vehicles conducting work, traveling on the access road within the landfill property, and limited views of the landfill itself.

The entrance to the landfill, located approximately 700 feet to the west of the entrance to Ko Olina, is marked by a small sign announcing the location of WGSL. Landscaping treatments including the use of trees and vegetation screens the administration building from the highway. Portions of a permanent litter fence are visible from the highway and occasional queuing of refuse vehicles within the landfill along the WGSL access road during peak delivery periods makes the presence of the landfill known to Farrington Highway motorists.

The WGSL site is visible in varying degrees from surrounding development such as the Kai Lani subdivision, Coconut Plantations town homes, Ko Olina Golf Course and the Marriott Ihilani Resort (see Photos 3 thru 6). The appearance of the landfill from these locations is dominated by a large earthen mound representing filled portions of the landfill. Stabilized lower sections of the landfill have begun to take a more ‘naturalized’ look as grass and other vegetation take root. The upper portion of the site resembles a quarry operation due to the piles of soil and rocks being readied for use as cover material (see Photos 3 thru 6). Also visible from some vantage points, is the concrete drainageway that runs along the northwest rim of the valley. Views of the landfill from areas further away from the mouth of the gulch begin to recede with increasing distance from the WGSL.

Caterpillar tractors moving refuse and cover material within the remaining active landfill cell (E-4) are not readily visible based on the location of the cell within a depression further back into the landfill. However, refuse vehicles can be seen traveling up and down the access road to deposit their loads in the landfill as well as construction vehicles transiting the site.

The **Photo Key** indicates the approximate locations where Photos 1 through 6 were taken. Kahe Point blocks views of the gulch from the northwest while the gulch walls block the view from the southwest along Farrington Highway up to the Waimānalo Gulch stream crossing.

Photo 1 – Taken off of Farrington Highway northwest of Kahe Power Generating Station. Only a portion of the upper reaches of the eastern valley wall is visible. Dust clouds can be seen rising above the ridge as vehicles negotiate along the access road within the site.

Photo 2 – Taken from the parking lot at the Kahe Point Beach Park. Views towards the project site are limited due to the proximity of Kahe Point. The nearby ridge blocks potential views of the landfill.

Photo 3 – Taken from the tennis court area of the Marriott Ihilani Resort. The higher elevation above existing structures, trees, and vegetation offers an unobstructed view of the project site. The lower to middle elevations show the start of landscaping efforts to blend the landfill with the surrounding hillsides. Refuse vehicles and bulldozers can be seen moving within the site.

Photo 4 – Taken from the Ko Olina Beach Resort parking lot. Existing trees in the foreground block views of the lower portions of the landfill. The upper elevations show more recently disturbed soils. The active working cell is not visible due to the existing elevation of completed landfill cells, including MSW Cell 1.

Photo 5 – Taken along Koio Drive adjacent to the Ko Olina Golf Course. The cover material in the upper reaches of the landfill is visible. The active working cell is not visible.

Photo 6 – Taken from the southern end of Lagoon 1, adjacent to the Marriott Ihilani Resort. Existing vegetation and buildings in the foreground block views of the lower portions of the landfill site. Only the upper region of the site with more recent cover material can be seen. The active working cell is not visible.

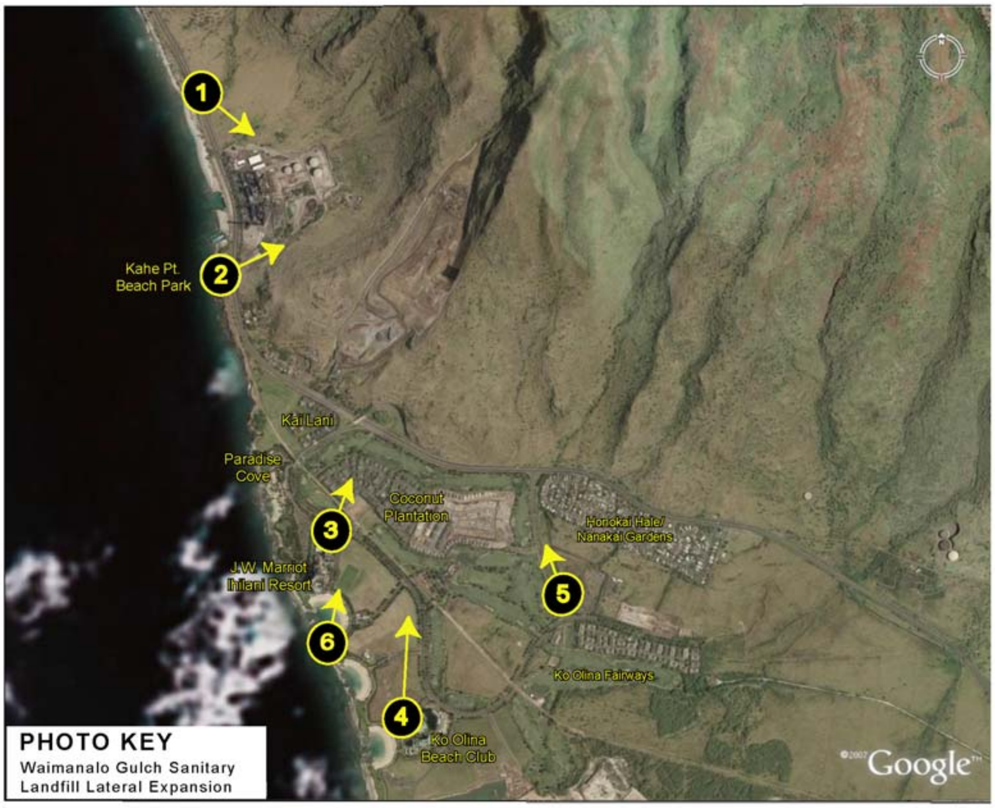


PHOTO KEY
Waimanalo Gulch Sanitary Landfill Lateral Expansion

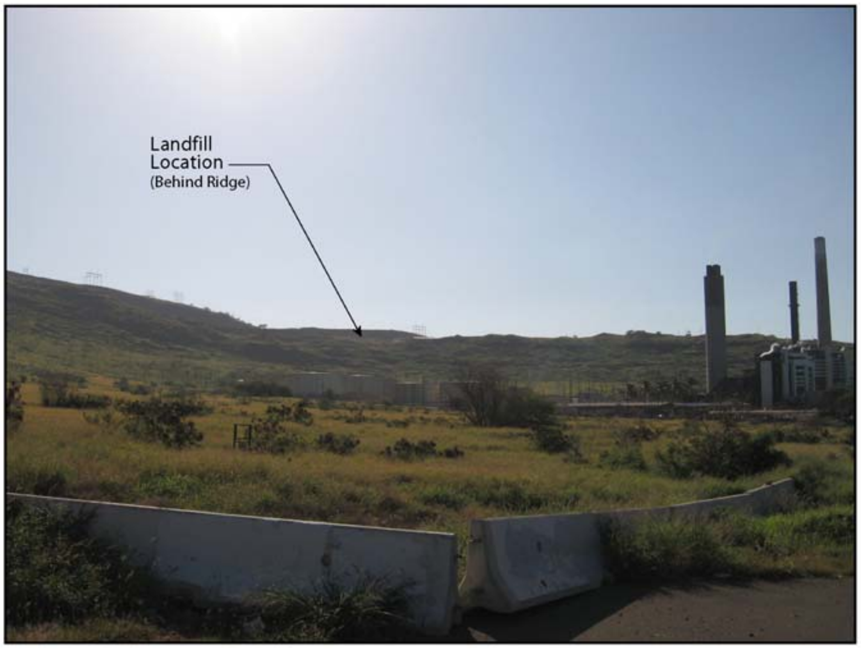


Photo 1
View of Project Site
From Farrington Hwy
Facing Southeast

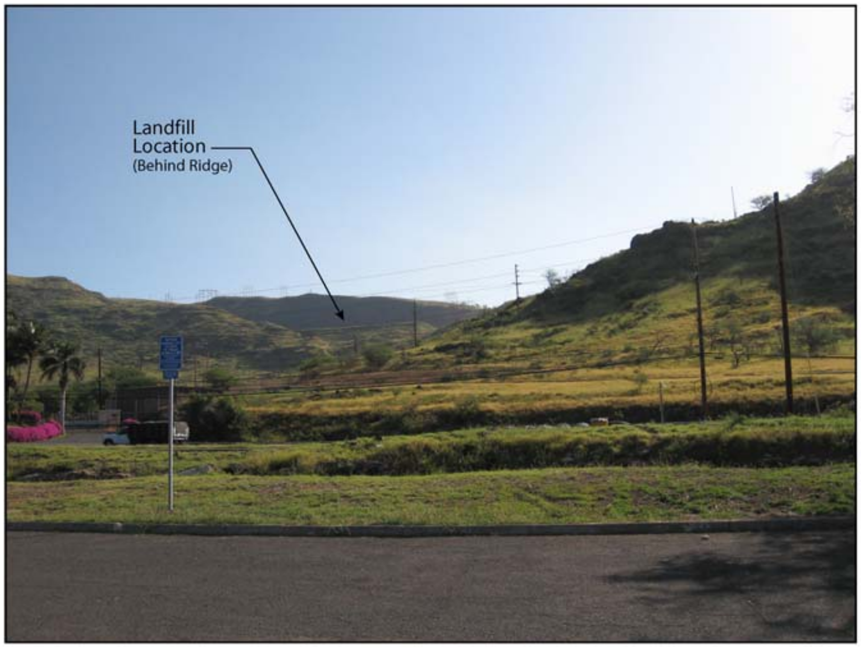


Photo 2
View of Project Site
From Kahe Pt. Beach Park
Facing Northwest

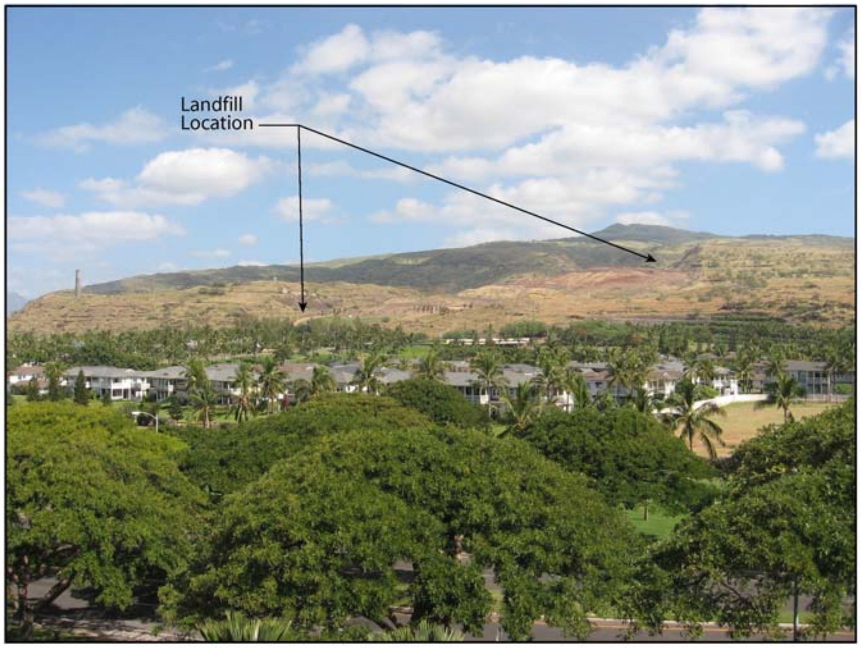


Photo 3
View of Project Site
From J.W. Marriot
Ihilani Resort
Facing North

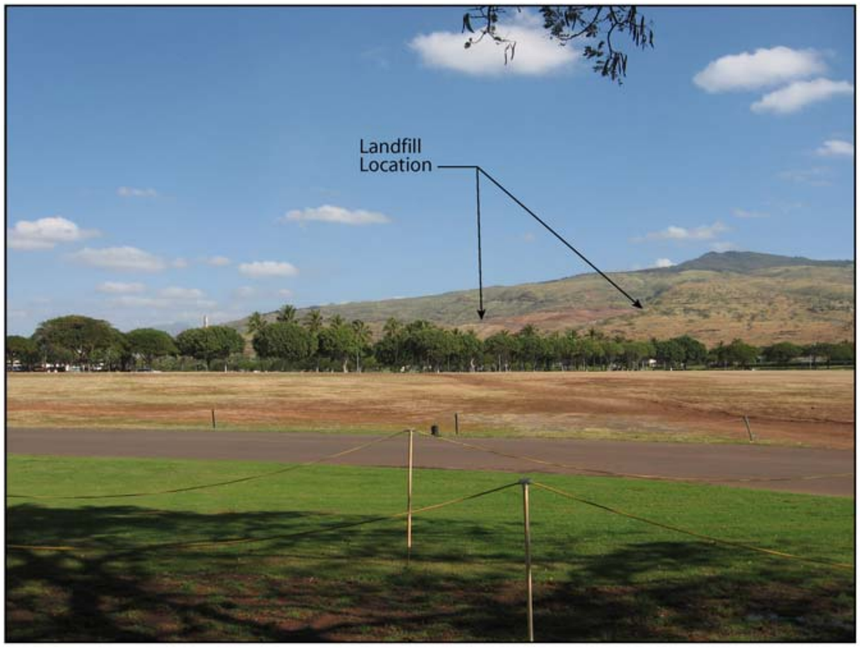


Photo 4
View of Project Site
From Ko Olina Beach Club
Facing North

Photo 5
View of Project Site
From Koio Drive
Facing Northwest

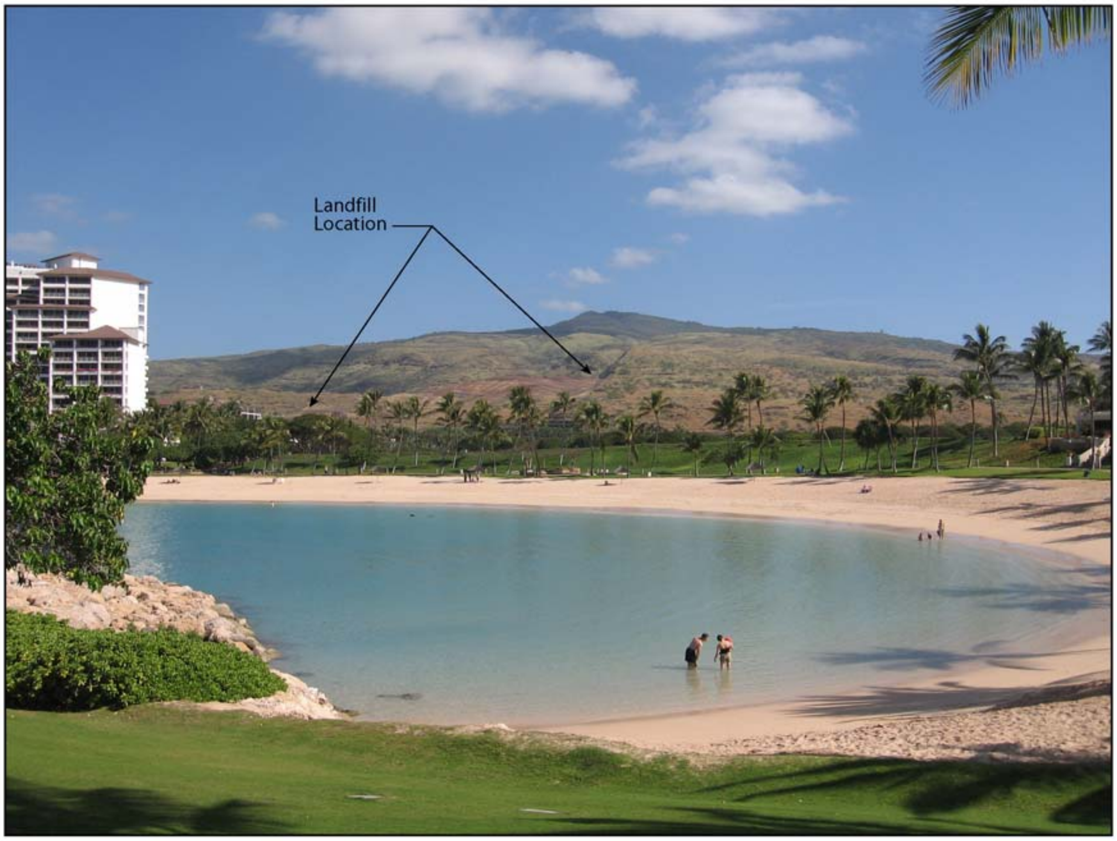


Photo 6
View of Project Site
From Lagoon 1
Facing North

Changes to Viewplane Over the Life of the WGSL

The proposed project will be developed in accordance with a preliminary closure sequencing plan up to and after the approximately 15 year life of the facility as provided in **Figure 4-9, Preliminary Closure Sequence**.

It is important to note that a number of factors can potentially affect the sequencing plan. The landfill elevations shown are based on conservative waste disposal estimates from the prior history of use and consideration for the future adoption of waste reduction strategies. Factors that can affect the rate of waste disposal include: a downturn in the economy such that fewer goods and products would be replaced at any given period. Replaced goods would in part be disposed of at the landfill; use of new waste treatment and disposal technologies not yet available, but successfully adopted in the future, would reduce the need for landfilling; and, a natural or man-induced disaster would be expected to generate waste debris requiring landfilling. The occurrence of one or more of these factors could result in either the more rapid exhaustion of space, or it may lengthen the period of time involving the use of landscaping or other mitigation measures.

In order to ascertain changes to the WGSL viewplane over the minimum 15 year period of anticipated use, digital analysis of the site was undertaken based on the closure sequence as provided in **Figure 4-9, Preliminary Closure Sequence**. The depiction of these changes are provided in **Figures 5-18A** through **5-18D**. The figures represent views toward the WGSL from the vantage point of the upper floors of the Marriott Ihilani Resort, Ko Olina. Color has been added to the landfill footprint and grades to clearly distinguish the site from the surrounding terrain and hillsides. Site terrain is based on recent topographic data obtained from WMH. Surrounding terrain is based on topographic data from the City & County of Honolulu.

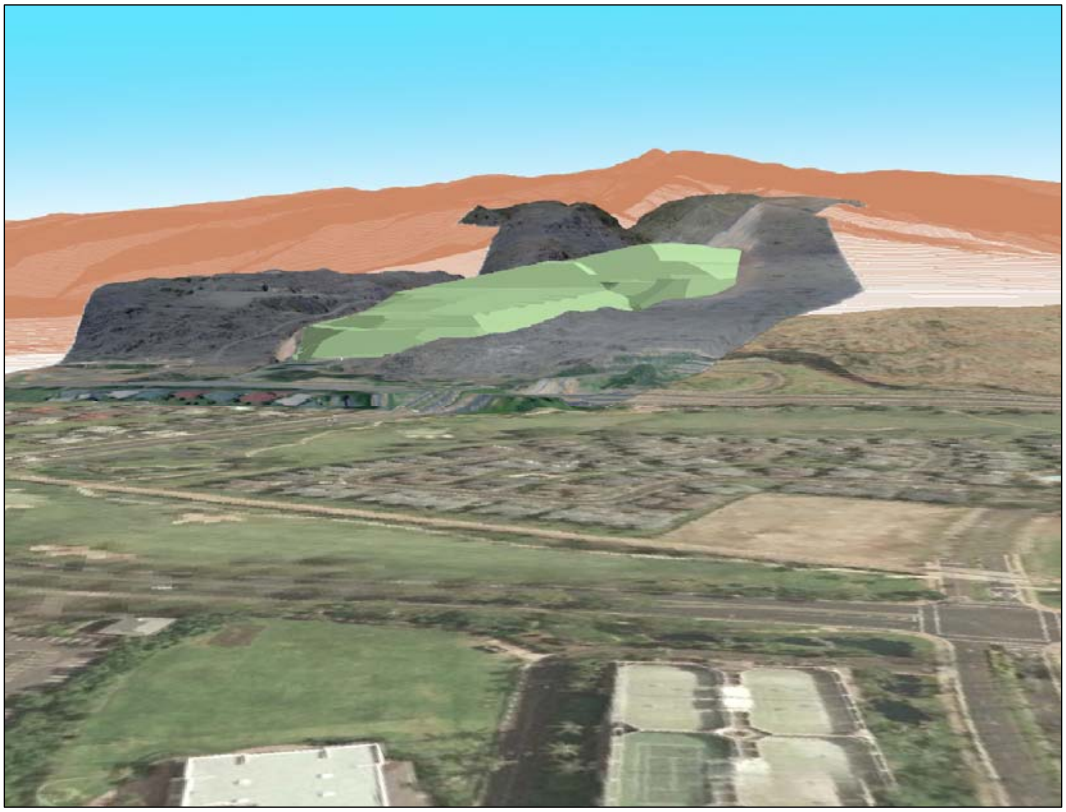


Figure 5-18A, Existing Permitted Area or Footprint of WGSL

Existing Conditions

Figure 5-18A depicts the existing condition of site as it is presently utilized. The grades and footprint (green) of the WGSL also represent the existing areas permitted for use.

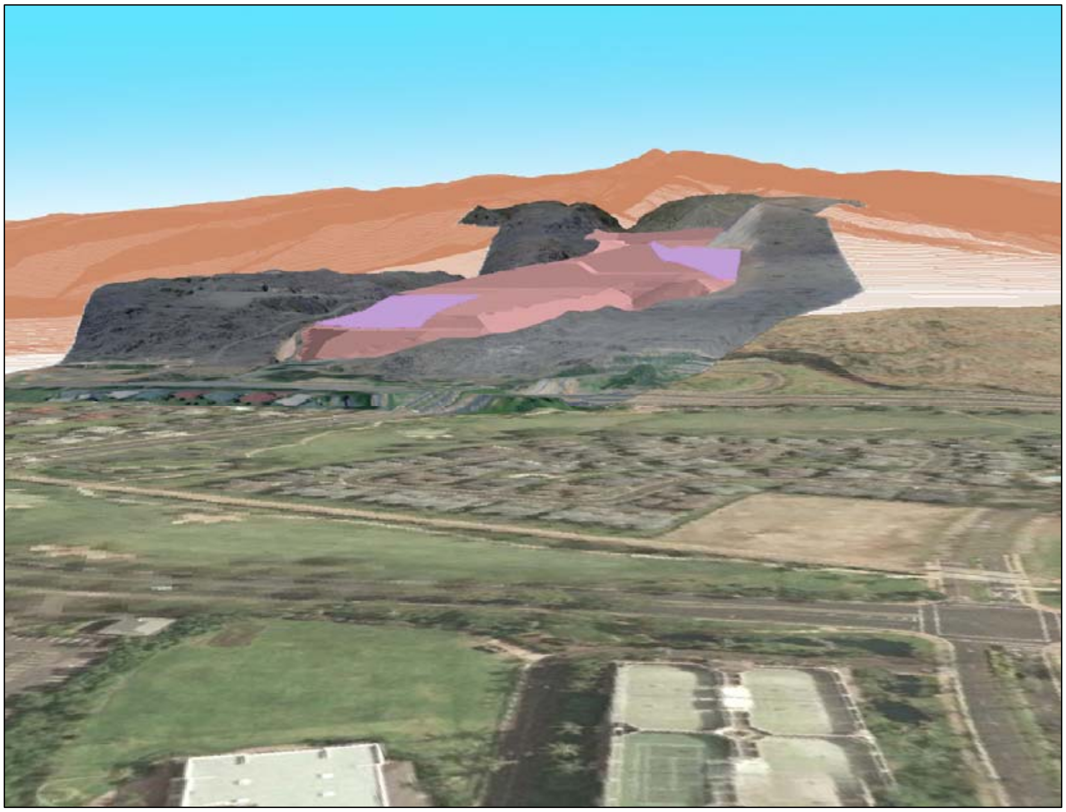


Figure 5-18B, WGSL Closure Sequence 1

Closure Sequence 1

Figure 5-18B depicts the start of Closure Sequence 1 reflecting sequences A through C in **Figure 4-9**. This is anticipated to occur on or after a period of approximately five years from start of use of the area of lateral expansion. The specific timeframe will be determined and based on final use of the existing ash monofil and MSW cells, and other factors relating to maintenance of landfill stability and operational requirements.

The brown layer depicts the proposed grades and the violet polygons depict the areas to be closed.

These areas include a portion of the existing ash monofill cells fronting the WGSL closest to the Farrington Highway, highlighted in violet. MSW cell E2 would also be closed and can be seen as a violet patch in the upper right or north east portion of the site. Portions of MSW cells 9 and 10 located to the northwest would also be closed, but are not visible based on their elevation below and behind the viewplane. Visual changes would primarily involve earthworking activities on a portion of the forward third of the landfill and a portion of the area containing cell E2. These activities would include the placement of surface treatments including grassing, planting of appropriate vegetation, and the use of stockpiled boulders.

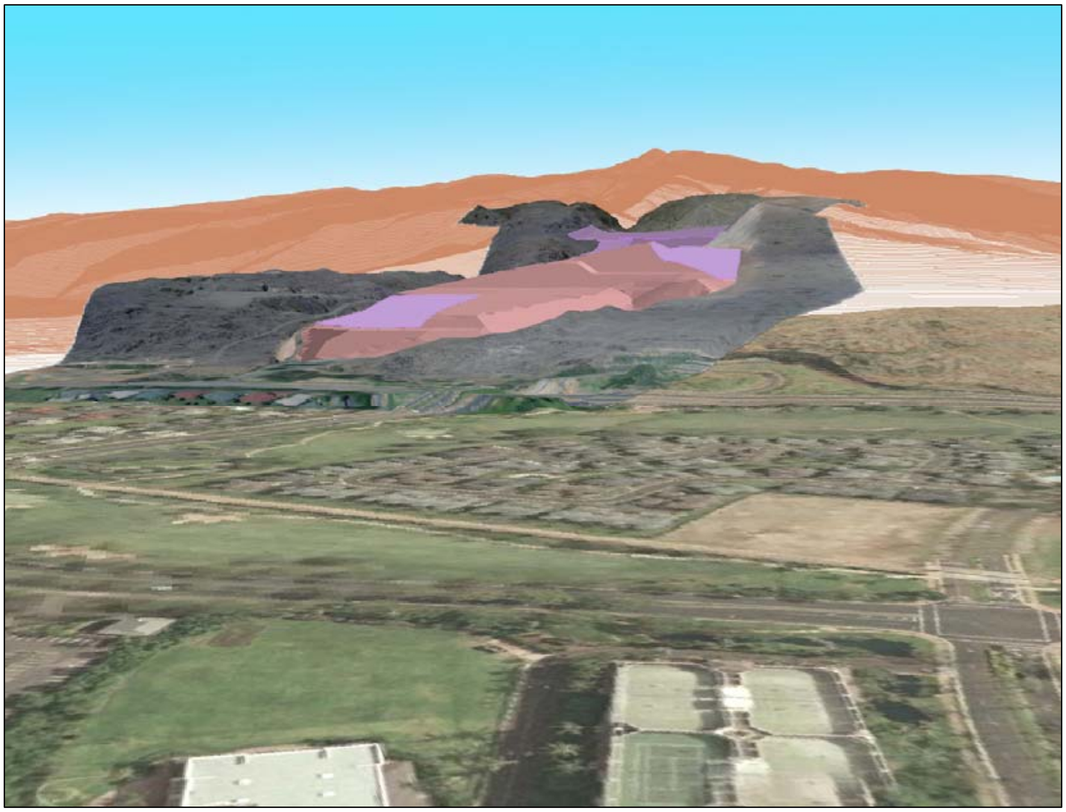


Figure 5-18C, WGSL Closure Sequence 2

Closure Sequence 2

Figure 5-18C depicts the start of Closure Sequence 2, reflecting sequences D through F in **Figure 4-9**. This is anticipated to occur on or after a period of approximately fifteen years after start of use of the expansion area. The specific timeframe will be determined and based on final use of the cells and other factors relating to maintenance of landfill stability and operational requirements.

The areas highlighted in violet begin from the approximate midpoint of the landfill and extend completely to the rear of the site. This area will include closure of: (1) all or portions of the existing permitted MSW cells 4A, 4C, 9, 10, and 11; and (2) closure of the lateral expansion cells E6, E7, E8, E9, E10, and E11.

Views of the area of lateral expansion are anticipated to initially be below the viewplane of this vantage point. As the lateral expansion area is utilized and nears the end of its life, however, distant views toward the lateral expansion cells would become visible at a distance of just over 1-mile from this hotel vantage point. Vantage points at lower elevations, and on either side of the ridgelines forming the Waimanalo Gulch, would be constrained from viewing the lateral expansion area.

The majority of views to the site during Closure Sequence 2 would primarily involve earthworking activities during landfilling, the transit of vehicles, and the eventual placement of surface treatments such as grassing, planting of appropriate vegetation, and the use of stockpiled boulders to reduce viewplane impacts.

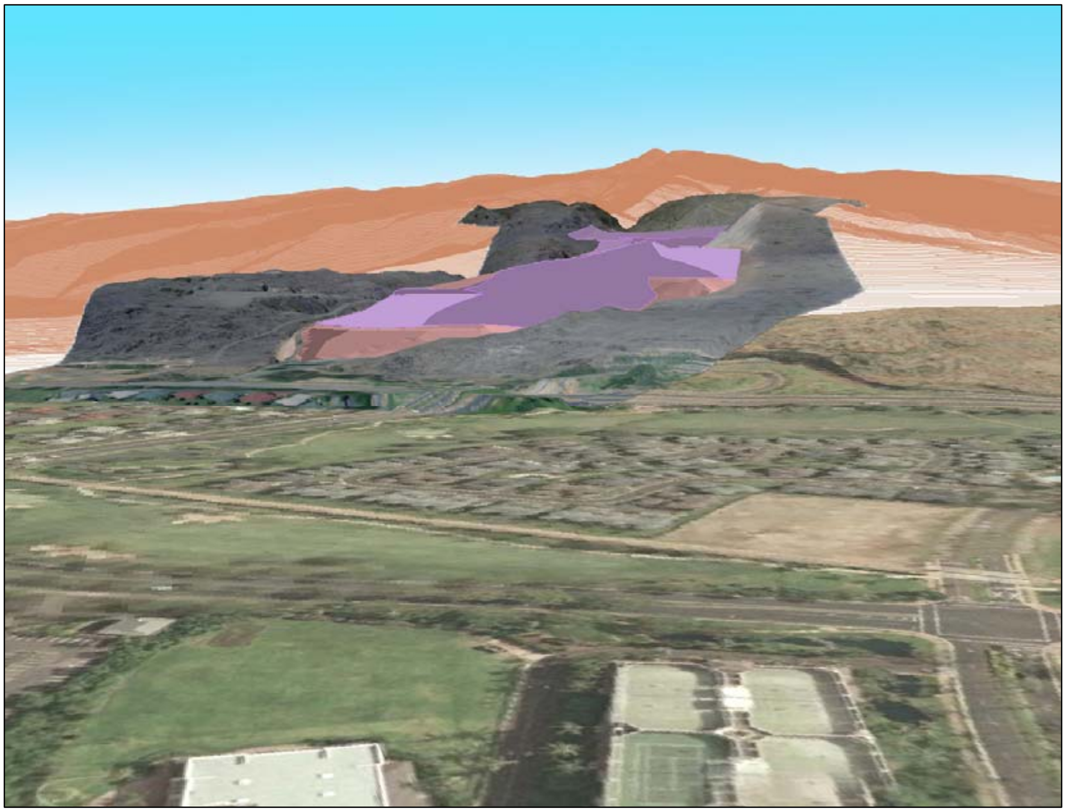


Figure 5-18D, WGSL Closure Sequence 3

Closure Sequence 3

Figure 5-18D depicts the final closure sequence reflecting sequences G through I in **Figure 4-9**, and primarily involves the forward half of the WGSL. This final sequence will occur after the end of Closure Sequence 2 and the cessation of landfilling at the site.

The areas highlighted in violet are located in the approximate forward half of the WGSL and include all or portions of the permitted: (1) Ash cells 1 through 5; (2) MSW cells 1 through 3, 4A, 4B, 5 through 8, and 11; and (3) MSW cell E1. Views toward the site would include earthworking activities to establish the placement of surface treatments including grassing, planting of appropriate vegetation, and the use of stockpiled boulders. Views of vehicles transiting across the landfill are expected to be significantly curtailed with the cessation of landfilling, and would only involve vehicles participating in closure and post-closure operations.

As discussed below, while the use of the WGSL will involve the transit of vehicles for access to various portions of the site, the use of access roads will be modified over time based on the progress of work. In general, views of refuse vehicles traversing the site are also expected to change over time as various portions of the landfill are used. Landscaping and existing on-site boulders will be used to vary the appearance of the site consistent with the surrounding hillsides and ridges. The phasing plan will consider the presence of the access roads and as feasible, identify specific locations where plantings or the placement of material would help to shield or camouflage views.

5.10.2. Potential Impacts and Mitigation Measures

The majority of the proposed project will not be visible from most vantage points along the Farrington Highway in the Waiʻanae or Kahe Point directions. The existing Kahe Point ridge line provides some screening of views of the landfill, including the proposed expansion area.

The general area that fronts Waimānalo Gulch (i.e. from the Kai Lani subdivision to Ko Olina Beach Club) is expected to be the most impacted from the proposed expansion project. Because this area has an unobstructed view into the gulch, activities can be seen from areas within this “view corridor”. However, once disposal activities are confined to the area of the lateral expansion (located mauka from current operations), line of sight views are anticipated to be limited to only the uppermost levels at the rear of the Waimānalo Gulch.

Views into the WGSL are expected to be an improvement from the existing conditions of the site, consisting of periodic views of vehicles in transit to and from active landfill cells. Due to the existing height of the berm in the area of MSW Cell 1, the majority of daily landfill activities in the expansion area will be obstructed from view. The progression of landfill operations beginning at the lower elevations and moving towards the rear of the gulch will help to mitigate and minimize any view impacts.

Views of the landscape within the Waimānalo Gulch will include the cut and grading of slopes to maintain the stability of the landfill cells. This will be somewhat similar to the existing conditions of the site adjacent to cell E-4. Views of landfill associated vehicles and the use of the proposed cells is not expected to be immediately visible until each of the cells are filled to the point that they are high enough to be seen from the surrounding lower elevations within the view corridor. Once the final elevation of the active cells is reached however, the landfill cell will be grassed to reduce the potential for any view impacts. Disposal activities will move to the next cell which is expected to be largely hidden by the higher elevation of the previous cell.

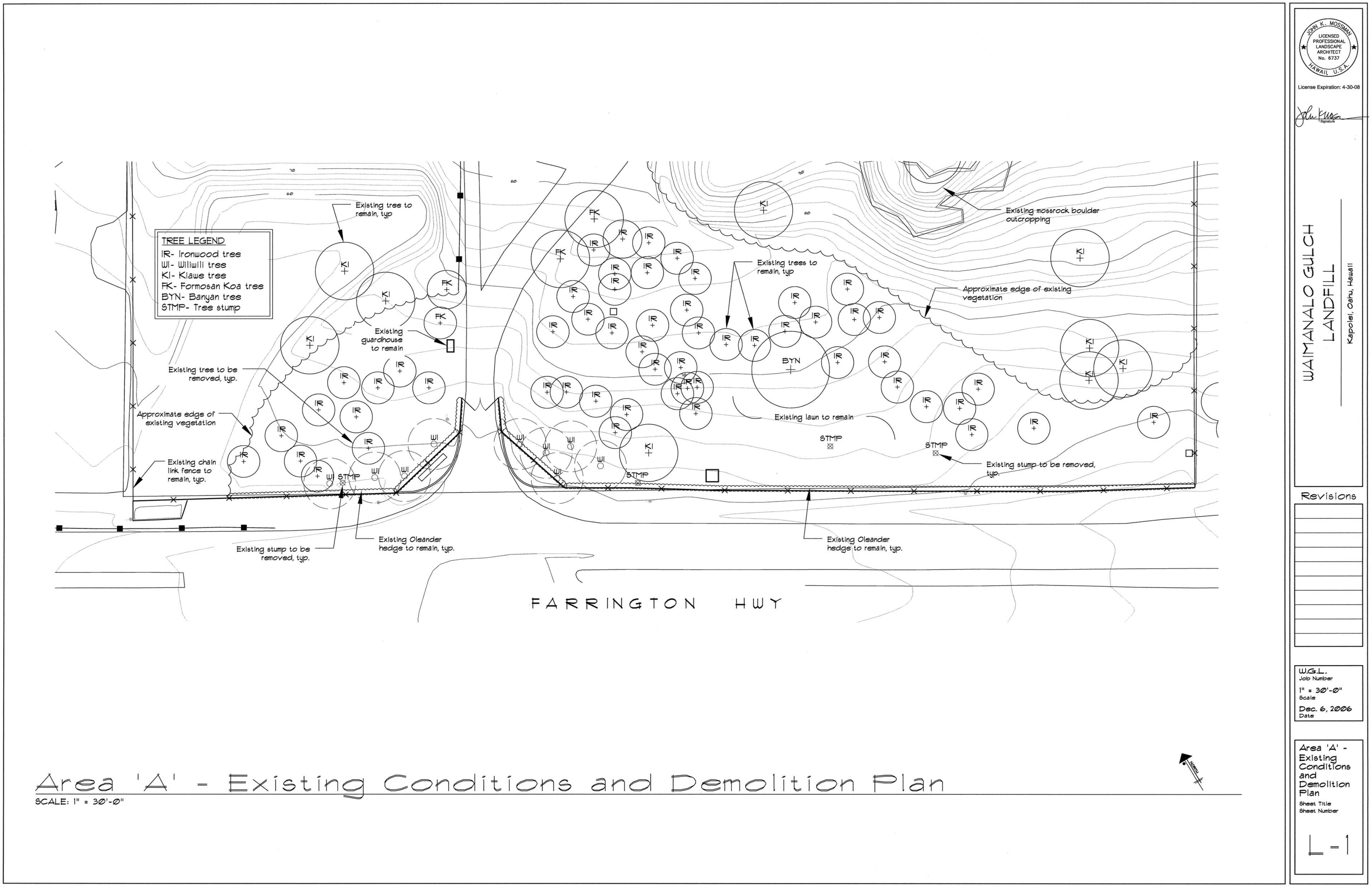
Mitigation measures to reduce visual impacts associated with existing operations have been initially implemented and will be modified to incorporate the proposed expansion area. The existing sanitary landfill has a 400-foot-wide vegetative buffer strip along the eastern portion of the site with a north-south separation of 800 to 1,000 feet. The approved landfill area has been hydromulched to begin the growth of grasses in the filled areas. Further landscaping effort, however, will be required and implemented to address the dry conditions of the site that have hindered prior hydromulching and plantings. Landscaping and the further use of irrigation will promote vegetative growth similar to that found on the adjoining hillsides. This will follow the seasonal growth cycle influenced by dry, hot summers, with intermittent greening of the hillsides during the winter months. In time, plant species in the surrounding areas are expected to spread into the closed areas of the landfill through the natural seeding process.

Views of refuse and construction vehicles in transit to and from the active areas of landfilling will be periodically visible during the use of the site without further mitigation. Carefully located interior roads, taking advantage of the terrain to screen the vehicles, will be employed based on weighing the need to maintain safe access within the site. Carefully placed landscaping elements including trees or other tall vegetation, will also be implemented based on the selection of plants with suitable root systems to avoid damage to completed landfill cells.

Views toward the landfill along Farrington Highway, from the Waiʻanae side of the landfill, will be addressed with landscaping treatment, as appropriate, that will include the use of landscaping elements along the western ridge of the WGSL adjoining the Kahe Power Generating Station. This measure will require careful placement of landscaping elements to maintain views toward the ridgeline to respect the huakaʻi pō (procession of the night marchers) viewplane as identified in Section 7.4. Cultural Impact Assessment, 7.4.7. Summary and Conclusions, Potential Impacts and Mitigation Measures.

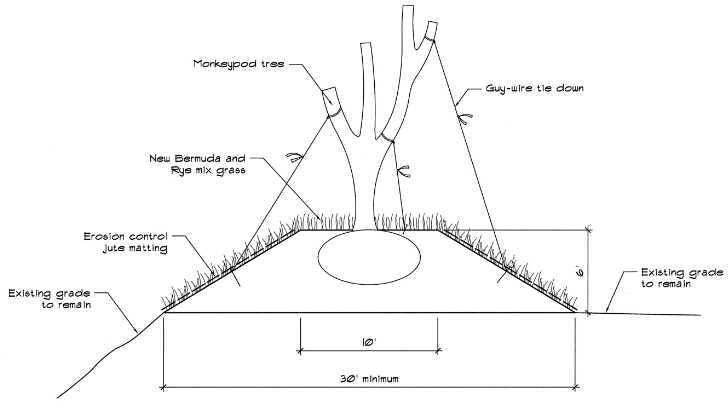
The use of plantings along Farrington Highway in the area of the Kahe Power Generating Station to screen motorists' views toward the western ridge of the landfill beyond the power plant was also considered. However, this mitigative measure was not considered feasible because it would be on land under ownership of the State DOT and the Hawaiian Electric Company, and involves further liability concerns.

The entrance to the landfill site contains existing landscaping including trees, hedges and grassed lawn areas as shown on **Figure 5-19, Existing Entry Landscaping**. In the short-term, additional landscape treatments are proposed to provide further vegetative cover to screen existing views of the WGSL from Farrington Highway and areas immediately adjacent to the entrance of the facility. See **Figures 5-20, Area B Landscape Plan** and **5-21, Area C Landscape Plan**. A long-term plan, already mentioned above, will involve continued revegetation of the slopes covering the landfill cells as they are incrementally closed with vegetation that is compatible to the dry conditions of the region. With the final closure of the existing landfill, the cap will be landscaped to match the vegetative cover of the surrounding hillsides. As much as possible, native trees, shrubs and groundcover will be integrated into the landscaping plan.



Source: Waimanalo Gulch Landfill Landscape Plan,
John K. Mossman Design, Inc.,
06 December 2006

Figure 5-19
Existing Entry Landscaping
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

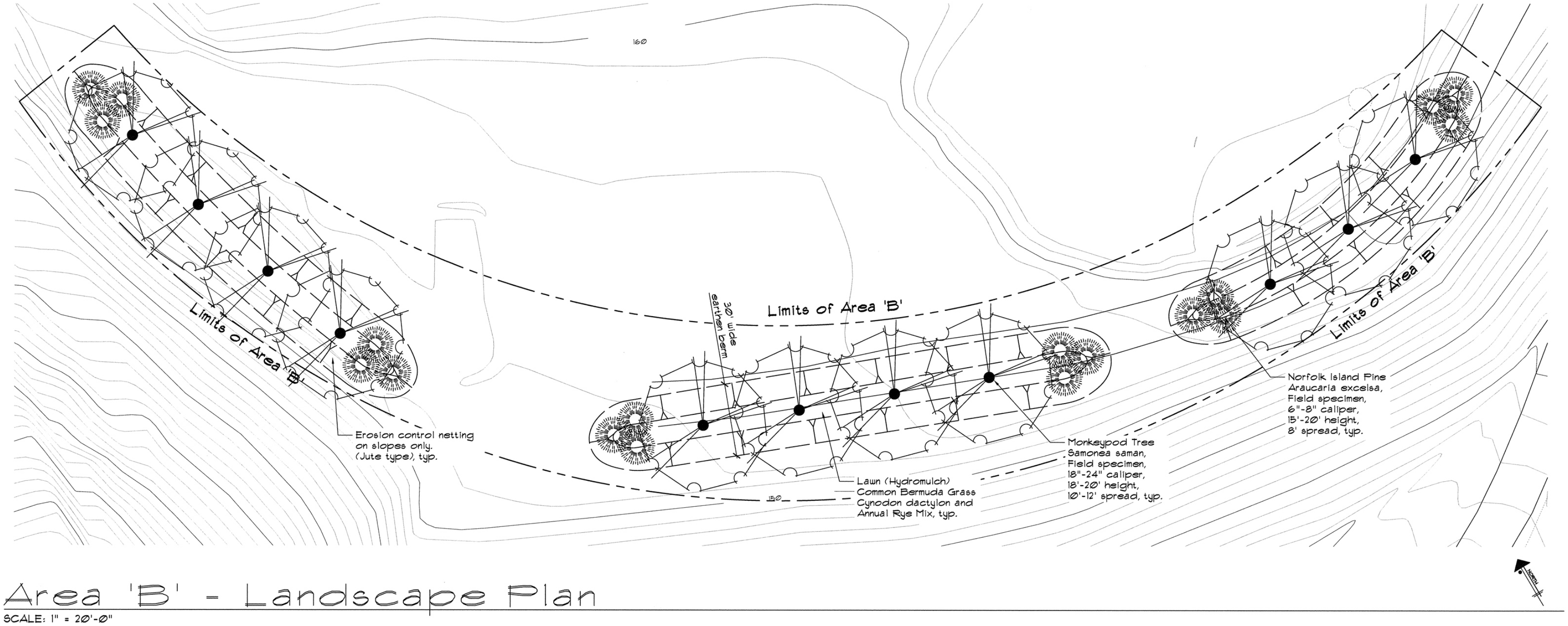


Planting on Earthen Berm

Not to Scale

NOTES:

1. Contractor to provide temporary irrigation systems (on-grade) as follows:
   A. Trees:
      - 6- 1 gpm bubblers per Monkeypod tree
      - 3- 1 gpm bublers per Norfolk Island pine and Kiawe tree
   B. Lawn:
      - 25'-30' impact sprinklers on 12" risers
   C. Water source shall be provided by Owner and located within project limit
2. All systems to be left in place for 1 year minimum
3. Backflow prevention device to be reduced pressure type (BWS approved)
4. Controller to be battery-operated with lithium battery
5. Exact locations of earthen berms and trees shall be staked out by Contractor with approval by Landscape Architect and Owner's Representative prior to construction of berms and planting of trees
6. All sloped areas shall be covered by erosion control netting (jute type) and installed as per manufacturer's instructions
7. All work shall be accepted and approved in writing by Landscape Architect and Owner's representative



Area 'B' - Landscape Plan

SCALE: 1" = 20'-0"

JOHN K. MOSSMAN
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 6737
HAWAII, U.S.A.

License Expiration: 4-30-08

John K Moss
Signature

WAIMANALO GULCH
LANDFILL
Kapolei, Oahu, Hawaii

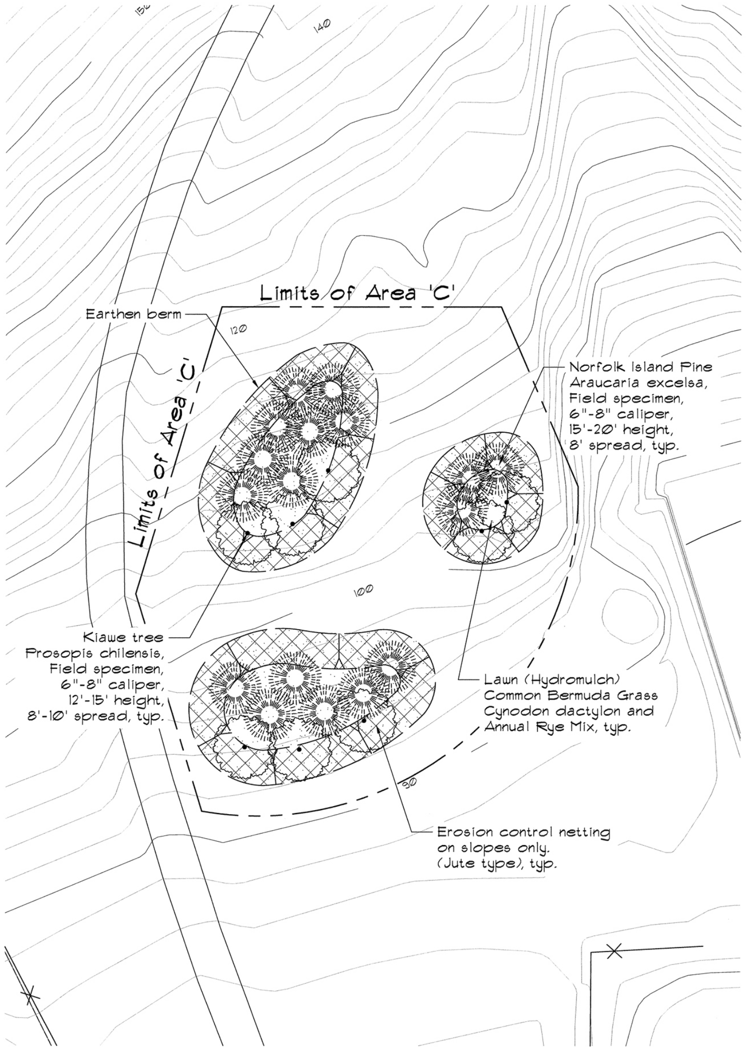
Revisions

W.G.L.
Job Number
1" = 20'-0"
Scale
Dec. 6, 2006
Date

Area 'B' - Landscape Plan
Sheet Title
Sheet Number
L-3

Source: Waimanalo Gulch Landfill Landscape Plan
John K. Mossman Design, Inc.,
06 December 2006

Figure 5-20
Area B Landscape Plan
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services



Area 'C' - Landscape Plan

SCALE: 1" = 20'-0"

NOTES:

1. Contractor to provide temporary irrigation systems (on-grade) as follows:

   A. Trees:

      - 6- 1 gpm bubblers per Monkeypod tree
      - 3- 1 gpm bublers per Norfolk Island pine and Kiawe tree

   B. Lawn:

      - 25'-30' impact sprinklers on 12" risers

   C. Water source shall be provided by Owner and located within project limit

2. All systems to be left in place for 1 year minimum

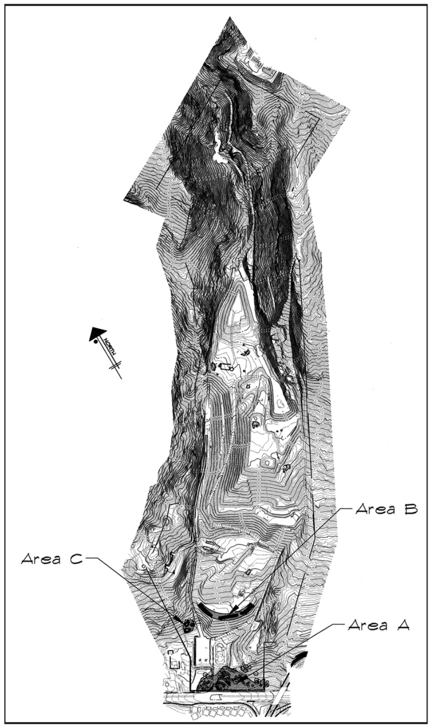
3. Backflow prevention device to be reduced pressure type (BWS approved)

4. Controller to be battery-operated with lithium battery

5. Exact locations of earthen berms and trees shall be staked out by Contractor with approval by Landscape Architect and Owner's Representative prior to construction of berms and planting of trees

6. All sloped areas shall be covered by erosion control netting (jute type) and installed as per manufacturer's instructions

7. All work shall be accepted and approved in writing by Landscape Architect and Owner's representative



JOHN K. MOSSMAN
No. 6737

License Expiration: 4-30-08

Signature

WAIMANALO GULCH
LANDFILL

Kapolei, Oahu, Hawaii

Revisions

W.G.L.
Job Number
1" = 20'-0"
Scale
Dec. 6, 2006
Date

Area 'C' -
Landscape
Plan
Sheet Title
Sheet Number
L-4

Source: Waimanalo Gilch Landfill Landscape Plan
John K. Mossman Design, Inc.,
06 December 2006

Figure 5-21
Area C Landscape Plan
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Scenic and Aesthetic Resources Summary

The potential secondary or cumulative impact of the planned use of the site will involve modification of the surface contours within the Waimānalo Gulch, that may be considered as a continuation of the present land use, but within the lateral expansion area. This modification is a necessary part of the project to establish landfill cells, stability slopes, berms, and installation of supporting facilities to allow for a landfill that meets the required federal, state, and City & County of Honolulu regulations for a properly designed and safe facility. While use of the site for landfilling will involve the alteration of the viewplane the mitigative measures as provided in this section are proposed to reduce the impacts.

Over the long term, during the operational use of the site vegetative practices and landscaping will serve to minimize the appearance of the landfill. The site will be allowed to revegetate to match as closely as possible the surrounding, undeveloped hillsides once the capacity of the facility has been reached, and during the planned 30 year period of landfill maintenance and monitoring.

Section 6

Public Services, Potential Impacts and Mitigation Measures

6.1 Traffic and Circulation

6.1.1. Traffic Impact Report

In January 2007, Wilson Okamoto Corporation prepared the report, Traffic Impact Report, Waimānalo Gulch Sanitary Landfill Expansion (**Appendix I**). The purpose of the report was to identify and assess the potential for traffic impacts resulting from the expansion of the WGSL. The scope of the study included:

- An evaluation of existing roadway and traffic operations in the vicinity of the project;
- An analysis of future roadway and traffic conditions without the proposed project;
- An analysis and development of trip generation characteristics for the proposed project;
- Superimposing the site-generated traffic over future traffic conditions; Identification and analysis of traffic impacts resulting from the proposed project; and
- Recommendations for improvements to mitigate the traffic impacts.

The following is a summary of the report findings (Wilson Okamoto Corporation, 2007).

Area Roadway System

In the vicinity of the landfill, the highway is a predominantly four-lane, two-way divided State roadway generally oriented in the east-west direction that serves as the primary access road along the southwest coastline of Oʻahu.

At the unsignalized intersection of the highway with the access road to the landfill, the eastbound approach has an exclusive, left-turn lane and two through lanes. There is an additional lane along the south side of the highway that serves as the eastbound off-ramp to Ko Olina Resort. The westbound approach of the highway has an exclusive right-turn lane and two through lanes. A median storage lane is provided along Farrington Highway for vehicles turning left from the landfill access road.

The WGSL access road approach of the intersection has one channelized lane that serves left-turn and right-turn traffic movements. Vehicles turning left from the access road are channelized into the median storage lane along Farrington Highway.

Traffic Volumes and Conditions

The field investigation consisted of manual turning movement count surveys and traffic flow assessments at the intersection of Farrington Highway with the access road to the landfill. The turning movement count surveys were conducted during the morning commuter traffic peak hours of 6:00 AM and 8:00 AM, and the afternoon commuter traffic peak hours of 3:00 PM and 6:00 PM.

The highway capacity analysis is based on procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration.

The analysis is based on use of Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak hours of traffic. LOS is a quantitative and qualitative assessment of traffic operations and is defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions as follows:

LOS	Ave Control Delay (seconds per vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

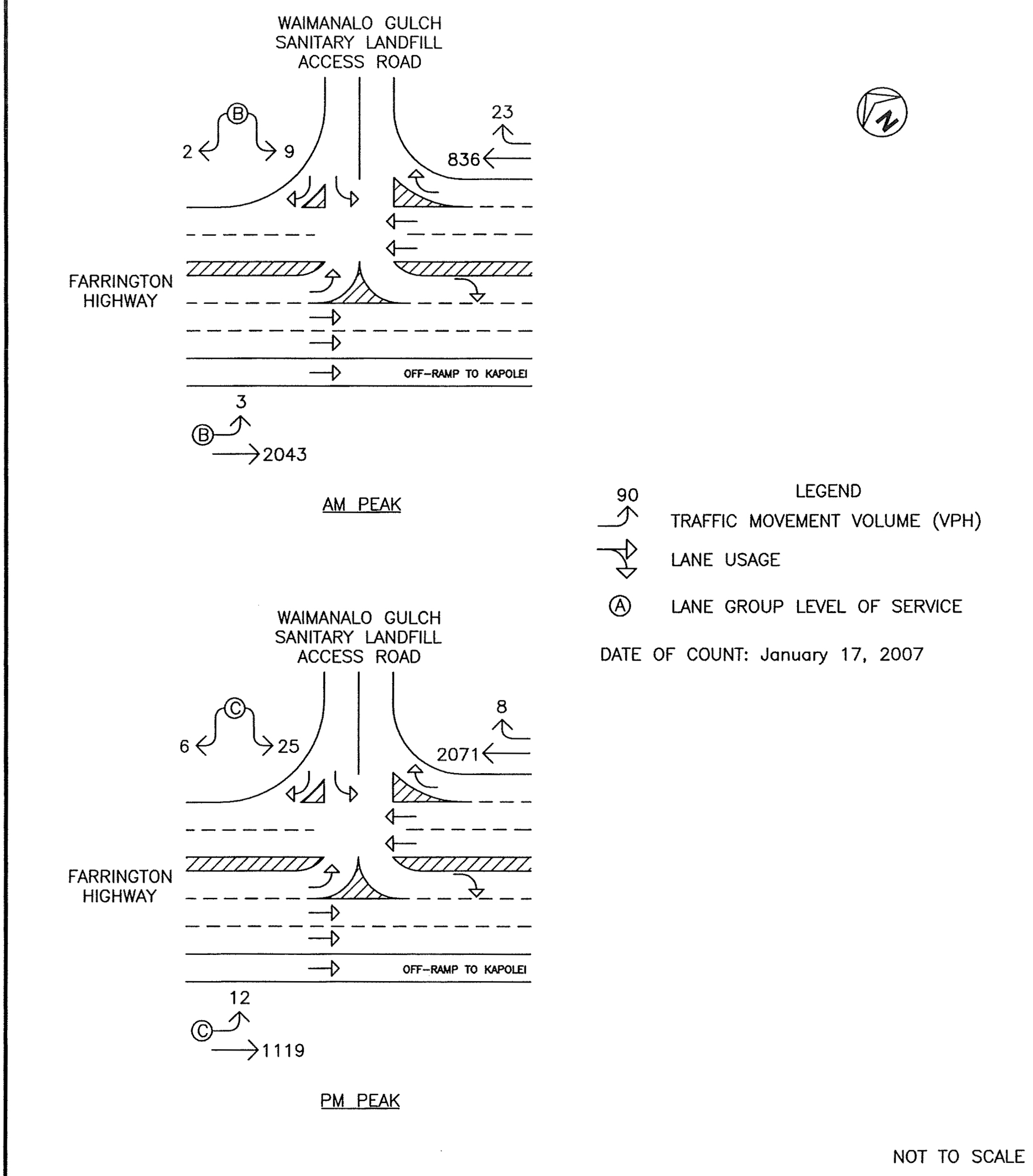
'Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A V/C ratio of greater than 1.00 indicates that the traffic demand exceeds the road's carrying capacity.

Existing Peak Hour Traffic

Figure 6-1 shows the existing AM and PM peak hour traffic volumes and operating traffic conditions. The AM peak hour generally occurs between 6:15 AM and 7:15 AM in the vicinity of the existing landfill. In the afternoon, the PM peak hour generally occurs between 3:45 PM and 4:45 PM. The analysis is based on these peak hour time periods to identify traffic impacts resulting from the proposed project.

At the intersection with the existing landfill access road, Farrington Highway carries 2,046 vehicles eastbound and 859 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 1,131 vehicles traveling eastbound and 2,079 vehicles traveling westbound. The critical movement on the Farrington Highway approaches of the intersection is the eastbound left-turn traffic movement which operates at LOS "B" during both peak periods.

The WGSL access road approach of the intersection carries 11 vehicles southbound during the AM peak hour of traffic. During the PM peak hour of traffic, the traffic volume is slightly higher with 31 vehicles traveling southbound. The access road approach of the intersection operates at LOS "C" during both peak periods. Traffic queues occasionally formed on this approach of the intersection with average queue lengths of 2-3 vehicles observed during both peak periods.



WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

WAIMANALO GULCH SANITARY LANDFILL EXPANSION

EXISTING PEAK HOURS OF TRAFFIC

FIGURE 3

Source: Traffic Impact Report for the Waimanalo Gulch Sanitary Landfill Expansion, Wilson Okamoto Corp., March 2007

Figure 6-1
Existing Peak Hours of Traffic
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

Projected Traffic Conditions

Site-Generated Traffic

The expansion of the WGSL is being proposed to increase the capacity and extend the current lifespan of the landfill. Since traffic impacts are dependant on the amount of waste generated, neither an increase in capacity nor an extension of the current lifespan will change the daily traffic rates. As such, the expansion itself is not expected to generate additional trips to and from the facility.

However, increased development throughout O‘ahu may result in an increase in site-generated trips to the landfill since additional refuse vehicles may be required to service these areas. As such, additional trips were conservatively assumed in order to assess traffic impacts.

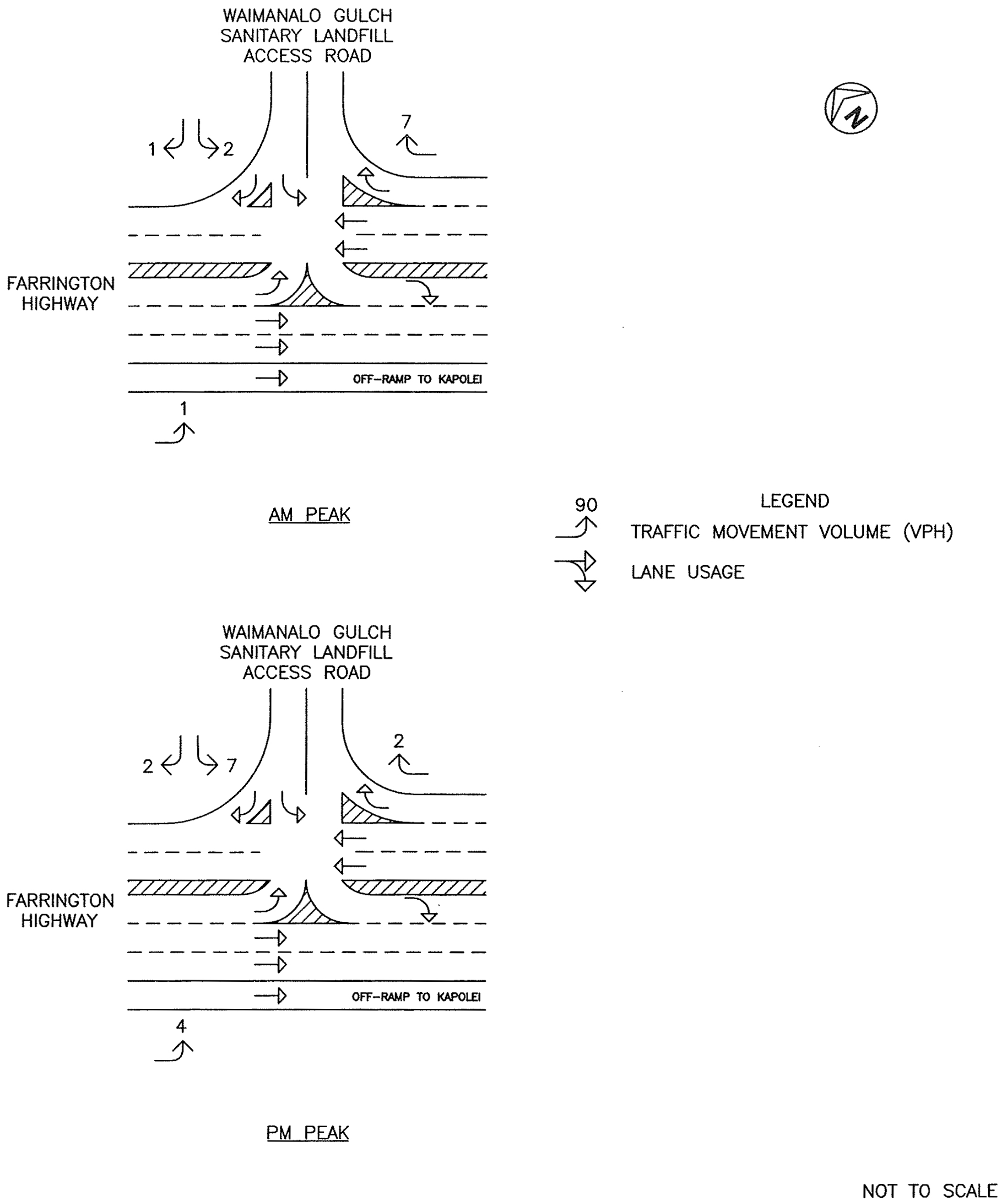
Trip Distribution

Figure 6-2 shows the distribution of site-generated traffic during the AM and PM peak hours of traffic. Access to the landfill will continue to be provided by the existing access road off Farrington Highway. The directional distribution of site-generated traffic at the intersection of Farrington Highway with the access road was assumed to remain similar to existing conditions.

Traffic Signal Warrant

As a result of the proposed expansion of the landfill, a traffic signal system may be warranted at the intersection of Farrington Highway and the WGSL access road. The installation of a traffic signal at an intersection may be justified by one or more of the eight warrants outlined in the "Manual on Uniform Traffic Control Devices for Streets and Highways," 2003 Edition (MUTCD). Warrant 3 was applied to the intersection to determine whether or not a traffic signal system might be justified.

Warrant 3, the "Peak Hour Warrant," consists of several conditions that may justify the installation of a traffic signal at an intersection where vehicles experience high traffic delay due to large volumes of intersecting traffic during the peak hour periods.



WILSON OKAMOTO CORPORATION
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WAIMANALO GULCH SANITARY LANDFILL EXPANSION

DISTRIBUTION OF ADDITIONAL SITE-GENERATED VEHICLES

FIGURE 4

Source: Traffic Impact Report for the Waimanalo Gulch Sanitary Landfill Expansion, Wilson Okamoto Corp., March 2007

Figure 6-2
Distribution of Additional Vehicles
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

One of the conditions is based upon the relationship between the traffic volumes along the major and minor street. If the traffic volumes along the minor street exceed the thresholds shown in the MUTCD, a traffic signal system may be warranted. Since the intersection lays within an isolated community with a population less than 10,000, Figure 4C-4 "Warrant 3, Peak Hour (70% Factor)" of the MUTCD was used to determine if a traffic signal system is warranted at this intersection. Under the "with project" conditions, the traffic volumes entering the subject intersection are below the thresholds during both peak hours of traffic and, as such, do not satisfy Warrant 3 for minor street approaches with one lane for high traffic volumes on the major street. Therefore, the intersection of Farrington Highway and the WGSL access road does not warrant a traffic signal system and is assumed to remain unsignalized.

Total Traffic Volumes With Project

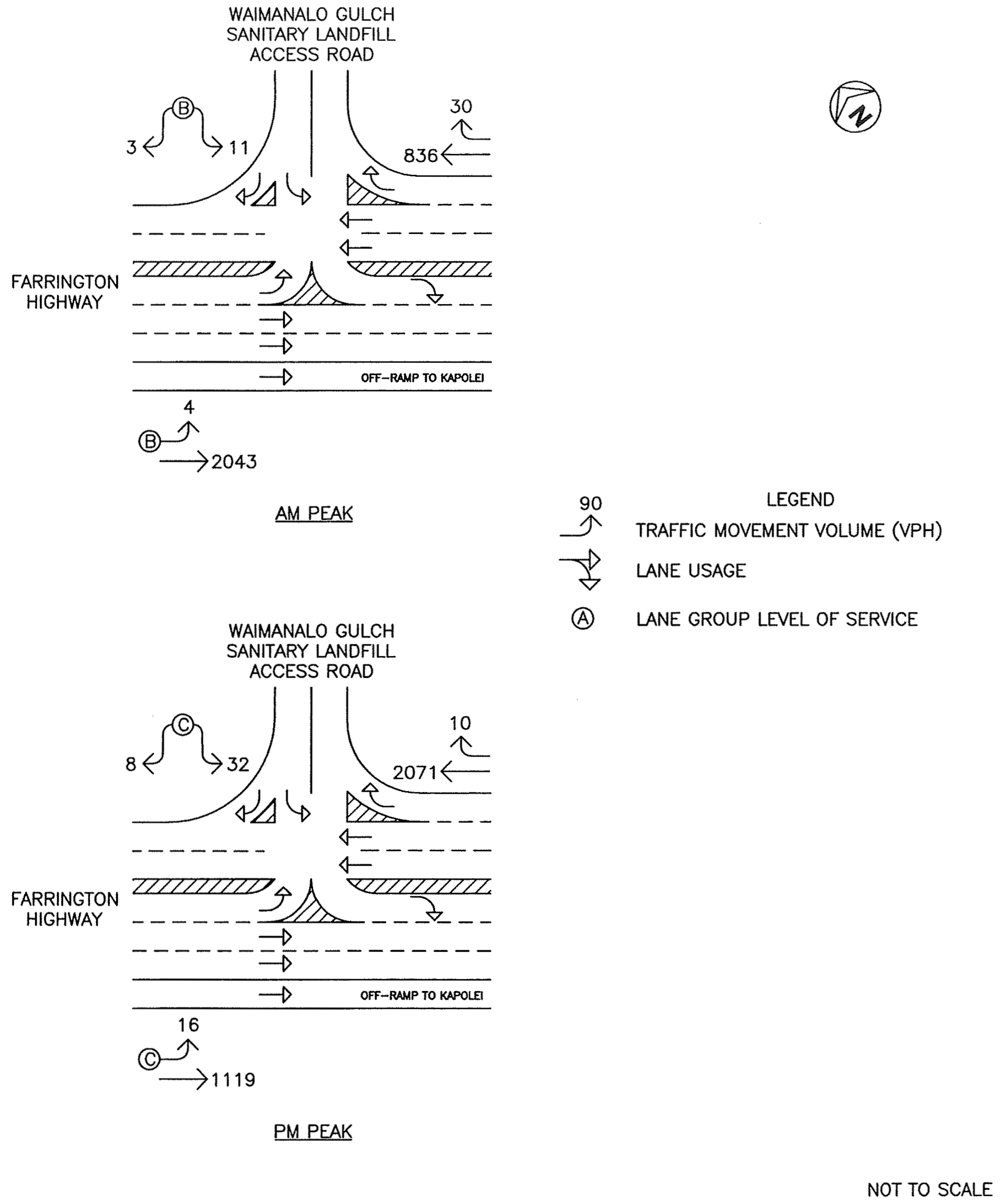
The projected AM and PM peak period traffic volumes and operating conditions with the proposed expansion of the existing WGSL are shown in **Figure 6-3**. The cumulative volumes consist of additional site generated traffic superimposed over existing traffic demands.

The cumulative AM and PM peak hour traffic conditions with the proposed expansion of the WGSL are summarized in **Table 6-1**.

Table 6-1
Existing and Projected With Project LOS
Traffic Operating Conditions

Intersection	Critical Movement		AM		PM	
			Exist	w! Proj	Exist	w! Proj
Farrington Hwy/ Waimanalo Gulch Sanitary Landfill Access Road	Eastbound	LT	B	B	C	C
	Southbound	LT-RT	B	B	C	C

Traffic operations in the vicinity of the landfill are expected to remain similar to existing conditions during both peak hours of traffic despite the anticipated increases in traffic along Farrington Highway due to the proposed expansion.



WILSON OKAMOTO CORPORATION
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WAIMANALO GULCH SANITARY LANDFILL EXPANSION

PROJECTED PEAK HOURS OF TRAFFIC WITH PROJECT

FIGURE 6

Source: Traffic Impact Report for the Waimanalo Gulch Sanitary Landfill Expansion, Wilson Okamoto Corp., March 2007

Figure 6-3
Traffic Volumes With Project
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

The critical traffic movements at the intersection of Farrington Highway with the WGSL access road are expected to continue operating at LOS "B" and LOS "C" during the AM and PM peak periods, respectively. The total traffic volumes entering the intersection are expected to increase by less than 1% during both peak hours of traffic with proposed expansion. These increases in the total traffic volumes are in the range of daily volume fluctuations along Farrington Highway and represent a minimal increase in the overall traffic volumes.

Recommendations

Based on the analysis of the traffic data and projected traffic conditions, the following are the recommendations of the study:

1. Maintain sufficient roadway width to accommodate safe vehicle ingress and egress.
2. Maintain adequate turning radii at all project roadways to avoid or minimize vehicle encroachments to oncoming traffic lanes.
3. Maintain adequate sight distances for motorists to safely enter and exit all project roadways.
4. Maintain adequate on-site loading and off-loading service areas to ensure that vehicular queues do not extend onto the highway.

Conclusion

The proposed expansion of the existing WGSL is not expected to have a significant impact on traffic operations in the vicinity. Although the expansion of the landfill is not expected to generate additional trips to and from the facility, additional trips were conservatively assumed to be generated by the proposed expansion to account for additional refuse vehicles generated by on-going development throughout O‘ahu. However, traffic operations in the vicinity of the landfill are expected to remain similar to existing conditions during both peak hours of traffic despite the anticipated increases in traffic. The critical traffic movements at the intersection of Farrington Highway with the WGSL access road are expected to continue operating at levels of service similar to existing conditions. In addition, the total traffic volumes entering the intersection are expected to increase by less than 1% during both peak hours of traffic with the proposed expansion. These increases in the total traffic volumes are in the range of daily volume fluctuations along Farrington Highway and represent a minimal increase in the overall traffic volumes.

6.1.2. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to result in the potential for adverse traffic impacts to the surrounding area or region.

The period of greatest concern would be during the morning and afternoon peak hours when the maximum number of motorists would be utilizing the section of Farrington Highway fronting the landfill. During the AM period the project would generate 11 vehicles southbound and during the PM period there would be 31 vehicles generated. The finding of the Traffic Impact Report is that this minimal increase in overall traffic volume is not expected to have a significant impact on traffic operations in the vicinity.

Although no adverse impacts to traffic are anticipated or expected, the Traffic Impact Report identifies four recommendations (see above). Each of the recommendations calls for maintaining roadway widths, turning radii, sight distance, and on- and off-loading areas to prevent excessive numbers of vehicles from queuing onto the highway. Each of these recommendations will be maintained by WMH and ENV.

Potential for secondary or cumulative impacts associated with traffic and circulation are not anticipated. The proposed project will constitute a continuation of use of the site for landfilling which was started in the early 1990s. According to the traffic impact report performed for the project, the WGSL is not expected to itself generate major new transportation demands along Farrington Highway, but that the demand for use of the area roadways would most likely be from increasing development in the area. In order to maintain safe operating conditions for the users of the WGSL and the public transiting along Farrington Highway, WMH will periodically evaluate traffic to assess the need for further traffic controls to maintain public safety.

6.2 Wastewater

6.2.1. Wastewater Facilities

The existing landfill facility is served by an existing on-site wastewater disposal system which accommodates domestic flows from the administrative and service buildings of the site. According to the WGSL operator WMH, the continuation of use of the existing system will be adequate for the proposed project based on no major increase in waste water flows or demands for use of the system.

6.2.2. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to result in potential for negative adverse impacts due to wastewater treatment. The project will not require upgrades to municipal wastewater service lines or to the Honoʻuliʻuli Wastewater Treatment Plant. If the facility is connected to the City wastewater system in the future, there is an existing 8-inch line located in Aliinui Drive that may be available for use. A Sewer Connection Application Form for sewer capacity reservation, and payment of a Wastewater System Facility Charge, would be required for the connection.

Potential for secondary or cumulative impacts are not anticipated. The site is currently provided with adequate service for wastewater. No new or future demands that would exacerbate the current or long term provision of this service is anticipated.

6.3 Potable/Drinking Water

6.3.1. Potable/Drinking Source Water

WGSL is served by lateral service lines from the existing Board of Water Supply (BWS) main along Farrington Highway. Water uses at WGSL are currently 1.3 million gallons per month with approximately 30 percent used for irrigation and approximately 70 percent used for dust control. An incidental amount is used by the administrative office.

6.3.2. Potential Impacts and Mitigation Measures

The proposed project will be served by existing BWS facilities. No major new construction involving new water supply facilities are anticipated to be required. Should new supply requirements be needed for irrigation or dust control, the BWS will be notified with appropriate coordination taken by ENV and WMH.

According to the BWS there are no objections to the proposed project (BWS Memorandum, December 18, 2006).

Potential for secondary or cumulative impacts are not anticipated. The site is currently provided with adequate water service. No new or future demands that would exacerbate the current or long term provision of this service is anticipated.

6.4 Power and Communications

6.4.1. Power and Communication Facilities

Electrical power is provided from the Hawaiian Electric Company (HECO) Kahe Power Generating Station by overhead service lines. Overhead high capacity transmission lines cross the middle to upper portions of the existing landfill site within an existing easement. ~~A separate easement crossing the present landfill access road is also held by HECO for periodic maintenance of the overhead lines.~~ Separate easements are held by HECO to cross the present landfill access road for periodic maintenance of the overhead lines, and for access to an existing telecommunications facility at Kahe Point near Battery Arizona.

Telephone and telecommunications services are provided by Hawaiian Telecom from lateral service lines connected to overhead service lines along Farrington Highway.

No new demands for power and communications services are anticipated. The existing power and communications facilities are expected to be sufficient for the proposed lateral expansion project.

6.4.2. Potential Impacts and Mitigation Measures

The proposed expansion of the site will maintain the existing 100-foot-wide easements for each of the four HECO transmission lines and landfill access road easement. As required by the State of Hawaii General Order No. 6 (Rules for Overhead Electric Line Construction in Hawai'i), the conductor-to-ground clearance for landfill operations will be at least 30 feet for areas traversed by vehicles and 25 feet for areas accessible by pedestrians only. This requirement will also provide necessary clearance for maintenance equipment.

Use and operation of the planned expansion area will be coordinated with HECO to minimize the possibility of a disruption of service due to the entanglement of litter on the power lines. Measures and practices will include:

> The use of permanent and portable litter fencing along the working face of landfill cells in relation to prevailing winds such as trades, Kona winds, and storm generated wind.
>
> Work crews will be dispatched should there be an event involving windblown litter crossing the Farrington Highway to neighboring residences within Ko Olina, and adjacent to the landfill. This may occur with high winds causing the loss of lighter paper and/or plastic material as it is being discharged from refuse vehicles onto active working landfill cells.
>
> MSW will be compacted and covered with approximately six inches of soil or suitable cover material at the end of each working day. The ash fill operation requires cover approximately once per week. The rate of ash disposal and routine 24 hour a day deliveries make daily cover operations impractical. The ungrassed portion of the ash fill area, therefore, could be impacted in an ultra-high wind, hurricane situation. This is somewhat addressed by the stable nature of the ash material itself which is conducive to the formation of a surface that is generally resistant to high winds.

Should any damage to existing utilities occur, they will be restored or relocated based on coordination with HECO and WMH.

These measures and practices will reduce the opportunity for windblown litter to affect the transmission lines and will further reduce potential vector, odor, and fire problems.

The Palehua Solar Observatory, operated by the U.S. Air Force, is located approximately 10 miles northeast of the landfill and could be affected by maintenance or installation of high capacity power lines. The U.S. Air Force will be notified concerning any work that is required for the proposed project.

Power and Communications Summary

Potential for secondary or cumulative impacts are not anticipated. The proposed project is adequately served and it is anticipated that future requirements would not result in the demand for services beyond those provided by the existing utility companies.

6.5 Police Protection

6.5.1. Police Facilities

The area of the proposed project is within the Honolulu Police Department (HPD), District 8, and includes the Waiʻanae and Kapolei region. The communities served include:

ʻEwa	ʻEwa Beach	West Loch
Barbers Point	Kapolei	Campbell Industrial Park
Makakilo	Honokai Hale	Ko Olina
Nānākuli	Māʻili	Waiʻanae
Mākaha	Makua	Kaʻena

The District 8 Kapolei Station Headquarters is located at 1100 Kamokila Boulevard, Kapolei, and can be reached at phone number: 692-4262. The building contains 50,589 square feet and is built on 5.13 acres of land donated by the James Campbell Trust

Estate. The station has three levels and provides offices and meeting rooms for District 8 command staff and patrol officers as well as personnel from the Criminal Investigation, Juvenile Services and Narcotics/Vice Division. The station has a modern cellblock consisting of 41 cells. (http://www.honolulupd.org/patrol/d8/index.htm, Website Accessed on 2/26/08).

A substation serving District 8 is located in Waiʻanae and provides a base of operations for the personnel patrolling the Waiʻanae Coast (http://www.honolulupd.org/patrol/d8/index.htm). The Waiʻanae Substation is located at 85-939 Farrington Highway, and can be reached at phone number: 696-4221 (http://www.honolulupd.org/patrol/d8/index.htm).

6.5.2. Potential Impacts and Mitigation Measures

The current level of police service provided to the WGSL is expected to be sufficient for the planned lateral expansion of the site. No new demands are expected based on the closure of the existing area of use prior to use of the new expansion area.

According to the HPD the planned project should have no unanticipated impact on the facilities or operations of the police department (HPD Memorandum, November 28, 2006).

The potential for secondary or cumulative impacts to future demands for police service is not anticipated. The proposed project is adequately served and it is anticipated that future requirements would not result in the demand for services beyond those provided.

6.6 Fire Protection

6.6.1. Fire Stations

The project area is served by the Honolulu Fire Department (HFD), Kapolei Fire Station 40, located at 2020 Lauwiliwili Avenue, Kapolei, and can be reached at phone number:

682-0533. The fire station serves as the headquarters for Battalion 4 and houses Engine 40 and Ladder 40.

Stations in the area that would provide additional coverage of service area include:

> Nānākuli Fire Station 28, located at 89-334 Nanakuli Avenue. The station houses Engine 28 and Tanker 28.
>
> Waiʻanae Fire Station 26, located at 85-645 Farrington Highway. The station houses Engine 26, Quint 26, and Tanker 26.
>
> Makakilo Fire Station 35, located at 92-885 Makakilo Drive. The station houses Engine 35.
>
> ʻEwa Beach Fire Station 24, located at 91-832 Pohakupuna Road. The station houses Engine 24.

6.6.2. Potential Impacts and Mitigation Measures

The potential for adverse impacts to the delivery or provision of fire fighting services is not anticipated. Existing and planned landfill construction activities will include the compaction and covering of refuse with approximately six inches of soil material that has proven effective in fire prevention. The cover material reduces oxygen from penetrating the landfill and reduces the opportunity for combustion. Further landfill preventative practices will maintain the use of earth stockpiles near the working face of active landfill cells to smother fires, the use of fire breaks to serve as a buffer zone, and the use of an on-site 6,000-gallon water truck as needed.

Site personnel for the existing and proposed project will continue to be instructed in proper fire fighting procedures. Equipment storage and maintenance fires will be handled with fire extinguishers. Fire extinguishers will be supplied on landfill work vehicles and all on-site fire fighting equipment will continue to be regularly inspected and maintained to ensure optimum operating effectiveness. If a fire is detected at the landfill surface:

> Burning refuse is excavated and separated from the fill area with heavy equipment and covered immediately with on-site soil.
>
> If necessary, water is applied to the burning refuse using the on-site water truck.
>
> If site personnel and equipment cannot extinguish the fire the HFD is called on to respond based on dispatches from the 911 emergency number. The number of stations responding to the 911 dispatch is based on the size of the fire.

According to the HFD, the maintenance of fire apparatus access for the duration of construction activities at the project site was requested in 2001 and 2006. ENV and the site operator, WMH, will continue to maintain fire apparatus access throughout the site to ensure that fire fighting vehicles and equipment are capable of mobilizing to all locations of the existing and planned lateral expansion areas. (HFD Memorandums, December 19, 2006 and June 29, 2001).

Practices and procedures for other types of fires including brush fires in the buffer zone or fire break area and structure fires are described in <u>Section 4, Project Description</u>, in this document.

<u>The potential for secondary or cumulative impacts are not anticipated. The proposed project is adequately served and it is anticipated that future requirements would not result in the demand for public fire protection services beyond those provided.</u>

6.7 Health Care and Emergency Services

6.7.1. Hospital and Ambulance Services

Two major medical facilities provide service to the area of the proposed project:

> St. Frances West is located at 91-2141 Fort Weaver Road in ‘Ewa Beach. The facility is a general medical and surgical medical center with approximately 102 hospital beds. Key services provided include general medical and surgical care, general intensive care, and emergency services. (http://health.usnews.com/ listings/hospital-directory/hawaii/ st_francis_medical_center-westdepartment, St. Francis Medical Center listing, website accessed February 26, 2008).
>
> The Wai‘anae Coast Comprehensive Health Center (WCCHC) is located at 86-260 Farrington Highway in Wai‘anae. The facility offers family practice and a wide range of other services including 24-hour emergency care, specialty services, laboratory and radiology services, dental, preventive health, case management, outreach, family planning, a teen clinic, perinatal case management, Native Hawaiian healing and integrated services, homeless outreach, adult day care, transportation, mental health treatment, substance abuse outreach and treatment, health career training, health professional training, and women, infant, and children (WIC) services. (http://www.aapcho.org/site/aapcho/ content.php?type=1&id=10154, website accessed February 26, 2008).

Emergency Medical Services (EMS) are provided by the Wai‘anae Fire Station 26, the St. Francis West facility, and WCCHC.

Other medical clinics and private facilities operate in the region.

6.7.2. Potential Impacts and Mitigation Measures

The proposed project will involve the continuation of use of the site and does not represent a major increase in landfilling activities, e.g., the planned lateral expansion area will only be utilized after the current area of use reaches capacity. This use is not expected to require the need for additional health care or emergency services beyond those that are presently available. Potential for adverse impacts are not expected.

The potential for secondary or cumulative impacts are similarly not anticipated. The project will be adequately served and it is anticipated that future requirements would not result in the demand for services beyond those provided.

6.8 Education

6.8.1. Educational Facilities

Public educational facilities in the area of the proposed project are designated as within the Department of Education (DOE), Campbell-Kapolei-Wai‘anae Complex Area region. Schools within the region include:

Campbell Complex Schools

Campbell High
‘Ewa Elementary
Kaimiloa Elementary
Ilima Intermediate (Middle)
Iroquois Point Elementary
Pohakea Elementary
‘Ewa Beach Elementary
Holomua Elementary
Keoneula Elementary

Kapolei Complex Schools

Kapolei Elementary
Kapolei Middle
Barbers Point Elementary
Mauka Lani Elementary
Kapolei High
Makakilo Elementary

Waiʻanae Complex Schools

Leihoku Elementary	Māʻili Elementary
Mākaha Elementary	Waiʻanae Elementary
Waiʻanae High	Waiʻanae Intermediate (Middle)

Ka Waihona ka Na`auao NCPCS (Charter School)
Kamaile Elementary PCCS (Charter School)

Public and private schools closest to the proposed project include the following:

- Ka Waihona O Ka Na'auao, located at 89-195 Farrington Highway, Nānākuli, approximately 2.4 miles west of the WGSL.
- Nanaikapono Elementary School, located at 89-153 Mano Avenue, Nānākuli, approximately 2.6 miles west of the WGSL.
- Nānākuli Elementary School, located at 89-778 Haleakala Avenue, Nānākuli, approximately 2.6 miles west of the WGSL.
- Mauka Lani Elementary School, located at 92-1300 Panana Street, Makakilo, approximately 2.6 miles east of the WGSL.
- Makakilo Elementary School, located at 92-675 Anipeahi Street, Makakilo, approximately 2.5 miles east of the WGSL.
- Island Pacific Academy, located at 909 Haumea Street, Kapolei, approximately 2.9 miles east of the WGSL.

6.8.2. Potential Impacts and Mitigation Measures

The proposed project is not expected to affect existing schools located in the region. The proposed project in itself will also not generate major new construction or development growth that would require the future delivery or provision of school services. <u>The potential for primary, secondary, or cumulative impacts is not anticipated.</u>

6.9 Library Services

6.9.1. Library Facilities

The DOE operates the following public libraries in the area of the proposed project:

Name and Location	Distance to WGSL
‘Ewa Beach Public Library 91-950 North Road ‘Ewa Beach, Hawai‘i 96706	Approx. 7.8 Miles
Kapolei Public Library 1020 Manawai Street Kapolei, Hawai‘i 96707	Approx. 3.0 Miles
Wai‘anae Public Library 85-625 Farrington Highway Wai‘anae, Hawai‘i 96792	Approx. 8.1 Miles

6.9.2. Potential Impacts and Mitigation Measures

The proposed project is not expected to affect the operation or use of public libraries. ~~Potential for adverse impacts are not expected.~~ The potential for primary, secondary, or cumulative impacts is not anticipated.

6.10 Parks and Recreation

6.10.1. Area Beaches and Park Facilities

The major public recreational areas in the immediate WGSL vicinity are the beach parks along the Kahe coastal areas including the Kahe Point Beach Park, Makaiwa Beach Park, and beaches located northwest along the coastline. Within the Ko Olina Resort are four constructed lagoons with sandy beaches. The beaches along the lagoon and region support surfing, swimming, picnicking, skin diving, boating, and related uses.

District III of the City & County of Honolulu, Department of Parks and Recreation, encompasses approximately 23 parks along the leeward side of O‘ahu. Parks are situated in each of the major residential zones and are located along the Wai‘anae Coast, at the tip of Barbers Point (in the James Campbell Industrial Park) and in ‘Ewa Beach. Within the Kalaeloa Community Development District (formerly the Barbers Point Naval Air Station), the White Plains and Nimitz Beaches are popular. These are under joint Navy and Parks Department control.

After the closure of Barbers Point NAS, most of the Navy land was conveyed to the City & County of Honolulu for redevelopment as recreational and sports facilities.

Other private recreational facilities include the Ko Olina Golf Course, tennis courts and facilities associated with the Ko Olina Resort including the Marriott Ihilani Resort and Spa; Marriott's Ko Olina Beach Club (resort timeshare units), and other developments within Ko Olina. Hiking trails available to the public are also located in the area.

6.10.2. Potential Impacts and Mitigation Measures

The proposed project is anticipated to have potential impacts that are somewhat similar to existing operating conditions that include the migration of landfill associated odor, windblown litter migrating to area beaches and parks, and visual impacts. The exception to these existing potential impacts, however, involves the location of the proposed project further mauka within the Waimānalo Gulch which will help to reduce potential odors directly attributable to the landfill, the control of windblown litter from working cells, and the visibility of working activities on the landfill working face.

Control of Landfill Odor

There are three pathways whereby odor may affect locations adjacent to the landfill: (1) odors from vehicles transiting to the landfill; (2) odors from refuse awaiting disposal once unloaded from refuse vehicles; and (3) odors as a result of decomposition processes within the landfill.

The potential for odor from transiting vehicles to the landfill include: vehicles that carry putrescible waste from residential and commercial sources; vehicles that carry treated sewage solids from the Sand Island Wastewater Treatment Plant digester and potentially other wastewater facilities; and private self-haulers from area farms disposing animal carcasses. Odors from refuse awaiting disposal involve a temporary condition in that once the refuse is buried and covered, the source of the odor is removed from exposure to the air column. Odors resulting from landfill decomposition involve bacteriological processes and are further described in Section 5.7. Landfill Associated Gas Emissions.

Mitigative measures to address landfill associated odor are provided in Section 5.7.3. Potential Impacts and Mitigation Measures (for Air Quality).

Control of Windblown Litter

The release of windblown litter is normally the result of improperly secured loads from transiting refuse vehicles, temporary high wind conditions, or a combination of these. During periods of high winds certain types of litter can become airborne and lodge in the portable litter fences deployed around the active working areas of the landfill. As the litter becomes lodged it accumulates and prevents the further capture of litter. Under this condition the litter escapes the fencing and drifts off-site to the Farrington Highway and neighboring properties.

Mitigative measures to control windblown litter at WGSL include the following:

- Permanent, temporary, and portable litter fences are used based on prevailing wind conditions and the nature of waste that may contain refuse prone to becoming windblown, e.g., lightweight materials especially plastic bags and paper products. Permanent fencing is erected in locations downgradient of the site where tradewinds normally blow. Temporary litter fencing is erected in locations adjacent to active landfill cells where tradewinds and gusts can be controlled for the duration of use of the active landfill cell. The temporary fencing is erected and removed according to the use of any active working cell. Portable machine-movable litter fencing is designed to be quickly positioned within active landfill cells based on prevailing wind conditions at the time of refuse delivery, handling, and the immediate location of the active working face of the landfill cell. As required, the approximately 7 to 12 foot high portable litter fencing can be relocated on-site on an as-needed basis. All litter fencing is regularly maintained by requiring work crews to remove litter as it is captured on the fence.

- Waste is processed and covered with cover material as soon as practicable upon the delivery of refuse to WGSL. Under normal operating conditions the refuse is delivered to the landfill and cover material placed over the refuse at the end of the working day. Under high wind conditions intermediate fill material is placed over refuse more frequently to suppress and reduce the opportunity for litter to become windblown.

- On-call or standby work crews are deployed on a schedule that is concurrent with the acceptance of refuse at the WGSL. The intent is to be able to act immediately upon an incident involving the loss of windblown refuse from the landfill. Work crews are mobilized when: (1) WGSL personnel observe windblown litter crossing the landfill property and drifting off-site to the Farrington Highway or adjoining property; or (2) a complaint is received from the general public or Honolulu Police Department, that windblown litter is being released from the WGSL.

- ENV will enforce existing rules, regulations, and procedural practices designed to reduce or mitigate the incidence of windblown litter. ENV regularly notifies refuse hauling firms that litter falling from refuse trucks onto highways, streets, and adjoining property is unacceptable and subject to penalty (including the loss of access to WGSL by offending drivers).

  Management personnel at WGSL also enforce the rule requiring all loads entering the landfill to be secured by use of a tarp, cover, or enclosure to mitigate against the loss of refuse. Inspection of all loads is from the landfill scale house via remote cameras situated above the beds of incoming trucks. Refuse delivery operators and drivers are issued warnings and are prohibited from entering the landfill if there are repeated infractions.

Visibility of Working Activities on the Landfill

Portions of the existing area of work within the WGSL are visible from various locations along Farrington Highway and the Ko Olina Resort (see Section 5-10, Scenic and Aesthetic Environment).

Views of ongoing waste disposal activities within the existing active landfill cells may be temporarily visible from Farrington Highway or the Ko Olina Resort. This is because the elevation of the active work area involving disposal of refuse will normally be located below the ridgeline, and completed portions of the landfill will screen views into the working cell. The proposed lateral expansion is expected to minimize line of sight views of landfill cells based on the work being located further mauka and within the Waimānalo Gulch.

Other views of the expansion area will include: vehicles traveling along the access roadway in transit to and from the disposal of refuse into cells; construction vehicles conducting periodic maintenance, repair, upkeep, and construction of the access road, drainage facilities, berms, and other structures associated with the proper operation of the site; and related structures including berms to maintain landfill stability and control runoff.

Mitigation to address these issues involves: (1) the location of the planned area of expansion further mauka and within the Waimānalo Gulch will itself minimize views into active areas of landfilling; and (2) the use of landscaping with trees and vegetative cover to act as a screening element to improve views of the site. While not all elements of the proposed project can be totally screened from view, the location of work and the careful placement of landscaping elements is expected to significantly reduce the potential for viewplane and aesthetic impacts.

A planned public drop off center at WGSL will further help to reduce the transit of residential and small self haulers along the access roadway to the working face of the landfill. This will remove from visibility some of the vehicles that would ordinarily travel along the access roads.

In the long term Waimānalo Gulch may one day itself be used as a reclaimed recreational facility that is not unlike parks on Oʻahu that were once refuse sites. These locations include Ala Moana Park and the Honolulu Waterfront Park in Kakaʻako.

Parks and Recreation Summary

The potential for secondary or cumulative impacts to parks and recreational facilities are not anticipated. The mitigative measures as provided in this section will address the migration of landfill associated odor, windblown litter migrating to area beaches and parks, and visual impacts.

Other potential secondary effects from impacts to air, water, or soils that might otherwise affect the use of parks and recreational facilities in the area will be subject to the mitigative measures as provided in Sections: 5.2. Topography; 5.3. Geology; 5.4. Surface Water; 5.5. Groundwater and Hydrology; and 5.7. Air Quality.

Section 7
Socioeconomic and Related Environment, Potential Impacts and Mitigation Measures

7.1 Socioeconomic Characteristics

In March 2008, SMS Research prepared the report, Socioeconomic Impact Assessment, Waimānalo Gulch Sanitary Landfill Lateral Expansion, City and County of Honolulu (**Appendix J**). As a result of comments received during the DEIS public comment period, two addenda were added to the report: (1) Environmental Injustice Issues; and (2) Impact on Property Values. Both addenda have been included in Appendix J, referencing this section. According to the report, a socioeconomic impact assessment is conducted to establish, for the use of policy-makers and the public at large, information about a proposed project and its socio-economic consequences. The report is used, with other aspects of the EIS, to inform decision-makers, and to ensure that consequences are taken into account. Where appropriate, this report points to other technical studies for more detailed examination of related topics. (SMS Research, 2008).

7.1.1. Area of Study

A landfill on Oʻahu affects the entire island by providing a key element of Honolulu's solid waste system. All of Oʻahu's people and businesses are affected by the proposed action. The ʻEwa Development Plan (DP) Area within which the landfill is located is considered the area most affected by the daily operations of WGSL. The Waiʻanae DP adjoins the ʻEwa DP boundary and residents in the vicinity of the WGSL share the Farrington Highway, which is used for the hauling of refuse providing the only route into and out of Coastal Waiʻanae. (SMS Research, 2008).

Island of Oʻahu

Oʻahu has been the political and economic center of Hawaiʻi since the time of Kamehameha I. It is the most urbanized and populated of the Hawaiian Islands. After

World War II, Hawaiʻi residents moved to Oʻahu in record numbers. According to the 2000 U. S. Census, Oʻahu's resident population was 836,231, representing 72% of the State's population. By 2006, that population had risen to approximately 909,900. (SMS Research, 2008).

Hawaiʻi has witnessed rapid tourism since statehood that has supplanted agriculture and military spending as the major source of jobs and income. Because of their relative smaller economies on the neighbor islands, tourism has and continues to have a greater impact on the neighbor islands. But even in tourism, Oʻahu dominates the industry. In 2006, Oʻahu had nearly twice as many visitors as any neighbor island with 4,606,400. (SMS Research, 2008).

Oʻahu's tourism has been primarily centered in Waikīkī (87% of Oʻahu's hotel units are located in Waikīkī). However, in recent years Ko Olina in ʻEwa has begun to shape itself into a visitor destination area. During this same period, Oʻahu reinforced its role as the financial and shipping center of the State. Oʻahu's more diverse economy has also resulted in less economic fluctuation, lower unemployment and higher average income than has been experienced on other islands (SMS Research, 2008).

ʻEwa Development Plan Area

WGSL is situated within the ʻEwa DP Area which extends from Waipahu to Ko Olina and from ʻEwa Beach to Makakilo. The ʻEwa DP Area is the fastest growing region on Oʻahu and has nearly tripled its population over the 30 year period from 1970 to 2000. This compares to a 39 percent growth rate for Oʻahu as a whole during this same period (**Table 7-1**). (SMS Research, 2008).

Barbers Point NAS ("Kalaeloa"), with some 3,709 acres, was a major land use until closing in 1999. The airfield is now operated by the State Department of Transportation for general aviation, while the remainder of the Kalaeloa land is parceled among public and private users, including among others, the City, the Hawaiʻi National Guard, the

State Department of Hawaiian Home Lands, the U. S. Coast Guard, and the U. S. Navy. (SMS Research, 2008).

Table 7-1
Historical Population Change on O‘ahu, 1960-2000

	Resident Population					
Decade	1960	1970	1980	1990	2000	
County	500,409	630,528	762,565	836,231	876,156	
Wai‘anae	16,452	24,077	31,487	37,411	42,259	
‘Ewa		24,235	35,523	42,931	68,696	
Central O‘ahu			101,685	130,526	148,208	
PUC			417,240	432,023	419,422	
East Honolulu			43,213	45,654	46,735	
North Shore			13,061	15,729	18,380	
Ko‘olauloa			10,983	14,263	14,546	
Koolaupoko	60,238	92,219	109,373	117,694	117,910	
	Average Annual Growth Rates (Ten Year Intervals)					1980-2000
County		2.6%	2.1%	1.0%	0.5%	1.5%
Wai‘anae		4.6%	3.1%	1.9%	1.3%	3.4%
‘Ewa			4.7%	2.1%	6.0%	9.3%
Central O‘ahu				2.8%	1.4%	4.6%
PUC				0.4%	-0.3%	0.1%
East Honolulu				0.6%	0.2%	0.8%
North Shore				2.0%	1.7%	4.1%
Ko‘olauloa				3.0%	0.2%	3.2%
Koolaupoko		5.3%	1.9%	0.8%	0.0%	0.8%

Source: DBEDT (2004a) and earlier years; City of Honolulu website (http://www.honoluludpp.org/Planning/ResearchStats.asp)

Honolulu has long been O‘ahu’s commercial and transportation center. Squeezed between the Ko‘olau Mountain Range and the ocean, growth has extended outward, southeast toward Koko Head, and northwest toward Central O‘ahu and the Leeward communities. Concentration of activities in Honolulu has also created the expected problems of traffic congestion, overtaxed infrastructure, and deteriorating urban spaces. (SMS Research, 2008).

Plans to develop a “Second City” at Kapolei on the ‘Ewa Plain responded in part to these problems. Planning began in 1955, when Harland Bartholomew and Associates prepared the first ‘Ewa region master plan for the Estate of James Campbell. The concept of a separate city emerged in 1974, and was officially sanctioned in 1977 when the City Council approved the new General Plan with a Secondary Urban Center for O‘ahu centered on the ‘Ewa Plain. In 1986, the Estate proposed a detailed implementation plan for a city center, naming it the City of Kapolei. Since breaking ground in 1990, the region has been bustling. (SMS Research, 2008).

Kapolei land uses include a large industrial complex, with areas for both heavy industry (in the 1,367-acre James Campbell Industrial Park) and light industry plus new technologies (in Kapolei Business Park) and areas for commercial and office development in the City of Kapolei urban center. A 2006 inventory of the Campbell Industrial Park showed there were 251 businesses with about 4,500 workers. Approximately 85 percent of the parcels in the park are owned in fee by its tenants. (SMS Research, 2008).

Kalaeloa Harbor located along the northern edge of the Campbell Industrial Park, was created in 1961 as a second harbor for O‘ahu. South of the industrial area, about a mile offshore, are a buoy and pipeline designed to allow oil tankers to off-load their cargo without docking in the harbor. Steps are currently underway by Campbell Estate to construct a second industrial park at Kalaeloa Harbor. This industrial park would be built on a 332-acre parcel and construction is expected to begin in 2008 or 2009. (SMS Research, 2008).

Over the years, residential areas developed along Farrington Highway and as of 1962, uphill in Makakilo. New residential development in Kapolei has been led by the State, as master developer of the Villages of Kapolei, beginning in the 1980’s with its first Village, Kumu Iki. The Villages of Kapolei and adjoining developments have rivaled developments along Fort Weaver Road, to the east, and Mililani in Central O‘ahu, as new residential areas emerged with aggressive growth through the last decade. (SMS Research, 2008).

While industrial and residential development proceeded over recent years, many of Kapolei’s residents still commute to Honolulu. Growth in the center of Kapolei has been spurred by relocation of banking activities and both State and City offices. The Campbell Estate stresses Kapolei’s advantages as a wired community with direct access to satellite and fiber-optic network communications. (SMS Research, 2008).

The Ko Olina Resort complements the rest of Kapolei. Its innovative man-made coves provide recreational areas and frontage for hotels, and a 430 acre privately owned marina offers 330 full service slips for boats. Plans have called for as many as 8,700 housing units. These were planned with vacation markets in mind. Projects to date include a hotel, a time-share resort, and townhouse condominiums. One project, The Fairways at Ko Olina, was sold to the resident market, and newer projects have aimed at both second- and first- home buyers (The Coconut Plantation, Kai Lani, Ko ‘Olina Kai). The newest project, the Beach Villas at Ko ‘Olina, with 247 luxury units in beachside towers, is expected to open in the spring of 2008. (SMS Research, 2008).

When first opened in 1989, WGSL was surrounded by vacant land and agriculture. Although Makakilo had begun to be settled by homes 27 years earlier, it was still a significant distance from the landfill. The resort of Ko Olina was still undergoing development and Kapolei’s Second City had only just begun. Today, urbanization of the ‘Ewa Plain approaches closer to the landfill, the second City is a becoming a reality, and the resort of Ko Olina is a growing vacation and residential community. (SMS Research, 2008).

7.1.2. Demographic and Economic Characteristics

‘Ewa DP Area

The ‘Ewa DP Area has a young population; the median age of its residents is 31.2 vs. O‘ahu’s residents’ median age of 35.7. Households are significantly larger than average (3.69 persons per household, vs. 2.95 persons in the average household for O‘ahu as a whole). Of the 20,804 housing units in Ewa in 2000, 63.7 percent were owner occupied. (SMS Research, 2008).

Within the ‘Ewa DP Area, the Ko Olina sub-region (Census Tract 86.09) stands out as having an older median age, a large proportion of vacant homes held for seasonal or recreational use, and, among occupied homes, a low proportion of renters (26.1%). (SMS Research, 2008).

In general, the average per capita income over the entire ‘Ewa DP Area is lower than the Island of O‘ahu average. In the two census tracts abutting the landfill however, incomes tend to be higher. In the Kahe Census Tract, per capita incomes are nearly at the O‘ahu average level; in the Ko Olina Census Tract incomes are much higher. (SMS Research, 2008).

Workers living in the ‘Ewa DP Area are diverse in occupation, and, despite the long history of sugar cultivation in the region, a lower percentage of workers are in agriculture than the percentage islandwide. Commuting times are long, and a third of the workforce normally drives over 45 minutes to work which is characteristic of a suburban community. (SMS Research, 2008).

Among the ‘Ewa DP Area communities, Ko Olina and Honokai Hale[1] stand out in several ways. In this sub-region, the population tends to be older with a median age of 36.8, slightly higher than the island median. Most households do not have members younger than 18. The median household income level is much higher than in the other communities studied. However, the share of children under 18 living with family who are below the poverty level is comparable to that found in the Wai‘anae Coast, suggesting that those families that do have children in this sub-region face an economic situation very different from that of their older neighbors. (SMS Research, 2008).

Despite the intention to develop Kapolei into the second major O‘ahu city, Kapolei is today not much more than a significant suburban community. The same can be said of the neighboring communities along Fort Weaver Road, in ‘Ewa and Makakilo. Outside

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[1] In the Census tables, “Ko Olina” consists of Census Tracts 86.09 and 86.10, and includes Honokai Hale as well as Ko Olina.

of Campbell Industrial Park and the Kalaeloa Harbor, the commercial activity of the region is primarily designed to service a suburban community. (SMS Research, 2008).

Emerging Trends in the ‘Ewa DP Area

The building blocks laid today in the ‘Ewa DP Area forecast very strong future growth, although the business core has not yet emerged. According to **Table 7-2**, the ‘Ewa DP Area is the only Development Plan Area on the island that is expected to increase its share of the City’s population between 2005 and 2030. (SMS Research, 2008).

Table 7-2, Socioeconomic Projections, 2030

	2005		2025		2030	
DP Area	Population	Share of Island	Population	Share of Island	Population	Share of Island
Wai‘anae	**44,004**	**5%**	**49,682**	**5%**	**50,616**	**5%**
'Ewa	84,154	9%	164,136	15%	184,612	17%
Central O‘ahu	157,250	17%	180,687	17%	189,599	17%
Primary Urban Center	424,183	46%	478,430	44%	489,389	44%
East Honolulu	50,377	6%	51,713	5%	51,059	5%
North Shore	18,703	2%	20,074	2%	19,945	2%
Ko‘olauloa	15,099	2%	16,563	2%	16,725	1%
Koolaupoko	119,132	13%	116,766	11%	115,357	10%
Totals*	912,902	100%	1,078,051	101%	1,117,302	101%

Source: http://honoluludpp.org/planning/demographics2/Projections/2030byDP.pdf
Note: Percentage totals do not add due to rounding.*

The suburban residential areas that experienced vigorous growth through the last 15 years continue to fill in with projects by HASEKO, the Department of Hawaiian Home Lands, Gentry and others; and plans for accompanying major retail projects continue to progress. If anything is missing to complete the City, it is the maturing of an intense, downtown core characteristic of other cities: a corporate home to finance and professional service industries, upscale restaurants, specialty retail, medical services and other office tenants, that make a downtown viable. (SMS Research, 2008).

On February 9, 2005, ground was broken to begin construction of the North-South Road. This major roadway will connect the H-1 with Kapolei Parkway and extend into Kalaeloa. The project is targeted for completion later in 2008. The completion of the

North-South Road will signal the start of construction on the new University of Hawaiʻi West Oʻahu Campus and will provide a primary means of access to the underdeveloped lands of Kalaeloa and the largely vacant lands of West Kapolei. The confluence of activity along the North-South Road will have a significant impact on the shape and development timing of the entire ʻEwa DP Area. (SMS Research, 2008).

On the industrial front, Campbell Industrial Park is full and employment has remained stable for the past few years. Light industrial space in the City of Kapolei and Kapolei Business Park is anticipated to attract office and light industry jobs from other parts of Oʻahu as the region's residential population continues to grow. (SMS Research, 2008).

Kalaeloa Harbor, as is Honolulu Harbor, remains very active and in demand. The Sause Brothers barge operations have been shifted to this port from Honolulu. Kalaeloa also handles several bulk cargo operations and metals recycling. Space for expansion will remain tight for the next few years. (SMS Research, 2008).

A key to understanding the future of industrial/commercial uses in the ʻEwa region may lie with the Barber's Point Naval Air Station, now known as the Kalaeloa Community Development District. Because of its nearly 3,700 acre size and the undeveloped nature of much of its land, Kalaeloa offers business and commercial opportunities that no other part of the island can duplicate. (SMS Research, 2008).

Finally, as noted, Ko Olina continues to grow and to move toward a critical mass sufficient to fully support a resort community. (SMS Research, 2008).

If anything will slow the emergence of a true Second City at Kapolei, it is the capacity of the infrastructure. Despite construction of the North-South Road and the widening of the Fort Weaver Road, the road system in the ʻEwa region is significantly under capacity and deficient in connectivity. The school systems, finished park spaces, liquid and solid waste disposal, and drainage capacity must all be supplemented to accommodate the projected growth. (SMS Research, 2008).

Wai‘anae DP Area

The Wai‘anae DP Area is the fifth largest of the City Development Plan Areas. A long corridor, the Wai‘anae DP Area stretches 18 miles from Nānākuli to Kaena Point, and is confined by the Wai‘anae Mountain Range to the east and the ocean to the west. With ten percent of O‘ahu’s landmass, but less than five percent of the island’s population, the Wai‘anae DP Area is still rural, though it is becoming increasingly suburban. (SMS Research, 2008).

The Wai‘anae mountain range is a dominant feature and creates distinct valleys that line the corridor, linked by a single roadway and coastal beach parks. Nānākuli, about three miles from WGSL, includes the largest Hawaiian Homes community in the State, and is completely suburban in nature. Lualualei, adjoining Nānākuli, is home to large Navy munitions storage and communication facilities, as well as small residential communities along the Farrington Highway. Mā‘ili and Wai‘anae are home to large residential communities, as well as many small farms. Wai‘anae, is the urban core of the Wai‘anae DP Area, with its many shops and civic services. Mākaha has a small resort (now closed), but is essentially the last of the suburban housing communities along the coast. Makua is used by the U. S. Army for military training, while Ka‘ena is in the state's conservation district and inaccessible to public pedestrian or vehicular traffic. (SMS Research, 2008).

The Wai‘anae DP Area has experienced modest growth over the last 20 years (3.4%) and this has allowed the communities to retain the “small-town” values of the residents. But the isolation of these communities and its rural character has had its downside. Average incomes ($42,451) are significantly below the City average ($51,914) and the number of people living in poverty is nearly triple the number living in the ‘Ewa DP Area. Unemployment is very high and a host of social concerns threaten the region. Of equal concern, the Wai‘anae DP Area is seen by many of its residents as the “dumping” ground for problems that no one on O‘ahu wants, including the WGSL, PVT landfill (construction and demolition debris), a very large portion of O‘ahu homeless population, a major power plant, and firing ranges and military activities (over 32% of the region is controlled by the military). (SMS Research, 2008).

The entire region has been considered by some as at the "end of the road" and except for times of emergencies when the Kolekole Pass is opened to allow access to Wahiawā, across the Wai'anae range, there is only the Farrington Highway providing one way in and one way out of Coastal Wai'anae. The Farrington Highway lies at the entry to Wai'anae and runs past the WGSL. (SMS Research, 2008).

Emerging Trends in the Wai'anae DP Area

In recent years, the Wai'anae Development Plan has migrated from a "development plan" to a "sustainable community plan", reflecting the intention of the City and the community to retain the rural nature of the region. The plan's vision and supporting provisions are oriented "to maintaining and enhancing the region's ability to sustain its unique character, current population, growing families, rural lifestyle, and economic livelihood . . . " (SMS Research, 2008).

With the exception of significantly upgrading the infrastructure serving the region, and protecting and enhancing the lifestyle of Coastal Wai'anae, not much is projected to change. Although there have been on-going discussions for many years about adding a new highway through the Wai'anae Mountain Range or completing the highway around Ka'ena Point, plans have not been developed for such a project. Until then, the only access in and out of the Wai'anae DP Area will continue to be the Farrington Highway, and its connection with the H-1. (SMS Research, 2008).

7.1.3. Community Issues and Concerns

According to SMS Research, the information used to prepare the assessment of landfill issues and concerns included the following:

- Interviews with selected persons who SMS Research knew to be knowledgeable about the affected communities and activities relating to the proposed action
- Neighborhood Board resolutions and summaries of discussions of the issues during the years 2005, 2006 and 2007
- 2005, 2006 and 2007 local newspaper articles

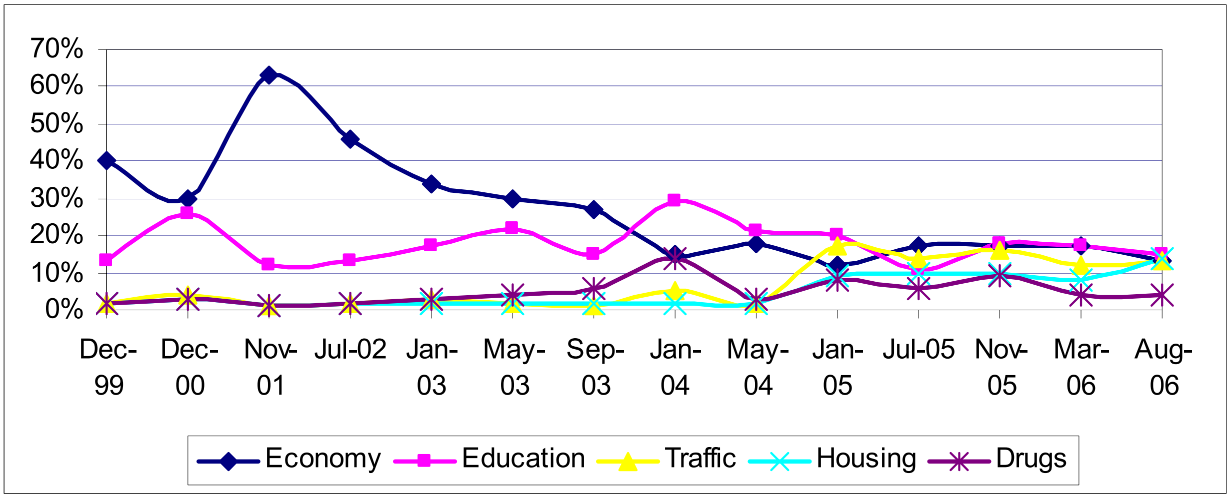
Other information from existing data sources was also used.

The objective of the data gathering is to understand the range of concerns and some of the linkages between them. The methodology was designed to cover a wide range of opinions, not to assess the relative importance of particular viewpoints. (SMS Research, 2008).

7.1.3.1. General Community Concerns and Issue

For several years, Hawai‘i residents have responded to polls on the major issues facing the community by pointing to the economy and education as the most important issues for the State (**Figure 7-1**). Environmental issues (e.g., environmental protection, recycling) do not achieve the same salience. (SMS Research, 2008).

Figure 7-1,
Major Public Issues, State of Hawaii, 1999-2006



Source: “People’s Pulse Poll – OmniTrak Group Inc.”

7.1.3.2. Community Issues and Concerns Regarding WGSL

Neighborhood Board Topics of Discussion

A total of 32 Neighborhood Boards meet monthly on the Island of Oʻahu. Discussion regarding the WGSL arose in the Waiʻanae, Makakilo/Kapolei/ Honokai Hale, and Kailua Neighborhood Board meetings.

Leeward communities were mostly interested in closing the WGSL and in ensuring that following the May 1, 2008 closure[2] of WGSL, that the next landfill would not be located in Leeward Oʻahu. Specific comments noted in italics included the following (SMS Research, 2008):

1. *Is the State Department of Health monitoring and conducting its own landfill investigations or are they relying on the operator?*
2. *What violations are outstanding and what is being done about them?*
3. *Is anyone, but in particular the military, being allowed to dump hazardous material in the landfill?*
4. *What is the present situation with transshipment? Is it a viable option to keeping WGSL open and at what cost?*
5. *What are the specific elements of the community benefits package and who benefits? Why? Who is represented in decision-making? Are there any features that are merely a substitute of City services that should be provided anyway?*
6. *What assurances are there that if WGSL is closed that another landfill is not opened on the Leeward Coast and what enforcement is available to prevent rogue trash dumping.*
7. *What is being done about the hazardous dump truck drivers and the dangerous traffic conditions caused by crossing the freeway without a light, by trucks lining up on the side of the highway waiting to enter the*

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[2] The requirement for the closure of the WGSL has changed since the time the interviews were taken. The new date is November 1, 2009.

landfill area, by the airborne and highway trash left behind by trucks and the landfill operation?

8. *What is the situation with the leachates? What is the stability of the landfill walls?*
9. *How is the landfill affecting the for-profit businesses in the area or the decisions of businesses who would like to locate in the Leeward area?*

The Kailua Neighborhood Board, over the course of 2005 and 2006, had numerous mentions of WGSL Sanitary Landfill. A majority of the concerns involved the EIS; when the preparation process would begin and the expected completion date. The board was also notified monthly of any news or decisions surrounding the landfill. The specific mentions in italics included (SMS Research, 2008):

1. *Questions were raised numerous times in 2005 and 2006 regarding the status of the EIS. It was believed that there was no movement on this due to a face-off between the City Council and the Mayor's promise to Leeward not to extend the landfill.*
2. *Concern was expressed that if the EIS process did not begin soon the City would run into similar problems to what Maui was facing with their permit process.*
3. *Credit was given to the Mayor for vetoing Bill 37 that would have closed WGSL by May 1, 2008. They understood that it was not an easy decision.*

Individual Community Issues and Concerns

Interviews with community leaders, individuals and community groups solicited strong and wide ranging comments on the WGSL. A sample of the most often mentioned reactions, slightly edited for grammar and without analysis as to legitimacy, are presented in italics.[3] Information from ENV and WM are also presented. (SMS Research, 2008).

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[3] In the course of the interviews, interviewees were assured anonymity and confidentiality by SMS Research. This allowed for free and frank conversations. As such, the names of interviewees are not presented.

Those Who Favor Closing the WGSL

On the City's Commitment to Close the Landfill

When it opened, the City committed to a short-term usage of WGSL. They extended it under the Harris Administration with a strong commitment that it would close in 2008. If we can't trust the City Administration to stand by the commitments of previous administrations, how can we trust anything they say?

The commitment to close the WGSL is reflected in the deeds of buyers in Ko 'Olina. We were told it would close in 2008. I'm not sure people would have bought units without that commitment by the Administration.

It's not like we have NO choices to using WGSL. We can expand H-POWER, we can ship waste to Washington State, we can landfill elsewhere on the island. So, if we have options, how do we justify going back on a commitment given in good faith?

It seems to me that if one reads the last EIS, there was absolutely no intention of keeping the timetable to five years. Remember, Harris started with an extension for 15 years, then cut it to five years after all the protest. There was no plan for what to do after five years. The City doesn't care; it takes the community for granted.

Where's the transparency necessary to deal honorably with the community? It robs the community and the larger O'ahu community of the opportunity to make reasoned judgments and it breeds distrust.

Does the Administration pay attention to its citizens; does it feel an obligation to keep its word. This is overwhelmingly the stuff that drives the response to ideas and fuels the energy behind the opposition to WGSL.

Discussions with ENV indicate that the City is continuously seeking ways to find relief for the landfill, but thus far with limited success (SMS Research, 2008). Currently available new technology based solutions as well as waste transshipment result in the generation of waste byproducts that cannot be further recycled or transshipped off island. These forms of waste will still require a municipal landfill for disposal. However, the use of alternative technologies and transshipment, as implemented, would reduce dependency and lengthen the life of the landfill through the reduction of waste volume.

The events that have transpired since the commitment of the prior administration to close WGSL is provided in Section 2, Project Background. The record of events presents the basis for the current Administration's decision to seek the expansion of the WGSL within the context of the prior commitment as considered by both the Administration and City Council.

On Management of the Operation

Despite numerous complaints over the years, we continue to have litter on the roads, we continue to have dangerous truck situations where merging into and crossing traffic occurs; we continue to have smells coming from the landfill; and we continue to have deliveries at off-hours. There may have been some improvements, but these issues are not being adequately addressed by Waste Management.

Waste Management is very secretive. They don't answer our questions; they subtly harass people who come to the site; they make the community suspicious.

Discussions with WMH indicate that they are taking steps to be more transparent on the operation of the landfill. They are active participants in the Mayor's Oversight Advisory Committee and provide tours of the landfill upon request. In 2006, more than 1,600 individuals toured the landfill (SMS Research, 2008). Both ENV and WMH provide website contact information to accept questions or complaints at:

http://www.keepinghawaiiclean.com/contact.htm; and
http://envhonolulu.org/solid_waste/contact/contact_us.html.

On Traffic

It is very dangerous when trucks line up on the highway waiting to turn mauka. It doesn't happen often, but when it does, it's very dangerous.

When trucks merge back onto the highway going toward town, they have to cut across traffic, sometimes very heavy traffic, without the benefit of a light. I'm surprised there haven't been any major accidents caused by these trucks.

The individual household deliveries, in cars and trucks, may be even more problematic than commercial trucks. These aren't professional drivers and they often don't cover the trash. These people are more likely to litter the road and to cause traffic hazards.

WMH notes that they are not aware of any major accidents involving trucks entering and exiting the landfill site. They continue to monitor the intersection and to counsel truck drivers on appropriate driving practices. (SMS Research, 2008).

An assessment of traffic conditions at WGSL in Section 5, Public Services, Potential Impacts and Mitigation Measures, provides further information regarding traffic volumes and safety at the entry to the site.

On Odors

The State Department of Health has done tests and they tell us that "yes, under certain conditions, odor is a very real problem." It is not our imagination. This is especially a problem for Honokai Hale and Ko 'Olina residents and guests.

The odor problem is most noticeable when they deliver sludge material from the Sewage Treatment Plant and it is not immediately buried. It happens often.

Sometimes it gets so bad, you can't come out of your house. I feel sorry for those people in Honokai Hale who may not have air conditioning.

Following numerous complaints a few years ago, WMH indicates it instituted a practice to immediately process sludge material upon delivery. WMH also improved the operation of their odor neutralizing misting system that functions during landfilling operations. Improved operating performance of the Synagro-WWT facility has reduced sludge delivery to the landfill by approximately 25 percent. (SMS Research, 2008).

Taken together WMH believes they are actively addressing this issue. According to WMH records there has been a drop in odor complaints from seven different instances in 2006 to one odor complaint in 2007. (SMS Research, 2008).

On Litter

This is the most visible problem. It was worse before, but the problem has certainly not gone away. Trucks litter because the load is not properly covered on the way to the landfill or because they do not clean the truck out completely before leaving.

Litter occurs sometimes because of the winds blowing over the landfill. Some days one can see paper and plastics hovering over the landfill, kicked up by the wind. And sometimes, that trash is blown down the mountain to the areas around the landfill and out to the ocean. There is a reason that wind farm people have looked seriously at sites above the landfill; the wind is very strong there.

Discussion with WMH indicate that it is their current practice to continuously process and cover the trash as it arrives, thereby limiting its exposure to wind. They also cover MSW daily, as is indicated by photos that are submitted to the State DOH at the end of each working day. WMH also employs people to pick up litter along the extremities of the landfill before it can blow off of the property. They appreciate that they are not always successful, but believe they have greatly reduced the problem. (SMS Research, 2008).

As to trucks not properly covering their load or not completely emptying their load, WMH contends that they monitor the trucks entering and leaving the landfill and are very aggressive about employing a system of counseling and fines. It is their position that anyone seeing violations of littering should call them and call the police with information on vehicle license numbers and the time and date of occurrence. (SMS Research, 2008).

ENV has stated that they are concerned regarding landfill bound vehicles as a potential source of odor and litter. Vehicles making deliveries to the landfill are prohibited from queuing outside of the landfill property or entering the landfill with uncovered loads. The scalehouse, which is operated by a City employee assists in monitoring vehicles and will enforce the provisions against uncovered loads at first with counseling. Repeat offenders are issued penalties and if the offense is serious, with prohibition against use of the WGSL.

On Views

The landfill is visible from Ko 'Olina and from the highway. It is most visible from Farrington Highway as you drive by the Kahe Power Plant.

If operations are visible now, how much more visible will it be if they expand operations? They are not supposed to excavate, so I don't understand how it will not be more visible?

The visibility of the landfill has a direct impact on the development of Ko 'Olina; on the largest single economic engine on the Leeward Coast. Hotel developers are very reluctant to buy parcels because all mauka view units will be looking at an operating landfill. One can say that the current landowners knew it was there when they bought the project, but they believed the City when the City committed to close the landfill in 2003 and then in 2008. The landfill is not the only reason these sites are difficult to sell, but it is a major reason.

People keep saying the view will improve as they plant cover and put in view screens. But it's been a long time and I don't see any trees or view screens.

Discussions and site visits indicate that Norfolk pines and monkey pod trees have been planted along a berm fronting the landfilling operation. These trees have yet to mature to a level to adequately screen views. Most of the finished surfaces have been hydro mulched, but grass has not yet taken hold. Berms have been erected in such a manner that views of the operation from the highway fronting the landfill and from much of Ko Olina have been partially obscured. WMH contends that if the operation is allowed to expand deeper into the Waimānalo Gulch, the finished heights of the berms and additional plantings will almost totally obscure any views of the operation for most of the neighbors. (SMS Research, 2008).

On the Safety of the Site

Is the site safe? I worry about the plastic linings since they have had some recent fires.

I worry about the fill coming down the hillside. When the recent earthquakes happened, my first thought was how we would handle the toxic materials if the walls of the landfill breeched.

WMH contends the landfill was never unstable and that the site has always been safe. However, to address the small area of the ash monofill that had a factor of safety less than permitted by the DOH, a berm was constructed and completed in 2005. The basis for WMH's contention are geotechnical studies and analyses that have been performed by third party professional firms whose work has been reviewed by independent, nationally recognized engineering professionals. (WMH and SMS Research, 2008).

A number of the special studies providing the basis for the design of the existing as well as proposed future areas of the landfill are identified in Section 5, Environmental Setting, Potential Impacts and Mitigation Measures, and in other sections of this EIS document.

On the Community Benefits Package

If the package is going to have elements that merely replace funds that should have been spent in the community anyway (e.g. park maintenance), then it's a farce.

Leave the decision to the community as to how the money is spent. Those decisions should not be controlled by people who don't have to live with the problem.

There is absolutely no reason not to include Makakilo as a recipient. They live next to the landfill. How does the WGSL affect the people living Ewa? Yet, they are recipients and the community of Makakilo is not.

If truth be told, the only communities that are directly affected by WGSL are Honokai Hale and Ko 'Olina; the communities indirectly affected are Makakilo, Kapolei, and the residents who pass by going further out Leeward.

I'm not sure I even want to discuss a "better" community package. As soon as we start "negotiating" a community package, we will surely have to keep the landfill. We'll get bought off. There's too much money being made by the City at the landfill.

ENV notes that the community benefits package thus far has been $2.7 million in 2007 and will be $2.0 million in 2008. They expect that participation and the benefits provided will continue to evolve as they gain experience in working with the community. (SMS Research, 2008).

The current City administration recognizes that WGSL has a potential impact on neighboring communities and implemented the community benefits program to provide those communities with funding for programs beyond those provided in the regular operating and capital budgets. A Committee comprised of representatives of Leeward Coast communities was established by the Mayor to review funding applications from nonprofit community groups, identify capital projects in their communities, and determine how funds will be utilized. The Committee will help to identify programs or projects to provide services and benefits that are in addition to any provided through the normal City budget process.

People Who Favor Extending the WGSL Landfill Operation

On the City's Decision

We need a landfill on the island, even if we have other successful alternative technologies. WGSL has more room for expansion; the investment is already made there. Honolulu town has had its share of landfills as has Windward O'ahu. It's just logical to extend the use of WGSL.

I support the full use of the Waimanalo site before any other site is considered. Anything else would be a terrible waste of money and resources.

Discussions with people opposed to continuing the operation of WGSL indicates that they believe the financial investment is not sufficient to offset the burden placed on the communities of 'Ewa and the Leeward Coast. They further indicate that this investment might have been more aggressively fought if they did not believe previous City administrations who indicated that the WGSL would be closed. (SMS Research, 2008).

7.1.4. Socioeconomic Impacts

The following discussion involves the potential social impacts of the proposed project. Information sources used include published annual reports and direct discussion conducted by SMS Research with governmental agency personnel.

7.1.4.1. Public Facilities and Services

Police Protection

The Honolulu Police Department (HPD) District 8 encompasses the Wai‘anae Coast, Makakilo, the ‘Ewa Plain, and the City of Kapolei. The District 8 headquarters is in Kapolei, while a substation in Wai‘anae provides a base of operations for officers patrolling the Wai‘anae Coast. (SMS Research, 2008).

During a one year time period, April 2006 - April 2007, in the area immediately surrounding WGSL, there were a total of 41 documented nuisance complaints, but they could not be specific on what types of complaints nor to whom they were attributable. Since April of 2007, their records show only one complaint in the area that was attributed to the landfill. This is consistent with WMH complaint logs which indicate 14 complaints in 2006 and only 4 complaints in 2007. Complaints made to WMH are not necessarily made to the police, and the police do not necessarily report complaints to WMH. (SMS Research, 2008).

Extension of the landfill operations should not result in any additional burden to the Honolulu Police Department. See also Section 6.5.1. Police Facilities.

Fire Protection

Leeward O‘ahu is served by the Honolulu Fire Department’s Fourth Battalion. The Kapolei Fire Station 40 also serves as the headquarters for Battalion 4. The headquarters building houses an engine and a ladder truck. Station 28, in Nānākuli, has an engine and a tanker. Station 26, the Wai‘anae Fire Station, has an engine, a quint truck (with pump and ladder), and a tanker. Also housed in Station 26 are the Waiʻanae EMS units. The Makakilo Fire Station 35 has a single engine. (SMS Research, 2008).

The Fire Department has worked successfully in the past with WMH supplying equipment to help with fighting area brush fires outside of the landfill property (no fires have occurred from within the landfill itself). No change in services is expected over the course of the next few years. (ENV and SMS Research, 2008).

The Honolulu Fire Department has requested that WMH maintain adequate access for fire apparatus and indicates that WMH is complying. As long as WMH continues to provide adequate access, the Fire Department foresees no necessary additions as a result of the WGSL expansion. See also Section 6.6.1. Fire Stations.

Emergency Services

Leeward Oʻahu has three EMS locations and one of Oʻahu's two Rapid Response Units. EMS is provided from the Waiʻanae Fire Station, in Nānākuli along Farrington Highway, and in Makakilo in Kapolei. The Rapid Response Unit location is at the St. Francis West Hospital. (SMS Research, 2008).

The WGSL and surrounding communities are adequately serviced by EMS services. Expansion of the WGSL will not add new residents and, according to WMH, only about 5 to 12 additional contract workers to the site. This will not significantly impact the quality of service currently available. See also Section 6.7.1. Hospital and Ambulance Services.

Education

Leeward Oʻahu has seen growth in school populations and schools in recent years, notably in Kapolei where new middle and high schools have opened. Availability of primary school space remains a problem. At least two schools were noted in the landfill site vicinity, Makakilo Elementary and Mauka Lani School. Mauka Lani School reported no complaints or staff concerns about WGSL Landfill or side effects including odor or children feeling ill at school. (SMS Research, 2008).

Development in the Kapolei area will lead to an increase in population, eventually causing the need for additional school locations. Expansion of the WGSL Sanitary Landfill will not create the need for additional elementary schools, nor will it affect existing elementary schools differently than they are affected at the present time. See also Section 6.8.1. Educational Facilities for other schools within the general project vicinity.

Library Services

Hawaii's public libraries are operated by the State Department of Education. Libraries are open in Waiʻanae, ʻEwa Beach and Kapolei. Due to limited funds, hours at libraries throughout Hawaiʻi have been reduced in recent years. No additional libraries have been announced. (SMS Research, 2008).

No impact on library services is anticipated as a result of the proposed project. See also Section 6.9.1. Library Services.

Parks and Recreation

There are parks situated in Waiʻanae, Māʻili, and Nānākuli, and throughout the major residential zones of ʻEwa. Also, beach parks are located along the Waiʻanae Coast at the tip of Barbers Point (in the Campbell Industrial Park) and in ʻEwa Beach. Odor issues and occasional airborne trash at nearby beach parks are the only reported issues caused by the current operations of the landfill. In the past, outdoor recreation at Ko Olina has been limited during occasions when odor was a problem. (SMS Research, 2008).

Long-term, WGSL may one day be used as a reclaimed recreational facility much like Ala Moana Park and the Honolulu Waterfront Park. (SMS Research, 2008).

After the closure of Barbers Point, much of the Navy land was conveyed to the City for eventual redevelopment as a recreation and sports facility. Funds for significant new developments have not been allocated, so major changes are not likely in the next few years. An expanded WGSL does not generate any additional demand for area parks. If odor issues and litter issues are adequately addressed, expansion and continued use of WGSL will have no impact on the use of nearby parks. (SMS Research, 2008). See also Section 6.10. Parks and Recreation.

Medical Services

Leeward O‘ahu is served by St. Francis West, a 100-bed hospital with 24 Emergency Service, located outside Waipahu, the Wai‘anae Coast Comprehensive Health Clinic, between Nānākuli and Wai‘anae, and clinics in Kapolei are maintained by other health care providers. SMS Research knows of no major changes in medical services planned for the study area. No impact is anticipated. (SMS Research, 2008).

7.1.4.2. Other Social Impacts

Positive Social Impacts

Reduced Impact on Other O‘ahu Communities

Unless a package of alternatives can feasibly process MSW and refuse currently handled by the WGSL, a landfill will still be needed. Without it, the health, sanitation and aesthetic issues associated with unprocessed waste or uncontrolled dumping will burden the entire island. Moving the current landfill operation to another O‘ahu location would only shift the potential for adverse impacts to another community, still requiring that the issues of litter, traffic, odors, and visual pollution be addressed and managed. (SMS Research, 2008).

Negative Social Impacts

Department of Health Issues

In February 2006, the Department of Health proposed one of the largest environmental fines against the City: Eighteen violations were identified in DOH’s six-month investigation. According to WMH, all but two violations were corrected when the Notice of Violation (NOV) was issued. The two violations were:

- Count VII, Failure to measure and maintain records of leachate levels in one sump due to a blockage caused by broken equipment, was addressed with the installation of the required equipment on September 27, 2007.
- Count I, Exceedance of permitted grades, was addressed through the submittal of an application to the DOH for a permit modification to increase the maximum final grades of the ash monofill. Public comments were solicited and a public hearing on the draft permit modification was held on December 11, 2007. The DOH permit allowing the height increase was approved on February 20, 2008.

On December 7, 2007, having addressed the two remaining counts identified in the NOV, the City and the DOH signed a settlement agreement which settled all issues arising from and related to the NOV. A summary of the counts identified in the DOH NOV are provided in **Table 7-3**.

According to WMH and the City, the public and the environment were never at risk during the period cited in the NOV or at any time over the period of use of the site. However, the public perception was of an improperly and poorly administered facility. An overview of the situation indicates:

- The DOH issuance of the NOV was based on information that was self-reported by WHM. WMH substantiates the safety of the WGSL with a number of technical studies and reports that serve as the basis for the design, operation, and monitoring of the facility, as required by both federal, state and City & County of Honolulu requirements, and WMH standards for safe engineering and operational practices.
- The community is highly sensitized to the presence of the landfill within the context of previous City administrations commitments to close the landfill, and experience with prior nuisances involving odor, litter, and visual aesthetics. Any activities of an operational nature will therefore continue to be scrutinized by the community. The situation involving the NOV exacerbates this and calls into question the management of the facility and its potential impact on the community and environment.

Table 7-3, DOH Notices & Finding of Violations

Count	*Alleged Violation*	*Date of Last Alleged Violation*	*Compliance Status*
1	Exceeding Permitted Grades	2/20/08*	In compliance
2	Failure to submit Annual Operating Reports in a Timely Manner	2/22/2005	In compliance
3	Failure to Place Daily Cover on the Active Face of MSW Landfill	6/9/2005	In compliance
4	Failure to Place Intermediate cover Material on the Ash Monofil	6/29/2005	In compliance
5	Exceeding Leachate Head on th4e Liner in Ash Monofill	6/15/2005	In compliance
6	Exceeding Leachate Head on Liner in MSW Cell E-1 Sump	6/22/2005	In compliance
7	Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in Cell 4B Sump	9/26/07*	In compliance
8	Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in Ash Monofill Sump	2/9/2005	In compliance
9	Failure to notify DOH of Noncompliance on Equipment Blockage in MSW Cell 4B Leachate Lateral line and inability to Measure Leachate Levels	6/22/2005	In compliance
10	Failure to Notify DOH of Noncompliance in a Timely Manner on the Exceedances of Permitted Grades and submission of the Annual Operating Reports	2/22/2005	In compliance
11	Unauthorized Storage of Material on the Ash Monofill	3/2005	In compliance
12	Failure to Manage and Ban the Acceptance of Special Waste	5/19/2005	In compliance
13	Failure to Maintain Records and Record Location of Asbestos Disposal at the Landfill	7/2/2005	In compliance
14	Failure to Cover a Dead Animal	2/17/2005	In compliance
15	Failure to Submit annual Surface Water Management Plan	9/1/2005	In compliance
16	Failure to Control the Generation of Dust from Vehicular Traffic	2/17/2005	In compliance
17	Failure to Minimize Free Litter Generation in the Landfill	6/24/2005	In compliance
18	Failure to Monitor Explosive Gases and Maintain Monitoring Records	2004	In compliance

* Date the DOH deemed WGSL to be in compliance.

Property Values

The 2002 Socio-Economic Impact Assessment of WGSL Expansion presented property value results that were not necessarily in line with what experts and the public at large would have expected. See also Section 7.1.5. Addendum to Socioconomic Impact Assessment, for additional information. (SMS Research, 2008).

Research found that single-family homes fit the hypothesis that property values increase with distance from the landfill up to a distance of about three miles. However, the condominium analysis shows a significant correlation of increased value and proximity to the landfill – the opposite result. (SMS Research, 2008).

Condominium property values are higher near WGSL due to the location of the condominiums within the Ko Olina Resort. According to the Ko Olina website, Ko Olina Resort & Marina's residential development will be Hawai'i's premier location for homebuyers across the world and for local residents…Ko Olina will provide a feeling of luxury in a private community…(SMS Research, 2008).

Diminishing Community Trust

The failure to follow through on commitments from the City to close WGSL may be having an impact in eroding public trust and increasing cynicism toward City government. This is happening in the fastest growing community on the Island of O'ahu where private-public partnerships are necessary to ensure sensible and well-managed growth. (SMS Research, 2008).

The problem is complicated by a "community-benefits package" proposal that both proponents and opponents of the landfill who were interviewed expressed some hesitation. There appears to be general agreement among them that there has been insufficient community involvement in questions surrounding "who should benefit?", "what impacts are being addressed?", and "what services are appropriate?" (SMS Research, 2008).

~~Environmental Injustice~~

~~Environmental Injustice is defined as: "An environmental injustice exists when members of disadvantaged, ethnic, minority or other groups suffer disproportionately at the local, regional (sub-national), or national levels from environmental risks or hazards, and/or suffer disproportionately from violations of fundamental human rights as a result of environmental factors, and/or denied access to environmental investments, benefits, and/or natural resources, and/or are denied access to information; and/or participation in decision making; and/or access to justice in environment-related matters."~~[4]

~~A number of interviewees point out that Leeward O'ahu has been and continues to remain on the receiving end of many of O'ahu's burdens. They argue that within a 10-mile stretch along Farrington Highway there are two separate landfills handling hazardous~~[5]~~, construction and municipal waste, as well as an two existing electrical power plants, a proposed new generator unit at the Campbell Industrial Park, a deep draft harbor and the Campbell Industrial Park, all of which service the entire Island of O'ahu -- all of which adversely impacts the environment of these communities. Further, Leeward O'ahu is now the home of thousands of homeless people, many of whom were driven out of other communities only to be "welcomed" and "tolerated" in Coastal Wai'anae. Inteviewees argue that the continued use and expansion of WGSL will only increase the imbalance of those impacts on Leeward O'ahu. (SMS Research, 2008).~~

~~Proponents of keeping the landfill in operation point out that the siting of the landfill occurred long before the siting of the other examples noted above and had nothing to do with the demographics of the people in surrounding communities. Furthermore, the surrounding communities also accommodate one of the most beautiful resort complexes on O'ahu, abutting the ever expanding Second City of Kapolei. This is the fastest growing region on O'ahu and WGSL does not appear to have stymied its growth. They believe that this is not indicative of a community suffering from environmental injustice. (SMS Research, 2008).~~

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[4] ~~Wikipedia *Environmental Justice* http://en.wikipedia.org/wiki/Environmental_justice~~

[5] ~~WGSL does not accept hazardous waste for disposal.~~

~~Data from the SMS Report would appear to support this position. Although the median household income in the Wai‘anae DP Area ($42,451) is below the island average ($51,194), the median household income in the ‘Ewa DP Area ($59,583), in which the WGSL is located, exceeds the island average. In addition, median household incomes for the two communities immediately surrounding the landfill all significantly exceed the island averages. These are Makakilo ($88,515) and Ko Olina/Honokai Hale ($74,083). (SMS Research, 2008).~~

~~Finally, Windward O‘ahu residents note that for the last 40 years most of the active landfills were on the Windward side of the island. It is only recently that WGSL has been the only major landfill for MSW on O‘ahu. (SMS Research, 2008).~~

Environmental Injustice (Addendum to Socioeconomic Impacts)

On February 11, 1994, President Clinton issued Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” to focus federal agencies’ attention on disadvantaged communities with the goal of achieving Environmental Justice. Over the years, each federal agency has defined environmental justice or injustice within the context of the Executive Order and in a manner that allows its application to their particular agency’s functions. The EPA defines **Environmental Justice** as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies”.[6] (SMS Research, 2008).

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[6] EPA goes on to define *Fair Treatment* to mean that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal environmental programs and policies. And they define *Meaningful Involvement* to mean that: (1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public’s contribution can influence the regulatory agency’s decisions; (3) the concerns of all participants involved will be considered in the decision-making process; and (4) the decision-makers seek out and facilitate the

The U.S. Department of Transportation, like other service agencies, goes slightly further by noting three pro-active environmental justice principles: "*(1) to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations; (2) to ensure the full and fair participation by all potentially affected communities in the decision-making process'; and (3) to prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations"*.[7] (SMS Research, 2008).

A number of interviewees point out that Leeward O'ahu has been and continues to remain on the receiving end of many of Oahu's burdens. They argue that within a 10-mile stretch along Farrington Highway there are two existing electrical plants, a proposed new generator unit at the Campbell Industrial Park, a deep draft harbor and a major industrial park, all of which service the entire Island of O'ahu – and all of which adversely impact the environment of these communities. Further, Leeward O'ahu is now the home of thousands of homeless people, many of whom were driven out of other communities only to be "welcomed" and "tolerated" on the Leeward Coast. They argue that the continued use and expansion of WGSL will only increase the imbalance of those impacts on Leeward O'ahu. They believe that the expansion of WGSL is a case of Environmental Injustice. (SMS Research, 2008).

Proponents of keeping the landfill in operation point out that when the landfill was sited, the only residential communities in the area were in Makakilo. The communities of Kapolei and Ko' Olina grew up on sugar fields that once abutted the landfill, after the landfill had already been in operation. Furthermore, they note that the surrounding communities also accommodate one of the more important and successfully developing resort complexes on Oahu, Ko 'Olina, and the ever-expanding Second City of Kapolei.

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involvement of those potentially affected. (Toolkit for Assessing Potential Allegations of Environmental Injustice, Office of Environmental Justice, US Environmental Protection Agency, November, 2004).

[7] An Overview of Transportation and Environmental Justice, Federal Highways Administration, US Department of Transportation, May, 2000.

This is the fastest growing region of O‘ahu and WGSL does not appear to have stymied its growth. They believe that this is not indicative of a community suffering from environmental injustice. Finally, Windward Oahu residents note that for the last 40 years most of the active landfills were on the Windward side of the island. It is only recently that WGSL has been the only major landfill for MSW on O‘ahu. (SMS Research, 2008).

A closer examination of the surrounding communities against the definition of Environmental Justice provides further insight. In 2004, the O‘ahu Metropolitan Planning Organization (OMPO) and the City & County of Honolulu, Department of Planning and Permitting (DPP) attempted to identify areas of the island that are vulnerable to Environmental Justice concerns.[8] Using definitions and criteria established by the Federal Highway Administration (FHWA) and 2000 U.S. Census block data, OMPO/DPP developed a systematic and comprehensive methodology to identify such communities. In their final analysis, 70 of the 435 blocks that make up O‘ahu were determined to be environmental justice areas based on race, and 17 blocks were identified as environmental justice areas based on income. (SMS Research, 2008).

None of the Census blocks in the ‘Ewa Development Plan Area were identified as environmental justice areas **based on income**. One can understand this as the overall average income in the ‘Ewa DP of $59,583 far exceeds the island average of $51,194. Additionally, the median household incomes for the two communities in closest proximity to the landfill all significantly exceed the island averages. These are Makakilo ($88,515) and Ko ‘Olina/Honokai Hale ($74,083). (SMS Research, 2008).

On the other hand, two of the Census blocks in proximity to the WGSL are environmental justice areas **based on race**, one in Makakilo and one in Honokai Hale. Both were selected because they have a Hispanic population that slightly exceeds the average settlement pattern plus an acceptable standard deviation for Hispanics. The acceptable index for Hispanics is 14.3 percent of the population. Hispanics make up 17.3 percent and 16.5 percent of these two communities respectively. No other minority

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[8] Environmental Justice in the OMPO Planning Process: Defining Environmental Justice Populations, Oahu Metropolitan Planning Organization and the County Department of Planning and Permitting, March, 2004.

groups exceed their acceptable indices in any block in proximity to WGSL. (SMS Research, 2008).

Having identified these two communities as EJ areas, one asks whether these two blocks are subject to disproportionately high and adverse health and environmental impacts due to the WGSL and whether they have had meaningful access to decision-making regarding the WGSL. (SMS Research, 2008).

On the first point, the EIS findings to date would indicate that with the possible exception of views and windblown litter, no one is subject to disproportionately high and adverse health and environmental impacts based on the use of existing and future mitigation measures that have been identified in the subject DEIS document. Further, the significant mix of EJ and non-EJ communities in proximity to the WGSL would indicate that the EJ communities are not suffering disproportionately. (SMS Research, 2008).

On the second point, it would appear that everyone has had opportunity to make their preferences known. The subject has been presented in numerous Neighborhood Board meetings, and in community meetings with the Mayor and other County officials. Additionally, the County Councilman for this district is very approachable. He is also an articulate and forceful spokesperson in opposition to the lateral expansion of the WSGL, he ably defends that position, and he is one of nine votes on the County Council to whom this question will be presented for approval. For those who support the extension, their position has been expressed by the Mayor and his Administration. (SMS Research, 2008).

Finally, while the present EIS adheres to the requirements of Chapter 343, HRS, which does not mandate EJ as a criteria for evaluation, the Chapter 343, HRS, EIS process does specifically allow for review and comment by all citizens. There has been significant opportunity for any expression of concern and such expressions become a part of the record for review by decision-makers.

7.1.4.3. Economic Impacts

Approach and Terminology

This ~~economic impact~~ section reviews the impacts that this project will contribute to the economic environment. The technical terms make a distinction between different types of impacts. First, in economic analysis, a distinction is made between impacts of the actual construction and operations of a project, and the effects of project-related spending throughout the local economy. In discussions of jobs, earnings, and taxes, three broad types are distinguished (SMS Research, 2008):

- Direct jobs/earnings/taxes are immediately involved with construction of a project or with its operations. It is important to note that direct jobs are not necessarily on-site: construction supports company personnel in offices and base yards, as well as on-site.
- Indirect jobs/earnings/taxes are created as businesses directly involved with a project purchase goods and services in the local economy.
- Induced jobs/earnings/taxes are created as workers spend their income for goods and services.

Direct, Indirect and induced economic impacts in Hawaiʻi can be estimated using multipliers from a model of input-output relations developed and refined by State researchers. (SMS Research, 2008).

It is also important to understand that although construction has a positive impact on the state economy, funds for the proposed expansion project will be generated from the tip fees assessed to haulers for the use of the landfill. These tip fees are translated to consumers and businesses through maintenance fees and collection fees. As a result, financial resources for construction will come from reallocation of funds that are already a part of the Hawaiʻi State economy rather than out-of-state investment. The reallocation of state monies results in a negative impact on jobs, earnings and taxes. These positive and negative impacts must be considered to gain a clear picture of the economic impact of the WGSL expansion. (SMS Research, 2008).

Employment and Earnings

Construction

Expansion of WGSL is expected to take 10 years to complete. This expansion will result in an increase in the capacity of the landfill and is expected to increase the life expectancy of the landfill by 15 or more years. (SMS Research, 2008).

Pending the receipt of final engineering figures, the construction of the expansion has been estimated at $86,000,000 over ten years, with expenditures spread consistently over those ten years. The construction estimates were determined through discussions with officials from WMH, the current operator. The expansion is planned in several stages. Each stage and year of construction will result in approximately the same level of construction spending. (SMS Research, 2008).

Employment

Construction spending will create jobs and spending in related industries. Direct jobs created as a result of this project will include some 746 person-years of employment[3] over the ten-year construction period. Direct jobs are not necessarily located on-site. As a rule of thumb, about 20% of direct construction jobs are off-site (in base yards, offices, and the like). (SMS Research, 2008).

Indirect and induced jobs are also created throughout the state. These are likely to be concentrated in commercial and/or industrial centers, rather than near a job site. In addition, this project will support some 328 indirect and 720 induced person-years of employment. In total, approximately 1,795 person-years of employment will be created as a result of the WGSL expansion. (SMS Research, 2008).

This, however, is not the net impact of the project. The project will result in a reallocation of funds that could be otherwise spent in other areas of the economy. The cost of construction is generated by revenue received from tip fees and these fees are translated to Hawaiʻi consumers; therefore, one must account for the negative impact associated with this project. Since tip fees are translated to consumers, it can be

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[3] Person years of employment is the number of full time equivalent positions required to complete the work defined by the estimated cost of construction during the specific period of time.

inferred that the proposed expansion will have a negative impact on personal consumer expenditures. A reduction in personal consumer expenditures results in a negative impact on jobs, earnings, and tax revenues. **Table 7-4**, shows the negative impact on jobs associated with this project. (SMS Research, 2008).

Table 7-4, Economic Impact - Negative Impact on Jobs

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
Direct Jobs Lost[1]	72	72	72	72	72	72	72	72	72	72	721
Indirect Jobs Lost	15	15	15	15	15	15	15	15	15	15	147
Induced Jobs Lost	31	30	29	28	27	27	26	26	26	26	275
Total Jobs Lost	117	117	116	115	114	113	113	113	113	113	1,143

[1] Person-years of employment
Source: DBEDT: State Input – Output Study 2002
Note: Totals do not add due to rounding.

As shown in **Table 7-5**, the WGSL expansion will result in a net positive impact. Despite the negative impact associated with the expansion, some 651 direct, indirect and induced person-years of employment will be created. (SMS Research, 2008).

Table 7-5, Economic Impact - Net Impact on Jobs

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
Direct Jobs Net	13	10	7	5	2	0	(3)	(3)	(3)	(3)	25
Indirect Jobs Net	23	21	20	19	18	17	16	16	16	16	181
Induced Jobs Net	51	49	48	46	44	43	41	41	41	41	445
Total Jobs Net	87	81	75	70	64	59	54	54	54	54	651

[1] Person-years of employment
Source: DBEDT: State Input – Output Study 2002
Note: Totals do not add due to rounding.

Earnings

Positive workforce earnings associated with the project's construction will amount to $59.6 million in direct earnings and $40.1 million indirect and induced earnings (as shown in **Table 7-6**). The total positive impact on direct, indirect, and induced earnings associated with all construction will be about $99.8 million. (SMS Research, 2008).

Table 7-6, Economic Impact - Positive Impact on Earnings

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
Construction Earnings [1]											
Direct Earnings	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	59.6
Indirect Earnings	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	14.3
Induced Earnings	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	25.8
Total	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	99.8

[1] Person-years of employment
Source: DBEDT: State Input – Output Study 2002
Note: Totals do not add due to rounding.

As with employment, this project will also have negative impacts on earnings. As shown in **Table 7-7**, a total negative impact on earnings of approximately $36.5 million can be expected. (SMS Research, 2008).

Table 7-7, Economic Impact - Negative Impact on Earnings

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
Earnings [1]											
Direct Earnings Lost	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	19.3
Indirect Earnings Lost	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	7.7
Induced Earnings Lost	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	9.4
Total Lost Earnings	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	36.5

[1] Person-years of employment
Source: DBEDT: State Input – Output Study 2002
Note: Totals do not add due to rounding.

On balance, the proposed project will result in an overall positive impact on earnings. In total, approximately $63.3 million in earnings will be generated per **Table 7-8**. (SMS Research, 2008).

These earnings will boost the local economy, as many of the dollars will be used to purchase goods and services from other industries. **Figure 7-2, Consumer Spending Patterns by Industry, 2003 - 2004**, shows Honolulu consumer spending patterns to illustrate how earnings may be used. (SMS Research, 2008).

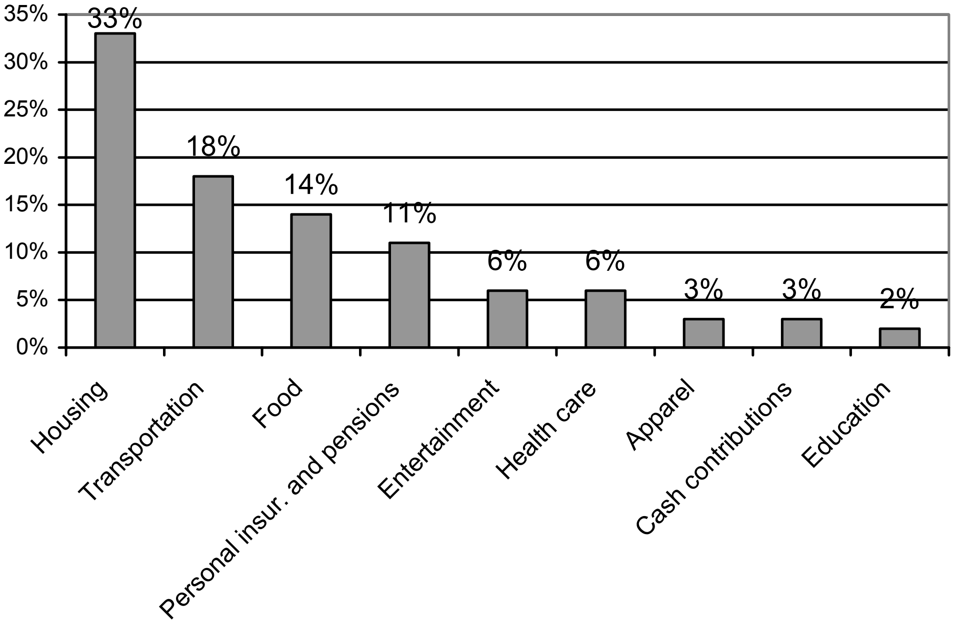
Table 7-8, Economic Impact - Net Impact on Earnings

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
Earnings [1]											
Direct Earnings - Net	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	40.3
Indirect Earnings - Net	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	6.6
Induced Earnings - Net	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	16.4
Total Net	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	63.3

[1] Person-years of employment
Source: DBEDT: State Input – Output Study 2002
Note: Totals do not add due to rounding.

Housing costs such as shelter and utilities account for more than 33 percent of consumer expenditures. Food and transportation also account for a large amount of consumer spending (14 and 18 percent). It can be expected these patterns will continue in the future creating economic growth in several industries. (SMS Research, 2008).

Figure 7-2, Consumer Spending Patterns by Industry, 2003 - 2004



Source: US Census 2000, State of Hawaii Data Book 2005

Fiscal Impacts

State of Hawaii

Construction spending has an impact on state tax revenues. **Table 7-9**, displays the estimated positive impact as a result of the WGSL Expansion. The expansion cost is estimated at $86 million and the planned construction would result in $3.2 million in direct state tax revenues. The indirect and induced impact of this project will result in $6.2 million in state tax revenues. In total, the project would result in an estimated positive impact of $10.4 million in state tax revenues. (SMS Research, 2008).

Table 7-9, Positive Impact on State Tax Revenues

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
State Taxes [1]											
Direct	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	3.18
Indirect	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	2.34
Induced	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	4.90
Total Net	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	10.42

[1] in millions of 2006 constant $

Source: DBEDT, State Input – Output Study, 2002

Note: Totals do not add due to rounding.

As shown in **Tables 7-10** and **7-11**, the total impact on state tax revenues will be positive. Approximately $6.6 million in state tax revenue will be lost as a result of this project. In total, there will be a small positive impact in state tax revenues of approximately $3.8 million during the 10 years of construction. (SMS Research, 2008).

Table 7-10, Negative Impact on State Tax Revenues

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
State Taxes [1]											
Direct Lost	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	3.84
Indirect Lost	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.98
Induced Lost	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	1.79
Total Lost	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	6.61

[1] in millions of 2006 constant $

Source: DBEDT, State Input – Output Study, 2002

Note: Totals do not add due to rounding.

Table 7-11, Net Impact on State Tax Revenues

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	Cumulative
State Taxes [1]											
Direct Net	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.67)
Indirect Net	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	1.36
Induced Net	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	3.11
Total Net	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	3.80

[1] in millions of 2006 constant $
Source: DBEDT, State Input – Output Study, 2002
Note: Totals do not add due to rounding.

In sum, the economic impacts of the expansion appear to be a net positive with approximately $63.3 million net flowing directly and indirectly through the economy and $3.8 million of net tax revenues being raised. All of the income is a result of a 10-year construction period. WMH does not believe the expansion will result in the need for new hiring or other increased operating costs. (SMS Research, 2008).

This socioeconomic analysis did not take into account any indirect or induced economic effects of the landfill operation on surrounding businesses. There was insufficient, verifiable information available at the time of the compilation of the report. As noted, the residential sales program at Ko Olina has been successful. If it could have been more successful without the landfill is speculative. (SMS Research, 2008).

7.1.5. Addendum to Socioeconomic Impacts

In September 2008, SMS Research completed its, Addendum to the Socioeconomic Impact Assessment, for the WGSL. The purpose of the addendum was to further investigate the potential for impacts to property values based on proximity of the WGSL to residential property. The study focused on the proposition that the closer a residential property is to the site of the landfill, the lower will be the sales price of that unit, other factors held constant.

The study data and findings are provided in the following and in **Appendix J**:

"For this study, we adopted the often used hedonic pricing model. The model considers a single family home to be a collection of attributes including physical characteristics (size, number of bedrooms and bathrooms, age, etc.) and location (neighborhood, distance from the landfill, etc.). The sales price of the unit is considered to be a function of all of these attributes. Multiple linear regression or some other appropriate analytical method is used to estimate the impact of each attribute net of the impacts of the other attributes. The impact of distance from the landfill, therefore, can be estimated independent of the other housing unit characteristics.

The data used for the study were a set of 173 property records taken from Multiple Listing Services for properties listed between August 1, 2007 and July 10, 2008. The properties were located in West O‘ahu between ‘Ewa and Mā‘ili and within six miles of the landfill site. Data extracted for each property included physical attributes (unit type [single or multi-family], number of bedrooms, number of bathrooms, size in square feet, age in years, and date sold), and location (neighborhood name, distance from the Waimānalo Gulch Landfill site in miles). These data were analyzed using multiple linear regression with sales price as the dependent variable. Results for all communities are shown in Table 1.

Results show that four of the eight property attributes had statistically significant relationships with property value (price). Based on the unstandardized regression coefficient, the most highly related attribute was size in square feet. It was positively related to price. The age of the unit was negatively related to price. That is, as the age of the unit increased, the price decreased. The number of bedrooms was also negatively related to price, suggesting that the greater the number of bedrooms, the lower the price. And finally, the distance from the Waimānalo Gulch Landfill was negatively related to unit price. That is, the greater the distance from the landfill, the lower the price.

This analysis shows no empirical support for the proposition that the landfill results in lower residential property values for the Waimānalo Gulch Sanitary Landfill. Specifically, that distance from the landfill would be associated with lower property values.

Table 1: Regression Results for All Properties, 2008
(Addendum to Socioeconomic Impact Assessment, SMS Research)

Property Attributes	Coefficients		Significance Test Results		
	Unstandardized Coefficient B	Standardized Coefficient Beta	t-value	Sig.	Std. Error
unit size in square feet	435.17	0.755	9.78	0.000	44.50
distance from landfill in miles	-27,602.06	-0.287	-6.06	0.000	4,552.41
age of unit	-5,543.84	-0.330	-5.47	0.000	1,014.24
number bedrooms	-74,253.62	-0.279	-4.02	0.000	18,488.33
number bathrooms	-26,485.37	-0.082	-1.16	0.249	22,911.94
multi-family	48,240.65	0.046	1.13	0.262	42,864.92
date sold	0.00[9]	0.021	0.50	0.620	0.00
(Constant)	-5,754,621.47		-0.47	0.636	

Dependent Variable: Price

---

[9] Dates were stored as the number of seconds since October 14, 1582, the start of the Gregorian calendar. The unstandardized regression coefficient will therefore be very small, but can be statistically significant if real differences exist in the model.

Studies that report a negative relationship between sanitary landfills and residential property values are not unusual in the literature. Negative or statistically insignificant results have been reported by Bleich, Findlay and Philips (1991); Cartee (1989); Reichert, Small, and Mohanty (1992); Thayer, Albers and Rahamatian (1992), Zeiss and Atwater (1989). Furthermore, many reviewers have cautioned that disamenities such as landfills do not necessarily cause nearby residential property values to decrease. They note that several issues have been confounded in the discussion in the recent past. Sanitary landfills generally have much less impact on property values than hazardous materials landfills. Very large landfills have some impact on property values while smaller ones have none or even increase values (Lim and Missios, 2007). Overall, the characteristics of the residential unit (size, configuration, amenities) generally have a greater impact on market prices than distance from a landfill (Chan et. al., 1993; Kung et. al., 1993). In this particular case, two factors are probably more important. First, the sample size for the study is small and the number of variables may be too large for reliable estimates. The adjusted R-squared value for this analysis was .728, suggesting that the model with eight property attributes explained about 73 percent of the variance in the prices measured. That is considered a reasonable level of reliability. Nevertheless, 27 percent of the variance was unexplained.

Second, the results were consistent with known property values in West Oʻahu. Koʻolina Resort properties are essentially "across the street" from the landfill site. Koʻolina properties are among the highest in West Oʻahu. As you move away from the site, you encounter communities with increasingly lower property values. We have not discovered a way to analyze this difference because the price of an individual residential property and the average property value in a community are based on the same variable – unit price. This suggests that the hedonic model may present problems when dealing with the impact of disamenities on residential property values.

In order to add some clarity to the situation, we developed a model for properties located in Koʻolina alone. It was necessary to drop the "unit type" attribute because all Koʻolina properties in our dataset were multi-family units. The results of this analysis are shown in Table 2.

Table 2: Regression Results for Koʻolina Properties, 2008
(Addendum to Socioeconomic Impact Assessment, SMS Research)

Property Attributes	Coefficients		Significance Test Results		
	Unstandardized Coefficient B	Standardized Coefficient Beta	t-value	Sig.	Std. Error
distance from landfill in miles	267,480.96	0.663	4.32	0.000	61,962.28
age of unit	-5,300.70	-0.116	-1.23	0.227	4,306.57
unit size in square feet	134.12	0.216	1.09	0.281	122.49
date sold	0.00	0.091	1.00	0.323	0.00
number bathrooms	61,273.99	0.142	0.97	0.338	63,107.20
number bedrooms	39,571.27	0.120	0.90	0.374	43,906.19
(Constant)	-24,096,747.51		-1.00	0.325	

Dependent Variable: Price

> Only one property attribute, distance from the landfill, had a statistically significant relationship with price. And that relationship was positive. That is, within the Ko‘olina Resort, the farther from the landfill a property is sited, the higher the unit price.
>
> The adjusted R-square coefficient was .629, somewhat less reliable than the prior analysis. The sample size was 41 property records, much smaller than we would have preferred for reliable estimates. This is particularly problematic because the price of Ko‘olina properties has 3.5 times the variance of other properties and is strongly skewed to the higher end of the market. Equally important, the other property attributes in our Ko‘olina dataset had only half the variance of the same attributes for other communities. Ko‘olina properties were 2- and 3-bedrooms only; others were 1 to 4 bedrooms. Ko‘olina unit sizes ranged from 653 to 1,834 square feet; other communities ranged from 407 to 1,766. The age of units varied from 2 to 14 in Ko‘olina and from 2 to 35 in other areas. Regression models analyze covariance, the extent to which the dependent variable co-varies along with independent variables. The limited variance associated with property attributes other than price will make it difficult to identify statistically significant relationships with those attributes.
>
> There is another issue with applying the hedonic model and regression analysis to the Ko‘olina dataset. In this procedure, the correlations or covariances among the individual property attributes are analyzed to produce unidirectional relationships. The finding that distance from the landfill is related to property value (price) can be interpreted to mean that the distances exist first (in time) and result in the observed price level differences. But the landfill predates the resort development. Therefore we cannot easily eliminate the possibility that the price came before distance from the landfill. That might occur, for instance, if a developer were to locate less valuable units nearer the landfill and more valuable units at greater distances. Regression results for our second model could be produced by either process.
>
> This analysis presents different results from the previous analysis. Once again, mixed results are not uncommon in the literature. Reichert, Small and Mohanty (1992) found all three possibilities – positive, negative and not significant -- within their landfill evaluations. Michaels and Smith found drastically different results for individual communities. Thayer, Albers and Rahamatian (1992) found that even when analysis shows a negative relationship with property value, the function may not be smooth. That is, the loss in value may not be the same for all neighborhoods." (SMS Research, 2008).

Summary of Findings

According to SMS Research, given the caveats described in the report, the results for the two analyses reported are clear: for properties located within six miles of the WGSL, there was no evidence that the landfill is associated with decreasing property values. As distance from the landfill deceases, however, property values tended to increase. Within the area of the Ko Olina Resort, distance from the landfill was associated with increasing property values. (SMS Research, 2008).

The authors of the report added that the interpretation of the results are subject to the limitations of the data and the use of the hedonic model. "Sample sizes for both analyses were small, and the Ko‘olina model is based on only 41 cases. The available data may exclude important variables used by property buyers in making their final decisions. And finally, there may be issues with applying the same hedonic model to both sets of property records." (SMS Research, 2008).

~~7.1.5. Socioeconomic Mitigation Measures~~

7.1.6. Socioeconomic Mitigation Measures

Mitigation measures are normally considered in anticipation of potential impacts. In the case of the WGSL, where there is history, as well as existing practices, one can observe the current impacts, and propose measures that are in addition to current practices of WMH and the City.

There are three types of mitigative measures that are proposed: (1) measures that are an improvement of current practices regarding nuisances and safety; (2) measures that improve on existing community involvement and communication; and (3) measures that commit to funding the necessary research and development into alternative solutions to the continued use of landfilling.

~~7.1.5.1. Improving Current Practices~~

7.1.6.1. Improving Current Practices

SMS Research provided the following recommendations for socioeconomic mitigation measures. These measures are indented and are followed by further discussion and mitigation that is proposed by WMH and ENV.

Views

> WMH should continue to implement the on-site landscaping plans that have already been developed; especially for those areas facing south toward Ko-Olina; and
>
> WMH should design and implement landscape screens (e.g., pines, tall hedges) along the berm and the access road that is visible from Farrington Highway, fronting the Kahe Power Plant. As an alternative, WMH might consider entering

> into a partnership with HECO to plant an effective screen of trees along Farrington Highway which would have the dual purpose of screening the landfill operations and the power plant from passing vehicles (SMS Research, 2008).

Because of its elevation, the most obvious views of the landfill are from a distance. Berms obscure much of the operations but the face of the berms are exposed dirt that is visible from within the Ko Olina view corridor and from Waiʻanae views toward the landfill above the HECO power generating station. Hydromulching has been applied to some of the exposed berms but the grass seedlings have not yet become well established. This has resulted in some portions of the landfill and landfilling operations to be readily visible.

Landscaping plans have been prepared to vegetate and screen exposed areas and views of landfill operations. Initial planting to provide screening has been started and will be augmented with new plantings or plantings of other plant types based on the results.

The west-facing stability berm along the upper access road shields views from some of the operations, but not all of it. Selected plantings, consistent with the area vegetation, such as keawe or haole koa, will be investigated for use as visual buffer.

Discussion with HECO will be undertaken to consider the use of trees or other tall vegetative cover along the HECO property boundary with the Farrington Highway to serve the needs of both the Kahe Power Generating Station and the WGSL.

Odor

> WMH and the City should continue to be vigilant in processing the sludge from the sewage treatment plants upon delivery and in taking all means to reduce any odor impacts (SMS Research, 2008).

In recent months, the combined impact of immediate processing, diversion of some of the sludge for processing at the Synagro-WTT facility, and the improved performance of the odor neutralizing mist system appears to have had a significant positive impact.

However, continued vigilance is required. While the current performance of the facility has been encouraging, WMH will pay continued attention to the performance of the Synagro system. A rapid response to any temporary resumption of disposal of untreated sewage sludge will be addressed with:

1. Immediate disposal practices that have previously been developed to remove of the source of the odor from the prevailing wind;
2. the landfill odor control misting system will be operated, if required, to reduce the potential impact of odors migrating off-site, in particular, towards Ko Olina, the adjoining residences along Nānākuli, beach parks such as at Kahe Point, and the beaches; and
3. Refuse trucks that are off loaded will be evaluated for the application of odor reducing solvent prior to allowing them to leave the site.

Litter

WMH must continue to monitor the egress and ingress of vehicles and continue to aggressively enforce the anti-littering regulations and fines; and

ENV and WMH should maintain a direct communication link with the HPD; in the case of littering, it will lead to faster, more effective response (SMS Research, 2008). Additionally, this communication linkage should expand to the community most affected by the potential loss of refuse from vehicles traveling along public thoroughfares.

WMH institutes inspection practices that monitor commercial trucks upon entering and leaving the landfill area to ensure that their loads are secured upon entry and that the trucks are free from debris before exiting. WMH policy prohibits repeat violators from entry to the landfill. These inspections are beneficial and will continue.

A potentially significant problem is from citizens and others who deliver trash, and who are not adequately securing their loads. This results in the generation of windblown litter. Further effort involving public education by ENV and WMH will be implemented to supplement the inspections. The public education would be supported through the possible use of the WMH newsletter for distribution to the community.

A good communication link between HPD and WMH/ENV will increase the shared understanding of the problem and the ability to respond in a timelier manner. However, prior effort involving discussions with HPD were limited by the need for the police to provide community services significantly greater than the enforcement of littering along the public thoroughfare. At the same time, once refuse vehicles leave the WGSL property, both WMH and ENV have no further legal control over the activities of the operator or the vehicle. For this reason an important part of improving the problem of commercial or personal vehicles littering the roadway must include the community.

Addressing this concern will therefore involve the following:

1. WMH and ENV will seek the participation of the HPD as a participant in the WGSL Oversight Advisory Committee. This will involve coordinating how litter complaints are addressed, who should receive the complaint, important information that should be recorded at the time of the complaint, and follow-up actions, if any, that would provide closure to an incident particularly if it is serious.
2. WMH and ENV will notify the community through the WMH newsletter and the ENV website, opala.org, of the steps that the public can take to help with reporting highway littering. The community will be advised concerning procedures, who to call, what to record, and subsequent actions that can be taken by all parties (including WMH and ENV).

While the community is asked to help with this problem, WMH and ENV will continue to provide litter pick up that migrates off-site from the area of the WGSL, either as a result of landfill operations or from vehicles that are not properly secured.

~~7.1.5.2. Improving Community Involvement and Communications~~

7.1.6.2. Improving Community Involvement and Communications

Community Involvement

The City must effectively use the Oversight Advisory Committee;

The City should continue to contribute to a community benefits package for as long as the landfill exists; and

The representation on the Committee that determines the benefits package should include all directly affected communities (SMS Research, 2008).

The Oversight Advisory Committee allows for building relationships that are important in addressing community concerns. However, this requires time and the commitment of the Committee participants. Providing website information and telephone numbers help with the effort but does not replace the need for regular face-to-face meetings to build community bonds. In 2007, the Oversight Advisory Committee went through a period of difficulty establishing a quorum for its meetings. A first step toward stimulating attendance and participation will be to focus on highway and off-site littering as described above. Other measures that will be developed will include, but are not limited to:

1. Maintain and expand outreach, education, and coordination of landfill operations through regular briefings before the Makakilo-Kapolei-Honokai Hale Neighborhood Board No. 34 and Waianae Neighborhood Board No. 24. Representatives from ENV and DPP currently provide information and receive comments from both boards on the activities of WGSL. The regular presentation of information by WMH should be added to establish a closer working relationship with the neighborhood boards in both the Kapolei and Nānākuli/Wai‘anae communities to convey that the implementation of mitigation measures will require their input.
2. WMH will continue to extend and to expand the opportunity for all members of the community to visit and inspect the operation of the landfill. The City Administration, ENV, and WMH has stated their commitment to

operating a well run facility with minimal impact to the surrounding community. Maintaining the opportunity for the public to visit the site will promote an understanding of landfill operational practices while allowing for improved communication and the establishment of linkages between the parties. Potential nuisance issues associated with operation of the facility can be identified early so that adjustments or modifications to operational practices can be discussed, considered, and implemented as soon as possible, e.g., increasing the frequency of water sprinkling to control dust during dry or high wind conditions. Other measures would be implemented as required.

3. WMH will continue its outreach efforts with the (1) Ko Olina Community Association (KOCA) and the various homeowner/owner associations within Ko Olina; and (2) adjoining homeowners and residents in the surrounding area including Nānākuli and the planned Makaiwa Hills project. The outreach would provide information to the community on operational practices at the WGSL and the schedule for anticipated events, such as the temporary shutdown of H-POWER for scheduled maintenance. This would allow for further coordination and cooperation to minimize the potential for landfill related nuisance impacts that include odor, litter and dust, and site aesthetics.

The proposal for a community benefits package was initiated by the current administration in an effort to address community based concerns related to presence of the landfill within the Waimānalo Gulch and its proximate location along Coastal Wai‘anae. The value of the community benefits have been identified as $2.7 million in 2007 and ~~will be~~ $2.0 million in 2008. The specific benefits that will be distributed in the future have not yet been determined. In order to accomplish this, the City will review and establish the priorities for the content of the benefits package based on use of open community forums, surveys, and maintaining a suggestion link on the website opala.org. While this effort is ongoing the City anticipates that with the experience gained from its current work that future modifications will be implemented to improve the system.

There is a perception that the Committee that determines the benefits package does not include representation from all neighboring communities. The effort to identify the specific benefits that will be distributed and the parties that will be responsible for representing the communities involved remain on-going. Future information, including the names of participants involved will be provided by the City by website on opala.org or other agency website as appropriate.

Website

> WM/ENV should use its web-sites aggressively as educational and communication tools (SMS Research, 2008).

Uncertainty is often the cause of increasing community concern; communication is usually the most effective remedy. According to SMS Research, many of the people interviewed were unfamiliar with the location of the WGSL on the Waste Management website and did not know that there was an avenue for electronic communication. Slight improvement to what is basically a good website and greater education as to its availability of information will help to maximize its use as a communication tool (SMS Research, 2008).

The appropriate party for the addition of publicly accessible information is the ENV website, opala.org. This site undergoes regular updating of information and is regularly maintained by ENV staff. This site will be used for the dissemination of future information regarding the availability of site tours to WGSL (currently offered), the status of new technology (including recycling proposals) undergoing evaluation by ENV, and other matters involving the operation of the City's refuse management system.

~~7.1.5.3. Improving the Commitment to Alternative Solutions to Landfilling~~

7.1.6.3. Improving the Commitment to Alternative Solutions to Landfilling

Alternatives to Landfills

> The City should continue to invest in Research and Development, and where feasible, implement alternative technologies that will result in a reduction in the City’s dependency on a landfill (SMS Research, 2008).

The City has remained actively involved in the investigation of feasible alternatives to landfilling and considers that a mix of different refuse management strategies will be required to reduce long-term dependency on landfilling. Some of the methods with potential for addressing O‘ahu's short term needs include waste to energy, recycling, and even transshipment. While none of these current alternatives can completely remove the need for a landfill the City remains committed to research and utilization of new methods as they prove feasible for City & County of Honolulu taxpayers and the environment.

A brief summary of prior efforts by the City to promote alternative technology and waste reduction strategies include:

1/12/98	Restriction of allowable cardboard and greenwaste in refuse for disposal to no more than 10 percent of volume. These items should be recycled.
2/9/98	Restriction on construction and demolition debris was accepted at landfill to no more than 10 percent of volume. C&D waste should be disposed of at the PVT Landfill.
5/7/02	Request for Proposals for an In-vessel bioconversion facility to convert wastewater sludge from Sand Island Wastewater Treatment Plant to a beneficial reuse product. Constructed and now operational.
1/13/03	Ban on green waste and white goods. These items should be recycled.
12/14/04	Municipal Solid Waste Recycling Facility. Project subsequently cancelled.
10/1/06	Ban on construction and demolition debris waste from landfilling. C&D waste should be disposed of at the PVT Landfill.
1/16/07	Request for Proposals to Construct and Operate an Alternative Energy Facility and/or H-POWER Facility. Currently under review.
1/22/08	Request for Proposals for the Interim Shipping of City-provided Municipal Solid Waste (MSW) to a Mainland Landfill. Bid submittal to City, May 14, 2008 (extended to May 28, 2008).

Alternative Locations

> The City should continue to seek an alternative site to WGSL as the primary landfill location on Oʻahu (SMS Research, 2008).

WGSL was once located in a part of Oʻahu with limited development and at the periphery of urban growth. Approximately 20 years later, WGSL is now located in the fastest growing region of Oʻahu and within a divergent mix of land uses that include resort, residential, and major urban uses such as the James Campbell Industrial Park and the HECO Kahe Power Generating Station.

Prior to the eventual closure of the proposed project the City will initiate the search for Oʻahu's next landfill site. In as much as this timeframe is envisioned to take place when the lateral expansion of the WGSL reaches its capacity in approximately 15 years, participation in this effort should be initiated within the next 10 years and include not only the potentially affected community in which the site is proposed, but all the communities of Oʻahu who would share in the use of the facility. Although it is not possible to assign the subjects or topics for this future effort, a list for future consideration should include: the relationship of the landfill to the refuse disposal needs of Oʻahu; the safety and design of the proposed landfill facility in relation to environmental and social issues; and appropriate mitigation measures to address environmental and nuisance concerns including odor, windblown litter, and visual aesthetics. Any community provided solutions that are proposed should be documented and made a part of the project record.

7.1.6.4. Summary of Potential Impacts and Mitigation Measures

The potential for primary, secondary, and/or cumulative impacts to the socioeconomic resources of the area and region are possible without implementation of the mitigative measures as provided in this EIS, and the operational and management practices employed by WMH for the proposed project. Potential impacts involve possible financial losses to area businesses, and resort and residential sales from landfill associated nuisances and environmental impacts as outlined in Section 7.1.3. Community Issues and Concerns, and Section 7.1.4. Socioeconomic Impacts.

If directly attributed to the landfill: (1) the immediate secondary potential impact could involve the loss of income, employment, sales, and tax revenues from the lowering of economic demand for the area; and (2) the cumulative potential impact could involve the long term loss of the capacity of the region to attract future business, residential, and other related economic growth.

The mitigative measures as provided in this EIS to address the socioeconomic resources of the area and region have been proposed to mitigate or reduce the potential for primary impacts that could lead to the potential secondary or cumulative impacts described above. These mitigation measures are provided in this and in other sections of the EIS to maintain the environmental quality of the area and region.

7.2 Land Use and Ownership

7.2.1. Regional Land Uses

The region of ‘Ewa surrounding the WGSL is composed of a mix of multiple land uses including residential, resort, recreational, business, commercial, and industrial uses. These uses include, but are not limited to, the following (**Figure 7-3, Regional Land Uses in Ewa**):

- Hawaiian Electric Kahe Power Generating Station - This is the largest power plant on O‘ahu producing approximately 651 megawatts of electricity for residential, commercial, business, government, military and industrial uses. The power plant is located west of the WGSL.
- Kahe Point Beach Park - This is public beach park situated less than half a mile south from the landfill. The park is located makai and oceanside of the Kahe Power Generating Station and the WGSL.
- Paradise Cove - This is a private recreational facility providing luaus and entertainment on approximately 12 acres about half a mile southwest of WGSL. It is located on the shoreline adjacent to the Ko Olina Resort and serves guests of the resort, tourists with other accommodations on O‘ahu and the neighbor islands, and the residents of O‘ahu.

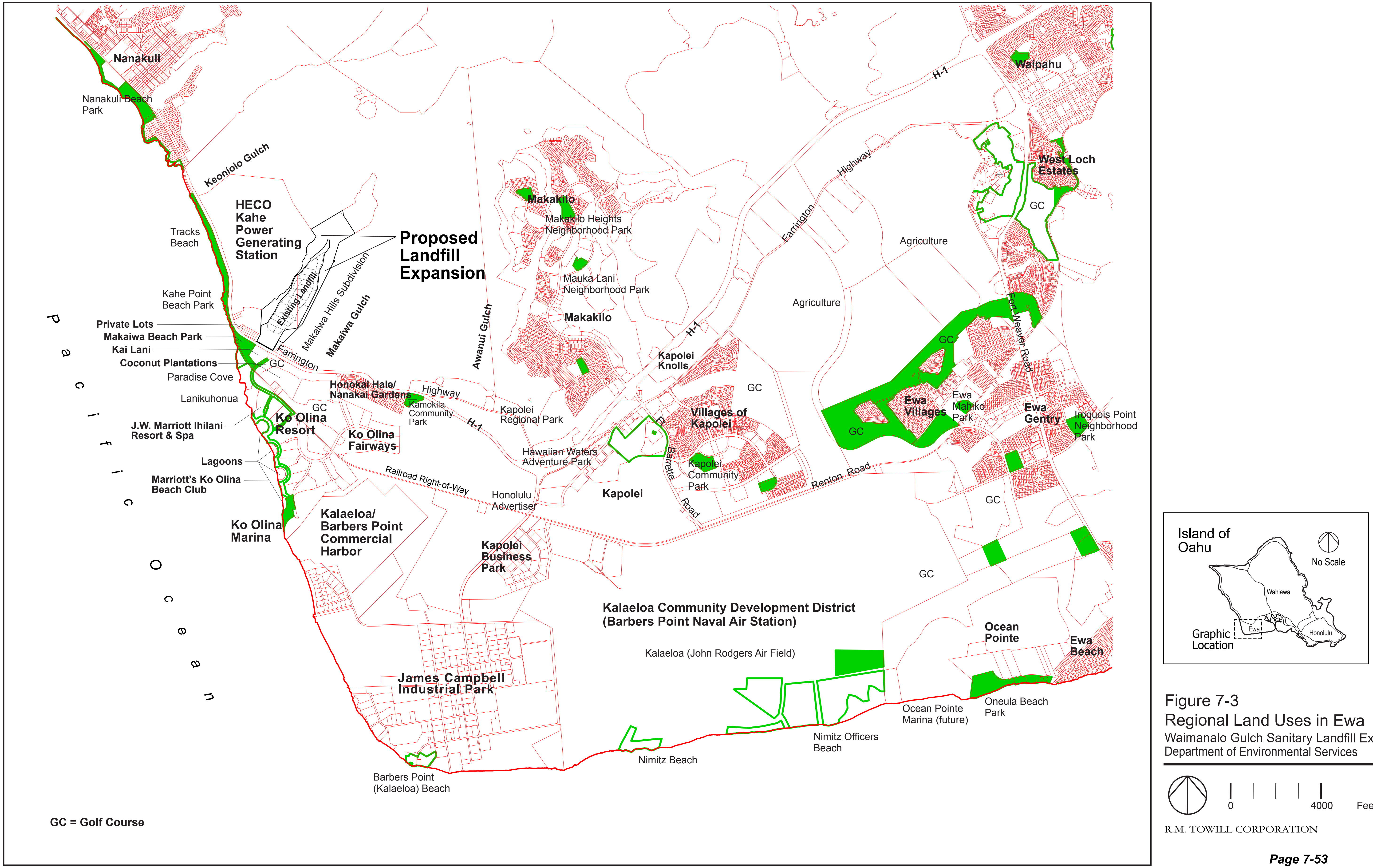


Figure 7-3

Regional Land Uses in Ewa

Waimanalo Gulch Sanitary Landfill Expansion

Department of Environmental Services

R.M. TOWILL CORPORATION

Mary 2008

- Lanikūhonua - Private property owned by the Estate of James Campbell. The site is used for recreational, cultural, and related purposes.
- Hawaiian Waters Adventure Park - This is a 25 acre water theme park located approximately 3 miles east of the WGSL. The park has served Leeward area and O‘ahu residents since May 1999.
- Ko Olina Resort - This 640 acre property is located makai of Farrington Highway and the WGSL. The Ko Olina coastline is comprised of sandy and rocky beachfront with a series of man-made lagoons along the shoreline. The site contains various resort, residential, and commercial facilities that include:
  - J. W. Marriott Ihilani Resort and Spa, is a resort hotel providing accommodation and amenities for tourists and local residents.
  - Marriott's Ko Olina Beach Club, is a timeshare resort. According to the Marriott website the facility is expanding with new construction that is scheduled to continue until July 2009. (http://www.vacationclub.com/resorts/ko/default.jsp).
  - Residential properties include: Ko Olina Kai Golf Estates and Villas, Kai Lani at Ko Olina, The Coconut Plantation, Ko Olina Fairways, Ko Olina Beach Villas, and the Ko Olina Hillside Villas.
  - Ko Olina Marina, opened in 2000, is a privately owned marina and situated on approximately 43 acres with 330 slips, maritime related facilities, and utilities.
  - Other properties and facilities associated with the Ko Olina Resort may be present at the site and it is expected that continuing resort and residential development will be planned in the future.
- Makaiwa Hills - This is a residential subdivision proposed for future development on land that is adjacent to and east of the WGSL. According to the Makaiwa Hills website, the project is a, "1,915 acre ocean view Hillside Planned Community over-looking Diamond Head with 1,875 homes, elementary school, a regional commercial center, parks, an 18-hole championship golf course, and extensive ridge and valley open spaces." (http://www.menne.com/maka.htm, Bryan Menne & Associates, website accessed 2/5/2008).
- James Campbell Industrial Park - This is a 1,267 acre commercial and industrial park with a number of businesses that include, but are not limited to, two oil refineries, a cement processing plant, 3 power

generating facilities, an aluminum fabricating company, moving and storage firms, and various other businesses. The facility was first constructed in 1958 and is located approximately 2.5 miles southeast of the landfill. The industrial park is home to H-POWER, the City's waste to energy recycling facility.

- Kalaeloa/Barbers Point Harbor - This is a commercial harbor that has become the second busiest harbor on O‘ahu. The harbor comprises 241 acres and includes facilities for container storage, ship repair, and related maritime activities. The site is located approximately 3.5 miles south of the landfill.
- Honokai Hale and Nanakai Gardens - These subdivisions are adjoining residential developments that are located less than approximately one mile southeast from the landfill.
- Makakilo - This is a residential development that was constructed prior to 1962 by Finance Realty. The subdivision is located approximately 2 to 3 miles east of the landfill. New subdivision development is presently on-going and future plans call for the construction of a Makakilo Drive bypass to relive traffic congestion.
- Villages of Kapolei - This subdivision includes a number of phased residential developments that were first constructed around 1990. The subdivision contains approximately 4,700 units on 698 acres of land. The site is located approximately 4 miles east of the landfill.
- West Loch Estates - This is a residential development initiated by the City & County of Honolulu. The site is located on the West Loch peninsula of Pearl Harbor.
- ‘Ewa Villages - This residential subdivision incorporates both new and renovated housing units that once served as sugar plantation housing for workers.
- ‘Ewa Gentry - This is a residential subdivision on land that was once under active sugar cultivation.
- Ocean Pointe - This residential development is situated on 1,100 acres of land along the ‘Ewa coastline.
- Kapolei Knolls - This is a residential subdivision located in the Kapolei area of ‘Ewa.
- Barbers Point Naval Air Station (BPNAS) - This is a closed Department of Defense facility now known as the Kalaeloa Community Development

District (July 1999). The 2,150 acre site is located 3 miles southeast of the landfill. In March 2006, the Hawaiʻi Community Development Authority (HCDA) published the Kalaeloa Master Plan to serve as a planning and policy guide and to coordinate the multiple entities with jurisdiction or interest in future land uses.

Other land uses including businesses, parks, schools, and other facilities also operate in the region.

7.2.2. Properties Within Proximity to the Proposed Project

Properties adjoining WGSL include the following (see **Figure 7-4, Properties in Proximity to WGSL**):

Table 7-12
Selected Properties Adjacent to the Southwest Corner of WGSL

No.	Tax Map Key	Ownership[10]
1.	(1) 9-2-003: 030 (1.0 acres)	Haili Rachel K
2.	(1) 9-2-003: 031 (0.8 acres)	Villanueva Sergio M
3.	(1) 9-2-003: 032 (0.8 acres)	Rapoza Moses & Iris T
4.	(1) 9-2-003: 033 (0.8 acres)	Lindahl-Giron Sherri M
5.	(1) 9-2-003: 034 (0.8 acres)	Kahe Homes
6.	(1) 9-2-003: 035 (0.8 acres)	Kahe Homes
7.	(1) 9-2-003: 036 (0.8 acres)	Kahe Homes
8.	(1) 9-2-003: 037 (0.7 acres)	Kehe [sic] Homes LLC
9.	(1) 9-2-003: 038 (0.6 acres)	Kahe Homes LLC & II LLC
10.	(1) 9-2-003: 039 (0.7 acres)	Richardson Florence C
11.	(1) 9-2-003: 047 (0.9 acres)	Nakatani Irene T & Robert I
12.	(1) 9-2-003: 049 (0.8 acres)	Nakano Judith R
13.	(1) 9-2-003: 013 (21.2 acres)	Lum Betsy F S A
14.	(1) 9-2-003: 015 (4.5.0 acres)	City & County of Honolulu

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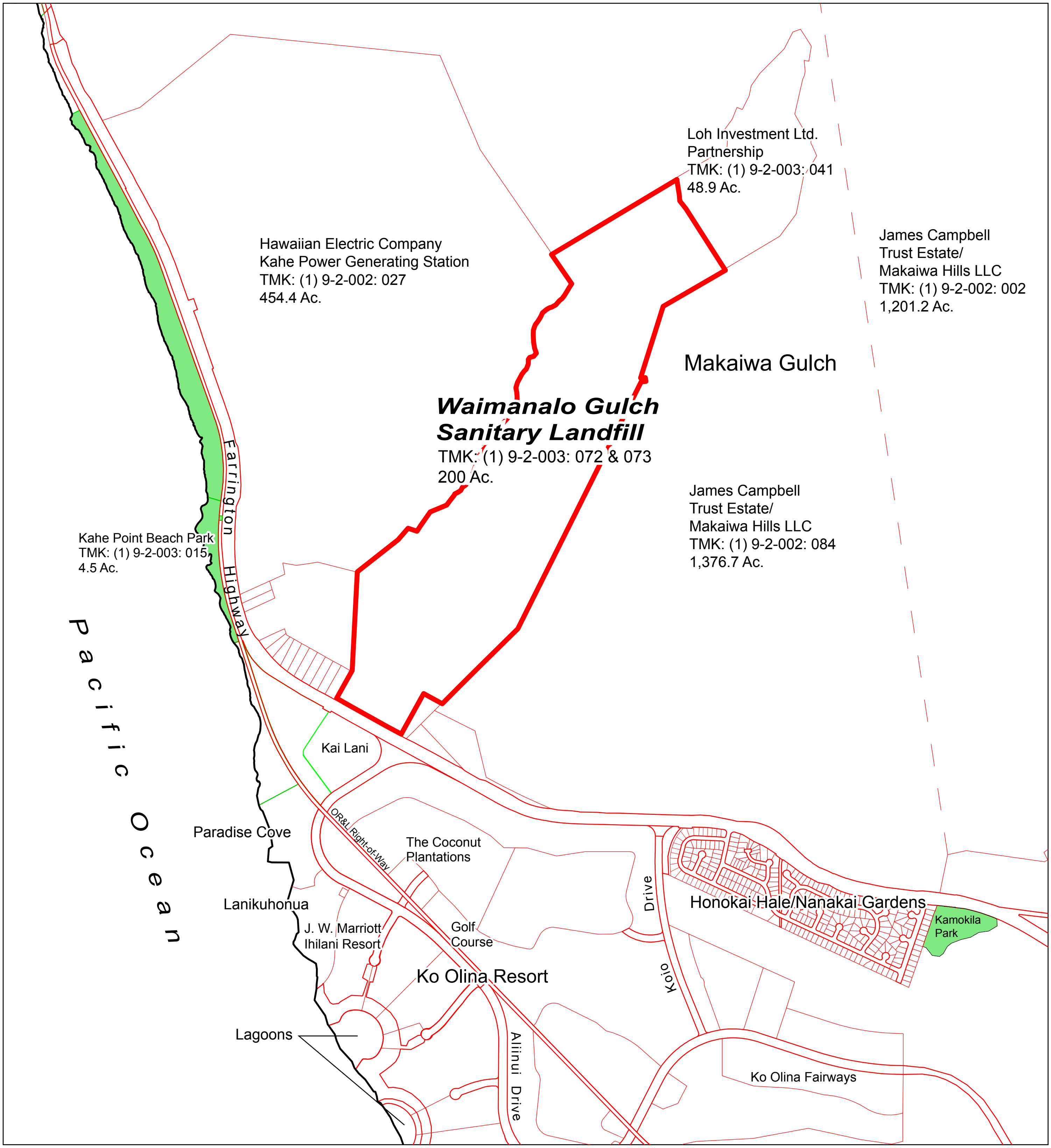
[10] Property data source: Win2Data®, February 21, 2008, Tax Map Key ownership listing.



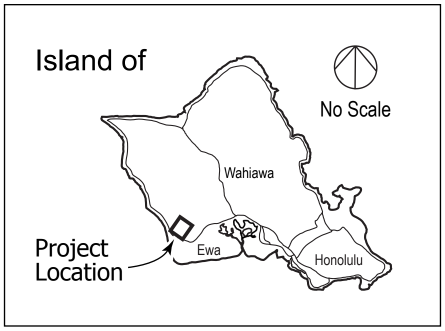


Figure 7-4
Properties in Proximity to WGSL

Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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- The northernmost point of the landfill adjoins land owned by the Loh Investment Ltd. Partnership (TMK: 9-2-003: 041, 48.9 acres).
- ~~West~~ Northwest of the landfill is the Hawaiian Electric Company (HECO) Kahe Power Generating Station (TMK: (1) 9-2-041: 027, 454.4 acres). Electrical transmission lines from the power plant traverse the project site at elevations of between approximately 760 and 840 feet.
- The northwestern and east portions of the landfill are bounded by land owned by the James Campbell Trust Estate/Makaiwa Hills LLC (TMK: (1) 9-2-003: 084, 1,376.7 acres). Future plans call for the development of a residential subdivision known as Makaiwa Hills[11].
- The northwestern most boundary of the Campbell Estate Trust property, northwest of the Kahe power plant, is also the location of the Southern Cross Terminal Building, a telecommunications facility which receives and processes communications signals from submarine fiber optic cables emanating from New Zealand, Australia, Fiji, and the Continental U.S.
- South of the project site is Farrington Highway (FASP No. S-900(4)), a State DOT facility which is the main thoroughfare serving the Waiʻanae Coast and the point of entry to the WGSL.
- Along the southwest corner of the landfill, above Farrington Highway, are private parcels under various ownerships (see **Table 7-12**, and **Figure 7-5**, **Selected Properties Adjacent to the Southwest Corner of WGSL**).
- Makai of the Farrington Highway to the south and southeast is the Kahe Point Beach Park (TMK: (1) 9-2-003: 015) and Ko Olina Resort (TMK: (1) 9-2-003, 9-1-056, and 9-1-057, various parcels). Kahe Point Beach Park is a City & County of Honolulu public park.

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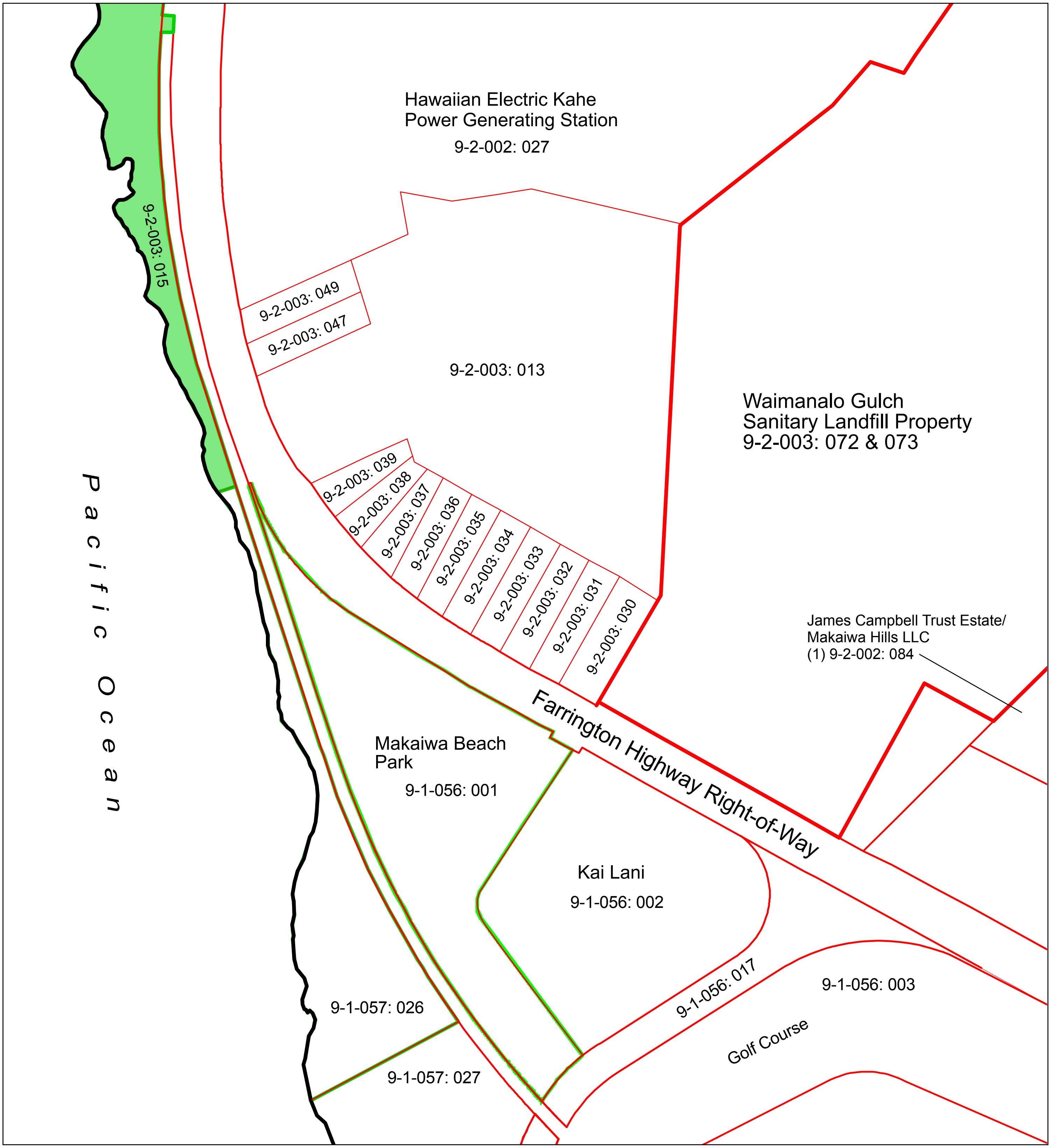
[11] According to Campbell Estate by letter (2002 Annual Report, Docket No. A92-687), to the State LUC dated October 22, 2002, the developer is exploring various ways to develop the project and will provide the required notice to prospective buyers of the project in accordance with Condition No. 19, of the Docket which states: *"19. Petitioner shall notify all prospective buyers of property in the Project of the potential odor, noise, and dust pollution resulting from surrounding Agricultural District land, Hawaiian Electric Company's Kahe Power Plant, and the City and County of Honolulu's Waimānalo Gulch Sanitary Landfill."*



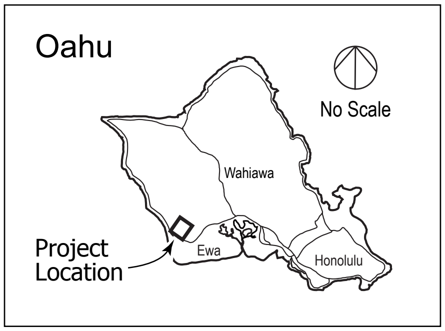


Figure 7-5
Selected Properties Adjacent to the
Southwest Corner of WGSL
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 400 Feet 800

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> Across Farrington Highway and approximately 200 feet from the southern landfill boundary is the main entrance to the Ko Olina Resort. Southeast of this boundary is the northwest corner of the Ko Olina Golf Course and The Coconut Plantations residential development comprised of approximately 270 multifamily units on approximately 29 acres of land. The Ko Olina Kai Lani Subdivision, first constructed in the early 2000s, lies across the highway from the WGSL.

Additional existing and planned properties and developments within the Ko Olina Resort in proximity to the proposed landfill expansion area includes the Paradise Cove Luau, Lanikūhonua, J. W. Marriott Ihilani Resort and Spa, and other residential developments associated with the Ko Olina Resort property.

7.2.3. Potential Impacts and Mitigation Measures

While WGSL is designed to serve all communities on the Island of Oʻahu, the potential for impacts associated with the use and operation of the facility are expected to be at a localized or community level based on the nature of the project involving waste handling and disposal within the Waimānalo Gulch. The operation of the proposed project therefore, is expected to result in potential land use impacts similar to those associated with the current use of the site. These potential impacts include:

- The generation of nuisance odors during delivery and landfilling of refuse.
- Windblown litter from the landfill becoming airborne and litter from improperly secured loads from refuse delivery trucks and private self-haulers.
- Traffic impacts associated with the transit of vehicles entering and leaving WGSL.
- The tracking of mud and sediments onto Farrington Highway from vehicles exiting the landfill.
- The migration of fugitive dust from landfill operations including earthwork and vehicles transiting to and from the site.

- The modification or loss of mauka view planes toward the WGSL.

A number of mitigation measures as described in this document have been identified to address the potential impacts described above. These measures, however, as previously noted in the WGSL Expansion FSEIS, 2002, will continue to require ongoing coordination with surrounding community and landownership interests. These parties include, but are not limited to: Ko Olina; Hawaiian Electric Company; James Campbell Estate Trust/Makaiwa Hills LLC; the Wai‘anae and Kapolei Neighborhood Boards; and other community groups and organizations that may be adversely affected or with an interest in the proper operation of the landfill.

Effort by the City Administration to establish an Oversight Advisory Committee for Waimānalo Gulch was initiated in July 2006. The purpose of the Committee was to serve in an advisory capacity to the Administration on landfill operational activities and to provide recommendations, as needed, to mitigate the potential effects of landfill operations on the community. While the Oversight Advisory Committee is continuing to serve in this capacity, on-going efforts by ENV and WMH will be maintained and extended to coordinate the operation of WGSL with the surrounding community. The mitigation measures that will be implemented are previously described in Section 7, 7.1.5. Socioeconomic Mitigation Measures.

Land Use and Ownership Summary

The proposed project is anticipated to result in the potential for secondary and cumulative land use impacts similar to those associated with the existing use of the site. These potential impacts would be an outgrowth of those identified in this section, summarized as:

- The generation of nuisance odors.
- Windblown litter from the landfill becoming airborne and litter from improperly secured loads from refuse trucks and private self-haulers.

- Traffic impacts associated with the transit of vehicles entering and leaving WGSL.
- The tracking of mud and sediments onto Farrington Highway.
- The migration of fugitive dust from landfill operations.
- The modification or loss of mauka view planes toward the WGSL.

These direct impacts could potentially lead to secondary and cumulative impacts that would include the loss or impaired use of land and properties in the affected area. Mitigation to address these concerns is addressed in this section and in the following:

- 4.2.3. Environmental Controls, Litter, to address windblown litter.
- 4.4. Dust and Mud, to address tracking of mud and migration of fugitive dust.
- 5.7.3. Potential Impacts and Mitigation Measures (Air Quality), for odor control.
- 5.10.2. Potential Impacts and Mitigation Measures (Scenic and Aesthetic Environment), to address impacts to view planes toward the WGSL.

7.3 Historic and Archaeological Resources

7.3.1. Introduction

An Archaeological Inventory Survey (AIS) of the proposed project site was conducted by Cultural Surveys Hawai‘i (CSH) in 2007 and 2008 (**Appendix G, Archaeological Inventory Survey**). The purpose of the AIS was to document all historic properties within the 92.5 acre area of the proposed project known as the Area of Potential Effect (APE). The following scope of work was identified to meet state and City & County of Honolulu requirements for AIS documentation in accordance with Chapter 13-13-276, HAR, and included coordination with the State Historic Preservation Division (SHPD) and City to address archaeological concerns:

1. A complete ground survey of the entire project area for the purpose of site inventory was completed. All sites were located, described, and mapped with an evaluation of function, interrelationships, and significance.

Documentation included photographs and scale drawings of selected sites and complexes. All sites were assigned State Inventory of Historic Properties (SIHP) numbers.

2. Limited subsurface testing was conducted to determine if subsurface deposits were located in the project area (particularly in potential archaeological sites).
3. Research on historic and archaeological background, including search of historic maps, written records, and Land Commission Award documents. This research focused on the specific area with general background on the ahupuaʻa and district, and emphasized settlement patterns.
4. As appropriate, consultation with knowledgeable individuals regarding the project area's history, past land use, and the function and age of the historic properties documented within the project area.
5. Preparation of the inventory survey report included:
    a) A project description
    b) A section of a USGS topographic map showing the project area boundaries and the location of all recorded historic properties
    c) Historical and archaeological background sections summarizing prehistoric and historic land use of the project area and its vicinity
    d) Descriptions of all historic properties, including selected photographs, scale drawings, and discussions of age, function, laboratory results, and significance, per the requirements of HAR 13-276
    e) A section concerning cultural consultations [per the requirements of HAR 13-276-5(g) and HAR 13-275/284-8(a)(2)]
    f) A summary of historic property categories, integrity, and significance based upon the Hawaiʻi Register of Historic Places criteria
    g) A project effect recommendation
    h) Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible to the Hawaiʻi Register of Historic Places

7.3.2. Methodology

Field Methods

Fieldwork was accomplished over a one-week period from January 25th to February 2nd, 2007. The CSH field crew consisted of Matt Bell, B.A., Amy Hammermiester, B.A., and Kevin Dalton, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator).

The fieldwork consisted of a 100% coverage pedestrian inspection of the study area and limited subsurface testing at select locations. The pedestrian inspection of the study area was accomplished through systematic sweeps (transects). The spacing interval between archaeologists was 5-10 meters. Cliffs and rock overhangs were inspected thoroughly for evidence of burials or cultural activity. All potential historic properties encountered were recorded and documented with a written field description, site map, photographs, and located using Global Positioning System (GPS) instruments.

Subsurface testing consisted of the partial excavation, by hand, of selected natural features located during the pedestrian survey. The purpose of the subsurface testing was to aid in determining if selected geological features (i.e. rock shelters, rock mounds, etc.) had been culturally modified or contained subsurface cultural deposits. All excavated material was sifted through a 1/8 in. wire mesh screen to separate out the soil matrix. Each test excavation was documented with a scale section profile, photographs, and sediment descriptions. Sediment descriptions included characterizations of Munsell color, compactness, texture, structure, inclusions, cultural material present, and boundary distinctness and topography.

Document Review

Background research included a review of previous archaeological studies on file at SHPD; a review of geology and cultural history documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawaiʻi State Archives and the Archives of the Bishop Museum; and a study of historic maps at the Survey Office of the DLNR. Information on Land Court Awards (LCAs) was accessed through the Waihona ʻĀina Corporation's Māhele Data Base (www.waihona.com).

The research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected type and location of sub-surface pre and post-contact historic properties in the project area.

Consultation

CSH worked with the Office of Hawaiian Affairs (OHA), SHPD, and knowledgeable cultural consultants pursuant to the requirements of HAR 13-276-5(g) and HAR 13-275/284-8(a)(2). This effort is dove-tailed with the cultural consultation effort currently underway for the project's cultural impact assessment, which CSH is also preparing pursuant to Chapter 343, HRS, and the Office of Environmental Quality Control's guidelines for assessing cultural impacts. **Table 7-13** summarizes the individuals and organizations/agencies that have been consulted.

7.3.3. Summary of Background Research and Predictive Model

Historical background research of Honoʻuliʻuli Ahupuaʻa indicated that pre-contact settlement would have been centered around the rich cultivated lands of Honoʻuliʻuli ʻili for extensive wetland taro cultivation and abundant coastal resources. The extensive limestone plain would also include recurrent use habitations for fishermen and gatherers, and sometimes gardeners. The upland dry forest areas would be used for hunting and gathering of forest resources, but likely not for widespread permanent settlement. In the intermediate area between the limestone plain and the upland forests indigenous Hawaiian activities would have been limited to dry land agriculture within gulches or near springs, and mauka/makai transportation routes (i.e. trails) and associated temporary shelters. (CSH, 2008).

Table 7-13
Cultural and/or Agency Consultations

Name	Affiliation
Ailā , William	Hui Malāma I Nā Kūpuna
Amaral, Annelle	‘Ahahui Siwila Hawai’i O Kapolei Hawaiian Civic Club
Cope, Aggie	Hale O Na‘auao Society
Desoto, Frenchy	Wai‘anae Coast Archaeological Preservation Representative
Davan, Teresa	O’ahu Island Archaeologist, SHPD
Eaton, Arline	*Kupuna* at Iroquois Elementary School
Enos, Eric	Cultural practitioner and director of Ka‘ala Farms
Flanders, Judith	Granddaughter of Alice Kamōkila Campbell
Greenwood, Alice	O’ahu Island Burial Council Member, Wai‘anae District
Ho‘ohuli, “Black” Jo	Wai‘anae Neighborhood Board No 24
Rezentes, Cynthia	Wai‘anae Neighborhood Board No 24
Johnson, Adam	Former Oahu Island Archaeologist, SHPD
Johnson, Rubellite	Hawaiian scholar
Josephides, Analu	O‘ahu Island Burial Council Member, Wai‘anae District
Kanahele, Kamaki	President of Nānākuli Homestead Association
Kane, Shad	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board and ‘Ahahui Siwila Hawai’i O Kapolei Hawaiian Civic Club
Kila, Glenn	Koa Mana
Makaiwi, Martha	Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34
McKeaque, Kawika	O‘ahu Island Burial Council member ‘Ewa District
Momoa, Joseph	Kama‘āina of Nānākuli and member of Kamo‘i Canoe Club
Morawski, Lauren	O’ahu Island Archaeologist, SHPD
Nāmu‘o, Clyde	Administrator at Office of Hawaiian Affairs
Paik, Kaleo	Culture and Historic Branch, SHPD
Philpotts, McD	Cultural practitioner and long time resident of Waimānalo ‘Ili
Silva, Alika	Koa Mana
Tiffany, Nettie	Kahu of Lanikūhonua and Former O‘ahu Island Burial Council member, ‘Ewa District
Timson, Maeda	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34 and President of Ua Au O Kapolei

By 1920, the lands of Hono‘uli‘uli were used primarily for commercial sugar cultivation and ranching (Frierson 1972:18). Much of the mauka lands in western Hono‘uli‘uli, including ridges and deep gulches, were unsuitable for commercial sugar and remained as pasture land for grazing livestock. Historical maps indicate a lack of any significant development within the study area into the late 1920s. (CSH, 2008).

Major land use changes came to western Hono‘uli‘uli when the U.S. Military began development in the area. Military installations were constructed both near the coast, as well as in the foothills and upland areas. A 1943 War Department map reflects the military presence and associated land use within and south of the study area during this time period. Access roads to power lines and telecommunications lines are indicated throughout the southeastern portion of study area. Also of note are the presence of access roads leading to the Battery Arizona, a subterranean WWII bunker complex identified by Hammatt and Shideler in 1999, situated on the southwest ridge above Waimānalo Gulch. (CSH, 2008).

Previous archaeological research in the vicinity of the study area has identified numerous pre-contact sites including: habitation structures (platforms and enclosures), agricultural features (walls, terraces, and mounds), and religious sites (kūʻula stone and koʻa). Within the "Makaīwa Hills" project area, which is abuts the southeastern boundary of the current study area, pre-contact habitation sites were found to be clustered in higher elevations above 1000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991). (CSH, 2008).

Historic archaeological sites identified in the vicinity of the study area include the Battery Arizona military complex (WWII bunker complex), sugar cane cultivation infrastructure, and walls and fences attributed to the Campbell Ranch. (CSH, 2008).

The background research indicates that historic properties are not expected to be encountered in the study area. This is based on review of the AIS for the proposed WGSL Project Site conducted by CSH in 1999, in which no historic properties were identified within the current study area (Hammatt & Shideler 1999). However, if historic properties are encountered they are likely to include both pre-contact and historic sites. Pre-contact archaeological sites may include: dry land agricultural sites, including planting mounds and terraces in the vicinity of springs or drainage gulches; habitation sites, including enclosures and platforms; trail markers (ahu); religious sites including enclosures, terraces, platforms, and/or upright stones located on prominent hills or other significant locations; and burials located within discrete rock shelters and/or caves. Historic archaeological sites may include: ranch related structures including walls, fences, and maintained springs; and military related structures including concrete bunkers, radio towers and related infrastructure. (CSH, 2008).

7.3.4. Results of Fieldwork

Fieldwork for the archaeological investigation was accomplished over a one-week period from January 25, 2007 to February 2, 2007 under state archaeological permit No. 07-19 issued by SHPD, per HAR Chapter 13-13-282. Fieldwork involved a 100% pedestrian inspection of the study area with limited subsurface testing. (CSH, 2008).

Survey Findings

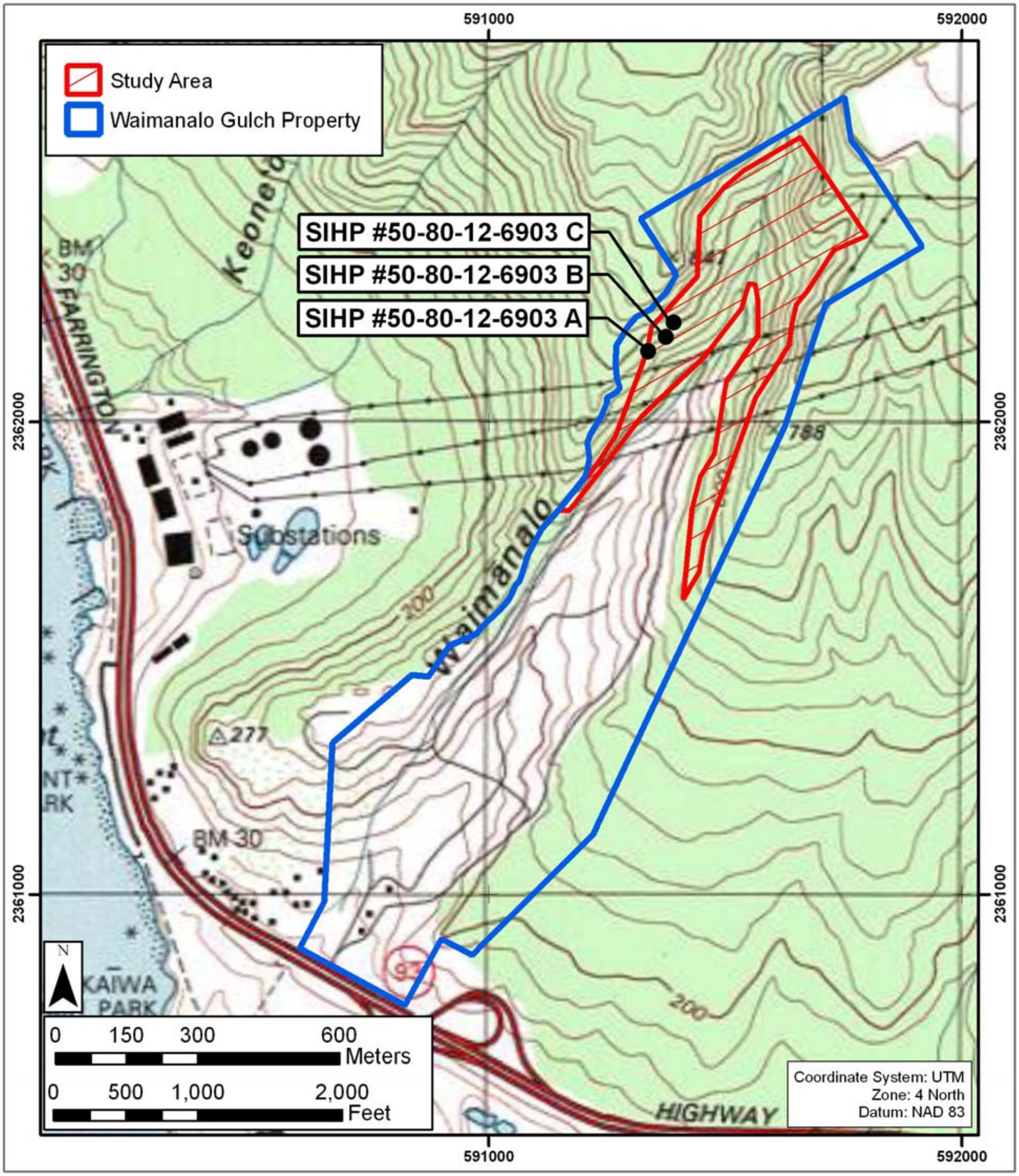
Pedestrian inspection of the study area identified one historic property, State Inventory of Historic Properties (SIHP) # 50-80-12-6903, within the study area (**Figure 7-6**). SIHP #50-80-12-6903 is of pre-contact origin, and consists of three large upright boulders potentially utilized as trail or boundary markers. A description of this historic property is presented below (see Description of Historic Property). (CSH, 2008).

Numerous natural caves and rock overhangs were observed and inspected for cultural modifications and/or the presence of human burials. Where significant sediment deposits were observed, subsurface testing in the form of controlled hand excavation was undertaken to establish if subsurface cultural deposits were present. (CSH, 2008).

The observed topography within the study area consisted of talus slopes with an average slope of 65 degrees. The observed geology consisted of exposed basalt outcrops with minimal soil deposition. (CSH, 2008).

As of February 2, 2007, activities taking place in a 6.8 acre area included: controlled dynamite blasting of gulch walls, bulldozing, construction of roads, and removal of material. This area was not included in the pedestrian inspection due to the hazardous conditions present. The exclusion of this area was not a major concern as it was previously surveyed in 1991 by Hammatt et al. and was determined to have no historic properties present. (CSH, 2008).

Figure 7-6, USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing location of SIHP #50-80-12-6903 (Features A-C) (CSH, 2008)



Inspection of Geologic Features

Numerous natural caves and rock overhangs area were discovered and investigated in the study area. The larger caves and overhangs (greater than two meters in depth and 4 meters in width) were documented and their position mapped using GPS (**Figure 7-7)**. (CSH, 2008).

A rock alignment identified as "CSH 3", located near the northeastern edge of the study area was also discovered. The alignment was determined to be of modern origin due to its location along a talus slope, in which soil erosion and rainwater runoff channels were observed. If the feature was of antiquity it would reflect disturbances associated with erosion and/or rainwater runoff, such as the retention of eroding rock and soil or the displacement of boulders incorporated into the alignment. Subsurface testing was conducted at this alignment to confirm the initial age determination of this feature. (CSH, 2008).

Cave 1 - Located on the western slope of Waimānalo Gulch, situated at the base of a small rock outcrop (**Figure 7-8**). The mouth of the cave opens to the northeast and measures 1.5 m high. The internal dimensions of the cave are: 8.0 m wide and 4.0 m deep, with a maximum ceiling height of 1.2 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Cave 2 - Located on the western slope of Waimānalo Gulch, situated at the base of a pronounced rock outcrop (**Figure 7-9**). The mouth of the cave opens to the east and measures 1.3 m high. The internal dimensions of the cave are: 8.0 m wide and 4.1 m deep, with a maximum ceiling height of 0.8 m. The roof of the cave has experienced some collapse and now covers approximately 70 percent of the floor. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Figure 7-7
USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998) Showing the Location of Documented Caves (CSH, 2008)

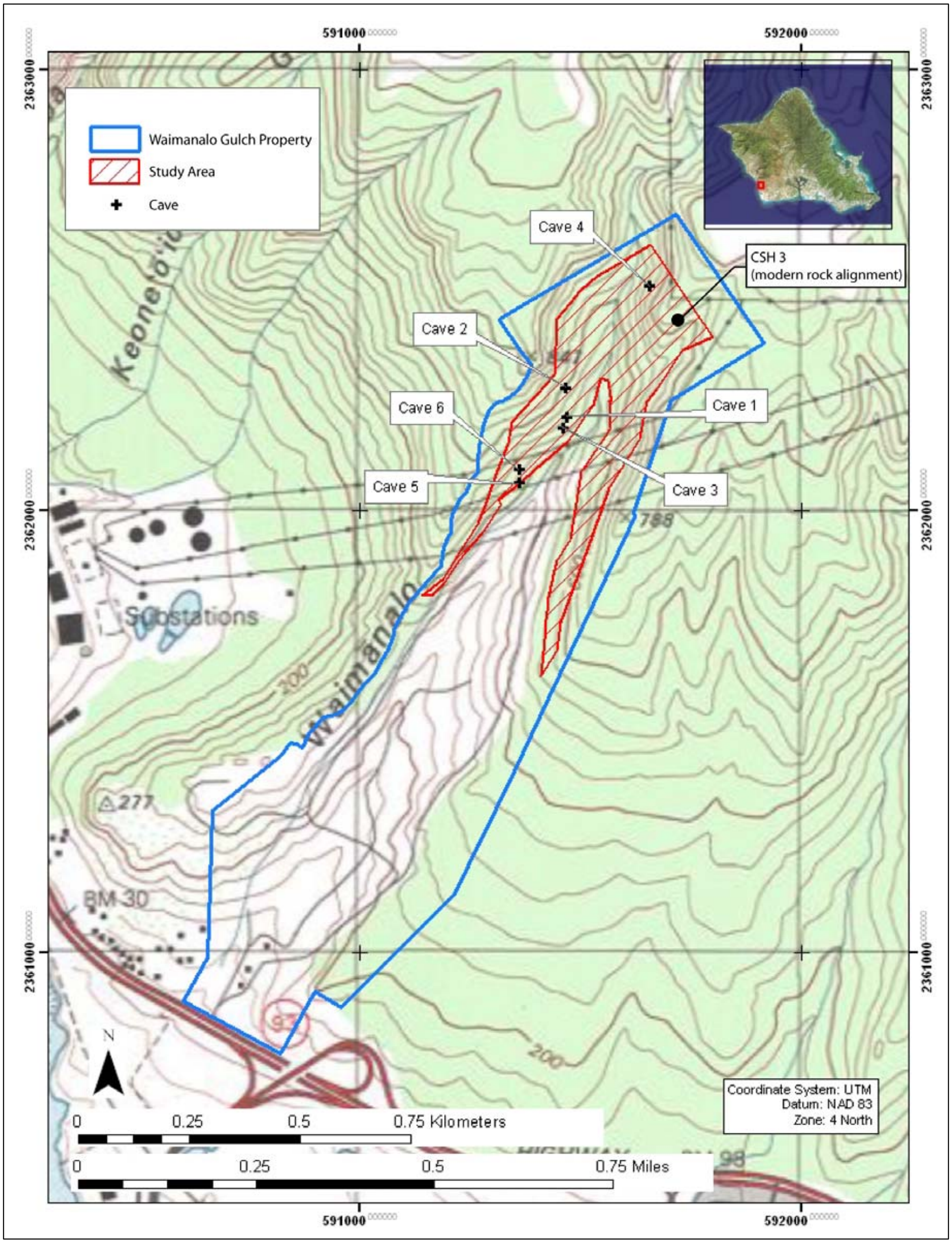


Figure 7-8, Photograph of Opening of Cave 1
View to the North (CSH, 2008)

Figure 7-9, Photograph of Opening of Cave 2
View to the Northwest (CSH, 2008)

Cave 3 - Located on the western slope of Waimānalo Gulch (**Figure 7-7**). The mouth of the cave opens to the south and measures 1.2 m high. The internal dimensions of the cave are: 4.0 m wide and 2.0 m deep, with a maximum ceiling height of 1.2 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Cave 4 - Located on the eastern slope of Waimānalo Gulch (**Figure 7-10**). This cave consists of a rock overhang situated at the base of the large rock outcrop. The mouth of the cave opens to the west and measures 2.0 m high. The internal dimensions of the cave are: 10.0 m wide and 4.0 m deep, with a maximum ceiling height of 2.5 m. A pair of small skeleton keys was observed within the cave (**Figure 7-11**). No other cultural material or human skeletal remains were observed on the surface of the cave floor.

Cave 5 - Located on the western slope of Waimānalo Gulch, situated near the southwestern end of the study area, overlooking the modern landfill (**Figure 7-7**). The mouth of the cave opens to the south and measures 1.0 m high. The internal dimensions of the cave are: 1.4 m wide and 1.3 m deep, with a maximum ceiling height of 0.8 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Cave 6 - Located on the western slope of Waimānalo Gulch (**Figure 7-7**). The mouth of the cave opens to the east and measures 1.2 m high. The internal dimensions of the cave are: 2.4 m wide and 1.5 m deep, with a maximum ceiling height of 0.7 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Modern Rock Alignment - A linear rock alignment (CSH 3) was located near the northeastern edge of the study area (**Figure 7-7**). The alignment is constructed of a single course of six small boulders, situated on the eastern slope of Waimānalo Gulch (**Figure 7-12** & **Figure 7-13**). It measures 1.2 m long and 0.6

Figure 7-10, Photograph of Opening of Cave 4 View to the Northeast CSH, 2008)

Figure 7-11, Photograph of Skeleton Keys From Cave 4 (CSH, 2008)

Figure 7-12, Photograph of CSH 3
View to the West (CSH, 2008)

Figure 7-13, Photograph of CHS 3
View to the South (CSH, 2008)

m wide, and is aligned cross slope. The alignment was determined to be of modern origin due to its location along a talus slope, in which soil erosion and rainwater runoff channels were observed. If the feature was of antiquity it would reflect disturbances associated with erosion and/or rainwater runoff, such as the retention of eroding rock and soil or the displacement of boulders incorporated into the alignment. No cultural material was observed on the ground surface in the vicinity of this feature.

Historic Property Description

Designation and Formal Type:	SIHP # 50-80-12-6903, Rock uprights
Function:	Trail / boundary marker
No. of Features	3
Age:	Pre-contact
Dimensions:	80 m long (NE-SW) x 10 m wide (NW-SE)
Location:	Waimānalo Gulch
Tax Map Key:	(1) 9-2-003: 073
Land Jurisdiction:	City & County of Honolulu

SIHP #50-80-12-6903 consists of three large upright boulders (Features A-C) possibly utilized as trail or boundary markers, located approximately 1320 m (4330 ft) inland of the coast along the western edge of the study area (**Figure 7-6**). The site is situated approximately 140 m (459 ft) north of the existing WGSL operations. The topography of the immediate area is moderately sloping to the southwest, while the geology consists of exposed basalt bedrock outcrops with pockets of shallow soil. Koa haole and exotic grasses dominate the surrounding landscape. A description of the features indicate (CSH, 2008):

> **SIHP# 50-80-12-6903 Feature A** - Consists of a large upright basalt boulder measuring 1.20 m length, 1.12 m wide, and 2.10 m high (**Figure 7-14** and **7-15**). There appears to be no intentionally placed rocks surrounding the base of this upright. The flat face of this stone is directed south, as to mark a trail or boundary for a traveler moving up slope. The face of this feature is discolored and appears

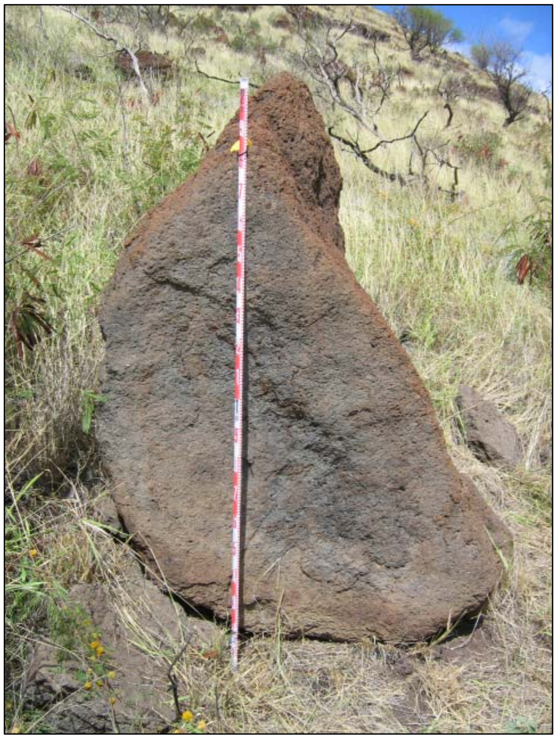


Figure 7-14, Photograph of Feature A
Upright Boulder, View to the North (CSH, 2008)

Figure 7-15, Photograph of Feature A
Upright Boulder, View to the West (CSH, 2008)

to have once rested on the ground. Feature A is interpreted as being of pre-contact origin, and its function is determined to be a trail or boundary marker. No cultural material was observed on the ground surface in the vicinity of this feature.

SIHP # 50-80-12-6903 Feature B - Consists of a large triangular upright basalt boulder measuring 1.63 m long, 0.75 m wide, and 1.78 m high (**Figure 7-16** and **7-17**). The upright appears to have one or more stones intentionally set at its western base. However, the majority of the upright's base rests upon naturally exposed bedrock. Feature B is interpreted as being of pre-contact origin, and its function is determined to be a trail or boundary marker. No cultural material was observed on the ground surface in the vicinity of this feature.

SIHP # 50-80-12-6903 Feature C - Consists of a large upright basalt boulder measuring 2.3 m long, 1.7 m wide, and 2.5 m high (**Figure 7-18** and **7-19**). This feature is believed to be in a natural upright position. Feature C is interpreted as being of pre-contact origin, and its function is determined to be a trail or boundary marker. No cultural material was observed on the ground surface in the vicinity of this feature.

7.3.5. Cultural Consultation Process

Introduction

The AIS investigation was carried out pursuant to the requirements of the Hawai‘i archaeological inventory survey regulations (HAR 13-276-5(g)) and Hawai‘i historic preservation review legislation (HAR 13-275-8(a)(2)). The cultural consultation effort focused on locating any additional cultural and/or historical land use information for the study area and focused on better establishing the age, function, cultural affiliation, and significance of the historic property identified in the study area. Mitigation measures were also developed for the significant historic property that would be affected by the proposed project. (CSH, 2008).

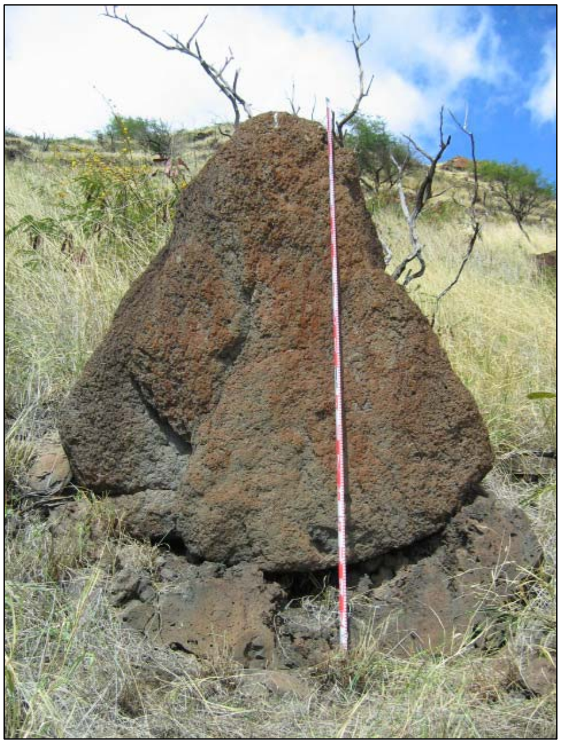


Figure 7-16, Photograph of Feature B
Upright Boulder, View to the North (CSH, 2008)

Figure 7-17, Photograph of Feature B
Upright Boulder, View to the West (CSH, 2008)

Figure 7-18, Photograph of Feature C
Upright Boulder, View to the West (CSH, 2008)

Figure 7-19, Photograph of Feature C
Upright Boulder, View to the Northwest (CSH, 2008)

Process Chronology

March 13, 2007 - During an SHPD site visit to the study area, former Oʻahu Island Archaeologist, Adam Johnson toured the location of SIHP #50-80-12-6903 and vicinity. At this on-site meeting SHPD directed CSH to proceed with cultural consultation to establish the cultural significance of the three upright stones. Mr. Johnson indicated that, based on the results of the consultation, it was likely that the upright stones would be determined significant under criteria D (information content) and E (traditional cultural significance to an ethic group) of the Hawaiʻi Register of Historic Places.

March 27, 2007 - CSH conducted a cultural consultant site visit with William Ailā (Hui Malāma I Nā Kūpuna), Eric Enos (cultural practitioner and Director of Kaʻala Farms), Shad Kane (ʻAhahui Siwila Hawai'i O Kapolei Hawaiian Civic Club), and McD Philpotts (long-time resident of Waimānalo ʻIli). The age, function, cultural affiliation, and significance of the upright stones were discussed. Potential functions for the stones included trail markers, markers for observation points for celestial observation and/or navigation, or markers used to calculate the location of specific coastal and/or off-shore resources. Although there was no clear consensus on function, all of the cultural consultants present indicated the stones were significant and that they had been used by traditional Native Hawaiian cultural practitioners in the past. They indicated that the stones' location was likely an important part of their cultural significance and function. Potential mitigation measures, including preservation in place and relocation were discussed.

The cultural consultants expressed concern regarding the final appearance of the landfill once it has reached capacity and will no longer be used. They wanted to see the new surface of the landfill naturalized with the random placement of basalt boulders and more natural vegetation, preferably Native Hawaiian dry land species, so that the final land fill surface appears more like the surrounding hillsides.

May 1, 2007 - CSH mailed a consultation letter to the Office of Hawaiian Affairs (OHA). This consultation was initiated pursuant to HAR Chapter 13-276-5 and 13-275-6. A copy of the consultation letter is provided in the CSH AIS Report.

May 24, 2007 - OHA provided a response to CSH's May 1, 2007 consultation letter on May 24, 2007, and is included in the CSH AIS Report. OHA requested additional project-related cultural consultation with members of the Koa Mana organization and Nettie Tiffany associated with Lanikūhonua. Additionally, the letter queried whether or not subsurface testing was undertaken as a part of the project AIS. Finally, the OHA letter took the position that the single historic property, SIHP #50-80-12-6903, consisting of three upright stones, should be preserved through adjustment of the current study area boundaries.

CSH responded to OHA in a March 7, 2008 mitigation consultation letter. As a result of OHA's suggestions, members of the Koa Mana organization visited the SIHP #50-80-12-6903 location and vicinity and provided input. Additionally, Nettie Tiffany was included in further cultural consultation.

July 18, 2007 - CSH held another on-site visit. Glenn Kila and Alika Silva from Koa Mana were present, along with Kaleo Paik, SHPD Culture and History Branch. At this meeting the age, function, cultural affiliation, and significance of the upright stones were discussed. Potential mitigation measures, including preservation in place and relocation were discussed. Once again, there was no clear consensus regarding the function of the stones, all of the cultural consultants present indicated the stones were significant and that they had been used by traditional Native Hawaiian cultural practitioners in the past.

October 5, 2007 - CSH held another on-site meeting with the current SHPD O‘ahu Island Archaeologists, Lauren Morawski and Teresa Davan. The AIS effort and results was discussed and the three upright stones were observed. CSH provided the SHPD archaeologists with a summary of the project's cultural consultation effort to date.

March 7, 2008 - A mitigation consultation letter was sent to OHA, SHPD, William Ailā (Hui Malāma I Nā Kūpuna), Eric Enos (cultural practitioner and Director of Ka‘ala Farms), Shad Kane (‘Ahahui Siwila Hawai’i O Kapolei Hawaiian Civic Club), Doug "McD" Philpotts (long-time resident of Waimānalo ‘Ili), Nettie Tiffany (Lanikūhonua), and Glenn Kila and Alika Silva (Koa Mana). The consultation letter included response information to the OHA May 24, 2007 letter. It included the results of the project’s AIS investigation and a description of the three upright stones. It also summarized the project’s cultural consultation effort to date. Finally, it described the proposed mitigation measures (See CSH AIS Report, Appendix C).

In March 2008, following the posting and emailing of the March 7, 2008 consultation letter, CSH attempted to contact the letter recipients by email and telephone to obtain feedback and comments. As a result of the effort on March 20 2008, CSH was contacted by telephone by Shad Kane (‘Ahahui Siwila Hawai’i O Kapolei Hawaiian Civic Club) and McD Philpotts (long-time resident of Waimānalo ‘Ili). Their comments are summarized as follows:

Doug “McD” Philpotts had four general comments:

1. He confirmed that he felt the stones were indeed naturally occurring and that they had not been modified or set up-right by human hands.
2. He and his son went out in his canoe to see how visible the stones were from offshore Lanikūhonua, makai of Waimānalo Gulch. He said he could see the stones faintly, by knowing where to look, but that the stones did not stand out on the Waimānalo Gulch slope and were hard to see. He said the stones did line up with the location of a fishing spot he knew, but that other landscape features were more easily discernable and made much better geographic reference points for triangulation.
3. He finds the proposed treatment of the stones, their movement to the Battery Arizona location, an acceptable form of mitigation.
4. He is most concerned about the final look of the landfill once it reaches capacity and the area will no longer be used. He feels the new final

surface of the landscape needs to be landscaped to be more natural, with native Hawaiian dry-land vegetation, and a more natural land covering of basalt stones. He thinks this naturalization of the surface will make the area much more useful in the future.

Shad Kane had five general comments:

1. He is disappointed about the landfill project as a whole as well as the proposed movement of the three stones (SIHP #50-80-12-6903)—but he understands the need and why the landfill needs to be expanded and the stones need to be moved.
2. He indicated that the stones' meaning and significance will be lost once they are moved from their original location.
3. He is interested in having research continue on the stones after they were moved. This further research should focus on determining the stones past use and/or significance to Native Hawaiian cultural practitioners.
4. He is in favor of interpretation of the stones based on the results of further research, with signage and public access.
5. He would like to see the stones moved back to as close as possible to their original location, from temporary curation at Battery Arizona, after the landfill has reached capacity and it would be safe to move the stones.

As a result of telephone follow up by CSH, Nettie Tiffany (Lanikūhonua) contacted Matt McDermott of CSH. Although Ms. Tiffany had not participated in the previous site visits, she had four general comments:

1. She indicated the description of the stones, their location, and photographs included in the consultation letter accurately portrayed what her mother described to her as trail markers that marked mauka/makai trails. These trails were used by Native Hawaiians to support mauka/makai trade and/or resource distribution. They were also used by bird catchers to access the mauka forests.
2. She was disappointed with the landfill expansion project and that the stones could not be left in place.

3. She felt that the stones significance as trail markers would be ruined if the stones are relocated.
4. She would like to see the stones moved back to as close as possible to their original location, from temporary curation at Battery Arizona, after the landfill has reached capacity and it would be safe to move the stones.

March 25, 2008 - SHPD staff Kaleo Paik (Culture and History Branch) and O‘ahu Island Archaeologists Lauren Morawski and Teresa Davan met with CSH to discuss the project’s ongoing consultation effort results. The project proponent’s proposed mitigation were also discussed. The SHPD staff had the following comments regarding the stones and their proposed mitigation:

1. Kaleo Paik thought it was unlikely that the stones would have functioned for marking coastal or offshore locations or resources, because of their position and the difficulty of seeing the stones from a distance.
2. All felt that the stones should be preserved in place if at all possible because their significance and function are likely tied to their current location.
3. If preservation in place is truly not an option, they were in favor of temporary relocation of the stones to Battery Arizona, with movement back of the stones to as near as possible to their original location once the landfill is closed.
4. All were in favor of further research regarding the stones significance and function, with eventual public signage and interpretation for the stones once they are moved back to as close as possible to their original location.

Summary of Consultation Effort

According to CSH the consultation effort determined no clear consensus regarding the function of the three stone uprights. However, all of the cultural consultants indicated that the stones were significant and that they were likely used by traditional Native Hawaiian cultural practitioners in the past. All cultural consultants also felt the stones should be preserved in place if at all possible because their significance and function are likely tied to their current location. If preservation in place is not an option, most were in favor of temporary relocation to Battery Arizona, with movement of the stones back to as near as possible to their original location once the landfill is closed. (CSH, 2008).

Some cultural consultants expressed an interest in having research continue on the stones after they were moved. This further research would focus on determining the stones past use and/or significance to Native Hawaiian cultural practitioners. Once the results of this additional research were interpreted, public access to the stones with interpretive signage was felt to be appropriate. (CSH, 2008).

The cultural consultants expressed concern regarding the final appearance of the landfill once it reaches capacity and is no longer used. They wanted to see the new surface of the landfill naturalized with the random placement of basalt boulders and more natural vegetation, preferably Native Hawaiian dry land species, so that the final landfill surface appears more like the surrounding hillsides. (CSH, 2008).

CSH thanks all the cultural consultants and OHA and SHPD representatives for their time and consideration during the project's archaeological consultation effort. Their input is extremely valuable and will help all concerned parties make the best, most well-informed management decisions for the historic property in the project APE. (CSH, 2008).

7.3.6. Summary and Interpretation

The AIS was completed by CSH in compliance with applicable State of Hawaiʻi historic preservation legislation. Land disturbing activities associated with the landfill expansion would include: major grading, including blasting of exposed rock surfaces, and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for the stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; excavation for the installation of a storm water runoff control channel along the west side of the gulch; and filling of the expansion area with refuse material. (CSH, 2008).

The archaeological survey of the project area identified one historic property designed as SIHP #50-80-12-6903, consisting of three stone uprights, and is located along the western edge of the study area, situated on the western slope of Waimānalo Gulch. The site is of pre-contact origin and is identified as Features A through C. The three upright boulders were potentially used as trail or boundary markers. (CSH, 2008).

The inventory survey fieldwork also involved a thorough inspection of caves and rock shelters observed within the study area. The caves and rock shelters were inspected for cultural modifications and/or the presence of human burials. Where significant sediment deposits were observed, subsurface testing in the form of controlled hand excavation was undertaken to establish if any subsurface cultural deposits were present. All observed and inspected caves contained no indications of cultural modification, subsurface cultural deposits, or use as a human interment site. (CSH, 2008).

A rock alignment (CSH 3) was also found located near the northeastern edge of the study area. The alignment was determined to be of modern origin. If the feature was of antiquity it would reflect disturbances associated with erosion and/or rainwater runoff, such as the retention of eroding rock and soil or the displacement of boulders incorporated into the alignment. Test excavations yielded no cultural material and confirmed the modern construction of the rock alignment. (CSH, 2008).

The AIS findings are largely consistent with expectations based on background research. An archaeological inventory survey of the “Makaīwa Hills” development project, totaling 1,850 acres and encompassing large portions of the Makaīwa and Pālailai gulches, identified pre-contact habitation sites clustered in higher elevations above 1,000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991). Hammatt et al. (1991) indicated that the higher elevations would contain ample forest subsistence resources for gathering on both a continual basis, as well as during times of famine and drought, while the lower elevations would be in close proximity to the shoreline and bountiful coastal resources. The current study area is located 80 m east of the “Makaīwa Hills” development project, contains a similar topographic and geologic setting, and is situated within an elevation range of 400 to 900 feet, the zone in which pre-contact archaeological sites were absent in the neighboring “Makaīwa Hills” study area. Thus, the fact that only a single historic property was identified within the current study area is not surprising and is consistent with the pattern observed by Hammatt et al. in 1991. Furthermore, SIHP #50-80-12-6903, consists of trail and/or boundary markers utilized by pre-contact populations, suggesting that portions of the study area were utilized for transportation to more resource rich areas (i.e. the coast and upland forest). (CSH, 2008).

Both the Hammatt et al. (1991) study and the current AIS are important because they provide valuable data toward establishing a settlement pattern for the leeward gulches and ridges of the Honoʻuliʻuli Ahupuaʻa. The current study area has been determined to be situated in an intermediate zone between the coast and the upland forest. This intermediate zone is defined by an extremely arid environment, a lack of vegetation, and steep rocky terrain which would have made pre-contact habitation and agriculture very difficult. This intermediate zone is focused between the 500 and 1,000 foot elevations and was most likely utilized for transportation between the more hospitable coast and upland forest areas. (CSH, 2008).

7.3.7. Significance Assessment

The AIS investigation provides sufficient information for an evaluation of significance in accordance with the Hawaiʻi State Registers of Historic Places (HAR 13-275-6). The criteria used to establish significance include:

> **Criteria A** - Historic property reflects major trends or events in the history of the state or nation.
>
> **Criteria B** - Historic property is associated with the lives of persons significant in our past.

Criteria C - Historic property is an excellent example of a site type.

Criteria D - Historic property has yielded or may be likely to yield information important in prehistory or history.

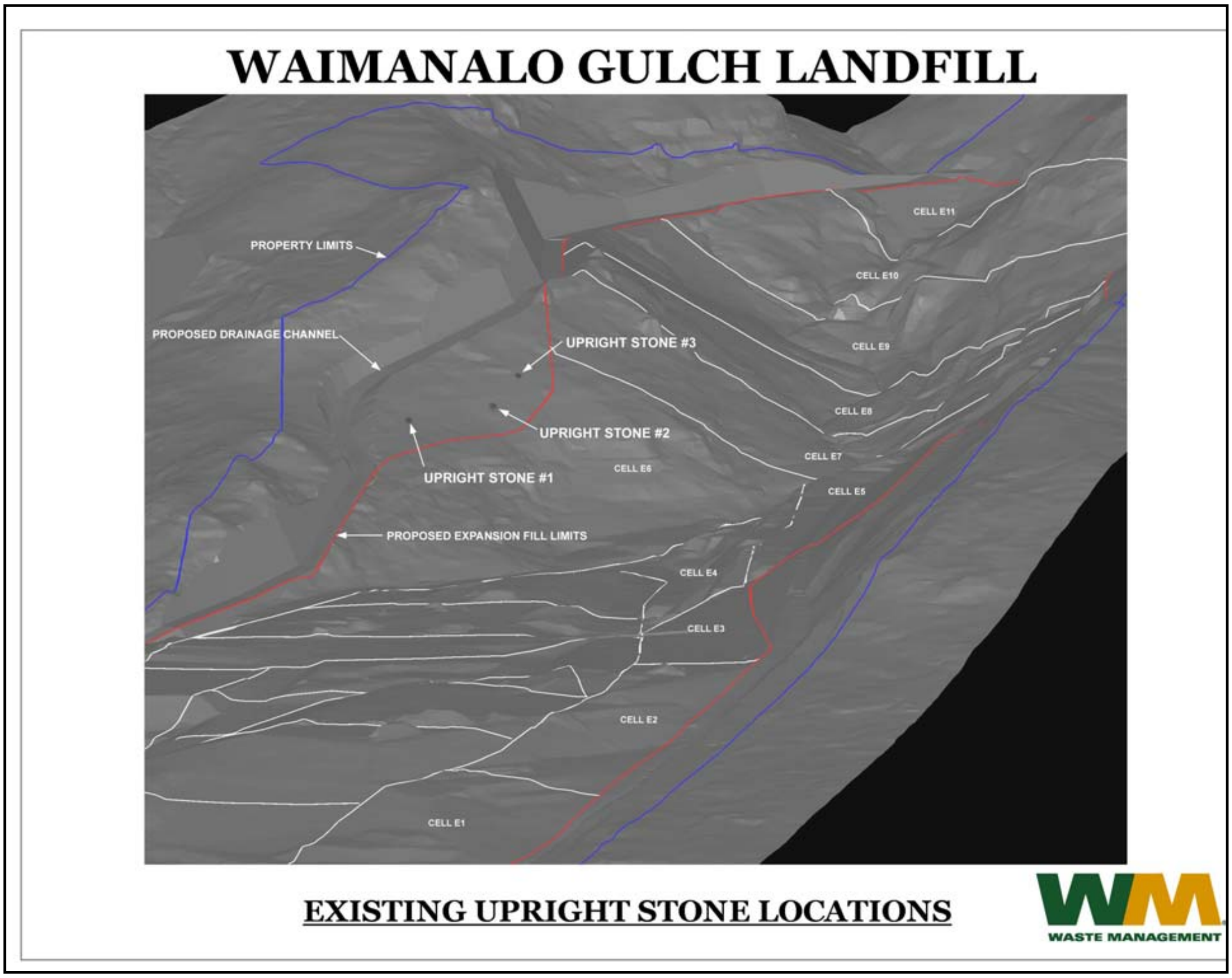
Criteria E - Historic property has cultural significance to an ethnic group, including, but not limited to, religious structures and burials.

SIHP #50-80-12-6903, consisting of three rock uprights, possesses integrity of location and materials and is recommended by CSH as eligible to the Hawaiʻi Register under criteria D & E.

7.3.8. Potential Impacts and Mitigation Measures

The proposed project will require excavation, mass grading, controlled blasting, and the use of heavy machinery and equipment to develop landfill cells and other structural features that will maintain the integrity and safety of the proposed area of lateral expansion. The development of a modified landfill design was considered by WMH and ENV as a means of providing further protection to the stone uprights. This consideration would avoid the location of the uprights along a steep slope to maintain and preserve the condition of the existing site. However, according to WMH the uprights are located along a ridgeline that would remain susceptible to vibration (**Figure 7-20**):

1. The safety of the stones cannot be guaranteed if they were preserved in place. Excavation, mass grading and controlled blasting in the area of the uprights and elsewhere within the WGSL would subject the stones to repeated vibration over the next 15 years of the proposed project. Vibration from construction activities could potentially be sufficient to dislodge the stones from their existing resting place, causing them to roll down the steep slope they rest on. Upon completion of construction, the original location of the uprights would also have been graded based on landfill design requirements to provide appropriate drainage and slope stability.



Note: Graphic shows the proposed landfill expansion in relation to the three stone uprights comprising SIHP # 50-80-12-6903. Note the large drainage channel upslope of the stones and the cell E6 immediately down slope. (WMH and CSH, 2008).

Figure 7-20, Proposed WGSL Expansion Project Three-Dimensional Graphic

2. Preservation in place would require a significant reduction of the overall area and volume of the proposed facility expansion. In addition, the stone uprights would be in proximity to a proposed large storm water drainage channel and Cell E6, immediately above the location of the uprights.

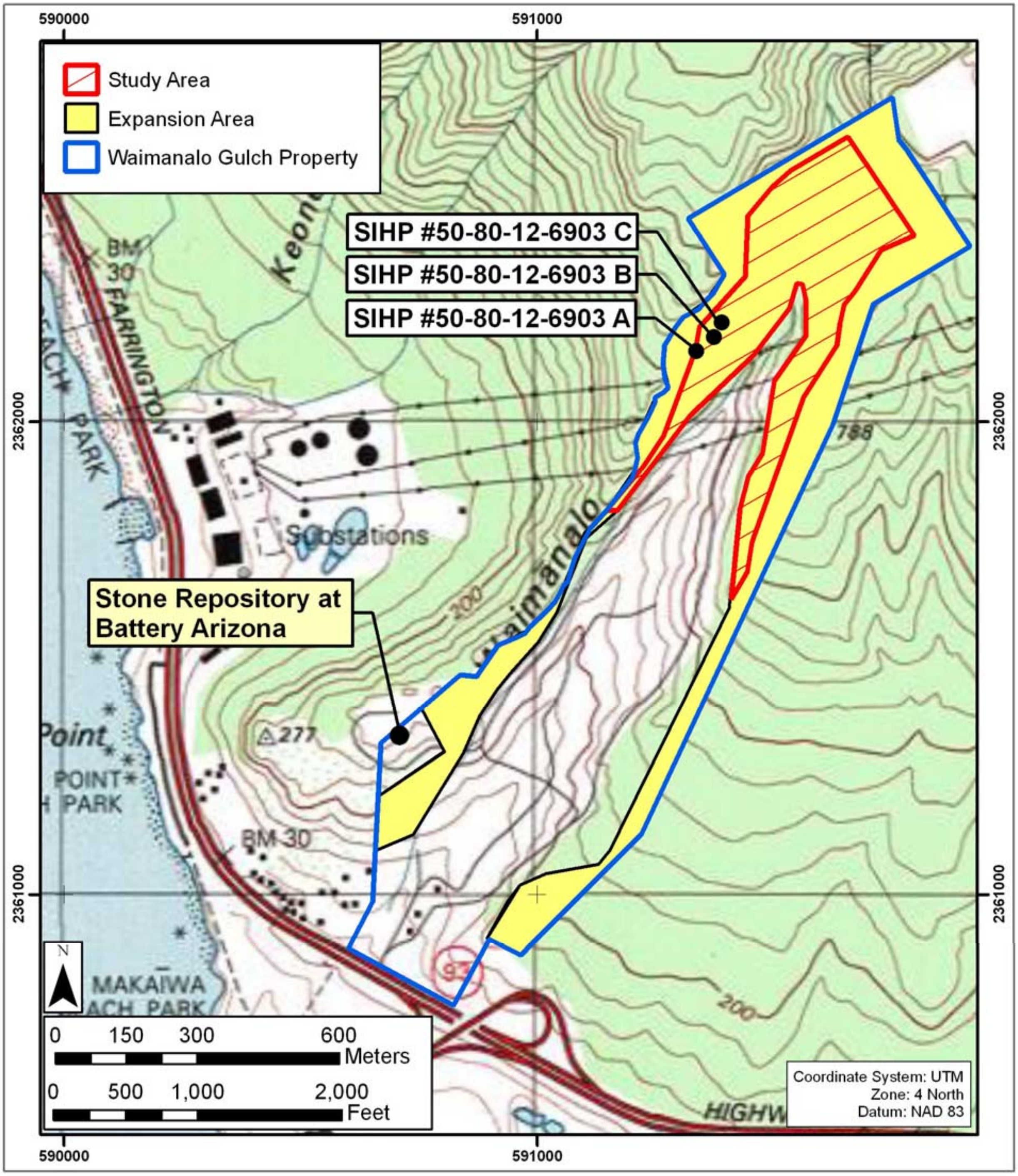
3. Considering the use of the site as a landfill, preservation in place is not thought to be an appropriate mitigation treatment for the stones, considering their cultural sensitivity.

Because of concern that construction activities could jeopardize the area of the site and potentially undermine the stability of the underlying surface of the stone uprights, or the uprights themselves, WMH and ENV have determined that the three upright stones comprising SIHP # 50-80-12-6903 cannot reasonably be preserved in place in a safe and appropriate manner. Accordingly, a project effect determination of “effect with agreed upon mitigation commitments” is proposed.

Mitigation to address the preservation of the site is recommended in the form of relocation of the three SIHP # 50-80-12-6903 upright stones to the Battery Arizona site, located in the southwestern portion of the WGSL (**Figure 7-21**). This recommendation is based on precedent that was established for three prior noteworthy stones of cultural significance to Native Hawaiians that have already been relocated based on earlier expansion of the WGSL. These stones, described by Hammatt and Shideler (1999), were relocated to the Battery Arizona site in 1988. **Figure 7-22**, shows the location of this established stone repository in relation to the Battery Arizona features. **Figures 7-23** and **7-24**, are photographs showing the proposed relocation area in relation to the already established Battery Arizona stone repository site. The proposed relocation would ensure and maintain the safety of the stones during construction activities for the proposed project, and would make them much more accessible to interested parties.

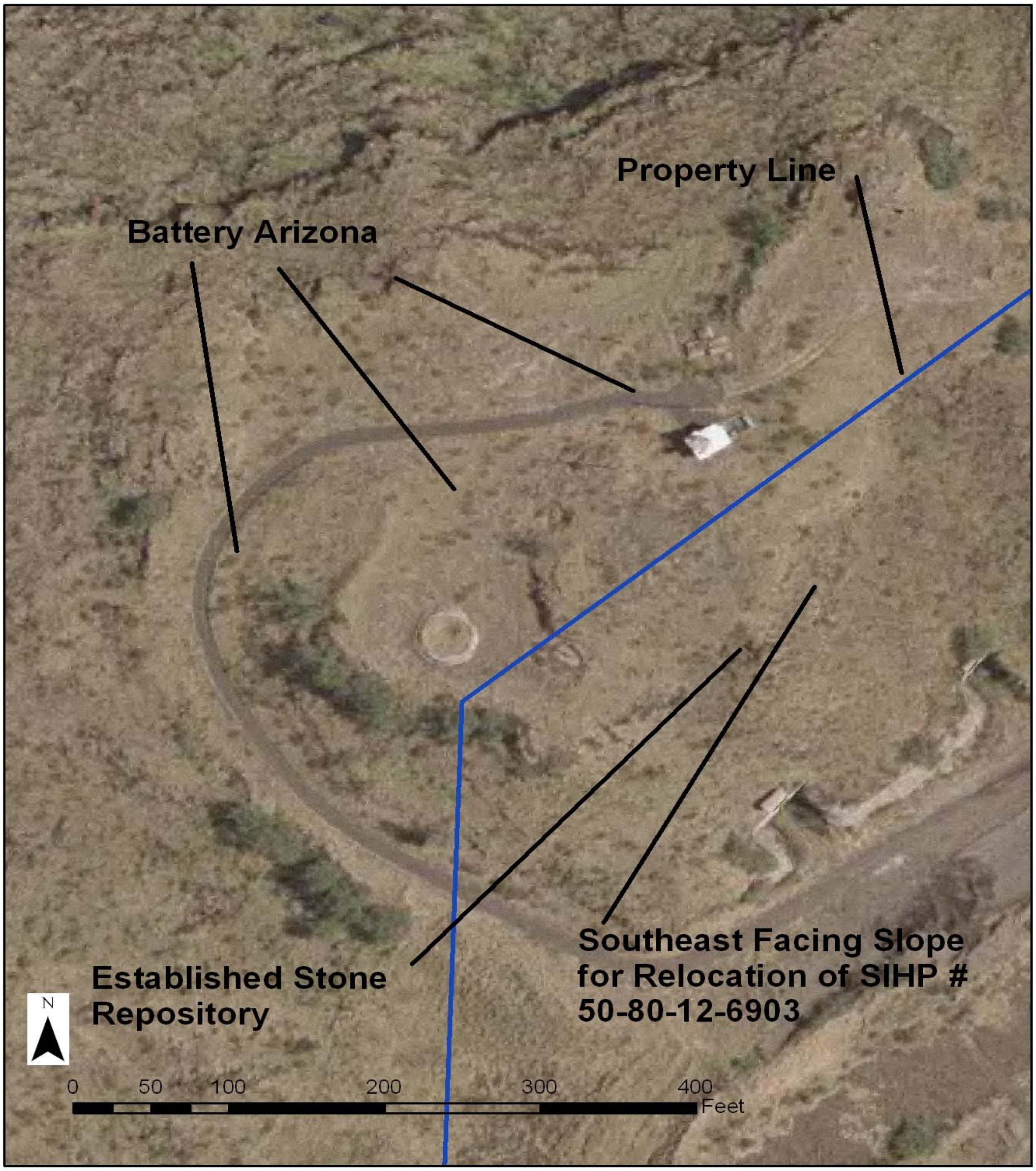
The specific actions required for the proposed relocation would be prepared as part of an Archaeological Mitigation Plan (AMP) for SIHP # 50-80-12-6903. The details would be determined based on further consultation with the cultural consultants, SHPD, ENV, and WMH. The AMP is proposed to include additional research to help better establish the function of the three stones. The option of relocating the stones back to near their original resting places would be included as a part of the discussion.

Figure 7-25 is a modified photograph showing approximately the appearance of the relocation from coastal Honoʻuliʻuli. The relocation would only take place after the planned area of lateral expansion has been completed in approximately 15 years.



Note: Portion of the 1998 `Ewa USGS 7.5-minute topographic quadrangle showing the Waimānalo Gulch property boundaries, the boundaries of the proposed 90-acre expansion area, the 36-acre study area, the location of Features A, B, and C of SIHP #50-80-12-6903, and the previously established stone repository at Battery Arizona. (CSH, 2008).

Figure 7-21, Location of Proposed Stone Repository at Battery Arizona and Relationship to SIHP #50-80-12-6903



Note: Aerial photograph of Battery Arizona showing the established stone repository and the proposed relocation area for SIHP # 50-80-12-6903. (CSH, 2008).

Figure 7-22, Aerial Photograph of Proposed Battery Arizona Stone Repository

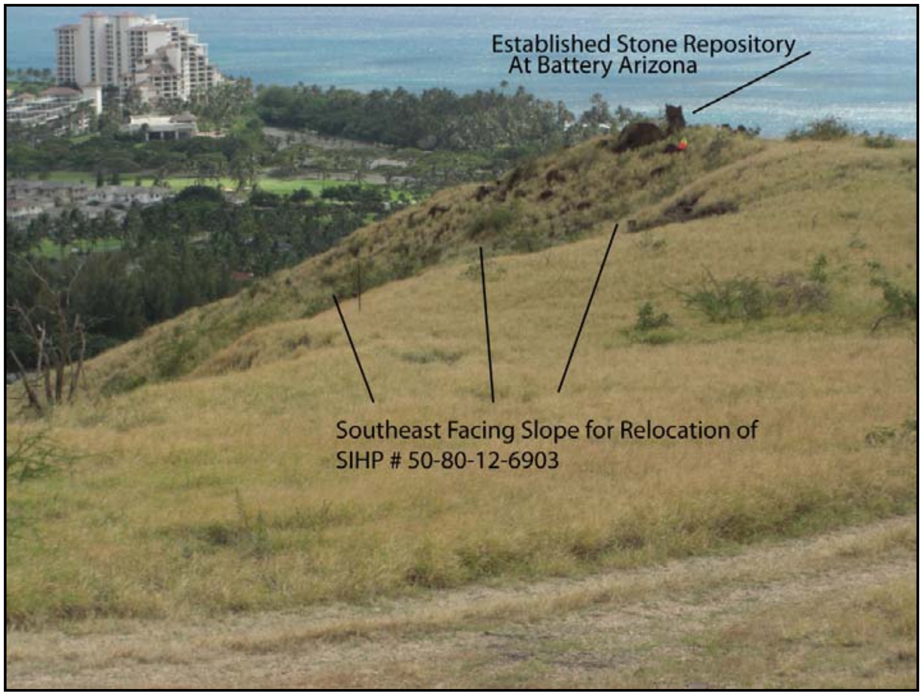


Figure 7-23, Photograph of Proposed Relocation Area at Battery Arizona for SIHP # 50-80-12-6903, View to the South

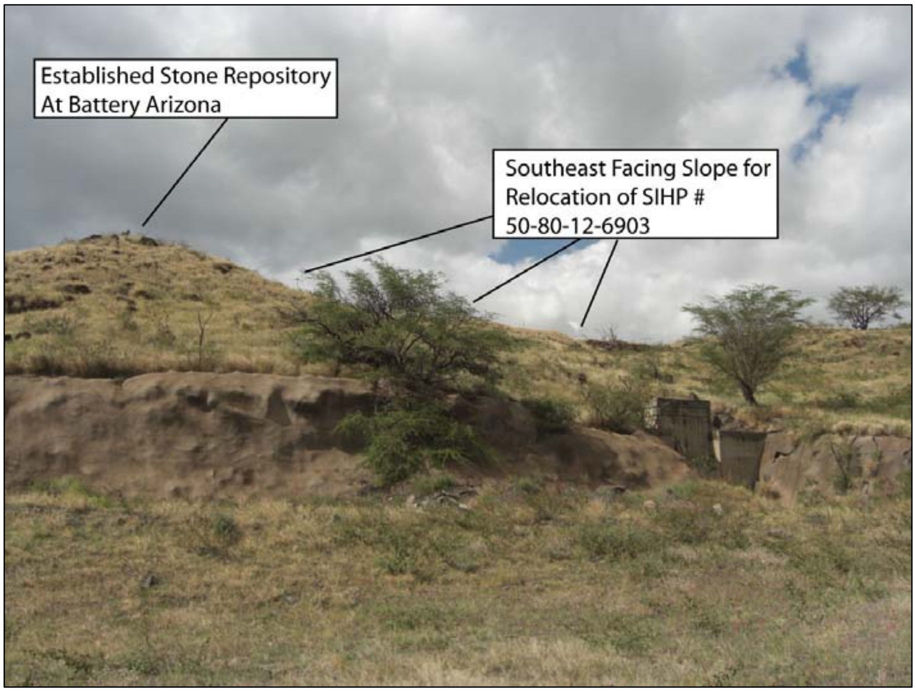


Figure 7-24, Photograph of Proposed Relocation Area at Battery Arizona for SIHP # 50-80-12-6903, View to the North

Note: Altered photograph showing the planned landfill surface topography in 15 years. The potential SIHP # 50-80-12-6903 relocation site, on top of the new landfill surface, is shown. (CSH and WMH, 2008).

Figure 7-25, Altered Photograph
Planned Landfill Surface in Approximately 15 Years

The permanent relocation of the stones to the Battery Arizona site will also be considered as a more feasible mitigation option. Based on the results of the cultural consultation, however, cultural informants would prefer to see the stones eventually returned to near their original resting places once the landfill is no longer active, with interpretive signage based on further background research and making public access available. (CSH, 2008).

Historic and Archaeological Resources Summary

There is potential for secondary impacts to historic and archaeological resources that may be present in the area of lateral expansion. Mitigation to address this possibility has been provided in Section 7.3.8. Potential Impacts and Mitigation Measures (Historic and Archaeological Resources), and in Section 7.4.7. Summary and Conclusions, Potential Impacts and Mitigation Measures (Cultural Impact Assessment).

The potential for cumulative or additive impacts are not anticipated. Prior archaeological studies and reports have been prepared to ensure appropriate examination and historical review of both the existing and proposed areas of use. In addition to the examination of the site by a qualified professional archaeologist, the SHPD and cultural informants with knowledge of the site and region have also reviewed the site. As appropriate, an Archaeological Mitigation Plan (AMP) and other documentation will be prepared and coordinated with the appropriate parties to ensure against adverse effects to historic properties and resources.

7.4 Cultural Impact Assessment

7.4.1. Introduction

A Cultural Impact Assessment (CIA) of the proposed project site was conducted by Cultural Surveys Hawaiʻi (CSH) in 2007 and 2008 (**Appendix H, Cultural Impact Assessment (Draft)**). The purpose of the CIA is to consider the effects the proposed project may have on traditional cultural practices and resources and: (1) comply with the Hawaiʻi environmental review process (HRS, Chapter 343), which requires consideration of a proposed project's effect on cultural practices; (2) provide an assessment of the proposed project's impacts to cultural practices in accordance with the OEQC, Guidelines for Assessing Cultural Impacts; and (3) support the project's historic preservation review under HRS, Chapter 6E-8 and HAR, Chapter 13-275.

The scope of work for the CIA included (CSH, 2008):

1. Examination of historical documents, Land Commission Awards (LCAs), and historic maps with the specific purpose of identifying Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.

2. A review of the existing archaeological information pertaining to the sites on the property as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
3. Oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region.
4. Preparation of a report on items 1-3 summarizing the information gathered relating to traditional practices and land use. The report assesses the impact of the proposed action on the cultural practices and features identified.

7.4.2. Methodology

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched by CSH at the SHPD library, the Cultural Surveys Hawai‘i library, and the University of Hawai‘i (UH) Hamilton Library. The Office of Hawaiian Affairs (OHA), O’ahu Island Burial Council (OIBC), and members of other community organizations were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the study area and the surrounding vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the researchers’ familiarity with the families who live in the area. Some of the prospective community contacts were not available to be interviewed as part of this project.

7.4.3. Traditional and Historic Background

7.4.3.1. Introduction to the Cultural Landscape

The project area is situated on the eastern side of the Wai‘anae Mountains in the Hono‘uli‘uli Ahupua‘a and is sub-divided into the ‘ili of Waimānalo in the moku or district of ‘Ewa. Hono‘uli‘uli is the largest ahupua‘a on O‘ahu and includes all the land from the western boundary of Pearl Harbor westward around the southwest corner of O‘ahu to the ‘Ewa/ Wai‘anae District Boundary with the exception of the west side of the harbor entrance which is in the ahupuaʻa of Puʻuloa (the ʻEwa Beach/Iroquois Point area). The Honoʻuliʻuli Ahupuaʻa includes approximately nineteen kilometers (twelve miles) of open coastline from Oneʻula to Pili o Kahe. The ahupuaʻa extends mauka, almost pie-shaped, from West Loch nearly to Schofield Barracks in Wahiawā; the western boundary is the Waiʻanae Mountain crest running north as far as Puʻu Hapapa (or to the top of Kaʻala Mountain according to some). (CSH, 2008).

The Honoʻuliʻuli Ahupuaʻa includes a long coastline and four miles of waterfront along the west side of West Loch. The land immediately mauka of the coast consists of a flat karstic raised limestone reef forming a level nearly featureless "desert" plain marked in pre-Contact times (previous to illuviation caused by sugar cultivation) by a thin or non-existent soil mantle. The micro-topography is notable in containing countless sinkholes caused by chemical weathering (dissolution) of the limestone shelf. Proceeding mauka from the limestone plain, the shelf is overlain by alluvium deposited through a series of gulches draining the Waiʻanae Mountains. The major gulches are, from east to west: Awanui, Pālailai, Makaīwa, Waimānalo and Limaloa. The alluvium carried by the gulches has spread out in delta fashion over the mauka portions of the plain, which comprises a dramatic depositional environment at the stream gradient change. These gulches are generally dry, but seasonal Kona storms carry immense quantities of runoff onto the plain and into the ocean. As typical drainages in arid slopes they are either raging uncontrollably, or are dry and do not form stable water sources for traditional agriculture in the upper reaches. The Honoʻuliʻuli gulches, in contrast to those draining into Pearl Harbor to the east, do not have valleys suitable for extensive irrigated agriculture. However, the lack of suitable valleys is compensated for by the rich watered lowlands at the base of Honoʻuliʻuli Gulch (the ʻili of Honoʻuliʻuli). (CSH, 2008).

The Honoʻuliʻuli Ahupuaʻa, as a traditional land unit, had tremendous and varied resources available for exploitation by early Hawaiians that included (CSH, 2008):

1. Twelve miles of coastline with continuous shallow fringing reef that offered rich marine resources.

2. Four miles of frontage on the waters of West Loch which offered extensive fisheries (mullet, awa, shellfish), as well as frontage suitable for development of fishponds (for example, Laulaunui).
3. The lower portion of Hono‘uli‘uli Valley in the ‘Ewa plain offered rich level alluvial soils with plentiful water for irrigation from the stream as well as abundant springs. This land would have stretched well up the valley.
4. A broad limestone plain which because of innumerable limestone sink holes offered a nesting home for a large population of avifauna. This resource may have been one of the early attractions to human settlement.
5. An extensive upland forest zone extending as much as twelve miles inland from the edge of the coastal plain. As Handy and Handy have pointed out, the forest was much more distant from the lowlands here than it was on the windward side, but on the leeward side was more extensive (1972:469). Much of the upper reaches of the ahupua‘a would have had species-diverse forest with kukui, ‘ōhi‘a, sandalwood, hau, kī, banana, etc.
6. A network of trails giving access to Lualualei and Wai‘anae coastal reaches.

7.4.3.2. Main Areas of Settlement

Cultural, archaeological, and historical sources show a general pattern of three main areas of settlement within the ahupua‘a: (1) a coastal zone, (2) inland settlement at Pu‘u Ku‘ua and (3) the Hono‘uli‘uli taro lands (CSH, 2008).

The Coastal Zone - Ko ‘Olina and Kalaeloa (Barbers Point)

Ko ‘Olina - There are three major studies on the Ko ‘Olina project area (Davis et al. 1986a; Davis et al. 1986b; and Davis and Haun 1987). Davis documents around 180 component features at 48 sites and site complexes consisting of habitation sites, gardening areas, and human burials. Chronologically the occupation covers the entire span of Hawaiian settlement in what Davis and Haun describe as "one of the longest local sequences in Hawaiian prehistory"

(Davis and Haun 1987:37). The earliest part of the sequence relates to the discovery of an inland marsh and early dates were also obtained for the beachfront site (Lanikūhonua) and an inland rock shelter. (CSH, 2008).

Kalaeloa (Barbers Point) - Archaeological research at Barbers Point has focused on the areas in and around the newly constructed Deep Draft Harbor (Barrera 1975; Davis and Griffin 1978; Hammatt and Folk 1981, McDermott et al. 2000). A series of small clustered shelters, enclosures and platforms show limited but recurrent use at the shoreline zone for marine oriented exploitation. This settlement covers much of the shoreline with more concentrated features around small marshes and wet sinks. Immediately behind the shoreline under a linear dune deposit is a buried cultural layer believed to contain some of the earliest habitation evidence in the area. (CSH, 2008).

Inland Settlement at Puʻukuʻua

It is mentioned in moʻolelo (oral history) that the area of Puʻukuʻua, on the east side of the Waiʻanae Ridge, north east of the current project area, seven miles inland of the coast, was a Hawaiian place of great importance. (CSH, 2008).

In 1899, the Hawaiian language newspaper "Ka Loea Kālaiʻāina" relates a story of Puʻukuʻua as "a place where chiefs lived in ancient times" and a "battle field," "thickly populated." This area was well known and visited by all Oʻahu chiefs. (CSH, 2008).

McAllister recorded three sites in this area: two heiau (shrines) (sites 134 Puʻu Kuina and 137 Puʻukuʻua; both destroyed) and a series of enclosures in Kukuilua which he calls "kuleana sites" (McAllister, 1933). On the opposite side of the Waiʻanae range along the trail to Pōhākea Pass, as Cordy (2002) states, “Kākuhihewa was said to have built (or rebuilt) Nīoiʻula, a poʻokanaka heiau (1,300 sq. m.) in Hālona in upper Lualualei, along the trail to Pōhākea Pass leading into ʻEwa, ca. A.D. 1640-1660" (Cordy 2002:36). There is no direct archaeological evidence available to the authors’ (CSHs') knowledge that intensive Hawaiian settlement occurred along the Pōhākea Pass trail but it is considered as a place of higher probability for traditional Hawaiian sites, based on the above indications. Geographically, the area receives sufficient quantities of water and would have had abundant locally available forest resources. (CSH, 2008).

Honoʻuliʻuli Taro Lands
Centered around the west side of Pearl Harbor at Honoʻuliʻuli Stream and its broad outlet into the West Loch are the rich irrigated lands of the ʻili of Honoʻuliʻuli which give the ahupuaʻa its name. The major archaeological reference to this area is Dicks, Haun and Rosendahl (1987) who documented remnants of a once-widespread wetland system (loʻi and fishponds) as well as dry land cultivation of the adjacent slopes. (CSH, 2008).

The area bordering West Loch was clearly a major focus of population within the Hawaiian Islands and this was a logical response to the abundance of fish and shellfish resources in proximity to a wide expanse of well-irrigated bottomland suitable for wetland taro cultivation. Dicks et al. (1987:78-79) conclude, on the basis of nineteen carbon isotope dates and three volcanic glass dates that "Agricultural use of the area spans over 1,000 years." Undoubtedly, Honoʻuliʻuli was a locus of habitation for thousands of Hawaiians. (CSH, 2008).

7.4.3.3. Traditional and Legendary Accounts of Honoʻuliʻuli

Honoʻuliʻuli, Oʻahu, is associated with a number of legendary accounts. Many of these concern the actions of gods or demi-gods such as Kāne, Kanaloa, Māui, Kamapuaʻa, the pig god, Maunauna, the shark deity, Kaʻahupāhau, and the hero Palila. There are several references to chiefly lineages and references to the ruling chiefs Hilo-a-Lakapu and Kūaliʻi, (Ko ʻOlina is reported to have been a vacationing place for Kākuhihewa). Traditional and legendary accounts identified by CSH include references to the following:

- The Naming of Honoʻuliʻuli (Legend of Lepeamoʻa)

- The Pele Family at Honoʻuliʻuli
- Keahumoa, Residence of Māui's Grandfather (Legend of Māui's Flying Expedition)
- Kāne and Kanaloa and the Boundaries of ʻEwa (Simeon Nawaa Account)
- Kamapuaʻa, The Pig God, Associated with Honoʻuliʻuli
- Home of the Shark-Goddess Kaʻahupāhau (Legend of Kaʻehuikimanōo Pu'uloa)
- The Frightened Populace of Honoʻuliʻuli (He Kaʻao no Palila)
- Two Old Women Who Turned To Stone (Ka Loea Kālaiʻāina)
- The Strife of Nāmakaokapāoʻo and Pualiʻi (Kaʻao no Nāmakaokapāoʻo)
- The Story of Kaihuopalaʻai Pond, Honoʻuliʻuli (Kaʻao no Maikohā)
- The Traveling Mullet of Honoʻuliʻuli (Fish Stories)
- Honoʻuliʻuli and the Head of Hilo-a-Lakapu (Legend of the Sacred Spear-point)
- The Strife at Honoʻuliʻuli from Which Kūaliʻi Unites Hawaiʻi Nei (Moʻolelo o Kūaliʻi)
- The Last Days of Kahahana and Honoʻuliʻuli (The Land is the Sea's)
- Puʻuokapolei and the Reckoning of the Seasons (Kamakau)
- Honoʻuliʻuli in the Poetry of Halemano (Kaʻao no Halemano)

7.4.3.4. Legends and Traditional Places in Upland Honoʻuliʻuli

Kahalaopuna at Pōhākea Pass - One of the most popular legends of Oʻahu is that of Kahalaopuna (or Kaha) a young woman of Mānoa who is slandered by others and is then killed by her betrothed, Kauhi, a chief from Koʻolau, Oʻahu. While the numerous accounts (Day 1906:1-11, Fornander 1919 Vol. V: 188-193, Kalākaua 1888:511-522, Nakuina 1904:41-45, Patton 1932:41-49, Skinner 1971:220-223, Thrum 1907:118-132, Westervelt 1907a 127-137, Westervelt 1907b 84-93) vary in details, they typically have Kahalaopuna slain and then revived repeatedly with the aid of a protective owl spirit. (CSH, 2008).

Moʻo at Maunauna (Kuokoa) - Moses Manu in recounting the Legend of Keaomelemele makes a reference to a moʻo (fabulous lizard, dragon, serpent) named Maunauna who lived above Līhuʻe (presumably at the landform of that name in extreme northern Honoʻuliʻuli) and who was regarded as a bad lizard (Kuokoa April 25, 1885). (CSH, 2008).

Paupauwela and Līhuʻe - Paupauwela, also spelled Popouwela (derivation unknown), is the name of the land area in the extreme mauka section of Honoʻuliʻuli Ahupuaʻa. The land area of Līhuʻe is just makai of this land, and extends into the ahupuaʻa of Waipiʻo (adjacent to the eastern border of Honoʻuliʻuli). Both place names are mentioned in a chant recorded by Abraham Fornander, which was composed as a mele for the Oʻahu king, Kūaliʻi, as he was preparing to battle Kuiaia (Fornander 1917, Vol. IV, Part 2:384-386). The place name Līhuʻe means “cold chill" and is also cited in poem (Ka Loea Kālaiʻāina, July 22, 1899, translated in Sterling and Summers 1978:21). This explains the meaning of a Hawaiian saying “Hao na kēpā o Līhuʻe i ke anu” (The spurs of Līhuʻe dig in with cold) (Pukui 1983:#479). (CSH, 2008).

The aliʻi were closely associated with Līhuʻe, which had habitation areas and playing grounds set aside for their sports. (Ka Nūpepa Kūʻokoʻa, Aug. 26, 1865, translation in Sterling and Summers 1978:23).

Līhuʻe was also the home of a famous cannibal king-man, Kaupe, who overthrew the ruling chiefs to become the paramount power between Nuʻuanu and the sea. (Westervelt 1963:90-96).

Hill of Maunauna - The hill Maunauna lies between the lands Paupauwela and Līhuʻe. One translation of Maunauna is “mountain sent [on errands].” Two servant moʻo who lived here had no keepers to supply their needs” (Pukui et al. 1974:149). It was at Maunauna, according to one tradition, that the forces of the chiefs Kūaliʻi and Kuiaia of Waiʻanae met to do battle, which was averted when a mele honoring the god Kū was chanted. (Fornander 1917, Vol IV, Part 2:348).

> In the Legend of Ke-ao-melemele, a woman named Paliuli traveled in this area. In a very short time she [Paliuli] walked over the plain of ‘Ewa; ‘Ewa that is known as the land of the silent fish [pearl oysters]…She went on to the plain of Punalu‘u and turned to gaze at Maunauna point and the plain of Lihue. (Manu 1885, translation in Sterling and Summers 1978:21),
>
> Certain place names in the uplands, including Maunauna, are also mentioned in the story of Lo-lae’s Lament. The place of Lolale’s residence is given in King Kalākaua’s version of this story. (CSH, 2008).

7.4.3.5. Prehistory and Early History

Various Hawaiian legends and early historical accounts indicate the ahupua‘a of Hono‘uli‘uli was once widely inhabited by pre-Contact populations. This would be attributable for the most part to plentiful marine and estuarine resources available at the coast, along which several sites interpreted as permanent habitations and fishing shrines were located. Other attractive subsistence-related features of the ahupua‘a include irrigated lowlands suitable for wetland taro cultivation (Hammatt and Shideler 1990), as well as the lower forest area of the mountain slopes for the procurement of forest resources. (CSH, 2008).

Exploitation of the forest resources along the slopes of the Wai‘anae Range - as suggested by E. S. and E.G. Handy - probably acted as a viable subsistence alternative during times of famine (Handy and Handy 1972:469). The upper valley slopes may have also been a significant resource for sporadic quarrying of basalt for the manufacturing of stone tools as evidenced in part by the existence of a probable quarrying site (50-80-12-4322) in Makaīwa Gulch at 152 m. (500 ft.) above mean sea level (Hammatt et al. 1991). (CSH, 2008).

The Hawaiian ali‘i were also attracted to the region, which is steeped in myth. (Ke Au Hou, July 13, 1910).

Other early historical accounts of the general region typically refer to the more populated areas of the ‘Ewa district, where missions and schools were established and subsistence resources were perceived to be greater. However, the presence of archaeological sites along the barren coral plains and coast of southwest Hono‘uli‘uli Ahupua‘a, indicate that prehistoric and early historic populations also adapted to less inviting areas, despite the environmental hardships. (CSH, 2008).

Mid- to late-1800s
Associated with the Māhele of 1848, 99 individual land claims in the ahupua‘a of Hono‘uli‘uli were registered and immediately awarded by King Kamehameha III. The vast majority of the LCA were located near the Pu‘uloa salt works and the taro lands of the ‘ili of Hono‘uli‘uli. The present study area appears to have been included in the largest award (Royal Patent 6071, LCA 11216, ‘Āpana 8) granted in Hono‘uli‘uli Ahupua‘a to Miriam Ke‘ahi-Kuni Kekau‘ōnohi on January 1848 (Native Register). (CSH, 2008).

In 1877, James Campbell purchased most of the Hono‘uli‘uli Ahupua‘a and in 1879 brought in a well driller from California to search the ‘Ewa plains for water, and a “vast pure water reserve” was discovered (Armstrong and Bier 1983). Following this discovery, plantation developers and ranchers drilled numerous wells in search of the valuable resource. By 1881, the Campbell property of Hono‘uli‘uli prospered as a cattle ranch with “abundant pasturage of various kinds” (Briggs in Haun and Kelly 1984:45). (CSH, 2008).

In 1889, Campbell leased his property to Benjamin Dillingham, who subsequently formed the O‘ahu Railway & Land Co. (O.R. & L) in 1890. Dillingham’s Hono‘uli‘uli lands above 200 feet elevation that were suitable for sugar cane cultivation were sublet to the O‘ahu Sugar Co. Throughout this time and continuing into modern times, cattle ranching continued in the area, and Hono‘uli‘uli Ranch established by Dillingham was the "fattening" area for the other ranches (Frierson 1972:15). (CSH, 2008).

‘Ewa Plantation Co. was incorporated in 1890 and continued in full operation up into modern times. The plantation grew quickly with the abundant artesian water. As a means to generate soil deposition on the coral plain and increase arable land in the lowlands, the ‘Ewa Plantation Co. installed ditches running from the lower slopes of the mountain range to the lowlands and then plowed the slopes vertically just before the rainy season to induce erosion (Frierson 1972:17). (CSH, 2008).

The O‘ahu Sugar Co. was incorporated in 1897 and included lands in the foothills above the ‘Ewa plain and Pearl Harbor. Prior to commercial sugar cultivation, the lands occupied by the O‘ahu Sugar Co. were described as being “of near desert proportion until water was supplied from drilled artesian wells and the Waiāhole Water project” (Condé and Best 1973:313). The O‘ahu Sugar Co. took control over the ‘Ewa Plantation lands in 1970 and continued operations into the 1990s. (CSH, 2008).

1900s

By 1920, the lands of Hono‘uli‘uli were used primarily for commercial sugar cane cultivation and ranching (Frierson 1972:18). Much of the mauka lands in western Hono‘uli‘uli, including ridges and deep gulches, were unsuitable for commercial sugar cultivation and remained pasture for grazing livestock. Modest construction in the area included the realignment of the “Waianae Road” (present Farrington Hwy.) to run along the makai / southern edge of the Waimānalo Gulch property, and a road the top of the Kahe Point ridge, within the Waimānalo Gulch property. (CSH, 2008).

In the late 1920s, the main residential communities were at the northeast edge of the ‘Ewa Plain. The largest community was still at Hono‘uli‘uli village. ‘Ewa was primarily a plantation town, focused around the sugar mill, with a public school as well as a Japanese School. (CSH, 2008).

Major land use changes came to western Hono‘uli‘uli when the U.S. Military began development in the area. Long before the Japanese bombing of Pearl Harbor in

December 1941, the U.S. military had initiated the Oʻahu Coast Defense Command, a series of coastal artillery batteries designed to assist in the defense of Pearl Harbor and to prevent invasion of Oʻahu. Military installations were constructed both near the coast, as well as in the foothills and upland areas. (CSH, 2008).

In the 1950s, the Waimānalo Gulch site was used as a NIKE missile base. Palailai Military Reservation (a.k.a. Battery Palailai from 1942-1944), located atop Puʻu Palailai, was used from the 1920s and included Fire Control Station "B" (Payette 2003). (CSH, 2008).

Battery Arizona

On the southwest ridge above Waimānalo Gulch are the subterranean remnants of Battery Arizona, an ambitious World War II military project. The attack of December 7, 1941 impelled the construction of further defensive armament for portions of the Oʻahu coastline not protected by the existing batteries. Even the sunken ships at Pearl Harbor would be enlisted in Oʻahu's defense. When, early in 1942, it was discovered that the two rear three-gun turrets of the U.S.S. Arizona were salvageable, an ambitious plan to mount them at two land installations on Oʻahu was set into motion. The two sites chosen were the tip of Mōkapu Peninsula at Kāneʻohe Bay, designated Battery Pennsylvania, and Kahe Point above the Waiʻanae Coast, designated Battery Arizona. (CSH, 2008).

Construction of Batteries Pennsylvania and Arizona commenced in April 1943 and continued through all of 1944 and into two-thirds of 1945. Battery Pennsylvania at Mōkapu Point was near completion in August 1945 when its guns were test fired around the same time of Japan's surrender. Battery Arizona had not been completed by the war's end; its guns, though installed, were never fired. (CSH, 2008).

A 1943 War Department map indicates a road was constructed within the makai / southern portion of Waimānalo Gulch, ascending the western slope to the top of the Kahe Point ridge. This road, along with several other roads and trails indicated on the map, were likely constructed in association with the Battery Arizona complex and other military installations and training areas in the vicinity. (CSH, 2008).

1950s to Present

Waimānalo would once again play a role in the Oʻahu defense system when, sometime after 1959, the United States Army purchased or exchanged land with the Campbell Estate for a Nike-Hercules anti-aircraft missile base located at the head of Waimānalo Gulch. The Nike complex, in use between 1961 and 1968 consisted of two control sites and one double-sized launcher site (Murdock 2003). The tunnel complex of Battery Arizona was also used for civil defense circa 1960. (CSH, 2008).

Development in the uplands of western Honoʻuliʻuli have generally been limited to ranch related housing and infrastructure, military training and NIKE missile stations, as well as the construction of military and commercial communication and atmospheric observation stations on the ridges near Pālehua. In 1975, the U.S. Air Force constructed the Pālehua Solar Observatory with five solar optical telescopes. (CSH, 2008).

In 1985, the City condemned 81.5 acres of agricultural land in Waimānalo Gulch for use as a landfill to dispose of municipal refuse and ash from the H-POWER incinerator to be built nearby at Campbell Industrial Park. Work on the landfill began in 1987. In 1988, workers constructing the Waimānalo Gulch landfill were reporting strange incidents at the site. According to a newspaper article by Bob Krauss:

> We've been having funny things happen, said one of the men on the site. In one case, a man was standing on a flat rock and the thing threw him over. All of a sudden, it just flipped over.
>
> Another time a backhoe was knocking down kiawe trees. The trees have shallow roots systems so they usually just fall down. But one of the trees jumped up and did a somersault...
>
> Then there was the payloader filling in a huge hole where a $17,000 fiberglass fuel tank had been placed. The story is that the driver put his machine in reverse

> but it jumped forward and leaped into the hole, smashing the tank. (Honolulu Advertiser, 6/20/88:A-1, A-4)

Other incidents reported to Krauss were a truck that had flipped over, tools that had vanished, and a huge stone that had disappeared. The workers called in:

> …a woman recommended for lifting curses and banishing evil spirits. She said the trouble was caused by a certain stone, the “chief of the valley,” which was lying on its side.
>
> The men quickly set the stone upright. But they got it upside down. Things went from bad to worse. The woman came out again and recommended they place the stone on the hill where it will not be covered by rubbish when the landfill opens. (Honolulu Advertiser, 6/20/88:A-1, A-4).

According to Krauss, in April 1988, the stone was moved to a “nest of boulders so that it faces east,” at the “end of a Hawaiian Electric Company Road to one of its relay stations on top of [a] hill.” This site lies close to the Battery Arizona bunkers in the southwest portion of the WGSL property.

7.4.4. Previous Archaeological Research

The ‘Ewa Plain has been the focus of more than 50 archaeological studies over the last two decades, largely as the result of required compliance with county, state, and federal regulatory requirements. Kalaeloa, in particular, has been intensively studied. In contrast, relatively little research has been conducted in the uplands of Hono‘uli‘uli, along the southern slopes of the Wai‘anae Range. This discussion of previous archaeological research will focus on the results of this prior archaeological work at the southern end of the Wai‘anae range. (CSH, 2008).

Recent archaeological investigations in the southern Wai‘anae Range have generally been focused on deep gulch areas for potential landfill locations, lower slopes for residential development, and mountain peaks for antennae or satellite tracking infrastructure (**Table 7-14**).

Table 7-14, Previous Archaeological Investigations in the Uplands of Honoʻuliʻuli Ahupuaʻa

Reference	Type of Investigation	General Location	Findings
Bordner 1977a	Archaeological Reconnaissance	Proposed Makaīwa Gulch Landfill Site	No archaeological sites identified.
Bordner 1977b	Archaeological Reconnaissance	Proposed Kaloʻi Gulch Landfill Site	3 sites (-2600, -2601, -2602), low stacked boulder walls.
Bordner and Silva 1983	Archaeological Reconnaissance and Historical Documentation	Proposed Waimānalo Gulch Landfill Site	No archaeological sites identified.
Sinoto 1988	Archaeological Reconnaissance	Makakilo Golf Course	Low stacked boulder wall (-1975)
Bath 1989	Petroglyph Documentation	Waimānalo Gulch	3 petroglyphs (-4110)
Hammatt et al. 1991	Archaeological Inventory Survey	Makaīwa Hills Project Site	34 sites, including prehistoric habitation and agricultural features, rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure.
Hammatt 1992	Archaeological Inventory Survey	KAIM Radio Tower, Pālehua	No archaeological sites identified.
Nakamura et al. 1993	Archaeological Inventory Survey	Makakilo D and D-1 Development Parcels	Cement irrigation flume (-4664).
Borthwick 1997	Archaeological Assessment	Satellite Multi-Ranging Station, Pālehua	No archaeological sites identified.
Dega et al. 1998	Archaeological Inventory Survey	UH West Oʻahu	Two historic site complexes, (50-80-08-5593 historic irrigation system and 50-80-09-2268 Waiahole Ditch System).
Hammatt and Shideler 1998	Archaeological Inventory Survey and Assessment	Waimānalo Gulch Sanitary Landfill Project Site	Battery Arizona Complex and modern "shrine" site.

The earliest attempt to record archaeological remains in Honoʻuliʻuli Ahupuaʻa was made by Thrum (1906). He reports the existence of a heiau located on Puʻu Kapolei, southeast of the current project area. (Thrum 1906:46).

In his surface survey of 1930, archaeologist J. Gilbert McAllister recorded the specific locations of important sites, and the general locations of less important sites (at least at Honoʻuliʻuli). Archaeological investigations by McAllister along the southern slopes of the Waiʻanae Range identified a number of sites. McAllister's Site 136 is located near Mauna Kapu, northeast of the current project area, and is described as a small platform on the ridge dividing the ʻEwa and Waiʻanae districts. The 4 to 6 square foot platform was constructed of coral and basalt stones, and was believed to be an altar (McAllister 1933:107). It is noted to have been destroyed by the time of Sterling and Summers' work in the late 1950's (Sterling and Summers 1978:32). (CSH, 2008).

McAllister's Site 137 is located at Puʻu Kuʻua, a prominent landmark northeast of the current project area. Puʻu Kuʻua Heiau was described by McAllister as: (Destroyed) The heiau was located on the ridge overlooking Nānākuli as well as Honoʻuliʻuli at the approximate height of 1,800 feet. Most of the stones of the heiau were used for a cattle pen located on the sea side of the site. The portion of the heiau which has not been cleared for pineapple has been planted in ironwoods. (McAllister 1933:32).

Makaīwa Gulch, the next major gulch east of Waimānalo Gulch was surveyed as a potential landfill location (Bordner 1977a). The reconnaissance survey included lands within Makaīwa Gulch from Farrington Highway mauka to the approximately 1,000 ft (305 m) elevation. One archaeological feature was identified, a complex of three concrete platforms that was interpreted to be a military related structure. (CSH, 2008).

An archaeological inventory survey of the "Makaīwa Hills" development project located several traditional as well as post-contact archaeological sites (Hammatt et al. 1991). 34 sites were located, including prehistoric habitation structures (temporary and permanent), agricultural features (terrace and mounds), rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure. (CSH, 2008).

Kaloʻi Gulch, which borders the northern portion of the current project area, was also surveyed as a potential landfill location (Bordner 1977b). The survey included lands within Kalo‘i Gulch and its smaller tributaries from the *makai* end of the gulch up to the 1,400 ft elevation. It was noted that bulldozing extensively modified lands at the base of the gulch, *makai* of an historic quarry. In the *mauka* portions of the project area, three sites, possibly prehistoric, were identified. The three sites (50-80-12-2600, -2601, -2602) consisted of low-stacked basalt boulder walls located along the north side of the Kalo‘i Stream channel. (CSH, 2008).

During the initial archaeological survey of the lower portions of Waimānalo Gulch (the future site of the Waimānalo Gulch Sanitary Landfill), up to the 430-foot elevation, no archaeological sites were identified (Bordner and Silva 1983). In 1989, three petroglyph units (Site 50-80-12-4110) were located within the previously surveyed parcel (Bath 1989). Site -4110 is located in the southwest corner of Waimānalo Gulch, at approximately 80 ft. elevation. (CSH, 2008).

Further archaeological study within Waimānalo Gulch was conducted for the expansion of the sanitary landfill (Hammatt and Shideler 1998). No archaeological sites were located with the project area; however two sites, the Battery Arizona bunker complex and a modern “shrine” site, were observed along the northern ridge that separates Waimānalo Gulch from the HECO Kahe Power Plant property. The stones of the “shrine” site were believed to have been previously relocated from the central portion of Waimānalo Gulch circa 1988. (CSH, 2008).

An archaeological inventory survey for the proposed University of Hawai‘i-West O‘ahu campus was conducted by Dega et al. (1998). No traditional Hawaiian sites were located. (CSH, 2008).

Two archaeological studies were made in the Pālehua area, *mauka* of Makakilo. An archaeological inventory survey of the proposed KAIM radio tower (Hammatt 1992), located northwest of the current project area identified no archaeological remains. An archaeological assessment for the proposed Ministry of Transportation Satellite Multi-Ranging Station project site (Borthwick 1997), which abuts the western perimeter of the

Air Force Solar Observatory facility, identified no archaeological remains. In 2002, an informal survey conducted by SHPD/DLNR identified an enclosure site (50-80-08-6402) just off of Pālehua Road (SHPD personal communication 2004). The site consisted of two enclosures; one enclosure was determined to be of prehistoric origin, while the other was historic. (CSH, 2008).

Archaeological studies associated with the proposed Makakilo Golf Course (Sinoto 1988) and the Makakilo D and D-1 Development Parcels (Nakamura et al. 1993) were conducted in the immediate vicinity of the current project area. A single archaeological feature, a low stacked basalt boulder wall (50-80-12-1975), was identified (Sinoto 1988).

Archaeological inventory survey of the Makakilo D and D-1 Development Parcels included lands on the southern and western slopes of Puʻu Makakilo, adjacent to the golf course property. A single historic property, a cement irrigation flume (50-80-12-4664), was located in the southern portion of the project area near the H-1 Freeway (Nakamura et al. 1993). No sites were located in the vicinity of Puʻu Makakilo. (CSH, 2008).

7.4.5. Results of the Community Contact Process

Consultation with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the Waimānalo Gulch was undertaken by CSH by letter, e-mail, and telephone or in-person contact. In the majority of cases, letters - including a map of the project area – were mailed. The specific language requesting the information included the following (CSH, 2008):

> "The purpose of this assessment is to identify any traditional cultural practices associated with the project area, past or present. We are seeking your kōkua and guidance regarding the following aspects of our study:
>
> - General history and present and past land use of the study area.

- Knowledge of cultural sites which may be impacted by the project – for example, historic sites, archaeological sites, and burials.
- Knowledge of traditional gathering practices in the study area–both past and on-going.
- Cultural associations with the study area through legends, traditional use or otherwise.
- Referrals of kūpuna or anyone else who might be willing to share their general cultural knowledge of the study area.
- Any other cultural concerns the community might have related to cultural practices in the Waimānalo area."

A total of twenty-one (21) individuals, organizations, and agencies were consulted (**Table 7-15**). Four of these referred CSH to other individuals who were included in the study. Seventeen (17) individuals contributed specific and relevant information via formal interviews, informal "talk story" discussion and / or email.

Table 7-15
Summary Consultation Efforts by CSH

Name	**Affiliation**	**Comments**
Ailā , William	Hui Mālama I Nā Kūpuna o Hawai'i Nei	Mr. Ailā feels it is very important to preserve the sites of this area. See Section 6 of the CIA for response.
Amaral, Annelle	'Ahahui Siwila Hawai'i O Kapolei Hawaiian Civic Club	Made referral to Shad Kane.
Cope, Aggie	Hale O Na'auao Society	Mrs. Cope mentioned that that area was known for the night marchers trail from *mauka* to *makai*. See CIA, Section 6 for response.
Desoto, Frenchy	Wai'anae Coast Archaeological Preservation Representative	Made referral to Gary Omori, William Ailā .
Eaton, Arline	*Kupuna* at Iroquois Elementary School	See CIA, Section 6 for response.
Enos, Eric	Cultural practitioner and director of Ka'ala Farms	Mr. Enos visited Site 6903 to view *pōhaku* within the project area. He is concerned about the protection of this site.
Flanders, Judith	Granddaughter of Alice Kamōkila Campbell	See CIA, Section 6 for response.
Greenwood, Alice	O'ahu Island Burial Council Member, Wai'anae District	Ms. Greenwood spoke of a village at Makaīwa. She recalls a story about a ceremony in the area that mentioned possible burials. She remembers the *mo'olelo* had the names of the unknown gulches. She also spoke about the

Name	Affiliation	Comments
		huakaʻi pō (procession of the night marchers) and *akua lele* (flying god, usually a poison god sent to destroy, sometimes in the form of fireballs). See CIA, Section 6 for response.
Hoʻohuli, "Black" Jo	Waiʻanae Neighborhood Board No. 24	Mr. Hoʻohuli is concerned about caves in the *mauka* area that may contain burials.
Rezentes, Cynthia	Waiʻanae Neighborhood Board No. 24	Mrs. Rezentes suggested contacting Frenchy Desoto. She is very concerned about the view plane.
Johnson, Rubellite	Hawaiian scholar	Ms. Johnson recommended consulting people who are from the project area.
Josephides, Analu	Oʻahu Island Burial Council Member, Waiʻanae District	See CIA, Section for response.
Kanahele, Kamaki	President of Nānākuli Homestead	See CIA, Section 6 for response.
Kane, Shad	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board and ʻAhahui Siwila Hawaiʻi O Kapolei Hawaiian Civic Club	Mr. Kane made two site visits with CSH to the project area. Mr. Kane is very concerned about the cultural sites within the project area and wants to be involved in the preservation process. He is also concerned about the view plane. See CIA, Appendix A for complete interview conducted in 2002 in association with a previous CIA of portions of the project area (cf. Souza and Hammatt 2002)
Makaiwi, Martha	Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34	Made referral to Maeda Timson and Shad Kane.
McKeague, Kawika	Oʻahu Island Burial Council member ʻEwa District	See CIA, Section 6 for response.
Momoa, Joseph	Kamaʻāina of Nānākuli and member of Kamoʻi Canoe Club	Mr. Momoa mentioned the night marcher path in Waimānalo area and he feels the path needs to be kept clear of visual blockage.
Nāmuʻo, Clyde	Administrator at Office of Hawaiian Affairs	OHA recommended: (1) Consultation with seven specific individuals, all of whom CSH attempted to contact. (2) The project area should be considered a portion of a larger traditional cultural landscape, and that the possible presence of one or more Traditional Cultural Properties be considered (See CIA, Appendix C for OHA letter).
Philpotts, Douglas McDonald	Cultural practitioner and long time resident of Waimānalo ʻIli	Mr. Philpotts made a site visit to view the uprights within the project area. See CIA, Section 6 for response and CIA, Appendix B for complete interview.
Tiffany, Nettie	Kahu of Lanikūhonua and Former Oʻahu Island Burial Council member, ʻEwa District	See CIA, Section 6 for response.
Timson, Maeda	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34 and President of Ua Au O Kapolei	Mrs. Timson shared two stories told to her by her Tutu Defreitas. Her *tutu* would bless the *hale* with *tī* (or *kī*) leaf and Hawaiian salt because all the *keiki* would get *makaʻu* (scared). They also had *tī* leaf on all four corners of the house for protection.

7.4.6. Cultural Resources and Traditional Practices

The areas of Waimānalo Gulch, Makaīwa Gulch, Ko ʻOlina, Lanikūhonua and the uplands of Pālehua and Puʻukuʻua are within the ʻili of Waimānalo located in the ahupuaʻa of Honoʻuliʻuli, ʻEwa District. ʻIli is defined as "a land section, next in importance to ahupuaʻa and usually a subdivision of an ahupuaʻa" (Pukui and Elbert 1971:91).

The current project area was a zone of less intensive land use between resource rich areas mauka and makai. The makai area has marine resources, a canoe landing, koʻa (fishing grounds) and loʻi (pondfield) that sustained a fishing village. The mauka area is considered a sacred place with many heiau, myths and legends. (CSH, 2008).

Although this area has been placed in the district of ʻEwa and the ahupuaʻa of Honoʻuliʻuli, some Waiʻanae community members feel a strong connection with this place as many traverse this area frequently to get in and out of Waiʻanae. Participants also mentioned the many natural and cultural resources of the region. (CSH, 2008).

Specific aspects of traditional Hawaiian culture mentioned during information gathering interviews and "talk story" sessions are incorporated in the CIA document. Some interview material is excerpted from past CIAs conducted by CSH. Interviewees for the current project gave their permission for past interviews to be included in this report. Participants also provided new stories for Waimānalo Gulch for which we have found no previous written documentation. Some of these stories include Spirits (ʻUhane), the "Legend of the Slain Girl", the "Legend of Two Giants", and associations with the Pueo ʻAumakua. (CSH, 2008).

Concerns for sacred sites in the area focused on the Pueo Stone which was relocated around 1988 for preservation. Nana Veary, a respected kupuna, relocated the pōhaku. Gary Omori asserts that after the Pueo Stone was moved to safe ground "the strange events stopped." Another concern of the area surrounds the tradition of "Night

Marchers” (huakaʻi pō); in particular, the passage in the makai region close to human habitation at Lanikūhonua. The huakaʻi pō inland route is somewhat vague but appears to be up the southern ridge of Waimānalo Gulch. (CSH, 2008).

7.4.6.1. Traditional Hawaiian Beliefs

A number of kūpuna and other community members spoke of beliefs associated with Waimānalo ʻIli of Honoʻuliʻuli and the surrounding valleys. While these beliefs and traditions are interrelated, they are discussed in terms of the presence of ʻuhane (soul, spirit, ghost), traditions of huakaʻi pō (procession of the night marchers), a legend of a slain girl, a legend of two giants, and a tradition of owl ʻaumakua (ancestor gods), in addition to accounts of other mysterious and strange incidents. (CSH, 2008).

Association with ʻUhane

Several people familiar with the area mentioned that Waimānalo Gulch and Makaīwa Gulch are associated with *ʻuhane*. In *Nānā i Ke Kumu*, a source book on Hawaiian cultural practices, concepts and beliefs, *ʻuhane* are introduced as follows:

> *Says Mary Kawena Pukui of certain of her ancestral beliefs, “Some things are ʻeʻepa. Unexplainable. ”Accept that, and it becomes easier to know about ʻuhane. For in Hawaiʻi’s religious mystic tenets, ʻuhane was: The animating force which, present in the body, distinguished the quick from the dead. And so ʻuhane can be called “spirit.”*
> *The vital spark, that departed from the flesh, lived on through eternity, rewarded for virtue or punished for transgressions in life. Thus ʻuhane is “spirit” in the immortal sense, and the “soul” of Christian concept. Or, as immortal spirit or soul, the ʻuhane might return to visit the living and so be termed a “ghost”. (Pukui et al. Vol. I, 1972:193)*

The following is a brief summary of the traditional Hawaiian beliefs as documented by CSH (See **Appendix H**, for further detail).

Huakaʻi Pō or ʻOiʻo (Procession of the Night Marchers)

There are Hawaiian beliefs regarding the presence of what are commonly known as “night marchers” and the huakaʻi pō or the, “night procession or parade, especially the night procession of ghosts that is sometimes called ʻoiʻo” (Pukui and Elbert 1986:84). The night marchers are the souls of those who have passed on. An ʻōlelo no’eau (proverb) makes reference to this tradition: “He pō Kāne kēia, he mā’au nei nā ‘e’epa o ka pō.” (This is the night of Kāne, for supernatural beings are wandering about in the night) (Pukui 1983:98).

Several of the participants in this cultural study talked about night marchers. Aunty Arline Eaton commented that there is a pathway for the night marchers that travel from the *mauka* area of Waimānalo ‘Ili down to the special place of Lanikūhonua. She feels strongly that this pathway must be kept clear for them to continue their traditional passage.

Aunty Aggie Cope and Kamaki Kanahele both mentioned that the *‘ili* of Waimānalo was well known for the pathway of the night marchers and they both feel it is of great importance to keep that pathway clear of visual impact.

Judith Flanders mentioned that her grandmother Kamōkila Campbell spoke about the night marchers’ trail that came from the uplands to the ponds at Lanikūhonua.

Nettie Armitage-Lapilio related a tradition that at certain times of the year night marchers would come down from the uplands to the vicinity of Kamōkila Campbell’s place on the coast (Lanikūhonua). The procession route indicated was on the east ridge of Waimānalo Gulch which is the west ridge of Makaīwa Gulch (Souza and Hammatt 2002).

Analu Josephides recalls mo‘oleo told to him by his kūpuna. One of the many stories shared and landscapes pointed out is both the path of the night marchers and of the night marchers themselves. One of the stories that Tutu Wahine related was that in the old days no homes were built in this particular area except for the mauka area of Makaīwa to the west, the mauka area to the east known as Makakilo, and the makai area below where in ancient time was the dwelling place of the Kamapua‘a ‘ohana.

> *We were told as children that one of the reasons that homes were not built on the path of the night marchers were that the night marchers and those who leaped from this world*

> *and taken to be with these clans were said to carry the burning kapu of Pihenakalani. This was a kapu that descends from Kauaʻi from the ancient days of the Mū and the Menehune people. It was also known as the prostrating kapu of Kalanikauleleiaiwi.*

Nettie Tiffany discussed her childhood memories about what her aunty called the “bird catchers.” They would come down from the Waimānalo and Makaīwa Gulch area through a trail that was marked by a large *pōhaku* (stone). The bird catchers would come down from the gulch to take a bath in the waters fronting Lanikūhonua.

Legend of Two Giants

A legend told by Alice Greenwood mentions two giants who live in the Waimānalo and Makaīwa area. The legend indicates that when one giant opens his eyes it means the giant will take someone’s life. There is concern that these legends may be connected with unexplained car accidents that have occurred on Farrington Highway in front of the two gulches. Few details of this legend were provided.

There are also several accounts of giants in the vicinity. The Hawaiian gods Kāne and Kanaloa, who are sometimes understood to attain supernatural size, are associated with the area of Piliokahe where stones they hurled from red hill landed (Simeon Nawa’a 1954 in Sterling and Summers 1978:1). Simeon Nawaʻa related another account of Piliokahe associating two hills with a male and a female - seemingly of fabulous size. The demi-god Māui is associated with the southern Waiʻanae area (particularly Lualualei) and is often thought of as a giant in his superhuman efforts to snare the sun.

Legend of the Slain Girl

These ʻ*uhane* may be explained by a few legends concerning the Waimānalo Gulch area. Mr. Omori tells about one legend of two lovers (Souza and Hammatt 2003):

> *…the girl is hunted down and killed in the Waimānalo Gulch. People say that the girl’s ʻuhane lingers in this gulch and an image of a white lady appears at times and strange things happen in the area. For example, unexplained car accidents happen on Farrington Highway.*

This account has strong similarities with the famous legend of Kahalaopuna, the young woman of Mānoa who is murdered repeatedly (she revives repeatedly) by Kauhi, her jealous lover from Koʻolau. Enraged at accounts of her sleeping with various lovers, Kauhi leads Kahalaopuna through the uplands of south Oʻahu traveling west from Mānoa Valley (with Kahala being slain repeatedly). While the many accounts differ in detail a common setting for the last of the beatings is Pōhākea Pass in Honoʻuliʻuli north of the project area. After being put to death, her ʻuhane flies up into an ʻōhiʻa lehua tree and calls out to travelers passing along the road asking them to inform her parents of her death.

ʻAumakua Pueo of the ʻIli of Waimānalo

Many people consulted for this project mentioned the frequent sighting of pueo (owl) in the area. Gary Omori and William Ailā mentioned that the pueo was the ʻaumakua of the ʻohana in the area (Souza and Hammatt 2002). In Nānā i Ke Kumu, a source book on Hawaiian cultural practices, concepts and beliefs, the concept of ʻaumakua is introduced as: “ancestor gods; the god spirits of those who were in life forebears of those now living; spiritual ancestors” (Vol. I, 1972:35). ʻAumakua fall into the English category of totems and were typically animal or plant species. ʻAumakua could be inherited bilaterally, from both the father’s and mother’s kin groups (ʻohana). Each individual had the opportunity to retain multiple ʻaumakua. Mary Kawena Pukui’s childhood education included memorizing the names of fifty of her family ʻaumakua (Nānā i Ke Kumu Vol. I, 1972:356). Aunty Aggie Cope mentioned that there was a rock in Waimānalo Gulch that resembles a pueo. The presence of the Pueo Rock connects the traditions and beliefs directly to this area. The Waimānalo and Makaīwa Gulches are typical habitat for pueo and they are often seen hunting in the grasslands.

7.4.6.2. Burials

Most Hawaiians in the pre-Contact period belonged to the makaʻāinana or commoner class and their bones were usually buried in their particular ʻili. Burials are commonly reported from clean, consolidated sand deposits, which was clearly a common method of internment practiced by Hawaiians (Cleghorn 1987:42).

No burials or iwi kūpuna (ancestral human remains) have been documented in two archaeological inventory surveys of the project area (Hammatt and Shideler 1998; Dalton and Hammatt 2008). The closest known burials were found in the Ko ʻOlina and Lanikūhonua in caves, sand dunes and sinkholes. However, Dalton and Hammatt's (2008) report states it is possible that burials may be discovered during proposed construction activities; in particular, several small caves and overhangs in the northwest portion of the current project area may contain such evidence. Some participants strongly recommend that the project does not extend any further into the mauka region, which may contain burials. (CSH, 2008).

Nettie Tiffany urged caution in regards to burials in the project area; she feels although the land has been heavily altered by ranching and other activities there is still a possibility of finding *iwi kūpuna*. She also strongly suggests that there be a plan of action if there are burials found during the project. (CSH, 2008).

Aunty Arline also mentioned that if people lived in the project area, there might be a possibility of finding burials (CSH, 2008):

> *My only thought is that for every person that lives in that area, that's where they bury their people… We never said anything if people died, we'd go over there and they'd bury them right there where the house is. We'd never go four-hundred-million-miles away, it's right there. All your ʻohana stay right in the same area. We never went afar, not in the rural areas.*

7.4.6.3. Trails

Trails connected the settlements throughout the District of ʻEwa and Waiʻanae. Based on nineteenth and twentieth century maps, the primary transportation routes correlated closely to the existing major roadways. (CSH, 2008).

It seems clear that a major east/west artery from ʻEwa and Kona Oʻahu to Waiʻanae ran just south of Makaīwa Gulch roughly along the Farrington Highway alignment. "As mentioned before, there were three trails to Waiʻanae, one by way of Puʻu o Kapolei, another by way of Pōhākea, and the third by way of Kolekole" (ʻĪʻī 1959:97).

The following on ancient trails is from the ʻAhahui Siwila Hawaiʻi O Kapolei letter:

> *There may have once existed an intersection of 2 trails in the approximate location where the present entrance to Ko 'Olina exist today. In ancient times there were 3 ways to get to Waiʻanae. One was by way of Kolekole, one was by way of Pohakea and the 3rd was by way of Puʻuokapolei. Farrington Highway follows the path of the ancient trail that passed Puʻuokapolei.*
>
> *Generally, petroglyphs are found on the high ground between Waimānalo and Makaiwa Gulches indicating that a trail may have once existed in this area, again confirming a mauka-makai path. The existence of this trail is supported by numerous amounts of cultural resources and structures built along this lineal mauka-makai relationship that follows the path of Waimānalo and Makaiwa Gulches.*

The petroglyph site described (State Inventory of Historic Properties [SIHP] # 50-80-12-2893) is located outside the southeast corner of the current project area. A mauka/makai trail, probably the one depicted on a 1914 Fire Control Map, starts at the area of the petroglyphs (SIHP # 2893) and goes up between the east end of Waimānalo Gulch and the west end of Makaīwa Gulch. This trail is most likely a pathway to the former village of Puʻu Kuʻua and the heiau in the mauka region of Honoʻuliʻuli. This mauka/makai trail would have also intersected the well known trails of upper Honoʻuliʻuli, Pōhākea Pass, Kolekole and Palikea which all lead to Kūkaniloko, the center or piko of the Island of Oʻahu. (CSH, 2008).

7.4.6.4. Gathering of Plant Resources

Given the ecosystem diversity of the coastal lowland, transition and upland forest zones in Honoʻuliʻuli Ahupuaʻa, it is likely that one of the primary traditional cultural practices associated with the present project area would have been the gathering of native plant resources. **Table 7-16**, lists Honoʻuliʻuli lowland plants and uses with columns for "common/Hawaiian name", "scientific name" and "use" based on research conducted by

Barbara Frierson (1973) on native plant species present in Hono‘uli‘uli before 1790, in addition to plant use recorded by Isabella Abbott (1992). (CSH, 2008).

Table 7-16, Native Plants in Hono‘uli‘uli

Hawaiian/Common Name	Scientific Name	Use
Hala, pandanus	Pandanus odoratissimus	Weaving
Hau, hibiscus	Hibiscus tiliaceus	Cordage
Milo	Thespesia paradisiaca	Wood used for bowls
Neneleau, Sumac	Rhus sandwicensis Rhus chinensis	Unknown
‘Ilima	Sida cordifolia	Leis, medicine
Kou	Cordia subcordata	Bowls
Makaloa, sedge	Cyperus laevigatus	Mats (Abbott)
Pili, grass	Heteropogon contortus	Thatch
Kakonakona, grass	Panicum torridum	Unknown
Honohonowai	Commelina nudiflora	Unknown
Ma‘o, cotton	Gossypium tomentosum Abutilon incanum	Flowers used as dye for kapa (Abbott)
‘Ūlei	Osteomeles anthyllidifolia	Branches used for fishing nets (Abbott)
‘Uhaloa	Waltheria americana	Medicine (Abbott)
Koali‘ai	Ipomoea cairica	Cordage (Abbott)
Pā‘ū o Hiiaka	Jacquemontia sandwicensis	Unknown
Ko‘oko‘olau	Bidens sp.	Use as tea (Abbott)
‘Ulu, breadfruit	Artocarpus incisus	Food
Kalo, taro	Colocasia esculenta	Food
Niu, coconut	Cocos nucifera	Food, liquid

The accessibility of Hono‘uli‘uli lands, including the present project area, to Hawaiians for gathering or other cultural purposes was radically curtailed during the second half of the nineteenth century. By the 1870s, herds of cattle grazing across the ‘Ewa Plain likely denuded the landscape of much of the native vegetation. Subsequently, during the last decade of the nineteenth century, the traditional Hawaiian landscape was further distorted by the introduction and rapid development of commercial sugar cane cultivation. Throughout the twentieth century sugar cane cultivation was the dominating land use activity within the project area. Cane cultivation – and the sense that the project area was private property – restricted access inside the project area to employees of ʻEwa Plantation. (CSH, 2008).

7.4.6.5. Native Gathering Practices for Plant Resources

Hiram Kamanā indicated that he used to gather ingredients for a cleansing *lāʻau lapaʻau* (botanical medicine), including "*Kī Māmaki*" (*Māmaki, Pipturus* sp.), in the uplands. The bark, fruit and young leaves of the Māmaki were used medicinally (Wagner et al. 1990:1307). It is definitely understood that this was picked well *mauka* of the landfill (no *Māmaki* is known to grow in the immediate vicinity of the landfill). (CSH, 2008).

Nettie Armitage-Lapilio spoke of gathering plants for both medicine and ornament in the uplands. She spoke of gathering Ēkoa (also known as Koa-haole and Lilikoa; Leucaena leucocephala aka Leucaena glauca) seeds and or seedpods for lei which the ʻohana would wear while performing hula and also sell to make extra money. She indicated the seeds/seedpods were gathered where the landfill is now. This exotic species (first collected on Oʻahu in 1837) is very common, often forming the dominant element of the vegetation in low elevation, dry, disturbed habitats of all the major islands (Wagner et al. 1990:680).

Nettie Armitage-Lapilio mentioned gathering two species for lāʻau lapaʻau: ʻUhaloa (Waltheria indica var. americana) and Kīnehe (Spanish Needle, Bidens spp.). According to Wagner et al. 1990:1280, ʻUhaloa, which is known by many alternative names (e.g., ʻAlaʻala, Pū loa, Hala uhaloa, Hiʻaloa, and Kanakaloa), is an indigenous pan-tropical plant, occurring in dry, often disturbed sites on all the major islands; it has been widely used medicinally by the Hawaiians as a painkiller especially for sore throat. Kīnehe (aka Kī, Kī pipili and Nehe) is a pan-tropical exotic weed widespread in disturbed areas (Wagner et al. 1990:279). Pukui and Elbert (1986:152) note for "Kīnehe" that: "The Spanish needle (Bidens pilosa) is a lowland weed; young fresh plants are still brewed for tea."

CSH is confident that Māmaki has not grown near the landfill in recent times as it prefers wetter environments found at higher elevations. Ha‘uōwī, Pānini, Ēkoa, Uhaloa, and Kīnehe are all quite ubiquitous in similar dry, lowland areas. It is interesting to note in passing that four of the six plant species used (Ha‘uōwī, Pānini, Ēkoa, Kīnehe) are exotic species. CSH further perceives no adverse impact on Hawaiian utilization of these species by the proposed landfill expansion action. (CSH, 2008).

7.4.6.6. Taro in Hawaiian Culture

Taro cultivation was mentioned in two of the LCA testimonies for individual kuleana claims in the ‘ili of Waimānalo of Hono‘uli‘uli Ahupua‘a. The testimonies indicated that these LCA’s contained at least two lo‘i as well as house lots, sweet potato, kula-at Pu‘ukuua, ponds, streams and fishery. The taro cultivation here was not as intensive as the well known “Hono‘uli‘uli Taro Lands” near the mouth of Pear Harbor and the Hono‘uli‘uli Stream. Apparently Waimānalo ‘Ili had sufficient water along with backshore swampy areas to provide personal lo‘i on a small scale. Although these claims were not awarded they provide a wealth of information. (CSH, 2008).

The area of Lanikūhonua south of the WGSL, once a marshy wetland fed by a natural springs, was an ideal place to cultivate taro. Davis et al. (1986) mapped the natural marshy area and spring. Many maps show water filtering down from the Waimānalo and Makaīwa Gulches as well as the unnamed gulches that could have also feed the *lo‘i* of this area. There is no mention of taro grown in the project area but there were natural springs that could sustain a small patch. Aunty Nettie Tiffany, Aunty Arline Eaton and Douglas McDonald Philpotts all mentioned that the area of Waimānalo, Makaīwa, and Lanikūhonua had sources of fresh water. (CSH, 2008).

Taro has an intimate connection to the Hawaiian culture. Taro (kalo; Colocassia esculenta) was probably brought to Hawai‘i by the earliest Polynesian voyagers and has been a staple crop on the islands ever since. Taro is intimately connected through myth to the origins of Hawaiians as a people. (CSH, 2008).

The physical attributes, the growth patterns, and the propagation of taro all reflect the structure of Hawaiian kinship and an obvious relationship to the human body. The main plant in the center is the *makua* (parent), the smaller plants budding out of the *makua* are the *ʻohā* (offspring). The center of the leaf where it connects to the stem is the growth center of the veins of the leaf and is called the *piko* (belly button). The stem is called *ha*, which is also a word for breath, the basis of life. The cycle of planting is a reflection of the human life cycle. (CSH, 2008).

All parts of the taro plant are used for food: the corm is cooked and eaten as table taro or steamed and pounded into *poi*; the stem can be steamed and used in various soup and stew dishes; the young leaves are used for *laulau* and *lūʻau* dishes mixed with fish, squid, pork, chicken or beef. Generally, the leaves are not harvested from the plants designated for corm production because continuous cutting makes the corms soft and tasteless (*loli*). Taro growers who grow leaf for home use or commercial purpose always have specially designated *lūʻau* patches. It is traditional Hawaiian practice to use all the coarse green cuttings that are the by-product of the harvesting of the corms as food for the pigs. This green material, when cooked and fed to the animals, is highly nutritious. For this reason, raising pigs is traditionally symbiotic to taro production. (CSH, 2008).

Although taro is not grown anymore near the project area, documents prove there once was taro cultivation west of Honoʻuliʻuli. (CSH, 2008).

Due to the dry conditions on the leeward side of Oʻahu, taro was not as abundant in Waimānalo ʻIli as it was in some of the surrounding marshy areas. Though, there was a fair amount of water sources in the area. (CSH, 2008).

7.4.6.7. Significant Cultural Sites within the Project Area

CSH previously performed an inventory survey of the project area in 1998 (Hammatt and Shideler 1998) and an additional assessment was conducted in 2007 (Dalton and Hammatt 2008). During the 2007 companion archaeological inventory survey, CSH identified one historic property within the project area: SIHP # 50-80-12-6903, three rock uprights, which were recommended eligible for the Hawaiʻi Register under Criteria D and E. (CSH, 2008).

A culturally significant Pueo Stone was identified by Bath in 1989. This “Pueo Stone” eventually had to be relocated to the northwest ridge of the gulch. Due to the significance of this cultural site, it has been protected and cared for in a safe area by a cultural practitioner. (CSH, 2008).

7.4.6.8. Marine Resources

The sea is a rich resource and the Hawaiian people were traditionally expert fishermen. Fish of all types supplied the Hawaiian diet with a rich source of protein. This source of food is a supplement to the things grown in the uplands. The LCA documents provide information that the people of Waimānalo area were utilizing the ocean resources as a fishery as well as the upland forest area for subsistence. This is a good example of the *ahupuaʻa* system that was once used. (CSH, 2008).

Through the interview process, a number of koʻa and fishing experiences were cited. A koʻa is defined as “Fishing grounds, usually identified by lining up with marks on shore or shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams” (Pukui and Elbert 1971:144).

Hawaiians were very conservative when it came to marine resources. They set kapu on certain fish during their time of spawning and made sure that these fish had time to repopulate. The following exert is a passage from Hawaiian Fishing Traditions which talks about the kapu on ʻōpelu (CSH, 2008):

> *An important fishing kapu concerned the ʻōpelu (mackerel) and the aku (bonito), two highly prized fish caught in great numbers in Hawaiian waters. ʻŌpelu was netted from July through January. Walter Paulo and Eddie Kaʻanana, two ʻōpelu fishermen from Miloliʻi, told me the best time for catching this fish is in October. ʻŌpelu was placed under kapu in February, until the end its spawning season, around July (Moku Manu and Others 1992:xii).*

7.4.6.9. Wahi Pana (Storied Places)

The concept of wahi pana, a place with a story or legend attached to it, is very important in Hawaiian culture because it is a connection to the past and the ancestors. From place names, one can know intimate details about people who lived there, the environment, cultural practices and historical events that took occurred. In Hawaiian culture, if a particular spot is given a name, it is because an event took place there that had meaning for the people of that time. Because Hawaiian culture was based on oral traditions, place names and their associated stories were an important way of remembering these traditions and ensuring these stories would be passed on to future generations. In Hawaiian thinking, the fact that a place has a name deems it important. Often, spiritual power or mana is attached to a place, which increases its importance. (CSH, 2008).

On the subject of wahi pana, Edward Kanahele writes:

> *As a native Hawaiian, a place tells me who I am and who my extended family is. A place gives me my history, the history of my clan, and the history of my people. I am able to look at a place and tie in human events that affect me and my loved ones. A place gives me a feeling of stability and of belonging to my family, those living and dead. A place gives me a sense of well-being and of acceptance of all who have experienced that place. (Kanahele in James 1995:6)*

Analu Kameeiamoku Josephides mentions a moʻolelo passed down to him by his kūpuna regarding some names of the Waimānalo ʻIli. The area was referred to as five brothers who protected and cared for the island of Oʻahu; they were the “Eyes” of Oʻahu (CSH, 2008):

> *Another concern that I may have is the place names of this particular area. A story that has been passed down to me from my kupuna is that there were five brothers who were the watchers. Their names were Makaīwa, Makaʻike, Makaloa, Maka-Io, and Makakilo. It was known that Makaīwa was to the farthest west and that Makakilo was to the farthest east. That these five brothers were the eyes of the Oʻahu people and were their protectors. They would watch for enemy intruders and relay messages to their makulu (runners). If enemy canoes were seen the makulu would run to the various districts and warn the chief and his/her people. This is why Oʻahu was a hard island to conquer in the ancient times. By the time the war canoes of the enemies would reach the shores they*

> *would be greeted by the warriors of Oʻahu, thus the enemies were never allowed to land upon the shores of Oʻahu.*

Douglas McDonald Philpotts also spoke about a connection between this area and the other islands through the path of the sun (CSH, 2008):

> *Whether you're a spiritual person or not you will be impressed by the sheer beauty of this place, and the spectacular views from here. But many who come here are surprised by the sense of mana here. The view is special here, from the top of Pālehua between Puʻu Manawahua and Mauna Kapu you can see all the islands and all of the mountain tops on those islands, this is the only place in all the islands you can do this. Hermann von Holt showed me the trench that still remains on the Honolulu ridge of Mauna Kapu and said another one in the south was taken out when the road was put in. It was right where the big blockhouse is now. Herman said they were told by the Hawaiians in the ranch camp at Honoʻuliʻuli this was a most sacred place, and the place of great mana, and that is why I think the Hawaiians lived here and their spirits never left. This could be part of the meaning in the name Pālehua. In addition to the unique view of the islands I have observed the annual journey of Iā (sun) from here. It starts on the first day of the celestial year on the winter solstice. At sunrise the sun can be seen rising from its house Haleakala as it begins its journey northward it rises from the west Maui Mountains and then from East Molokaʻi. Reaching Oʻahu it rises from Koko Head and moves from peak to valley north through the Koʻolau's reaching its destination Mokumanamana in exactly half a year. Then on June 21st, the summer solstice, the sun sets behind Kauaʻi and starts its journey back home. On this solstice line connecting Haleakala, Pālehua and Mokumanamana are also several heiau. Twice a year on the equinox the sun sets over Puʻu Heleakala. To me these and many other things seem to be more than coincidence.*
>
> *I am just starting to understand that there is no other place like this when you add the layer of the winter and summer solstice; there is no other place that lines up like that. So I think the real resource is the view, and the power that comes from that.*

7.4.7. Summary and Conclusions, Potential Impacts and Mitigation Measures

Potential Project

The WGSL was established in 1987. In addition to previous use activities, the importation of landfill material has most likely further eliminated any historic properties and plant resources related to Hawaiian cultural practices and beliefs that may have been present within the bounds of the landfill property. Additionally, the presence of the landfill over the last fifteen years has already precluded any traditionally established access to *mauka* areas through Waimānalo Gulch. (CSH, 2008).

The accessibility of Hono‘uli‘uli lands, including the present project area, to the Hawaiians for gathering or other cultural purposes would be radically curtailed during the second half of the nineteenth century. As noted above in this evaluation, by the 1870s, herds of cattle grazing across the ‘Ewa Plain likely denuded the landscape of much of the native vegetation. Subsequently, during the last decade of the nineteenth century, the traditional Hawaiian landscape was further distorted by the introduction and rapid development of commercial sugar cane cultivation. Throughout the twentieth century sugar cane cultivation was the dominating land use activity within the project area. Cane cultivation – and the sense that the project area was private property – restricted access inside the project area to employees of ‘Ewa Plantation. (CSH, 2008).

The ‘ili of Waimānalo including (Makaīwa, Lanikūhonua, Ko ‘Olina, and the uplands) has been described by community participants in this assessment process as a sacred area of great cultural importance. Many of the individuals contacted or interviewed for this study have expressed concerns about cultural impacts within and beyond the boundaries of the proposed project area. These concerns are based on a traditional view of the Hawaiian landscape as a continuum, in which the ‘ili of Waimānalo is perceived in unbroken relationship between mauka and makai lands and to the ocean beyond. This relationship is reflected in the oral traditions mentioned by the people of this land, the sites documented within the project area, as well as the many sites mauka and makai. The current project area is located along an ancient pathway between the mauka and the makai, i.e., the uplands and the coast. Both of these two general areas contain diverse and abundant resources. This pathway is traversed by Hawaiian ancestors in both the physical and the spiritual form. The makai area was rich in estuarine and marine resources including a canoe landing, a ko‘a, ki‘i pōhaku as well as lo‘i that sustained a thriving fishing village. The mauka area is covered with numerous religious cultural sites. (CSH, 2008).

Community participants have expressed great concern about the Huaka‘i Pō Kāne, also known as the Night Marchers, a monthly procession of the spirits of the dead. According to kūpuna, the trail of the Night Marchers in this area runs from mauka to makai.

Hawaiian cultural belief is that these trails are significant and must not be impeded for fear of retribution from spirits of the departed. This type of cultural tradition often goes unacknowledged because it is not an accepted part of the dominant Western culture; however it is very real for many people in Native Hawaiian communities. Hawaiian culture acknowledges a spiritual aspect to nature and interprets it in a way that has made certain Kānaka Maoli (native born) very sensitive to natural phenomena. (CSH, 2008).

According to the state OEQC's guidelines for preparation of cultural impact studies, analysis must take into account culturally significant physical and natural features of the landscape. For example (CSH, 2008):

> Certain landmarks and physical features are used by Hawaiian navigators for sailing and the lines of sight from landmarks to the coast by fisherman to locate certain fishing spots. Blocking these features by the construction of buildings or tanks may constitute an adverse cultural impact. (Office of Environmental Quality Control 2004:47)

Based on the information gathered during the course of this study and presented in this report, the evidence indicates that the proposed project will affect traditional Native Hawaiian stone uprights (SIHP # 50-80-12-6903), as identified in the CSH Archaeological Inventory Survey for the proposed project (CSH, 2008).

Recommendations and Mitigation Measures

The Cultural Impact Assessment prepared by CSH has identified community concerns regarding the potential for cultural impacts associated with the proposed project. The following provides CSH's recommendations and the proposed mitigative measures that will be implemented by ENV/WMH:

1. If cultural site SIHP # 50-80-12-6903 needs to be removed, a cultural monitor should respectfully care it for. Douglas McDonald Philpotts, Shad Kane, William Ailā, and Eric Enos all agree that the upright *pōhaku* should

> be removed from its original place during construction, then reunited with its former space and preserved in place. The removal of the *pōhaku* should be conducted in a cultural manner with a cultural monitor and the proper protocols. There should be a preservation plan in place for future cultural access and these community members should be involved in the mitigation process. (CSH, 2008).

As provided in Section 7.3.8. Potential Impacts and Mitigation Measures, ENV and WMH propose that the stone uprights be relocated based on the preparation of an Archaeological Monitoring Plan (AMP) that will be reviewed and approved by the SHPD. Guidance concerning the use of an archaeological monitor to maintain cultural sensitivity and the use of proper protocols will be sought from the SHPD and selected community informants identified by SHPD and CSH. The AMP will include a preservation plan for future cultural access that will incorporate the input of the community informants.

The primary provisions of this approach are that: (1) the period of time for the relocation of the stone uprights would coincide with the use of the area of lateral expansion, a period of approximately 15 years; and (2) although it may not be possible to relocate the stone uprights in the exact same location, ENV and WMH intends to maintain consultation with the SHPD and community for the final resting place for the stone uprights. The maintenance of access will be provided.

2. The traditional view of the Hawaiian landscape as a continuum should be taken into consideration during the planning process. Waimānalo Gulch is perceived as an unbroken relationship between *mauka* and *makai* lands. This relationship is reflected in the traditions of the Waimānalo area mentioned by the community contacts. In this view, any future activity within the landfill property will further distort and diminish the traditional landscape. (CSH, 2008).

The mauka lands of the Waimānalo Gulch have been bisected by the Farrington Highway as the ahupuaʻa transitions to makai lands along the coastline. Although it may not be possible to completely recover the traditional relationship that was once established between these lands, there are three important cultural properties described in the CIA that can be addressed with appropriate and culturally sensitive treatment. These properties include: (1) cultural site SIHP # 50-80-12-6903; (2) the legend of the huakaʻi pō (below); and (3) a series of six natural caves and rock overhangs (also below). ENV and WMH acknowledge these features as an important part of the Hawaiian landscape and will provide for their appropriate treatment as a part of the mitigative measured described in this section.

3. The huakaʻi pō (procession of the night marchers) viewplane should be taken into account in the planning process. Several community participants in this study stated that it is very important to keep the pathway clear of visual and structural blockage from mauka to makai on the east ridge of Waimānalo Gulch and the west ridge of Makaīwa Gulch, in order to allow the huakaʻi pō to continue. Several participants in this study cited the establishment of visual and physical buffer zones to protect the huakaʻi pō. CSH recommends this topic should be addressed in greater detail through further consultation with the community. (CSH, 2008).

ENV and WMH will consult with the community informants identified in the CSH study to mitigate or reduce the potential for visual blockage of the west and east ridgelines of the Waimānalo Gulch. A starting point for this discussion would be through the WGSL Oversight Advisory Committee. However, in order to maintain cultural sensitivity, ENV and WMH would remain open to other suggested venues by the community informants to further discuss and implement appropriate measures for protection of the huakaʻi pō.

4. A series of six natural caves and rock overhangs located in the northwestern portion of the project area were examined and documented

by CSH during an archaeological inventory survey (Dalton and Hammatt 2008). Subsurface testing (excavation) was conducted at two of these features; most do not contain substantial sedimentary deposits. No significant cultural material was observed or discovered at any of these six caves and overhangs; thus, they have not been designated historic properties. However, at least one community participant has voiced concerns about possible disturbances to burials in these caves. CSH recommends cultural monitoring of any proposed disturbance to these caves by qualified native Hawaiians familiar with the project area. (CSH, 2008).

ENV and WMH propose the use of an archaeological monitor during construction activities that may affect the northwestern portion of the WGSL. Prior to the start of work the archaeological monitor will be tasked with (1) reviewing the construction plans for the use of the area of the caves, and (2) consultation with community informants including native Hawaiians who are familiar with the project area. Although burials were not encountered at the time of the AIS, it is always possible that burials might be discovered in the course of earthwork. In the unlikely event of the discovery of a burial work in the immediate area will cease and the SHPD will be notified by the archaeological monitor at (808) 692-8015. Instructions and guidance for future steps will be obtained from the SHPD.

5. Although the land has been dramatically altered, there remains a possibility that burials and other archaeological sites may be present in and around the proposed project area Efforts need to be made to insure adequate archaeology and cultural monitoring are conducted at this project site. In addition to this cultural impact assessment, CSH is conducting an Archaeological Inventory Survey for this project area that was ongoing at the time of this report’s completion (Dalton and Hammatt 2008); its findings and recommendations should be faithfully carried out in

accordance with applicable laws and administrative rules governing historic preservation work in the State of Hawai‘i. (CSH, 2008).

ENV and WMH will comply with the requirements as provided for archaeological and cultural protection and preservation as provided in Chapter 6E, HRS, and other applicable laws and regulations.

6. CSH recommends that community members be further consulted about these and other concerns throughout the planning process. Addressing these cultural concerns is part of the City & County of Honolulu’s “good faith” effort to minimize the impact of the proposed project on Hawaiian culture, its practices and traditions. (CSH, 2008).

ENV and WMH will continue to consult with the community regarding archaeological, cultural, and other environmental matters involving the operation of the existing WGSL and the proposed lateral expansion project. A number of mitigative measures to provide community consultation are provided and are cited elsewhere in this EIS document. The mitigative measures as cited in this section are intended to address the potential for adverse cultural impacts.

See also Section 7.1.~~5~~6. Socioeconomic Mitigation Measures; Section 7.2.3. Potential Impacts and Mitigation Measures regarding Land Use and Ownership; and Section 7.3.8. Potential Impacts and Mitigation Measures regarding Historic and Archaeological Resources.

Cultural Impact Assessment Summary

Secondary and cumulative impacts associated with the use of the site involve the potential for the discovery of other cultural resources, artifacts, or burials that may be present at the project site. This potential however, was considered and served as one important reason for the completion of the Archaeological Inventory Survey (AIS) and Cultural Impact Assessment (CIA) for this project.

Mitigation to address the potential for impacts to archaeological and cultural resources will be coordinated between WMH, ENV, and the SHPD and community informants to develop an appropriate plan for treatment for the stone uprights (SIHP # 50-80-12-6903), huakaʻi pō (procession of the night marchers), and six caves and overhangs. The plan will consider the provision of access by cultural practicioners.

In the unlikely event of the discovery of a burial, work in the immediate area will cease until appropriate coordination with the SHPD has been completed. As required, the applicable provisions of law including HRS, Chapter 6E, and HAR, Chapter 13-300 (regarding burials) to maintain the protection of archaeological and cultural resources will be provided by WMH and ENV.

Section 8
Relationship to Land Use Plans, Policies and Controls of the Potentially Affected Area

8.1. Hawaiʻi State Plan

The Hawaiʻi State Plan, Chapter 226, Hawaiʻi Revised Statutes (HRS), was passed into law in 1978 and revised in 1986 to reflect the future long range planning goals, objectives, and policies of the State of Hawaiʻi. The proposed project maintains consistency with the provisions of the State Plan in the following:

> *Section 226-6(b) To achieve the general economic objectives, it shall be the policy of this State to:*
> *(14) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy."*

The proposed project provides for the safe and effective disposal of municipal refuse for all the communities of Oʻahu in accordance with applicable federal, state, and City & County of Honolulu laws and regulations. This waste, if not properly managed, could affect Oʻahu's islandwide "…scenic beauty and the aloha spirit, which are vital to a healthy economy." In as much as the proposed location of the project is within the Waimānalo Gulch, the provision of mitigative measures, practices, and procedures for the proper handling of refuse will be applied to the project to address the potential for adverse environmental effects. (See Sections 4 through 6 of this document).

> *Section 226-11(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:*
> *(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.*

The proposed project is based on the use of an existing facility and property that is under ownership of the City & County of Honolulu. The use of this existing resource represents an effort to conserve the limited and precious land resources of O‘ahu by maximizing the capacity of the site.

The practice of conservation is further supported by the City through continuing efforts to promote recycling and the generation of energy through the use of municipal solid waste at H-POWER. Future plans also call for the use of landfill gas from the Waimānalo Gulch to one day be used in the generation of electricity at the neighboring Hawaiian Electric Company (HECO) Kahe Power Generating Station.

> *Section 226-11(b) (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.*
> *(3) Take into account the physical attributes of areas when planning and designing activities and facilities.*
> *(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.*
> *(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.*
> *(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai‘i.*
> *(8) Pursue compatible relationships among activities, facilities, and natural resources.*

The natural attributes of the existing WGSL site include a relatively dry climate, the absence of drinking or potable groundwater resources that could be adversely affected by a landfill, and the absence of known threatened or endangered botanical and faunal species. These and other factors were taken into account in the assessment of the site for use as a municipal sanitary landfill.

Protection of the site to ensure against potential adverse effects that could otherwise generate "costly or irreparable environmental damage", will involve the use of mitigative measures and management practices and procedures as described in this EIS document. The protection of air, and ground and surface water quality will be provided through extensive monitoring as described in Sections 4 and 5 of this document. Air, groundwater, and surface water quality is monitored to regularly ascertain the performance of the protective features of the landfill and is an existing practice that would be extended to the proposed project. The monitoring procedures will enable early notification of any issues with the performance of the landfill and provide sufficient time to address and implement corrective actions before any issue becomes a problem.

While the WGSL was initially developed in 1989, at a time with few or limited residential, resort, commercial and business development pressures in the ‘Ewa region, there is now major growth and development of existing and new developments that include ‘Ewa, Kapolei, Makakilo, Ko Olina, the future Makaiwa Hills residential subdivision, and in various locations along Coastal Wai‘anae. Because this growth highlights the limited space available on the Island of O‘ahu for facilities such as a landfill, this EIS proposes a number of mitigative measures and other practices that are intended to reflect the stated commitment of the City and the operator of WGSL, WMH, for the operation of a well run facility that avoids the potential for adverse environmental effects on adjoining land use activities, other facilities, and the natural resources of the site.

> *Section 226-12 (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:*
> *(I) Promote the preservation and restoration of significant natural and historic resources.*
> *(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.*
> *(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.*

> *(5) Encourage the design of developments and activities that complement the natural beauty of the islands.*

The preservation and restoration of natural and historic resources present at the WGSL has or is currently being addressed through the conduct of special studies of flora, fauna, archaeological, and cultural resources, and through the development of mitigative measures to address the potential for adverse environmental effects. Based on the conduct of special studies no known threatened or endangered species were observed to be present at the site. An existing archaeological site was found in the form of three stone uprights located along the southwestern edge of the landfill property. To address the discovery of the uprights: (1) the SHPD was notified to report the find and to ascertain further actions or requirements to ensure no disturbance until an appropriate plan for treatment is determined; and (2) notification and coordination with appropriate parties as determined by SHPD that includes the Office of Hawaiian Affairs (OHA) and SHPD designated cultural informants from the area.

The process of coordination to develop an appropriate treatment plan and to ascertain further the purpose and function of the uprights is in progress. The owner of the site, the City & County of Honolulu, intends to work with the SHPD and the community to provide appropriate treatment to ensure protection and preservation of the stone uprights an important part of Native Hawaiian culture and heritage. All required provisions of Chapter 6E, HRS, as well as other provisions of law governing archaeological preservation and protection will be complied with to prevent the irrevocable loss of this resource.

View impacts associated with the project involve mauka views toward the landfill property that includes: (1) some views from the Waiʻanae side of the property from construction vehicles transiting the southwestern and western ridge beyond the equipment and facilities of the HECO Kahe Power Generating Station; and (2) a view corridor providing views into the Waimānalo Gulch that extends from the Kai Lani subdivision to the Ko Olina Beach Club. From this location views of construction and refuse handling vehicles can be seen as they traverse the site to and from active areas of landfilling. Active cells located further back in the landfill cannot be seen based on the location of the cells below the completed portions of the site that are now closed from further landfilling.

While it is not possible to shield from view the location and features of the entirety of the WGSL, the potential for visual impacts during operation of the landfill will be minimized and mitigated with vegetative controls including the use of hydromulching, and plantings of grass, dryland shrubs, and trees, as provided in the project's landscaping plan.

> *Section 226-14 Objective and policies for facility systems-in general.*
> *(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives. (b) To achieve the general facility systems objective, it shall be the policy of this State to:*
> *(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.*

The proposed project represents a major capital project necessary for the safe, sanitary, and efficient disposal of municipal solid waste and refuse on the Island of O‘ahu. The project will serve all of O‘ahu's residents and visitors and is considered an essential part of the City's refuse management system that includes recoverable products recycling, waste to energy, and conservation of land resources for required public facilities such as landfills.

> *Section 226-14 (b)(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.*

The proposed project will allow flexibility in the development and adoption of future City initiatives that will reduce dependency on landfills: (1) The future adoption of new technologies will require sufficient time for operational viability. The presence of the landfill will provide public safety and security for the disposal of refuse during periods of startup, maintenance, and for unforeseen circumstances that may require equipment repair.

(2) There are no existing refuse reduction or "elimination" technologies that do not themselves result in the generation of some refuse that cannot be further recovered, recycled, or otherwise reused. For these forms of waste, a landfill provides the most viable method of disposal.

(3) Any effort to reduce the volume of refuse being landfilled would benefit the Island of O‘ahu through an extension of the life of the landfill. Landfill capacity that is not used would forestall the need to seek a new location for a future municipal landfill.

(4) The landfill serves as a public resource in the event of a natural disaster such as a hurricane, earthquake or tsunami. A location for the disposal of cleanup and demolition debris would be required to meet public health and safety requirements during the recovery effort.

> *Section 226-14 (b)(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.*

The proposed project represents the effort to expand an existing public facility that is owned by the City & County of Honolulu. The expansion of the facility will be supported within the existing resource capacity of the site and at reasonable taxpayer cost to all users on the Island of O‘ahu.

> *Section 226-15 Objectives and policies for facility systems-solid and liquid wastes. (a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:*

> *(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes. (b) To achieve solid and liquid waste objectives, it shall be the policy of this State to: (2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic, and (3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.*

The proposed project will facilitate the maintenance of public health and sanitation standards with regard to the disposal of MSW and refuse.

Although the proposed project does not in itself involve recycling, the City & County of Honolulu, through its Solid Waste Integrated Management Plan identifies recycling and materials recovery efforts to reduce Oʻahu's overall dependency on the need for landfills.

The City & County of Honolulu has promoted the investigation and adoption of technology based methods that have been proven to be efficient and economic in the reduction and treatment of solid waste. Examples of City led efforts include the use of a solids digester facility at the Sand Island Wastewater Treatment Plant and recent efforts to upgrade the H-POWER facility.

> *Section 226-104 (b) Priority guidelines for regional growth distribution and land resource utilization:*
> *(2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.*

The proposed project involves the use of agricultural land that has not been classified by the Agricultural Lands of Importance to the State of Hawaiʻi (ALISH) system as indicated in Section 8.3 of this document. The non-essential agricultural nature of the land can be considered as a use that would allow for the maintenance of more important agricultural lands in the agricultural district.

> *Section 226-104 (b)(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.*
> *(12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.*
> *(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.*

The proposed project has been evaluated with regard to the potential for adverse effects to critical environmental features or habitat. There are no known threatened or endangered species present and as appropriate, mitigative measures are proposed to minimize, mitigate, or otherwise reduce the potential for adverse environmental impacts.

An important factor that supports the utilization of the proposed site involves the existing landfill use of the site, and the capacity and ability of Waimānalo Gulch to continue to support O'ahu's refuse disposal requirements for the next approximately 15 year timeframe. This use of the site would support and preempt the use of other locations on the Island of O'ahu until such time that the present site has reached capacity.

As noted, this EIS document identifies the appropriate application of mitigative measures and practices to avoid the potential for adverse environmental impacts as a result of development for the area of lateral expansion.

8.2. State Functional Plans

The State Functional Plans are mandated by Chapter 226, HRS. Together with the Hawai'i State Plan, they are intended to guide the implementation of state and county actions in the areas of agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, transportation, and water resources development.

The major theme of the Functional Plans is a focus on balanced growth in the use of the state's limited resources. The plans were last subject to legislative approval in the early 1990s and have not since been subject to substantive legislative review and update. Accordingly, many of the plans' *implementing actions* are in need of revision. However, the *objectives* and *policies* contained in the functional plans reflect many of the same values that are as important today as they were in the 1990s.

The proposed project is considered to be consistent with the State Functional Plans in the areas of Energy and Recreation.

8.2.1. Energy Functional Plan

Objective B of the Energy Functional Plan calls for the displacement of oil and fossil fuels through alternate and renewable energy sources.

The WGSL is a generator of naturally occurring methane and other landfill gasses that are planned to be recovered for the generation of electricity through a landfill gas to energy (LFTGE) system. Although the landfill has been in operation since 1989, it is only recently that the landfill has matured enough to merit the recovery of combustible gas. The recent installation of a landfill gas recovery system in conjunction with the efforts of WMH and HECO will initiate the tapping of this alternative energy resource.

The proposed project also supports the displacement of oil and fossil fuels through the provision of a location for the disposal of H-POWER ash and residue that cannot be further recycled or reused. This supports the operation of H-POWER in the conversion of waste to energy and promotes the conservation of fossil fuel resources that would otherwise need to be imported for the generation of electricity.[1]

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[1] The facility is capable of processing 2,160 tons-per-day of municipal solid waste into refuse derived fuel (RDF) for combustion, while generating up to 57 megawatts of energy from this renewable

8.2.2. Recreation Functional Plan

Policy I-A(4) of the Recreation Function Plan calls for the development of areas mauka of existing beach parks to increase their capacities and to diversify and encourage activities away from the shoreline.

The proposed project is anticipated to be used as a municipal sanitary landfill for a finite period of time. At the end of this period the landfill will be closed in accordance with a specified closure plan reviewed and approved by the EPA and State Department of Health. Monitoring of the landfill is mandated for a period of 30 years to ensure the environmental safety and security of the site. During this period the landfill surface will stabilize and be revegetated to blend in with the surrounding landscape.

Although several years will be required, it will be possible to recover the use of the site for other purposes that include outdoor recreation. This reuse and recovery of the land is consistent with historical practice in the recovery of former landfill sites that include the Kakaako Waterfront Park, Sand Island State Recreational Area, and portions of the Ala Moana Park.

8.3. State Land Use Law

The State Land Use Commission classifies all lands in the State of Hawaiʻi into one of four land use designations: Urban, Rural, Agricultural, and Conservation. The proposed project is located within the State Agricultural District (**Figure 8-1**, **State Land Use District**).

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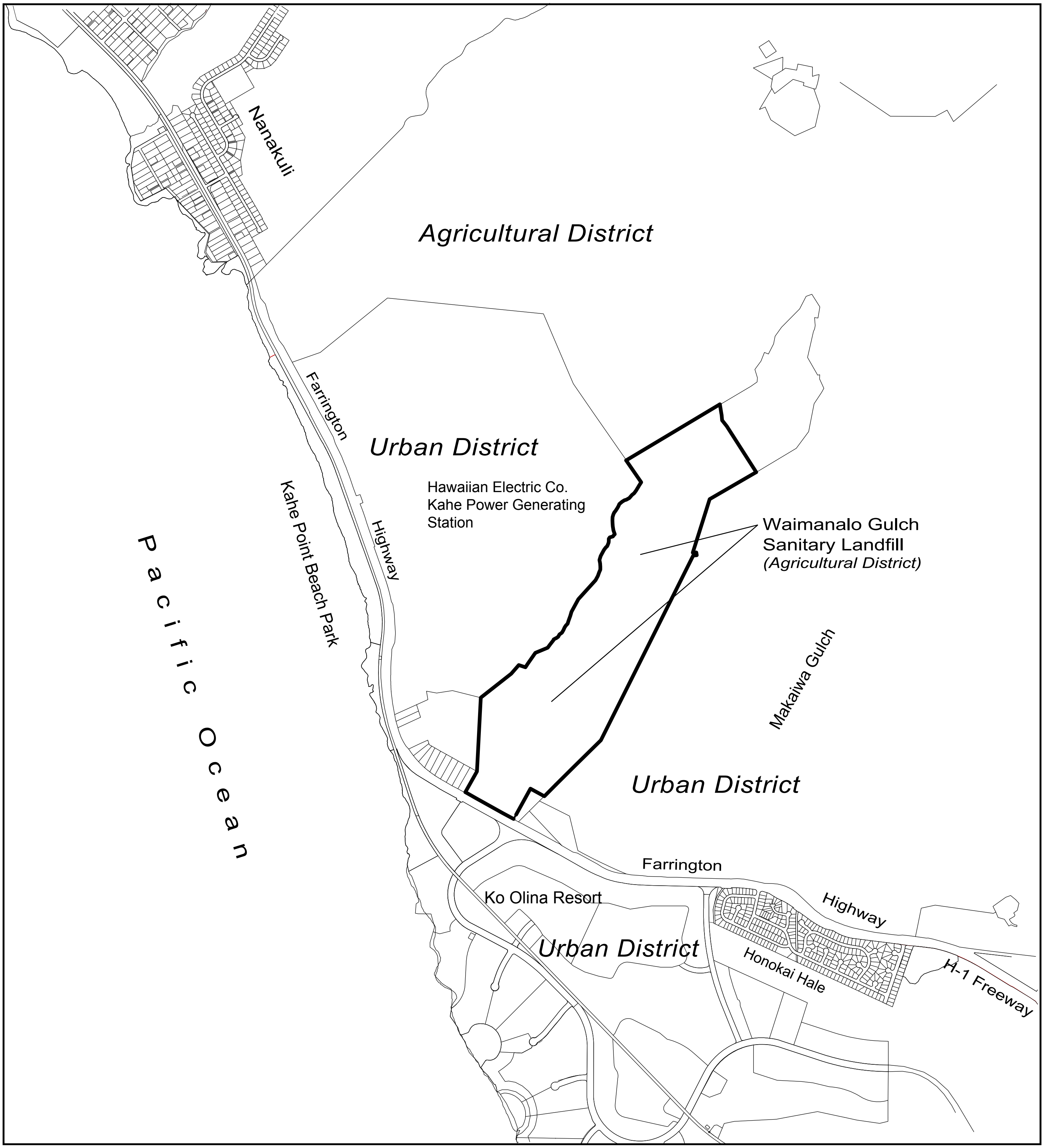
source. It has been estimated that as much as 10 million barrels of imported oil has been conserved by H-POWER (http://www.honoluluhpower.com/About.asp#Content).



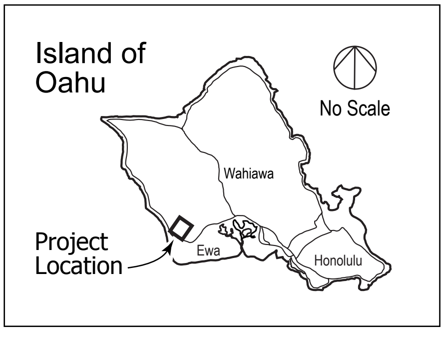


Figure 8-1
State Land Use District Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION

May 2008

According to the Agricultural Lands of Importance (ALISH) to the State of Hawaiʻi system the subject site is not classified as one of three types of agricultural land: Prime Agricultural Land, Unique Agricultural Land and Other Important Agricultural Lands. (**Figure 8-2**, **ALISH Map**).

Because of the location of the project in the State Agricultural District, if the land use designation of the subject property is not changed via a Boundary Amendment proceeding, a State Special Use Permit must be obtained for the proposed expansion through the City & County of Honolulu, Department of Planning and Permitting and the State Land Use Commission. Alternatively, a change of the State Land Use District designation from the Agricultural to the Urban District could be sought by the filing of a Land Use District Boundary Amendment proceeding with the Land Use Commission as an alternative means of obtaining the necessary land use approvals.

8.4. Special Management Area

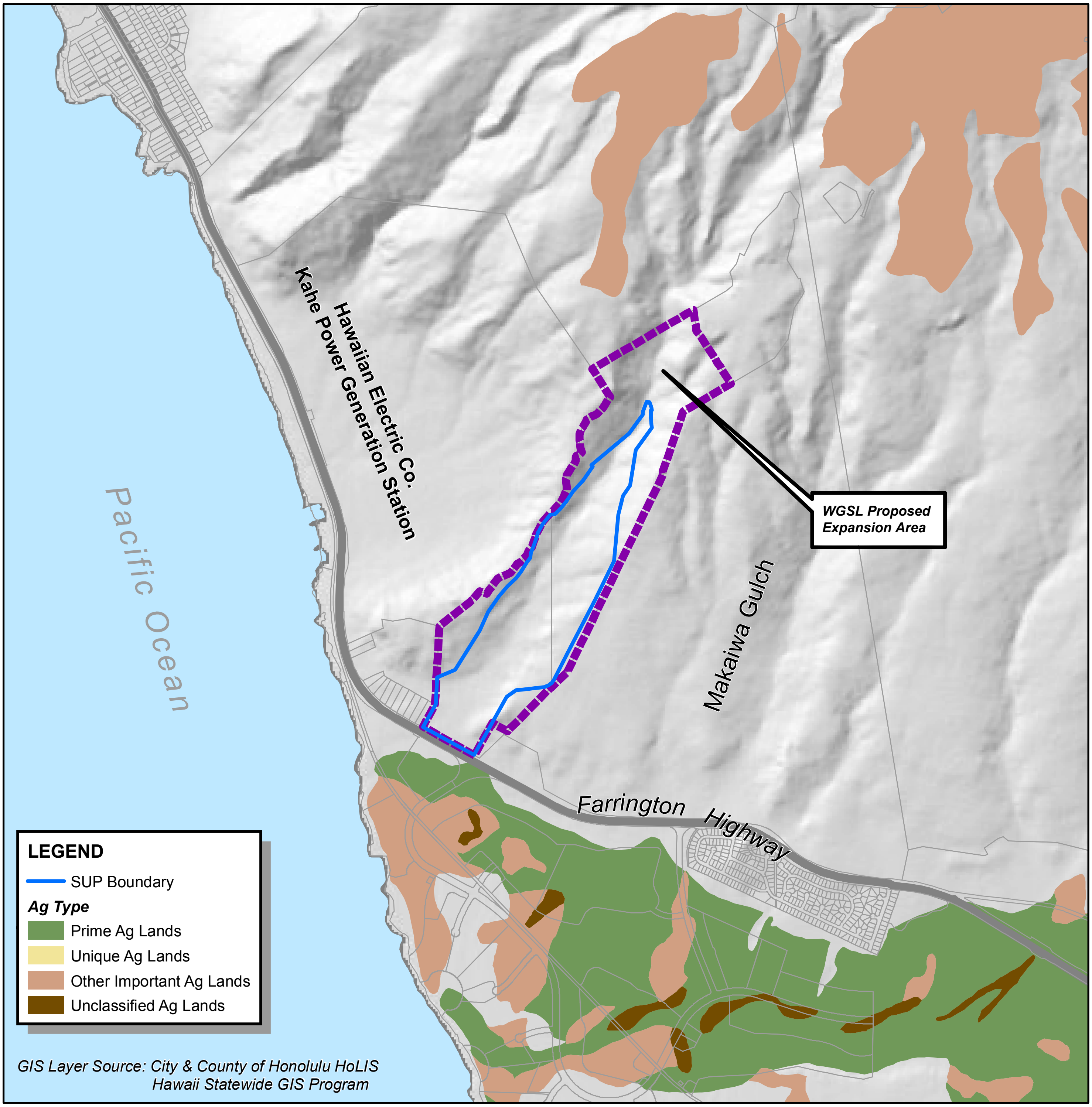
The State and City & County of Honolulu has established land use controls on development in coastal areas to avoid the permanent loss of valuable coastal resources and the foreclosure of management options. Special Management Area (SMA) boundaries have been set by the City to delineate coastal zone areas subject to regulation. According to the City & County of Honolulu's SMA Boundary Map for the Ewa area, the proposed project site is located outside of the SMA and is therefore not subject to SMA regulation.

The relationship of the SMA boundary to the project site is provided in **Figure 8-3, SMA Boundary**.

8.5. Coastal Zone Management Program

The State of Hawaiʻi designates the Coastal Zone Management Program (CZMP) to manage the intent, purpose and provisions of the federal Coastal Zone Management Act, and HRS, Chapter 205(A)-2, as amended, for the areas from the shoreline to the seaward limit of the State's jurisdiction, and any other area which a lead agency may designate for the purpose of administering the Coastal Zone Management Program.

The following is an assessment of the project with respect to the CZMP objectives and policies set forth in Section 205(A)-2.



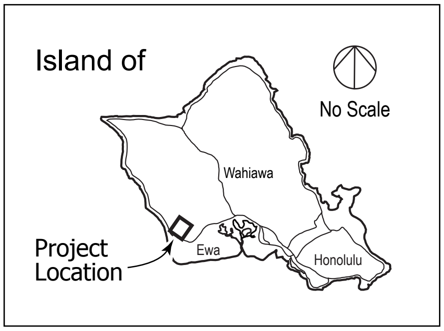


Figure 8-2
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 2000 Feet 4000

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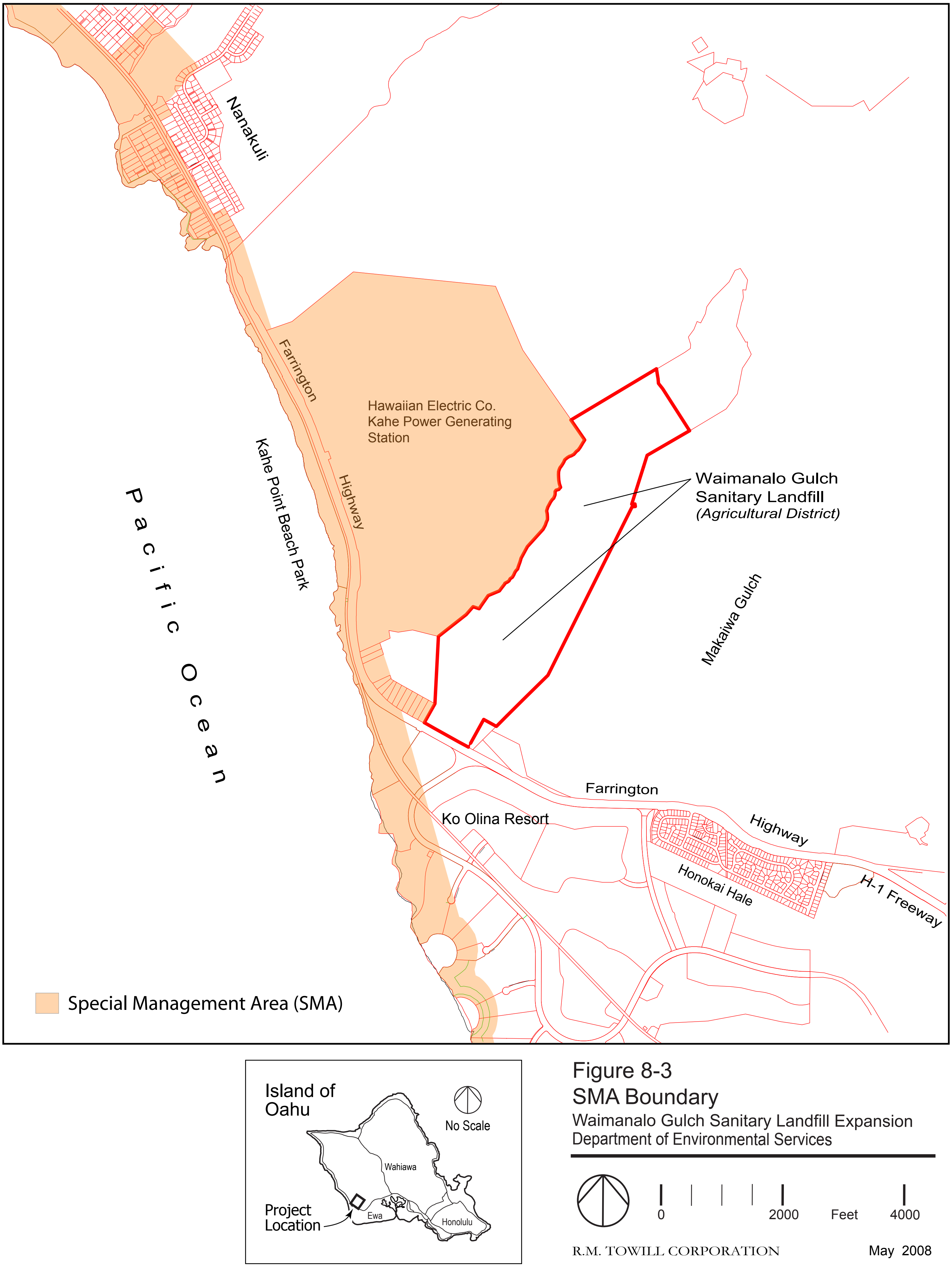

Figure 8-3
SMA Boundary
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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1. Recreational resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

A) Improve coordination and funding of coastal recreational planning and management; and B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.

Discussion:

The proposed facility is not located on the coastline or shoreline and does not involve the use of coastal resources. The site is not in a location suitable for the development of new shoreline recreational opportunities or to dedicable shoreline areas with recreational value. It is anticipated however, that with the eventual exhaustion of space within the WGSL that future recreational park opportunities may one day become available through the reclamation of the site. Although not shoreline dependent, the relative location of the site mauka and above coastal Waiʻanae, would allow open space recreational uses to complement and enhance the existing public beach and park facilities of the area.

2. Historic resources

Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

(A) Identify and analyze significant archaeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion:

Archaeological investigation of the site has been completed in accordance with the provisions of Chapter 6E, HRS. Three stone uprights were discovered in early 2007 as a result an archaeological inventory survey. The uprights were found to be in a cluster located near the southwestern edge of the WGSL in an area that would be affected by the lateral expansion. According to Cultural Surveys Hawaiʻi (Cultural Surveys Hawaiʻi, March 7, 2008):

> *The single historic property (SIHP # 50-80-12-6903) that was documented during the archaeological inventory survey was found near the southwest edge of the Waimānalo Gulch*

> *Sanitary Landfill expansion area. This resource is comprised of three rock uprights designated Features A-C, which, based on available information are naturally upright standing. These stone uprights rest on a steep southeast facing slope, are spaced 50-60 meters apart, and are situated on exposed outcrops. Feature A and Feature B are along the same outcrop, while Feature C is located on a higher outcrop upslope. This resource is interpreted as traditional Native Hawaiian, and may have functioned as trail or boundary markers. No additional feature components were observed near this location. In consultation with the State Historic Preservation Division (SHPD), this historic property is recommended eligible to the Hawai'i Register of Historic Places (Hawai'i Register) under criterion D, for its potential to yield information important in prehistory or history, and under criterion E, for its cultural significance to Native Hawaiians.*

No other significant archaeological resources were discovered as a result of surveying the project's 92.5 acre area of potential effect.

To address the discovery of the uprights: (1) the SHPD was notified to report the find and to ascertain further actions or requirements to ensure no disturbance until an appropriate plan for treatment is determined; and (2) notification and coordination with appropriate parties as determined by SHPD that includes the Office of Hawaiian Affairs (OHA) and SHPD designated cultural informants from the area.

The process of coordination to develop an appropriate treatment plan and to ascertain further the purpose and function of the uprights is in progress. The owner of the site, the City & County of Honolulu, intends to work with the SHPD and the community to provide an appropriate level of treatment to preserve the stone uprights. All required provisions of Chapter 6E, HRS, as well as other provisions of law governing archaeological preservation and protection will be complied with.

Although the specific treatment that will be applied to the uprights has not yet been determined by the SHPD, and implemented by the City, the proposed project will address and meet the State's goals for the "…protection, restoration, interpretation, and display of historic resources." Any further actions that will be taken will be based on SHPD direction and guidance~~ will be provided in the project's forthcoming Final EIS~~.

> *3. Scenic and open space resources*
>
> *Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.*
>
> *Policies:*
>
> *(A) Identify valued scenic resources in the coastal zone management area;*
>
> *(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline;*
>
> *(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
>
> *(D) Encourage those developments that are not coastal dependent to locate in inland areas.*

Discussion:

The majority of the proposed project will not be visible from most vantage points along the Farrington Highway in the Wai‘anae or Kahe Point directions. The existing Kahe Point ridge line provides screening of views of the landfill, including the proposed expansion area.

The general area that fronts Waimānalo Gulch (i.e. from the Kai Lani subdivision to Ko Olina Beach Club) will be most impacted from the proposed project. Because this area has an unobstructed view into the gulch, continued activities will be seen from areas within this “view corridor”. Anticipated view impacts will be similar to existing conditions at the site consisting of periodic views of vehicles in transit to and from active landfill cells. Due to the existing height of the berm in the area of MSW Cell 1, the majority of daily landfill activities in the expansion area will be obstructed from view.

Mitigation to reduce visual impacts associated with existing operations has been initially implemented and will be modified to incorporate the proposed expansion area. The existing sanitary landfill has a 400-foot-wide vegetative buffer strip along the eastern portion of the site with a north-south separation of 800 to 1,000 feet. The approved landfill area has been hydromulched to begin the growth of grasses in the filled areas. The landscaping effort, once established, will resemble vegetation on adjoining hillsides and follow similar growth cycles. In time, plant species in the surrounding areas are expected to spread into the closed areas of the landfill through the natural seeding process.

Views of Coastal Waiʻanae are not expected to be affected based on the location of the WGSL mauka and upgradient from the Farrington Highway.

4. Coastal ecosystems
Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
Policies:
(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Improve the technical basis for natural resource management;
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion:
The proposed project is not expected to have any adverse effects on coastal or marine coastal ecosystems. This is due to the location of the project mauka of the shoreline and the Farrington Highway.

During construction, all construction activities will be covered under an NPDES permit to address proper treatment of storm water discharges. Measures to reduce and prevent sediment discharges in storm water runoff will be in place and functional before project activities begin and will be maintained throughout the construction period. Runoff and discharge pollution prevention measures will be incorporated into a site-specific Construction Stormwater BMPs plan by the project contractor. An NPDES permit application addressing discharges of storm water associated with industrial activities will also be filed with DOH for the expansion area to ensure proper operation of the facility.

5. Economic uses
Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.
Policies:
(A) Concentrate coastal dependent development in appropriate areas;
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
(i) Use of presently designated locations is not feasible;
(ii) Adverse environmental effects are minimized; and
(iii) The development is important to the State's economy.

Discussion:

Although the proposed project is not a coastal dependent facility, the location of the project site was based on selection criteria and governmental regulations that establish the suitability of the site for use as a municipal sanitary landfill.

The proposed project property is owned by the City & County of Honolulu and is designated for a landfill. The use of the site for this purpose is not expected to affect the location or expansion of future coastal dependent developments.

> *6. Coastal hazards*
> *Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*
> *Policies:*
> *(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*
> *(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;*
> *(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and*
> *(D) Prevent coastal flooding from inland projects.*

Discussion:

The potential for hazards from storm wave, tsunami, hurricane, wind, flood erosion, subsidence, and point and nonpoint source pollution will be addressed by the proposed project through adherence to the landfill site operating manual and through adherence to all required regulatory permit authorizations and controls.

The development of the project will also be in compliance with the requirements of the Federal Flood Insurance Program, the City & County of Honolulu Drainage, Grading and Development standards for Flood Hazard Districts, and the LUO, Section 21-9.10, Flood Hazard Districts.

Coastal flooding is not anticipated based on the location of the project inland and upgradient of the Farrington Highway.

7. Managing development
Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
Policies:
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Discussion:
The project site is within the State Agricultural Land Use District. Land uses within this designation are subject to regulation by the State and City & County of Honolulu. The county's zoning designation is AG-2, Agricultural.

All improvement activities will be conducted in compliance with State and County environmental rules and regulations. This subject document is prepared to identify and, where necessary, propose mitigation measures to address the potential for impacts anticipated from the construction and operation of the project. This document will be published for public review in compliance with procedures set forth in HRS, Chapter 343.

8. Public participation;
Objective: Stimulate public awareness, education, and participation in coastal management.
Policies:

(A) Promote public involvement in coastal zone management processes;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific mitigation to respond to coastal issues and conflicts.

Discussion:

Public involvement in the project will consist of public notification of the project as provided in the Office of Environmental Quality Control (OEQC) Bulletin. See Section 13, Organizations, Agencies, and Public Parties Consulted in the Environmental Impact Statement Process, for a list of agencies, organizations and individuals consulted for this project. All written public comments will be provided with a written response. Where appropriate, mitigation measures will be developed to address issues and concerns raised during public review of the project.

9. Beach protection;

Objective: Protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion:

The proposed project is not located along the shoreline or beach. No structures are proposed seaward of the shoreline. Control of erosion will be based on conformance to standards of the City & County of Honolulu regulating the control of erosion.

The proposed project is anticipated to have potential impacts that include the migration of landfill associated odor, windblown litter migrating to area beaches and parks, and visual impacts. While the potential for impacts are not necessarily related to the policies associated with Item 9. Beach Protection, appropriate mitigative measures as provided in Section 6.10.2. Potential Impacts and Mitigation Measures (for Parks and Recreation) will be applied to the project to reduce the potential for adverse effects to public use and recreational activities at area beaches.

10. Marine resources

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion:

The proposed project does not involve or utilize marine resources. However, as required by law all necessary permit applications and environmental and building permit approvals will be secured prior to the initiation of construction activities.

8.6. City & County of Honolulu General Plan

The General Plan of the City & County of Honolulu is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of O‘ahu's residents and the strategies or actions to achieve them. It is the focal point of a comprehensive planning process that addresses physical, social, economic and environmental concerns affecting the City & County of Honolulu. Since adoption of the General Plan in 1977, the last amendment to the Plan was completed in 2002. Although the Plan has sustained a number of changes since its adoption the basic themes and directions for growth remain valid[2].

The proposed project is consistent with the General Plan objectives and policies that relate to the following:

> *"I. Population*
> *Objective B: To plan for future population growth.*
> *Policy 1: Allocate efficiently the money and resources of the City and County in order to meet the needs of Oahu's anticipated future population.*
> *Policy 2: Provide adequate support facilities to accommodate future growth in the number of visitors to Oahu."*

Although the proposed project does not directly influence future population growth, it represents an important public facility serving the island of O‘ahu by providing a location and means for the disposal of municipal refuse. In this regard the project is a necessary

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[2] General Plan, City & County of Honolulu. Website reference: http://honoluludpp.org/planning/GeneralPlan/GPIntro.pdf

use of City resources that will meet future population needs and accommodate growth in the number of visitors to O‘ahu.

> *"III. Natural Environment*
> *Objective A: To protect and preserve the natural environment.*
> *Policy 1: Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*
> *Policy 2: Seek the restoration of environmentally damaged areas and natural resources.*
> *Policy 4: Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive land forms, and existing vegetation."*

The development of the Waimānalo Gulch Sanitary Landfill occurred in 1989 prior to the rapid growth currently occurring in the ‘Ewa region. Surrounding land uses were largely limited to industrial activities including the James Campbell Industrial Park and the HECO Kahe Power Generating Station. Today, with the development of the adjoining Ko Olina Resort, Nānākuli Homesteads, Honokai Hale, Makakilo, Kapolei, and other subdivisions, the area has experienced major development and population growth. Although the proposed project will require an expansion of use of the existing facility and require transformation of the existing Waimānalo Gulch into space that will be used for landfilling, such use will be limited by the remaining space that is available at the site. With the eventual closure of the site, the land upon which the facility is located is expected to be reclaimed for other public purposes that may be considered more compatible with area surroundings. These uses may include, but are not limited to, open space for park and recreational activities not unlike the Kaka‘ako Community Park, which once served as a landfill in Honolulu. This practice will seek to restore use of the land for a public purpose and benefit.

> *"V. Transportation & Utilities*
>
> *Objective B: To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal.*
>
> *Policy 3: Encourage the development of new technology which will reduce the cost of providing water and the cost of waste disposal.*
>
> *Policy 4: Encourage a lowering of the per-capita consumption of water and the per-capita production of waste.*
>
> *Policy 5: Provide safe, efficient, and environmentally sensitive waste-collection and waste-disposal services.*
>
> *Policy 6: Support programs to recover resources from solid-waste and recycle wastewater.*
>
> *Policy 7: Require the safe disposal of hazardous waste."*

The proposed project is designed to serve as an environmentally sound method for the disposal of municipal solid waste and ash. The development of new technology based solutions, while promising, have and will continue to be evaluated by the City based on feasibility and a demonstrated operating record of performance for municipalities similar to the City & County of Honolulu. At this time however, there are no new technologies with proven feasibility of performance or that would completely eliminate the generation of waste by-products that would require disposal (see **Appendix K**).

The recovery of resources from solid waste is already occurring through the recycling of waste materials into energy through the City's H-POWER facility. The operating record of H-POWER has been proven through over a decade of performance that has benefited the City in reducing the amount of waste requiring landfilling. Based on this performance, plans for the expansion of the H-POWER have been proposed by the City.

It is possible in the future that as new and emerging technologies demonstrate similar proven levels of performance and feasibility of application for the City that such technologies will be adopted. At this time, however, there are no technology based alternatives that could by itself address the need for landfilling.

While the WGSL does not accept hazardous waste, the City supports the safe handling and disposal of all hazardous wastes.

> *"VIII. Public Safety*
> *Objective B: To protect the people of Oahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.*
> *Policy 2: Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard.*
> *Policy 8: Provide adequate search and rescue and disaster response services."*

Waimānalo Gulch Sanitary Landfill has other important functions in addition to its daily use for a municipal sanitary landfill. In the event of a public emergency involving a natural disaster such as a hurricane, tsunami, or earthquake, the facility will serve as a repository for disposal of disaster debris. This use will promote public safety by ensuring that a facility is available to handle disposal of debris that could otherwise accumulate in populated areas throughout the island, including along communities of the Waiʻanae Coastline.

8.7. City & County of Honolulu ʻEwa Development Plan (ʻEwa Sustainable Communities Plan)

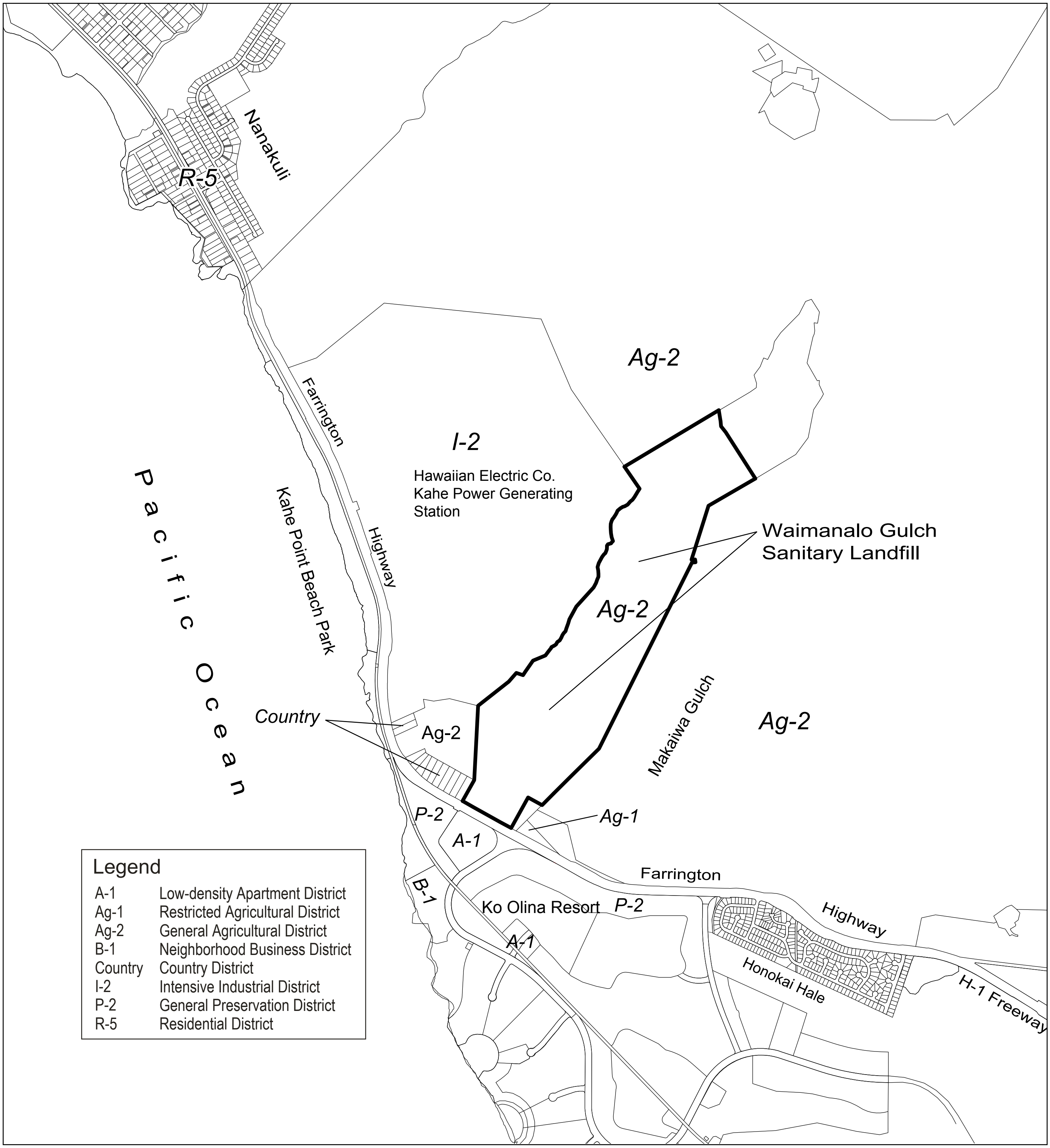
The ʻEwa Development Plan (DP), was adopted by the City in August 1997 and is currently undergoing a required five-year review and update. The date of completion of the review and update of the plan is not known at this time. As appropriate during the preparation of the project EIS, and upon completion of the five-year review, the proposed project will be evaluated for consistency with the updated ʻEwa DP.

The project site is depicted on the ‘Ewa DP within the Preservation District on the plan’s illustrative Open Space and Phasing Maps. The ‘Ewa DP discusses the analysis and recommendations of the Solid Waste Integrated Management (SWIM) Plan, prepared by the Department of Public Works and adopted by the Honolulu City Council in 1995. The Ewa DP states that the SWIM Plan identified the Waimānalo Gulch as having potential for expansion; however, siting and/or expansion of sanitary landfills should be analyzed and approved based on islandwide studies and siting evaluations (such as the Chapter 343, HRS, EIS process which is the subject of this document).

The Development Plan Public Facilities Map also depicts a symbol for the existing landfill facility, but does not delineate the boundaries of the landfill.

8.8. City & County of Honolulu Zoning Law

The zoning designation of the project site is AG-2 General Agricultural District (See **Figure 8-4**, **Zoning Map**). According to the Land Use Ordinance, development of a landfill is a permitted use in the AG-2 district. A determination of permitting requirements for this project pursuant to the zoning of the site will be completed with the Department of Planning and Permitting (DPP). It is anticipated that the existing facility and the proposed expansion will be considered a “public use” under the Land Use Ordinance. A Conditional Use Permit is not anticipated to be required.



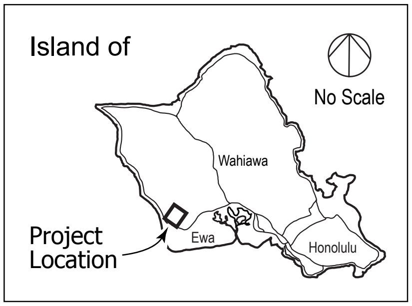


Figure 8-4
Zoning Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

Section 9

Alternatives to the Proposed Action

9.1. Introduction

In March 2008, the Alternatives Analysis for Disposal of Municipal Refuse report was completed for the subject EIS by Pacific Waste Consulting Group (PWCG) (**Appendix K**). This report was subsequently updated with additional information in September 2008, which is included in this section. The following includes a summary of the report and evaluation.

~~The following alternatives to the proposed project were evaluated:~~

9.2. O'ahu Refuse Disposal - General background information is provided pertaining to the composition of waste disposal for the Island of O'ahu.

Alternatives to the proposed project consist of the following:

9.~~2.~~3. No Action - Landfilling at the Waimānalo Gulch Sanitary Landfill would cease on November 1, 2009, with no alternative site or technology available.

9.~~3.~~4. Delayed Action - The action on the permit would be delayed. Given the time needed to process the permits, the delayed and no action alternatives have the same effect.

9.~~4.~~5. Transshipment - O'ahu's MSW would be baled and transported to a mainland landfill for disposal. Even with this alternative, not all MSW can be transshipped.

9.~~5.~~6. Alternative Technologies - Technologies other than landfilling that could reduce the amount of material requiring disposal and generate electricity or another beneficial reuse product. Alternative technologies that were considered include:

- Thermal and non-thermal technologies;

- Enhanced recycling;
- Addition of a third unit to H–POWER; and
- Alternative methods of landfilling, such as co-disposal of ash and MSW and use of a bioreactor landfill.

9.~~6.~~7. Alternative Sites - Alternative sites on O‘ahu for the landfill. The five alternative landfill sites considered in the analysis were:

- Ameron Quarry;
- Mā‘ili Quarry;
- Makaiwa Gulch;
- Nānākuli B; and
- Waimānalo Gulch Sanitary Landfill.

The analysis was performed for each of the alternatives. The examination of alternative technologies involved a review of currently operating facilities and includes information describing the technologies.

All alternatives were compared to criteria or guidelines established by the City & County of Honolulu for alternative technologies, alternative landfill sites, and transshipment. The requirements for alternative sites are based on the work of the Mayor’s Advisory Committee on Landfill Site Selection which was concluded in December 2003. The Committee was established as an independent panel advisory to the Mayor comprised of citizens and legislators from several areas of the Island of O‘ahu.

The requirements for alternative technologies were established by the City in its January 16, 2007 Notice to Bidders.[1] The transshipment alternative requirements were established by the City in its January 22, 2008 Notice to Bidders.[2]

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[1] City and County of Honolulu, Notice to Bidders, Project to Construct and Operate Alternative Energy Facility and/or H–POWER Facility. Competitive Sealed Proposals (CSP) NO. 037, January 16, 2007.

[2] City and County of Honolulu, Notice to Bidders, Shipping of City Provided MSW, Competitive Sealed Proposals (CSP No. 037). January 22, 2008.

9.2. O‘ahu Refuse Disposal

9.2.1. Introduction

Information is provided for the composition of refuse received at the City's H-POWER and WGSL facilities for general background information. Due to the preparation schedule for this EIS and the schedule for the City's Solid Waste Integrated Management Plan Update (SWIMP), data from the November 2007 draft update is provided.

9.2.2. Composition of Waste Stream

The composition of the disposed waste is based on hand-sorting randomly selected samples of the waste from garbage trucks. In 2006, the City studied the composition of the waste received at H-POWER, WGSL, and the Keehi Transfer Station. Sampling took place at H-POWER on September 18–21, 2006, WGSL on September 11–14, 2006, and at the Keehi Transfer Station on September 15–16, 2006.

Table 9-A, Aggregate Overall Waste Characterization Results - 2006, shows the composition of Oahu’s waste from H-POWER and the Waimanalo Gulch Sanitary Landfill combined.

Table 9-B, Waimanalo Gulch Landfill Waste Characterization Results - 2006, shows the composition of waste being disposed of at the WGSL. The majority of waste going into the landfill is from commercial and self-haul sources, rather than residential sources. 90 percent of the residential waste goes to H–POWER.

Table 9-A
Aggregate Overall Waste Characterization Results - 2006

Material	Mean	+/-	Mean (tons)	+/- (tons)
Total Paper	**30.2%**	**1.8%**	**284,082**	**17,040**
OCC (Recyclable)/Kraft	5.2%	1.1%	49,166	10,747
Newspaper	4.3%	1.1%	40,757	10,589
High-Grade Paper	2.6%	0.9%	24,420	7,993
Low-Grade Paper	5.1%	0.9%	48,151	8,012
Other Compostable Paper	11.7%	1.8%	110,142	16,582
Other Paper	1.2%	0.2%	11,446	1,896
Total Plastics	**12.1%**	**1.3%**	**113,821**	**11,808**
PET Bottles/Containers (Deposit)	0.3%	0.1%	2,843	578
PET Bottles/Containers (Non-Deposit)	0.3%	0.1%	2,449	646
HDPE Bottles/Containers	1.0%	0.3%	9,128	2,562
Other Bottles/Containers	1.1%	0.2%	10,142	1,818
Mixed Rigid Plastics	1.1%	0.4%	10,479	3,431
Plastic Film/Wrap	5.1%	0.7%	47,989	6,654
Polystyrene	0.8%	0.1%	7,056	1,371
Other Plastics	2.5%	0.4%	23,734	4,156
Total Metals	**4.8%**	**0.8%**	**45,448**	**7,151**
Aluminum Cans (Deposit)	0.3%	0.1%	2,626	632
Aluminum Cans (Non-Deposit)	0.3%	0.1%	2,630	1,351
Tin Cans	0.6%	0.2%	5,830	1,467
Other Ferrous	1.5%	0.4%	14,103	4,160
Other Non-Ferrous	0.4%	0.1%	4,148	1,020
Mixed Metals/Other Metals	1.7%	0.5%	16,111	4,660
Total Glass	**1.7%**	**0.4%**	**16,089**	**4,039**
HI5 Glass Bottles/Containers	0.4%	0.2%	4,158	1,589
Other Glass	1.3%	0.3%	11,930	3,102
Total Other Inorganics	**3.1%**	**1.2%**	**29,370**	**11,020**
Gypsum Board	0.3%	0.1%	2,760	1,280
Asphalt Roofing	0.5%	0.3%	4,261	2,609
Asphalt Paving	0.0%	0.0%	38	27
Concrete	0.3%	0.2%	3,078	1,535
Sand/Soil/Rock/Dirt	1.3%	0.8%	12,525	7,811
Ceramics	0.4%	0.2%	4,214	1,772
Miscellaneous Inorganics	0.3%	0.2%	2,496	1,445
Total Other Waste	**9.8%**	**1.6%**	**91,946**	**15,278**
Batteries	0.0%	0.0%	381	156
Furniture	3.4%	1.0%	31,555	9,795
Appliances	1.1%	0.7%	10,728	6,734
E-Waste	2.0%	0.7%	18,820	6,161
Auto Fluff*	3.2%	NA	30,462	NA
Total Green Waste	**8.7%**	**2.8%**	**82,041**	**26,182**
Total Wood	**4.5%**	**2.3%**	**42,273**	**21,884**
Untreated Wood	1.4%	0.5%	13,017	5,004
Treated Wood	2.1%	0.6%	19,428	5,371
Pallets	0.3%	0.1%	2,644	1,248
Stumps	0.8%	0.4%	7,185	3,473
Total Other Organics	**24.8%**	**2.1%**	**232,874**	**19,621**
Food	12.7%	1.9%	119,645	17,575
Textiles	3.1%	1.0%	28,726	9,136
Carpet	0.7%	0.3%	6,650	2,454
Tires	0.2%	0.1%	1,540	1,090
Miscellaneous Organics	3.7%	0.8%	34,569	7,578
Sludge	4.4%	NA	41,744	NA
Total HHW	**0.2%**	**0.1%**	**2,234**	**1,399**
Pesticides/Herbicides	0.0%	0.0%	0	0
Paints/Adhesives/Solvents	0.0%	0.0%	256	172
Household Cleaners	0.0%	0.0%	0	0
Automotive Products	0.2%	0.1%	1,711	1,221
Other HHW	0.0%	0.0%	277	147
TOTAL	**100.00%**		**940,187**	

* There was no auto fluff or sludge in the samples sorted for this study. As such, the standard deviation and the lower and upper bounds of the confidence interval are not applicable. The WGSL is known to accept auto fluff and sludge and therefore the average composition for these materials was obtained from sources outside the PWCG study.

Table 9-B
Waimanalo Gulch Landfill Waste Characterization Results - 2006

Material	Mean	+/-	Mean (tons)	+/- (tons)
Total Paper	**4.3%**	**1.6%**	**7,864**	**3,020**
OCC (Recyclable)/Kraft	1.6%	0.6%	2,993	1,110
Newspaper	0.3%	0.2%	504	307
High-Grade Paper	0.1%	0.1%	161	96
Low-Grade Paper	1.0%	0.5%	1,902	963
Other Compostable Paper	0.7%	0.4%	1,347	817
Other Paper	0.6%	0.3%	1,057	627
Total Plastics	**4.6%**	**1.7%**	**8,463**	**3,155**
PET Bottles/Containers (Deposit)	0.1%	0.1%	166	102
PET Bottles/Containers (Non-Deposit)	0.0%	0.0%	87	55
HDPE Bottles/Containers	0.2%	0.1%	426	248
Other Bottles/Containers	0.1%	0.0%	154	89
Mixed Rigid Plastics	1.5%	0.9%	2,811	1,664
Plastic Film/Wrap	0.7%	0.3%	1,195	632
Polystyrene	0.2%	0.1%	326	197
Other Plastics	1.8%	0.8%	3,298	1,468
Total Metals	**10.1%**	**2.8%**	**18,654**	**5,212**
Aluminum Cans (Deposit)	0.0%	0.0%	90	54
Aluminum Cans (Non-Deposit)	0.0%	0.0%	2	1
Tin Cans	0.1%	0.1%	152	96
Other Ferrous	4.6%	1.7%	8,377	3,099
Other Non-Ferrous	0.3%	0.2%	570	346
Mixed Metals/Other Metals	5.1%	2.0%	9,463	3,619
Total Glass	**0.5%**	**0.3%**	**950**	**547**
HI5 Glass Bottles/Containers	0.2%	0.1%	413	261
Other Glass	0.3%	0.2%	537	329
Total Other Inorganics	**4.9%**	**2.4%**	**8,957**	**4,452**
Gypsum Board	0.8%	0.5%	1,477	933
Asphalt Roofing	2.3%	1.4%	4,166	2,585
Asphalt Paving	0.0%	0.0%	0	0
Concrete	0.5%	0.3%	965	637
Sand/Soil/Rock/Dirt	0.0%	0.0%	0	0
Ceramics	1.2%	0.7%	2,209	1,363
Miscellaneous Inorganics	0.1%	0.1%	141	100
Total Other Waste	**33.9%**	**4.0%**	**62,267**	**7,436**
Batteries	0.0%	0.0%	62	39
Furniture	12.6%	4.4%	23,194	8,054
Appliances	1.0%	0.6%	1,832	1,164
E-Waste	4.0%	1.9%	7,393	3,582
Auto Fluff*	16.2%	NA	29,786	NA
Total Green Waste	**3.4%**	**1.5%**	**6,270**	**2,833**
Total Wood	**10.7%**	**3.3%**	**19,589**	**6,020**
Untreated Wood	2.2%	1.2%	4,053	2,148
Treated Wood	5.9%	2.1%	10,806	3,877
Pallets	0.8%	0.5%	1,381	867
Stumps	1.8%	1.2%	3,349	2,231
Total Other Organics	**27.6%**	**1.8%**	**50,788**	**3,243**
Food	1.1%	0.7%	2,075	1,206
Textiles	1.6%	0.8%	2,975	1,549
Carpet	1.6%	0.9%	2,908	1,618
Tires	0.0%	0.0%	33	23
Miscellaneous Organics	1.1%	0.6%	1,978	1,149
Sludge	22.2%	NA	40,818	NA
Total HHW	**0.0%**	**0.0%**	**64**	**44**
Pesticides/Herbicides	0.0%	0.0%	0	0
Paints/Adhesives/Solvents	0.0%	0.0%	0	0
Household Cleaners	0.0%	0.0%	0	0
Automotive Products	0.0%	0.0%	0	0
Other HHW	0.0%	0.0%	64	44
TOTAL	**100.00%**		**183,866**	

[*] There was no auto fluff or sludge in the samples sorted for this study. As such, standard deviation and the lower and upper bounds of the confidence interval are not applicable. The WGSL is known to accept auto fluff and sludge. The average composition for these materials was obtained from sources outside the PWCG study.

The results in **Table 9-B** are adjusted because the samples of waste for the waste characterization report were taken when H–POWER was in full operation and not diverting waste to the landfill. Waste from H–POWER is diverted to the landfill when H-POWER is unable to accept waste due to maintenance or capacity limitations. Because no waste was diverted, the composition at the landfill would have overstated the amount of some types of material. For example, if the landfill had 100 tons of material coming in and 50 tons were "X," the waste would be 50 percent "X". If an additional 30 tons of material were diverted from H–POWER, the total tonnage would have been 130 tons and "X" would have been 38 percent. The annual amount of waste received at the landfill was reduced by the amount of the material diverted from H–POWER so that the relative proportion of the remaining material was correct.

Table 9-C, H-POWER Waste Characterization Results - 2006, shows the composition of waste being disposed at H-POWER. Approximately half of the waste going into H–POWER is from residential sources and about half is commercial waste. The types and amounts of material shown reflect potential material for recycling programs.

~~9.2. No Action Alternative~~

9.3. No Action Alternative

This alternative involves taking no further action to extend the use of the site, or to select an alternative technology or new landfill site upon closure of the WGSL on or before November 1, 2009, in compliance with a State Special Use Permit amendment issued in March 2008.

The following would be expected as a result:

- There would be no landfill to accept the waste currently going to the Waimānalo Gulch Sanitary Landfill, leaving about 800 TPD of MSW requiring disposal.

Table 9-C
H-POWER Waste Characterization Results - 2006

Material	Mean	+/-	Mean (tons)	+/- (tons)
Total Paper	**36.7%**	**2.3%**	**277,570**	**17,082**
OCC (Recyclable)/Kraft	6.1%	1.4%	46,463	10,889
Newspaper	5.4%	1.4%	40,465	10,784
High-Grade Paper	3.2%	1.1%	24,390	8,143
Low-Grade Paper	6.1%	1.1%	46,462	8,103
Other Compostable Paper	14.5%	2.2%	109,368	16,874
Other Paper	1.4%	0.2%	10,423	1,821
Total Plastics	**14.0%**	**1.5%**	**150,749**	**11,585**
PET Bottles/Containers (Deposit)	0.4%	0.1%	2,689	579
PET Bottles/Containers (Non-Deposit)	0.3%	0.1%	2,373	655
HDPE Bottles/Containers	1.2%	0.3%	8,741	2,598
Other Bottles/Containers	1.3%	0.2%	10,039	1,851
Mixed Rigid Plastics	1.0%	0.4%	7,647	3,048
Plastic Film/Wrap	6.2%	0.9%	47,026	6,749
Polystyrene	0.9%	0.2%	6,760	1,382
Other Plastics	2.7%	0.5%	20,474	3,956
Total Metals	**3.5%**	**0.7%**	**26,517**	**4,936**
Aluminum Cans (Deposit)	0.3%	0.1%	2,548	642
Aluminum Cans (Non-Deposit)	0.3%	0.2%	2,642	1,377
Tin Cans	0.8%	0.2%	5,706	1,491
Other Ferrous	0.7%	0.4%	5,566	2,794
Other Non-Ferrous	0.5%	0.1%	3,585	977
Mixed Metals/Other Metals	0.9%	0.4%	6,470	2,948
Total Glass	**2.0%**	**0.5%**	**15,201**	**4,077**
HI5 Glass Bottles/Containers	0.5%	0.3%	3,756	1,597
Other Glass	1.5%	0.4%	11,445	3,142
Total Other Inorganics	**2.7%**	**1.4%**	**20,322**	**10,251**
Gypsum Board	0.2%	0.1%	1,256	884
Asphalt Roofing	0.0%	0.0%	0	0
Asphalt Paving	0.0%	0.0%	38	27
Concrete	0.3%	0.2%	2,103	1,420
Sand/Soil/Rock/Dirt	1.7%	1.1%	12,594	7,959
Ceramics	0.3%	0.2%	1,966	1,138
Miscellaneous Inorganics	0.3%	0.2%	2,365	1,469
Total Other Waste	**3.8%**	**1.8%**	**28,424**	**13,558**
Batteries	0.0%	0.0%	319	154
Furniture	1.0%	0.7%	7,879	5,568
Appliances	1.2%	0.9%	8,904	6,755
E-Waste	1.5%	0.7%	11,322	5,083
Auto Fluff	0.0%	0.0%	0	0
Total Green Waste	**10.1%**	**3.5%**	**76,048**	**26,516**
Total Wood	**3.0%**	**1.3%**	**22,363**	**9,557**
Untreated Wood	1.2%	0.6%	8,921	4,594
Treated Wood	1.1%	0.5%	8,423	3,749
Pallets	0.2%	0.1%	1,238	906
Stumps	0.5%	0.4%	3,781	2,693
Total Other Organics	**24.1%**	**2.6%**	**181,937**	**19,711**
Food	15.6%	2.4%	118,175	17,863
Textiles	3.4%	1.2%	25,825	9,172
Carpet	0.5%	0.2%	3,696	1,866
Tires	0.2%	1.0%	1,515	1,111
Miscellaneous Organics	4.3%	1.0%	32,726	7,630
Sludge	0.0%	0.0%	0	0
Total HHW	**0.3%**	**0.2%**	**2,190**	**1,425**
Pesticides/Herbicides	0.0%	0.0%	0	0
Paints/Adhesives/Solvents	0.0%	0.0%	257	176
Household Cleaners	0.0%	0.0%	0	0
Automotive Products	0.2%	0.2%	1,720	1,244
Other HHW	0.0%	0.0%	212	142
TOTAL	**100.00%**		**756,321**	

[*] There was no auto fluff or sludge in the samples sorted for this study. As such, standard deviation and the lower and upper bounds of the confidence interval are not applicable. The WGSL is known to accept auto fluff and sludge. The average composition for these materials was obtained from sources outside the PWCG study.

- Because the garbage could not be disposed, it could not be collected, requiring people to hold it at their homes and residences; resulting in health and safety problems.
- Ash disposal from H-POWER would cease as no other landfill on the Island of O‘ahu is permitted to accept this material.
- Eliminating ash disposal would stop the operation of H-POWER.
- Businesses would be closed to avoid health issues with improperly managed garbage.

Taken together, these actions would result in an unacceptable health, safety, and economic impact to all the communities of the island of O‘ahu.

~~9.3. Delayed Action Alternative~~
9.4. Delayed Action Alternative

The Delayed Action Alternative involves delaying further effort to extend the use of the WGSL; replace the use of the WGSL with an alternative technology based solution; or propose a new landfill site.

The Delayed Action and No Action Alternatives would have similar results. Given the complexity of the landfill permitting process in Hawai‘i and the limited time that is available, it is possible that delayed action would prevent the City from filing and processing ~~an amendment to the~~ a new State Special Use Permit (SUP) and/or a State Land Use District Boundary Amendment prior to ~~its~~ the current SUP's expiration on November 1, 2009, when the WGSL would be prohibited from accepting any further MSW. For this reason, the Delayed Action Alternative is not considered viable.

~~9.4. Transshipment of Waste Off-Island~~

~~9.4.1. Introduction~~

9.5. Transshipment of Waste Off-Island

9.5.1. Introduction

Waste transshipment involves the packaging of MSW for shipment to a disposal site located off-island.

On August 23, 2006, the U. S. Department of Agriculture (USDA) through its U. S. Animal and Plant Health Inspection Services (APHIS) announced its decision to allow the transshipment of MSW to the continental United States from Hawaii.[3] Transshipment will be allowed only under certain circumstances. Wastes by federal regulation that would be restricted from transshipment include hard-to-handle wastes, such as white goods, sewage sludge, auto fluff (auto upholstery & foam padding), and precluded waste including green and agricultural wastes (not more than three percent of the bale weight would be allowed). (PWCG, 2008).

Three transshipment firms have shown interest in shipping O‘ahu’s waste to the Roosevelt Landfill in Washington State. Two of the three have submitted initial proposals to the City to ship a portion of O‘ahu’s MSW to the mainland for disposal. Both proposals would shrink-wrap the waste prior to shipping. (PWCG, 2008).

On January 22, 2008 the City provided a notice to bidders that it would entertain proposals for transshipping waste to the mainland for disposal.

~~9.4.2. City & County of Honolulu Requirements for Transshipment of Waste~~

9.5.2. City & County of Honolulu Requirements for Transshipment of Waste

The City established the following requirements for the transshipment of MSW in its January 22, 2008 notice to bidders (PWCG, 2008):

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[3] Federal Register volume 71, number 163, published August 23, 2006.

- Permits, compliance letters, certifications, environmental assessments, and other documents, related to services needed to carry out the contract, must be current for the transshipment contractor.
- The proposed methods and measures to fulfill each requirement of the contract must be identified.
- A site plan displaying existing facilities, equipment, traffic conditions, and a description of operations must be provided.
- A back-up plan for equipment maintenance, failure, or other disruption, to minimize landfill disposal must be provided.
- A back-up plan for barge-loading obstruction or other disruptions of exporting operations to minimize landfill disposal must be provided.
- A copy of facility agreements between the bidder and facility, barging, or disposal operators must be provided if the bidder is not the director/operator of each.
- The bidder must provide a property easement for the placement of a City-owned scale, scale house, and associated equipment.

~~9.4.3. Transshipment Methodology~~
9.5.3. Transshipment Methodology

Two of the three interested transshipment firms have submitted applications to the State for modifications to the transfer stations they currently have permitted to handle MSW. Modifications include adding the equipment needed to transship MSW to the Roosevelt Landfill in Washington State or a landfill in Idaho. The transshipment vendors would shrink-wrap the waste to avoid shipment of pests and control nuisance impacts. The approach is described in the risk assessment prepared by APHIS for its regulatory action.[4] (PWCG, 2008).

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[4] *The Risk of Introduction of Pests to the Continental United States via Plastic-Baled Municipal Solid Waste from Hawaii,* United States Department of Agriculture, Animal and Plant Health Inspection Service, March 2006.

The process for handling the waste in Honolulu is specified in the final Compliance Agreement between the USDA and Hawaii Waste Systems, LLC (HWS). The procedures for handling the waste and transporting it to the landfill for disposal are detailed[5] as follows (PWCG, 2008):

> *"…Garbage and Regulated (domestic) Garbage collected by refuse trucks shall be delivered to the HWS facility at HWS Transfer Station …Trucks of agricultural waste shall not be accepted. Waste materials, containers, and bins associated with Foreign Garbage are strictly prohibited and shall not be accepted. The ground surface of the all areas for handling the Garbage and Regulated (domestic) Garbage should be level, solid, and impervious surface of asphalt or cement.*
>
> *The risk assessments for the movement of Garbage and Regulated (domestic) Garbage were conducted based on the specific details provided by HWS. These details included the exclusion of incinerator ash and the removal of all hazardous and liquid waste prior to baling. HWS will notify PPQ (USDA, APHIS local office) if the company plans change to include such materials so that the proper risk assessments can be conducted…*
>
> *The waste transfer station will receive only household and commercial waste acceptable for disposal at Roosevelt Regional Landfill. Collection trucks will deliver waste picked up from existing collection routes. After waste is tipped onto the tipping floor it will be inspected for unacceptable waste including yard waste, (other than incidental amounts not to exceed 3% of the total waste stream pursuant to 7 CFR Part 330), agricultural waste, industrial waste, infections waste, loads of predominantly of [C&D] waste and regulated hazardous waste. Any segregated unacceptable waste will be separated for further processing. Loads consisting predominately of [C&D] waste will be transferred to a C&D handling facility. Other waste will be drummed or otherwise contained and arrangements made for its proper transportation and disposal. Notwithstanding the foregoing, it is acknowledged and agreed that follow-up inspection of the route that was the source of the unacceptable waste will be conducted to try to locate the source and correct the waste handling process that allowed unacceptable waste to be collected.*

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[5] Final Compliance Agreement between Hawaiian Waste Systems, LLC, and the United States Department of Agriculture relating to the Regulated Article "Garbage and Regulated (domestic) Garbage from Honolulu, Hawaii." January 19, 2007. Pages 4-7.

Each load of waste received at the facility will be weighed and the date, time, company, driver name, truck number (i.e., company fleet number), weight (loaded), weight (empty), and origin of load, will be recorded. Records will be kept for a minimum of three years.

Step-by-step waste receiving and processing description is as follows:

- *Waste is delivered by collection truck to the HWS Transfer Station. The truck is weighed and then proceeds to the baling facility where it tips its waste onto the tipping floor. The collection truck is weighed again as it exits the site and continues on its collection routes. A weigh ticket is generated and kept on file.*
- *A loader operator inspects the waste and segregates any non-household or on-commercial waste. Household and commercial waste is pushed onto the in-feed conveyor by the loader. Segregated waste is set aside and handled separately as described previously.*
- *Garbage and Regulated (domestic) Garbage moves along the conveyor to the intake feed of the baler. The baler operator introduces waste into the baler where it is compressed using a compactor that produces bale densities of approximately 1000 kg per cubic meter for the most waste materials.*
- *The compacted bale moves from the baler via conveyor belt to the plastic wrapper. The plastic wrapper automatically wraps the bale with a minimum of 4 layers of pre-stretched, mastic-backed polyethylene plastic, of at least 16 micrometers thickness, and extrudes it onto a roller conveyor. The baler operator or loader operator will inspect each bale for integrity of the plastic wrap. Any bale with unsatisfactory wrapping will be re-sent through the wrapper.*
- *The wrapped bale moves down the roller conveyor and is removed by a loader with a special attachment that picks up the bale by squeezing it between two hydraulically operated smooth faced arms, or another piece of equipment designed to handle the bales without tearing or damaging them in any way. The smooth faced arms prevent damage to the plastic wrap.*
- *The loader moves the bale onto the bale storage area – which has a solid, impervious (concrete or asphalt) surface that is kept free of soil or other contaminants – or directly onto a flat bed truck, if one is available.*

- *Bales that are placed onto the bale storage area will be loaded onto flat bed trucks as they become available.*
- *Flat bed trucks will haul the bales to Barber's Point where they will be unloaded and stacked in the Staging Area. The same type of loader attachment (or equivalent equipment) will be used for unloading to prevent damage to the plastic wrap. The loader operator will inspect each bale of damage to the plastic wrap. If damage is found it will be returned to a wrapping area for rewrapping.*
- *Bales cannot be loaded onto the barge until they have been staged for at least five days. After five days, the bales are considered ready for transport and the area will be designated the Transport Area. HWS will maintain a clear separation between those bales ready for transport and those bales in the staging process.*
- *Bales at the Barbers Point Harbor facility will be stored until a barge is ready to be loaded. Barge loading will occur approximately monthly. When a barge is ready for loading, the bales in the Transport Area will be transferred onto the barge, again using squeeze-arm hydraulic equipment or other comparable, appropriate lifting equipment to prevent damage to the plastic wrap. The loading supervisor will inspect each bale once the bale is loaded onto the barge. Any damaged bale will be returned to the Transfer Station for rewrapping and restaging or be rewrapped and restaged on site at Barber's Point.*
- *When the barge is fully loaded it will proceed to its destination at the Roosevelt Regional Landfill in Washington State.*

  The compression settings on the baler shall be 1,000 kg per cubic meter or more. Records indicating the size and weigh to each bale shall be maintained.

Garbage and Regulated (domestic) Garbage which has fallen apart from an unwrapped compressed bale, or has been otherwise improperly compressed shall be set aside for a subsequent compression cycle.

The unwrapped, compressed bales shall be bound with plastic or metal clamps, netting, or strapping devices to retain its shape.

Compressed bales that do not hold together shall be rejected and set aside for a subsequent compression cycle. Records of re-compressed bales shall be maintained by HWS and available for monitoring by PPQ [local office of USDA, APHIS]…"

~~9.4.4. Other Jurisdictions Using Waste Transshipment~~

9.5.4. Other Jurisdictions Using Waste Transshipment

New Jersey and other areas of the U. S. use shrink-wrapping of MSW for shipment of waste to a disposal site. It has also been used in Europe for as long as 10 years. The Roosevelt Landfill in Washington receives MSW, not only from Washington State, but from Oregon, Canada, Idaho, and Alaska.[6] However, most of these operations do not use the shrink-wrap technology. (PWCG, 2008).

~~9.4.5. Physical, Regulatory, and Environmental Requirements~~

9.5.5. Physical, Regulatory, and Environmental Requirements

The requirements for the shipping of waste from Hawaii to the mainland U. S. are established in federal regulations[7] with approval of the specific requirements promulgated in the Federal Register[8]. Waste subject to transshipment would be considered "Regulated Garbage." Any waste commingled with regulated garbage would be considered Regulated Garbage and would have to be shrink-wrapped and handled according to federal requirements. The primary regulator of transshipment is the U.S. federal government through APHIS. (PWCG, 2008).

Compliance Agreement

All parties involved with transshipment must enter into a Compliance Agreement with the USDA before any waste can be transshipped. All parties must comply with conditions within the Compliance Agreement, as well as all provisions in 7 CFR 330.400–403 and 9CFR 94.5. (PWCG, 2008).

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[6] Washington State Department of Ecology, Solid Waste and Financial Assistance Program, “Solid Waste in Washington State Fifteenth Annual Status Report”, December 2006.

[7] 7CFR 330.400 and 9CFR 94.5.

[8] Federal Register volume 71, number 163, published August 23, 2006.

Transshipment Regulations

The requirements for shipping waste are in the Compliance Agreement and in other federal rules and regulations relating to transportation of materials by barge. (PWCG, 2008).

Receptacles

MSW transported from Hawaii to the mainland must be stored in specified receptacles. If the MSW is to be sent by watercraft, the receptacles must be contained within the guard rails of that watercraft. Receptacles must be tight, leak-proof, and covered while being transported.[7] Removal of receptacles must be under the direction and supervision of an inspector from APHIS and taken to an approved facility.

An approved facility is a facility certified by an appropriate government official as complying with environmental protection laws. The Administrator of APHIS must deem the equipment and procedures adequate to prevent the widespread contamination of plants and livestock.

The shrink-wrap technology used to contain the MSW before it is transshipped uses plastic film wrapping material that must be impermeable and made of low density polyethylene at least 16 micrometers in thickness. It is to be coated on one side with a non-hardening mastic/adhesive. Bales are mechanically wrapped to achieve airtight seals and kill the insects and pests entrained in the bale. In a 10-month study, DEKRA Umwelt, an international service provider, determined that the filmed bale environment is made up of 1 percent oxygen and more than 50 percent methane; that within 24 hours, any insects captured during baling of the MSW died from lack of oxygen. The film contracts once it is wound around the MSW. This ensures that during transshipment and disposal no materials or insects are leaked[9].

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[9] USDA, APHIS, March 2006.

Disposal

Disposal of MSW must take place at an approved facility. The Roosevelt Landfill has a permit issued pursuant to the federal Subtitle D regulations and would be considered an approved facility.

~~9.4.6. Potential Issues with Waste Transshipment~~

9.5.6. Potential Issues with Waste Transshipment

A shipping strike would create potential problems for Oʻahu in the transshipment of MSW to the mainland U. S. Assuming a transit time of 14 to 21 days, even short strike would threaten to cause the shipper to exceed the 75 day time limit from baling to disposal as required by the USDA. While the USDA Compliance Order requires the company to re-wrap the bales if they are held longer than 75 days doing so would be costly and, Oʻahu could be faced with the inability or significantly reduced ability to transship MSW during a shipping strike. This could potentially result in a health and safety issue, leaving Oʻahu with no place to dispose of its waste. (PWCG, 2008).

According to the DOT, there is existing congestion in the harbor that would need to be addressed.[10]

According to the Chief Executive Officer of HWS,[11] bales can be stacked two high. The space they have at the port facility will allow for storage of 30,000 tons of MSW. Assuming that the company handles 100,000 TPY, it is possible to store about two months of shrink-wrapped MSW (allowing for transit time to the mainland, processing at the mainland port, transport to the landfill, and disposal). The agreement for barge services allows management of the barge company, if required, to operate the equipment needed to transship the waste in the event of a strike due to the need to maintain public health and safety (PWCG, 2008). This assumes that the management will be sufficiently trained in the operation of the equipment, and that there will be enough management personnel available to maintain a reasonable level of operation.

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[10] EISPN Comment Letter from DOT, December 28, 2006.

[11] Meeting on December 14, 2006, Jim Hodge and Mark White held in Sacramento, California.

Green and agricultural wastes—as well as household hazardous wastes—are not permitted to be commingled with MSW and transshipped. Incidental amounts, less than three percent of the total amount of MSW shipped, however, are permitted (PWCG, 2008). Therefore, the MSW must first be sorted and the unpermitted waste separated from the MSW stream prior to shrink wrapping and shipment.

Transshipment of MSW makes the City &County of Honolulu dependent on external factors that could become beyond its ability to control. Transshipment would also result in the loss of high BTU value waste that would otherwise go to H–POWER. Transferring the disposal of a portion of the City's waste reduces the generating capacity of H-POWER, which currently provides power for approximately 45,000 homes.[12] To compensate for the loss of H-POWER supplied electricity, other methods of generating electricity would need to be found. The alternative is for the increased use of oil and/or coal to make up for the loss of generating capacity. (PWCG, 2008).

~~9.4.7. Impact on City Solid Waste Management System~~

9.5.7. Impact on City Solid Waste Management System

The environmental effects of transshipment through the HWS system are anticipated to include:

> Refuse transfer, baling, shrink-wrapping, and loading will be required at a permitted transfer station.
>
> The material will be contained within a system that has received approval from the federal government based on the system's ability to prevent the unexpected discharge of waste or plant pests to the environment.

The conclusion of how transshipment would affect the City's current system and financing of solid waste collection and disposal remains unclear at this time. If transshipment removes 100,000 tons per year (TPY), tip fees and revenues from

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[12] H-POWER. http://www.honoluluhpower.com, March 11, 2008.

electrical production and processing of MSW at H-POWER would be lost to the City. In as much as these revenues support the refuse collection system, the City would need to find other sources of funding to offset the losses.

H-POWER currently processes approximately 600,000 TPY of solid waste. With a reduction of 100,000 TPY of MSW to fuel the facility it would effectively operate at about half of its capacity, reducing the amount of energy and homes served by the facility. This loss would affect HECO because the utility would need to make up for the electrical energy with increased use of fossil based fuels (this assumes that there is excess generation capacity available from HECO).

~~9.4.8. Consistency with City & County of Honolulu Requirements~~
9.5.8. Consistency with City & County of Honolulu Requirements

The City & County of Honolulu guidelines regarding the transshipment of MSW off-island were established in its January 22, 2008 Notice to Bidders.

In addition, not all waste can be shipped off-island. Items such as flocked Christmas trees, sewage sludge, auto fluff, out of date medicines, and other hard-to-handle wastes cannot be shipped without special arrangements to dispose of these materials. The transshipment alternative only accepts materials from a specific waste stream and does not eliminate the need for a landfill.

~~9.4.9. Global Warming Considerations~~
9.5.9. Global Warming Considerations

PWCG performed an analysis to ascertain the potential generation of greenhouse gases (GHG) from transshipment compared to landfilling the same amount of waste in the WGSL, or burning it in H-POWER (see **Appendix K, Attachment C**). The purpose of the analysis was to evaluate the potential for broader cumulative effects to the environment given growing concern over global warming and climate change.
The assumptions and general conditions in the analysis included:

- The basis for the transshipment involved the transport of 100,000 TPY.
- The use of commonly accepted emission factors used to calculate the emissions.
- Where actual data was unavailable to define the logistical details of the transshipment process necessary to quantify emissions (e.g., physical considerations in port facilities, the time needed to move the wrapped waste onto and off the barge), a report prepared for the City to estimate the cost of transshipment was used as a resource.[13]
- Manufacturer's data was used to estimate electrical use by a baler and a shrink wrap machine as data was unavailable on the equipment that had been proposed for transshipment.
- Information on the fuel use on a tug boat and the time required for a load to be moved from O'ahu to the mainland was obtained from shipping industry contacts.[14]

The results of the comparison are summarized as follows:

Disposal Location	Emissions Million Tons CO_2 Equivalent
H-POWER	-28,711
WGSL	-3,686
Roosevelt Landfill	3,978

Note: The emissions at H-POWER and the WGSL are negative because GHG emissions resulting from the power they generate are more than offset by the reduction in emissions from burning coal or oil to produce the same amount of energy in other power plants on O'ahu.

The results indicate the lowest emissions of GHG would be from H-POWER, followed by WGSL, and the Roosevelt Landfill. It is expected that as with the Roosevelt Landfill, that transshipment to any landfill located on the mainland U. S., would result in similar

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[13] RW Beck, Draft Integrated Solid Waste Management Plan Update, November 2007. See Appendix C Trans-Shipment of Waste Analyses.

[14] PWCG-Personal communication with a representative of Young Brothers.

GHG levels based on the need to travel long distances across the Pacific Ocean and to the landfill site.

~~9.4.10. Conclusion Regarding Transshipment~~

9.5.10. Conclusion Regarding Transshipment

Waste transshipment is a potential alternative that can reduce the need for a municipal waste sanitary landfill for the disposal of MSW, but cannot completely replace it. Major issues involved with waste transshipment include:

- Green waste and other unacceptable wastes would be excluded from transshipment. These forms of waste would require disposal in an acceptable facility such as a municipal waste sanitary landfill.
- Waste transshipment would be vulnerable to the effects of a shipping strike. If the strike were lengthy and exceed the approximately 75 day limit to hold the shrink-wrapped bales, O‘ahu would have no location for the disposal of the bales and would need to seriously consider the use of the landfill[15].
- Costs associated with transshipment would be based on a negotiated tip fee, fuel, and labor costs that would not be in the control of the City & County of Honolulu.
- Tip fees and the generation of energy from H-POWER would be reduced by the amount of waste that is transshipped. The City would have to make up the shortfall in revenues and energy provided from H-POWER. HECO would also be affected since it would have to make up the shortfall in electrical generating capacity.
- Transshipment involves an increase in the generation of greenhouse gasses when compared to landfilling and the use of H-POWER, but does

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[15] The Courts could intervene in such a situation and order the parties involved to maintain the transshipment of waste based on public health and safety concerns.

have the potential to reduce the amount of capacity of the WGSL needed for landfilling.

- The loss of tip fees at WGSL would also contribute to a loss of revenue for the City and County, which is used to support the collection programs. Revenue from other sources would be needed to support the City's programs.

~~9.5. Alternative Technologies to Refuse Disposal~~

~~9.5.1. Introduction~~

9.6. Alternative Technologies to Refuse Disposal

9.6.1. Introduction

This section discusses the alternative technology approaches that may be able to reduce the demand for landfilling. There are currently no alternatives that have been proven to completely eliminate the need for a landfill. Alternative technologies reduce the demand for a landfill, but some residue will need to be disposed of in a landfill. (PWCG, 2008).

The evaluation of a combination of smaller alternative technologies was considered but not included in this EIS because the situation is similar to the evaluation of multiple smaller landfill sites with less capacity. This same issue was discussed by the 2002 Mayor's Advisory Committee on Landfill Site Selection. The Committee questioned whether the impacts of the landfill would be lessened if several smaller landfills were located around the island instead of at one location at Waimanalo Gulch. It was noted:

> "The Committee decided to limit its consideration to sites that had more than 10 years of capacity based on: the assumption that demand projections from the City remain unchanged; the City's experience with the length of time needed to implement new and feasible waste reduction technologies; and the cost and time required to identify and permit a new landfill site." (See Appendix K, Section 3.4).

The lead time and resources necessary to evaluate a combination of smaller scale technologies would be substantial and include:

- Detailed evaluation of the feasibility and cost of the technology or technologies using a different set of qualifying criteria than currently considered by the City, in that because a combination of technologies would have to be capable of processing the volume of waste accepted at the WGSL, several smaller facilities employing the same or different technologies would be used. This evaluation would need to include the detailed implementation plan identifying the planned construction scheduling and capital costs associated with the technology used.

- Several potential alternative sites would need to be identified, evaluated with the public and governmental agencies concerning environmental and land use effects, selected, and purchased. The number of alternative sites and magnitude of the public and governmental agency coordination needed would be a function of the number of technologies selected. Mitigative measures to address potential environmental effects associated with each technology would need to be developed.

- An estimate of the time needed for environmental and land use permitting would also need to be factored in to the project schedule.

In addition, for each alternative technology selected: (1) any waste by-products generated as a result of the technology process or processes used, would need to be at a scale that would not require landfilling; (2) would be required to have a market for the product resulting from the technology; and (3) be a feasible, proven, and reliable technology, used in a municipality similar in requirement to the City & County of Honolulu.

The City has the fiduciary and management responsibility to select only technologies that are proven to work on MSW with costs similar to the public cost of disposal and operations at WGSL. Factors that are not in favor of the evaluation of several smaller alternative technology facilities are:

- The expected lengthy period commitment of resources needed to research and develop a comprehensive package of small alternative technology facilities. This is reasonably expected to last more than a year and could take several years. The exhaustive process to select the technology for the third boiler at H–POWER took approximately a year to complete and was for a technology already proven in the City & County of Honolulu. The evaluation of one or more newer technologies could reasonably be expected to last much longer.

- The use of several smaller facilities is not efficient and cost effective. This is because the economies of scale normally present in an appropriately sized facility is not necessarily present at a smaller scale. This would lower the efficiency of waste disposal, potentially requiring in total size a greater combined number of facilities than would be provided by a single, appropriately sized facility.

Thus, the evaluation of a combination of alternatives is not considered feasible and would have significantly extended the time required beyond the November 1, 2009 SUP deadline to allow for the same or similar disposal capacity as available at the WGSL.

Factors important to ~~this~~ the analysis conducted by PWCG include:

> The City encourages alternatives to waste disposal that includes H–POWER. This facility converts about 40 percent of the MSW produced on Oʻahu into electricity. By-products are ash, residue, and unprocessible materials that require landfilling.

The City also contracts with a private vendor to operate a sludge pelletizing facility at the Sand Island Waste Water Treatment Plant. The facility converts sewage sludge previously disposed of at the WGSL into a fertilizer product. At the current time, the fertilizer product is not being marketed.

Both facilities share several characteristics:

- All were operated for many years using waste material similar to that produced on O‘ahu.
- The risk of operational problems was minimized because of the history of operations and the availability of firms to design, build, and operate the plants that have long term demonstrated operating results.
- The environmental impacts of the technologies were well understood and all had long histories of operating in compliance with regulations.
- The total cost of the technology was well understood.
- H-POWER has resulted in the significant reduction of the volume of material disposed of in the landfill.
- The City has continued its search for additional alternatives. Other areas of the U. S. and other countries are evaluating landfill alternatives and have observed some progress. Some of the results of those evaluations are used in this analysis to identify the advantages and disadvantages of the alternatives and compare them to the City’s criteria, also listed in this section.

The alternatives fall into several categories:

- Thermal processes which use heat to reduce the waste to other reusable products or a fuel. Pyrolysis and hydrolysis are examples of thermal processes.
- Non-thermal processes that produce a material, such as compost, that is sold.
- Enhanced recycling.
- Expansion of H-POWER.

Each of these alternatives has potential for reducing the amount of waste disposed of at the WGSL. However, each process produces a residue that, at this time, can only be landfilled for disposal.

~~9.5.2. City & County Requirements for Alternative Technologies~~
9.6.2. City & County Requirements for Alternative Technologies

The consideration of alternative technologies has been ongoing by ENV for many years. Those efforts have included implementing new recycling programs, bans on disposing certain recyclable materials in the landfill, and issuance of an RFP for Alternative Technologies or the addition of another boiler at H–POWER. It has since selected the addition of a third boiler at H-POWER to increase diversion of waste from the landfill.

The City identified the following six minimum requirements[16] for the use of alternative technologies (PWCG, 2008):

- *There exists at least one (1) operational facility processing municipal solid waste that over the past two (2) years has been operating at a rate of at least five hundred (500) TPD.*
- *Such facility has been operated successfully for the past two (2) years and has been fully operational eighty five percent (85%) of this time while meeting all performance and environmental compliance requirements.*
- *The facility without major modification or equipment changes, other than for the acceptable application of good engineering practice for scale up or scale down, would substantially represent the system proposed for Honolulu.*
- *The product produced at the facility has for the past two (2) years been marketed and resulted in the beneficial reuse of energy. The Offeror shall provide descriptions and documentation of the beneficial reuse.*

  For an Offeror to be able to claim an ability to contract for electric power to a utility, the Offeror must demonstrate that it has power purchase contracts on going and that the utility or energy customer, to which the power is to be sold,

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[16] City and County of Honolulu, Notice to Bidders, Project to Construct and Operate Alternative Energy Facility and/or H–POWER Facility. Competitive Sealed Proposals (CSP) NO. 037, January 16, 2007.

provides evidence in writing that it shall enter into a power purchase contract based on its understanding of the proposed facility's ability to produce such power.

- *The proposed Facility shall be commercially available such that: (1) The design is proven and the proposed facility is not the first of its kind; (2) The equipment proposed has operated successfully at least eighty-five percent (85%) of rated capacity while at the same time operating for at least eighty-five percent (85%) of the time during the past twenty-four (24) month period; (3) The equipment is regarded as being reliable and not subject to excessive maintenance, operational problems, or requires major re-designs; (4) The facility has processed a minimum of five hundred (500) TPD of municipal solid waste while operating in accordance with all environmental permits.*
- *Certification that the ash slag and residue by products from the proposed facility have met all environmental requirements for either marketing or landfill disposal including passage of the [Toxicity Characteristic Leaching Procedure (TCLP)] test and classification as non-hazardous materials, or, if deemed hazardous certification from the final disposal site that materials have been properly disposed of and how it would be disposed of for this project.*

In its RFP, the City encouraged both thermal and non-thermal technologies. With thermal technologies the by-product is steam or electricity which can be sold. The by-products of non-thermal technologies are materials that require development of a market (i.e., building material, or compost). Technologies that produce a product that must be sold into a market (other than an energy market) will be more difficult in Honolulu. For example, a market does not currently exist for an alternative technology that produces an MSW compost product. The reason is that the market for MSW compost is restricted on the mainland and has faced controversy in Honolulu.[17] The proponent of a technology that produces a solid MSW fuel would need to find a fuel user and there are only two solid fuel users, H-POWER and the AES coal fired power plant. The current H-POWER facility is operating at capacity. To handle an MSW fuel at AES would probably require a revision to its operating facility and the acquisition of new

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[17] Leone, Diana. *Waianae Compost Plan Hits Turbulence*. Star-Bulletin. August 17, 2006.

permits, a lengthy and expensive process, provided AES wished to pursue it. (PWCG, 2008).

~~9.5.3. Non Thermal Technologies~~

9.6.3. Non Thermal Technologies

Non-thermal or non-combustion technologies are those that do not require or produce large quantities of heat. Non-thermal technologies evaluated for the PWCG analysis are digestion and hydrolysis.

~~9.5.3.1. Anaerobic Digestion~~

9.6.3.1. Anaerobic Digestion

Anaerobic digestion is the decomposition of MSW without the introduction of oxygen. End by-products tend to be liquid, gas, and solid materials. The organic fractions of MSW are converted into single-celled proteins, which can be used for compost and fertilizers. Due to the length of time required for anaerobic digestion, greater land area is required to process the MSW. Examples of anaerobic technologies include: ArrowBio; Orgaworld; and Organic Waste Systems' DRANCO Dry Anaerobic Digestion. (PWCG, 2008).

This section provides information obtained for the ArrowBio process. ArrowBio has an operating 200 TPD plant using naturally occurring microbes to break down the organic faction of MSW. Other anaerobic methods will have different approaches and equipment, but produce similar products. (PWCG, 2008).

Currently, Orgaworld has two operating facilities, each with a capacity of 96 TPD, while Organic Waste Systems' facilities process up to 137 TPD. Both are significantly less than the City's minimum requirements and the Orgaworld and Organic Waste Systems are not discussed further. (PWCG, 2008).

Methodology

This process uses a separation-dissolving tank to separate organic and inorganic materials based on buoyancy. Heavier inorganic materials, such as metal and glass, sink to the bottom of the tank and are taken for further separation and then are recycled or disposed. Plastics, which remain floating, are separated pneumatically, while the remaining organic fraction is shredded and more water is introduced to further the biodegrading process. The remaining organic material is treated in acetongenic and methanogenic reactors producing fertilizer and biogas. The biogas, made up of approximately 75 percent methane, can be sold as clean, green energy for use in transportation and power facilities, or used internally to power the facility. The technology vendor is responsible for the disposal of these residues. (PWCG, 2008).

A demonstration facility, located in Hadera, Israel, processed more than 30 TPD of MSW and operated from 1996 to 1999. The facility was designed to process 11 TPD of MSW. One full scale ArrowBio facility located at the Hiriya transfer station in Tel Aviv, Israel has been in operation since 2002. The facility processes approximately 210 TPD of MSW and generates biogas sufficient to produce three MW.[18] (PWCG, 2008).

Use by Other Jurisdictions

The only ArrowBio facility currently in operation is at the Hiriya transfer station in Tel Aviv, Israel. ArrowBio technology may soon be added as part of Australia's Macarthur Resource Recovery Park, a proposed integrated waste facility on the current Jacks Gully landfill site.[19] (PWCG, 2008).

Physical, Regulatory, and Environmental Requirements

The ArrowBio facility at the Hiriya transfer station in Israel has one 200 TPD module and requires approximately two acres of land, with an additional one-half to one acre for long-term storage of materials. If it were sized up to meet the 500 TPD requirement of

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[18] Arrow Ecology www.arrowecology.com, March 11, 2008.

[19] Marshall, A.T. and Morris, J.M., "A Watery Solution," Chartered Institute of Waste Management Journal, August 2006.

the City & County of Honolulu, an estimated six acres of land would be needed. (PWCG, 2008).

This facility would require 0.05 MW of electricity per ton of MSW processed, which could be met with the generation of biogas. Water consumption data is not readily available; however, ArrowBio claims the consumption is low due to moisture in the MSW. Additional water is required for the separation/dissolving tank. (PWCG, 2008).

ArrowBio claims no negative environmental impacts. There is no significant odor potential as the MSW is immediately placed into the separation-dissolving tank. The treatment takes place in enclosed tanks, also reducing potential odors. Water used throughout the process is reused in the separation-dissolving tank, which results in low water consumption. A small amount of wastewater is generated from the process, but is expected to be suitable for release into the sanitary sewer system. (PWCG, 2008).

The company provided no information regarding economic benefits associated with the technology.[20]

Potential Issues

Potential issues with anaerobic digestion include (PWCG, 2008):

- There may be size-up issues unless units of the same size as the existing facility are used.
- A market will need to be developed for the MSW compost which may be difficult. MSW compost is not currently marketed on O‘ahu so it may be challenging and time consuming to develop the market.
- A market will be needed for biogas or it will need to be used to generate electricity and sold to HECO.

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[20] *Evaluation of New and Emerging Solid Waste Management Technologies,* New York City Economic Development Corporation and New York City Department of Sanitation, September 16, 2004.

Consistency with City & County of Honolulu Requirements

The anaerobic digestion facilities do not meet the City's requirements (PWCG, 2008):

- The existing facilities either process less than the City's minimum waste stream (the existing ArrowBio facility 210 TPD of MSW, 300 TPD less than what the City requires) or they process source-separated organics. ArrowBio could use multiple units to meet the City requirement.
- The facility design for the ArrowBio is the first fullsize facility.
- There is no proven market for the MSW compost product.

~~9.5.3.2. Aerobic Digestion~~

9.6.3.2. Aerobic Digestion

Aerobic digestion is the decomposition of MSW with the introduction of air. Vendor examples of aerobic digestion include Mining Organics, Real Earth Technologies, and the Herhof Environmental MBT Process. Due to the lack of readily available information on Mining Organics and Real Earth Technologies, a generic explanation of the Herhof Environmental MBT Process is provided. Different vendors use different approaches and equipment, but produce similar products. (PWCG, 2008).

Methodology

The aerobic digestion process can be either wet or dry. Dry aerobic digestion is similar to in-vessel aerobic composting (New York City Economic Development Corporation and New York City Department of Sanitation, 2004). Inorganic materials, such as glass, metals, and plastics are removed from the MSW prior to recycling. The remaining material is shredded, mixed, and put into a vessel with a controlled amount of air and heat. Liquid is removed thereby reducing the volume. The mixture is aerated, mixed, and depending on the reactor used, heated.[21] (PWCG, 2008).

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[21] Kumar, Surendra, Shashi and Salman Zafar. "Composting Technology." *MSW Management, The Journal for Municipal Solid Waste Professionals*. May/June 2006.

Wet aerobic digestion removes inorganic materials, such as glass, metals, and plastics, and pulps the organic materials from the MSW. The slurry is then mixed, aerated, and heated. Heating dries some of the organic material, reducing the total volume. Microbes are then introduced, which reduce the slurry to solid and liquid soil amendments for use in fertilizers (New York City Economic Development Corporation and New York City Department of Sanitation, 2004). The technology vendor is responsible for the marketing these materials. (PWCG, 2008).

Use by Other Jurisdictions

Composting of kitchen, food, and green waste scraps is well established in Europe. Germany has more than 500 biochemical treatment facilities processing more than eight million TPY of food and green wastes; the majority are aerobic compost facilities. However, these facilities are not processing MSW.[22] Vancouver, Canada has a 30 TPD demonstration plant by Herhof in operation processing separated food and other organic wastes (New York City Economic Development Corporation and New York City Department of Sanitation, 2004). There are currently seven commercial MSW Herhof plants in operation in Germany, Belgium, and Italy, with one proposed for the United Kingdom that will use the solid fuel produced by the MBT Process in a combustion plant. (PWCG, 2008).

Physical, Regulatory, and Environmental Requirements

These requirements are unknown as there are currently no aerobic facilities that meet the requirements of the City & County of Honolulu. (PWCG, 2008).

Potential Issues

The process results in compost that would have to be sold and no markets have been demonstrated in Honolulu. Even with a solid fuel by-product, Honolulu does not have an existing, market for the fuel. (PWCG, 2008).

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[22] Oaktech Environmental, http://www.oaktech-environmental.com/, March 11, 2008.

The process requires source-separated organics; it does not process mixed MSW. (PWCG, 2008).

Consistency with City & County of Honolulu Requirements
None of the Herhof Environmental plants currently in operation process more than 500 TPD of MSW. However, Herhof Environmental states their MBT Process is capable of processing up approximately 1,095 TPD.[23]

~~9.5.3.3. Hydrolysis~~

9.6.3.3. Hydrolysis

Hydrolysis is a chemical reaction in which water and another substance react, forming two or more new substances. With the hydrolysis of MSW, the reaction is between water and the cellulose fraction of the waste to produce sugars. To obtain the cellulose fraction of the MSW, glass, metals, and other inorganic materials must first be removed. (PWCG, 2008).

Several types of hydrolysis technologies exist. The description by Arkenol Fuels is provided as an example for discussion. Another technology is the Masada Oxynol process. (PWCG, 2008).

Methodology
Arkenol Fuel technology, also named Concentrated Acid Hydrolysis, uses the source-separated fraction of MSW. The process first sorts out recyclable materials. The remaining material is ground for further processing. Sulfuric acid decrystallizes the material and breaks the organic fraction into its component sugars (cellulose and hemicellulose). The material is then hydrolyzed; the chemical bonds are broken, producing hexose and pentose sugars required for commercial fermentation. Insoluble materials are filtered for processing for other uses. The entire process runs on biomass, including agricultural residues, crops grown specifically for use as biomass, paper,

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[23] http:// www.herhof.com/en/, March 11, 2008.

wood, and green waste (New York City Economic Development Corporation and New York City Department of Sanitation, 2004).

The pilot facility for Arkenol Fuels is in Orange, California, and processed one TPD of MSW. This facility operated for five years beginning in 1992.[24] (PWCG, 2008).

The only commercialized Arkenol Fuel facility is in Izumi, Japan. It has been in operation since 2002, using waste wood chips as feedstock.[25] (PWCG, 2008).

Use by Other Jurisdictions

There are no hydrolysis facilities currently in operation that process MSW as feedstock and none of the size that the City & County of Honolulu requires.[26] (PWCG, 2008).

Physical, Regulatory, and Environmental Requirements

A Masada Oxynol facility that could process about 600 TPD is expected to require 10-acres. The environmental impacts include emissions from the process, waste water discharges, and other impacts. The facility will need to satisfy the State’s regulatory and environmental process for MSW processing plants. (PWCG, 2008).

Potential Issues

The use of MSW as feedstock has not successfully been demonstrated except at a pilot facility scale, although Masada Oxynol proposes development of a commercial facility (New York City Economic Development Corporation and New York City Department of Sanitation, 2004).

A market for the ethanol produced is expected to exist in the City & County of Honolulu, but has not been proven. According to Arnold Klann, President, and Chief Executive Officer for Arkenol, Inc., an uncertain market for ethanol is believed to be one of the reasons an Arkenol Fuel project failed (CIWMB, 2006).

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[24] Arkenol Fuels, http://www.arkenol.com/, March 11, 2008.

[25] California Integrated Waste Management Board, Session Summary: Emerging Technology Forum, Brief summary of presentations by Rick Diederich prepared by CIWMB staff, April 17–18, 2006.

[26] Interstate Waste Technologies, http://www.iwtonline.com/, March 11, 2008.

Consistency with City & County of Honolulu Requirements
Hydrolysis is inconsistent with the City's requirements because there has not yet been a successful facility at the size required capable of operating on MSW. (PWCG, 2008).

~~9.5.4. Thermal Technologies~~

9.6.4. Thermal Technologies

Thermal or combustion technologies produce a significant amount of heat. During the processes, both organic and non-organic materials are combusted while the non-combustible materials can be recycled either before or after combustion. Common thermal technologies are gasification, plasma arc, pyrolysis, and incineration. Examples of thermal technologies include (PWCG, 2008):

- Covanta Energy - the City's H-POWER facility (described in this section as a proven technology currently in use by the City)
- Rigel Resource Recovery - Westinghouse Plasma Gasification
- Dynecology - Gasification with Briquetting of Refuse Derived Fuel (RFD)/Coal/Sewage Sludge
- Ebara Corporation - Fluidized Bed Gasification with Ash Vitrification
- GEM America - GEM Thermal Cracking Technology (Gasification)
- Global Energy Solutions - Thermal Converter Technology (Gasification and Vitrification)
- Interstate Waste Technologies - Thermoselect Gasification
- Pan American Resources - Destructive Distillation Lantz Converter
- Pratt Industries/VISY Paper (RDF)
- Comprehensive Resources, Recovery, & Reuse, Inc. (RDF)
- Takuma Mass Burn Renaissance System
- Resource Recycling, L.L.C. (Mass Burn)

~~9.5.4.1. Plasma Arc~~
9.6.4.1. Plasma Arc

This technology uses large carbon rods in a sealed vessel to generate a high temperature arc that converts the materials in the vessel into plasma (ionized air). Heat generated by the arc melts the inorganic fractions into a glass and vaporizes the organic fractions, which become a synthetic fuel gas. The waste glass can be disposed of in a landfill or may be used for beneficial purposes such as for replacement of imported sand for sand blasting. The synthetic gas is cleaned and burned to produce power. (PWCG, 2008).

There are several vendors of plasma systems, including Westinghouse and other project developers. A four TPD plasma system once operated near the H–POWER plant to process medical waste. (PWCG, 2008).

The City Council Public Works and Economic Development Committee heard from some plasma system representatives during its review of potential landfill sites.[27] The representatives that addressed the Committee were identified in the report as (PWCG, 2008):

> "…. the following companies with the plasma gasification technology have made presentations or submitted materials to the Committee on Public Works and Economic Development ..:
> (1) JDI/Geoplasma, LLC;
> (2) Environmental Solutions Corporation representing the Solena Group;
> (3) EnviroDyne;
> (4) Startech Environmental Corporation;
> (5) Scientific Utilization, Inc./Waste To Energy; and

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[27] November 16, 2004 memorandum from Councilmember Rod Tam to Concerned Citizens of Oahu transmitting the report titled "Committee on Public Works and Economic Development's Summary Report on its Landfill Site Selection Process."

(6) Phoenix Consulting Group International, LLC, for Biomass Conversion Technology, LLC".

Methodology

Plasma arc technology gasifies MSW with high pressure air and an electric arc that produces very high temperatures (up to 8,000 degrees Fahrenheit). These temperatures virtually vaporize the waste into its elemental components creating syngas, which can be used to generate electricity. (PWCG, 2008).

Use by Other Jurisdictions

There are two operating plasma arc facilities that process MSW. The longest running, that is not a demonstration plant, is the Eco Valley Utashinai facility located in Utashinai, Japan. The facility processed more than 270 TPD of MSW and 130 TPD of automobile shredder residue and generates approximately 4,700 KWh of salable energy in fiscal year 2005.[28] (PWCG, 2008).

The City of St. Lucie, Florida has begun negotiations for a plasma arc facility. The Georgia-based company, Geoplasma, has agreed to build and operate the facility and claims the facility will process 2,000 TPD of MSW and 1,000 TPD of MSW mined from a landfill while producing 120 MW of electricity.[29] (PWCG, 2008).

Geoplasma has agreed to build and operate the facility, estimating that within the next 15 to 18 years the facility will have disposed of all the current waste in the landfill. Ron Roberts, the Assistant Solid Waste Director in St. Lucie, estimates the plant will be finished within 25 to 30 months.[30] (PWCG, 2008).

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[28] Shigehiro, Michiaki, General Manager of Eco Valley Utashinai.

[29] Sladky, Lynne. "Florida county plans to vaporize landfill trash." USA Today. September 9, 2006 and Margasak, Gabriel. "Trash zapper in St. Lucie County gets shot in arm from Crist", TCPalm, November 10, 2007.

[30] Miller, Dan. "State-of-the-art plant makes trash vanish into thin air." County News Online. National Association of Counties, Washington, D.C., October 2, 2006.

A second plasma plant operating on MSW started operation in late January 2008 in Ottawa, Canada. It is a demonstration project. The information about the plant was obtained from news sources.[31] which stated (PWCG, 2008):

> "A demonstration waste-to-energy plant in Ottawa has finally turned its first load of trash into power…"
>
> "…the $27 million plant uses a process called plasma gasification to decompose waste under high heat and low oxygen into a gas mixture called syngas, and a glass-like material that can be turned into asphalt or concrete…"
>
> "Once the plant is running at full capacity, it is to divert 85 tonnes of waste a day from the city's landfills while generating enough electricity to run the facility and power 3,600 homes..."
> "Plasco hopes its demonstration plant in Ottawa will persuade other cities to buy the technology…"
>
> "Construction of the plant started in September 2006. It was to run as a two-year pilot project…"

The PLASCO plant was partially funded by the Canadian government (PWCG, 2008):

> "This brings to over C$90 million the equity invested in PlascoEnergy since August 2005. The Company had nominal debt and a modest cash position prior to this issue, and is well funded for development of commercial facilities next year," said Rod Bryden, PlascoEnergy President and CEO.
>
> "Commitment of funding from Sustainable Development Technology Canada ("SDTC") to the Ottawa demonstration project was a key factor in bringing the PlascoEnergy technology to reality and to attracting private

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[31] Information from http://www.cbc.ca/technology/story/2008/02/07/ot-plasco-080207.html, March 12, 2008

> capital that will fund its future commercial use around the world. SDTC has committed a non-repayable contribution of C$9.5 million," he said.[32]

Physical, Regulatory, and Environmental Requirements

The Eco-Valley Utashinai facility is the only plasma arc facility of its kind that has been operating. If a similar facility were built on Oʻahu, it would have to meet the same requirements of both State and Federal regulations as any new alternative technology (PWCG, 2008).

The actual treatment record of the Utashinai plant in FY 2005 is provided in **Table 9-1, Actual Treatment Record, Utashinai, Japan**, as follows[33]:

Table 9-1, Actual Treatment Record, Utashinai, Japan

Month	Receipt of Waste (Tons)		Treatment of Waste (Tons)		Slag (Tons)	Electric Power (MWh)			Operating (day)
	MSW	SR,ASR	MSW	SR,ASR		Generation	Consumption	Sold	Line1+Line2
Apr	2,118	850	1,447	238	314	305	1,659	0	25+10
May	2,288	665	2,406	443	372	1,172	2,098	25	25+27
June	2,317	561	2,063	913	651	1,063	2,059	19	22+30
July	2,186	1,083	2,625	743	450	1,053	2,317	0	31+31
Aug	2,391	939	1,527	881	443	637	1,862	0	21+21
Sept	2,169	93	2,302	895	469	840	2,202	0	30+24
Oct	2,206	449	1,773	671	453	548	1,963	0	22+19
Nov	2,067	619	3,364	896	676	1,360	2,397	0	30+30
Dec	1,965	718	1,164	387	308	297	1,388	0	20+1
Jan	1,722	519	2,207	737	451	613	1,881	0	14+22
Feb	1,398	702	1,612	788	345	356	1,510	0	0+28
Mar	1,877	1,353	1,247	741	278	341	1,522	0	0+19
Total	24,704	8,551	23,737	8,333	5,210	8,585	22,858	44	240+262

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[32] Information from PLASCO new release dated December 12, 2007, http://www.plascoenergygroup.com/?News/23/2007-12-03:First_Reserve_leads_PlascoEnergy_equity_funding, March 12, 2008.

[33] Nomura, Akira. Hitachi Metals. Actual Treatment Record for Utashinai Eco Valley. 2005. Correspondence to Wilma Namumnart, Department of Environmental Services, August 10, 2006.

Potential Issues

The experience with plasma operating on MSW has been limited to one full-scale plant. The cost of the facility is believed to be $425,000,000.[34] The actual cost of operations is not known. (PWCG, 2008).

Consistency with City & County of Honolulu Requirements

Plasma arc technology does not currently meet City & County of Honolulu requirements (PWCG, 2008):

- One of the two operating facilities has required maintenance for the furnace reflectors and the other started operations this year.[30]
- The Eco Valley Utashinai facility processes 270 TPD of MSW, 230 TPD short of the City's requirements. The Ottawa facility at 85 metric TPD is also short of the requirements.
- The facilities are the only ones operating on MSW.

~~9.5.4.2. Gasification/Pyrolysis~~
9.6.4.2. Gasification/Pyrolysis

Gasification is the process of reducing MSW to a synthesis gas. Pyrolysis is similar to gasification and often considered a type of gasification technology. The by-products of gasification are syngas and vitrified material (slag), and pyrolysis by-products are solid carbon and liquid fuel. Pyrolysis generally takes place during the first steps of gasification. Examples of gasification technologies are (PWCG, 2008):

- Dynecology - Gasification with Briquetting of Refuse Derived Fuel (RDF)/Coal/Sewage Sludge.
- Ebara Corporation - Fluidized Bed Gasification with Ash Vitrification.
- GEM America - GEM Thermal Cracking Technology (Gasification).

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[34] Waste Age Magazine, September 13, 2006. “Florida county to generate energy by vaporizing solid waste”. Also their web page at http://wasteage.com/news/Geoplasma/?cid=most-popular, March 11, 2008.

- Global Energy Solutions - Thermal Converter Technology (Gasification and Vitrification).
- Interstate Waste Technologies - Thermoselect Gasification.
- Pan American Resources - Destructive Distillation Lantz Converter.

Methodology

Dynecology's Gasification with Briquetting of RDF/Coal/Sewage Sludge technology processes MSW into RDF and then blends RDF and dewatered sewage sludge together with coal making briquettes. The briquettes are then introduced to the gasifier, or high-pressure, fixed-bed reactor. The inorganic fraction melts and is removed from the bottom of the chamber as slag and the synthesis gas is removed from the top. Dynecology has no facilities currently operating on MSW. (PWCG, 2008).

GEM America's GEM Thermal Cracking technology processes unsorted MSW. Recyclable materials, such as metals, glass, and cardboard are separated and the remaining materials are shredded, dried, and granulated. The MSW is then gasified and converted into synthesis gas. The synthesis gas can be used to generate electricity. GEM America has no commercial facilities currently in operation, but has two demonstration plants processing 73 TPD that have been in operation since 2000. (PWCG, 2008).

Ebara Corporation's Fluidized Bed Gasification with Ash Vitrification technology introduces shredded MSW into a fluidized bed reactor vessel. Gasification takes place in the reactor at atmospheric pressure. The ash and synthesis gas enter into a second chamber where the materials are heated again at higher temperatures. Fine particles are collected on the walls and become molten slag collected at the bottom of the chamber and cooled to form a vitrified granulate. The synthesis gas is used to produce energy. The largest Ebara plant is the Kawaguchi City reference plant which processes 462 TPD of MSW. (PWCG, 2008).

With Global Energy Solutions' Thermal Converter technology (Gasification and Vitrification), unsorted MSW is introduced into the gasification reactor. Preheated air is then introduced and the MSW is passed to a conversion chamber and then to a second conversion chamber. The secondary chamber cleans the gases and vitrifies the residue using a bed of molten material. The synthesis gas produced is used in a boiler to produce steam or generate electricity. (PWCG, 2008).

Interstate Waste Technologies uses a waste treatment process called Thermoselect Gasification. The system compacts unsorted MSW thereby removing most of the air and evenly distributing the moisture content. The compacted waste is pushed through a high temperature chamber where the inorganic waste turns molten and the organic waste converts into gas. The organic gases enter a lower temperature chamber and are shock cooled to avoid the formation of dioxins or furans. The gases are then shuttled through scrubbers to remove sulfur, heavy metals and other toxins. The resulting synthesis gas can be used for energy production or as a base material for chemical synthesis. The molten inorganic waste is also shock cooled and results in reusable mineral substances and metals. The water condensed during the different phases of the gas treatment is fed into the water treatment chambers where it undergoes a multiple-stage treatment. The processed water is then used for cooling purposes.[35] (PWCG, 2008).

Use by Other Jurisdictions

Global Energy Solutions has 14 facilities in operation in Japan, Asia, and Europe. Two facilities operating in Japan only process MSW.

Interstate Waste Technologies has the following facilities (PWCG, 2008):

- Fondotoce, Italy, operated the demonstration Thermoselect facility for six years, with commercialization commencing in 1994, from 1992-1998. The plant was decommissioned in 1999.

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[35] http://www.iwtonline.com/docs/Thermoselect_process_description.pdf, March 12, 2008.

- Karlsruhe, Germany, operated a Thermoselect facility from 1999 until 2004, when it was closed due to “general business strategy decisions.” The facility processed 225,000 TPY of waste from surrounding towns and rural districts.
- Thermoselect has seven facilities operating in Japan. Three of the facilities operate on MSW. Commercialization of the Matsu facility began in 2003 and currently processes 140 TPD. The Nagasaki and Tokushima facilities commenced operations in 2005, with the Nagasaki facility processing 300 TPD and the Tokushima facility processing 120 TPD of MSW.

Physical, Regulatory, and Environmental Requirements

Global Energy Solutions states that their Thermal Converter technology exceeds all known emission standards worldwide and that there are no odors due to the storage of MSW inside a building. Global Energy Solutions also states that their technology requires less land than traditional incinerators; however, no documentation of land requirements was found.[36]

The synthesis gas produced is sufficient to power the Thermoselect facility. Water consumption is 560 gallons/ton of MSW. Wastewater is treated and reused. (PWCG, 2008).

Potential Issues

Potential issues with gasification/pyrolysis include (PWCG, 2008):

- Global Energy Solutions’ Thermal Converter technology vitrified residual by-product requires a market.
- Interstate Waste Management’s Thermoselect technology requires a market for the metal pellet and vitrified granulate by-products.

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[36] Global Energy Solutions. http://www.teamges.com/, March 11, 2008.

Consistency with City & County of Honolulu Requirements

Global Energy Solutions' Thermal Converter technology might be consistent with the City's requirements; there is no information readily available regarding how long either of the two MSW facilities has been in operation in Japan. The by-product residual requires a market that is not proven on O'ahu. (PWCG, 2008).

Interstate Waste Management's Thermoselect technology is inconsistent with the City's requirements. Although there are seven Thermoselect facilities in Japan, only three operate on MSW and none at the size the City requires (the Matsu facility processes 140 TPD, the Nagasaki processes 300 TPD, and the Tokushima facility processes 120 TPD). All facilities have been in operation for more than two years. The market for the metal pellets and vitrified granulate by-products would have to developed on O'ahu. (PWCG, 2008).

~~9.5.5. Waste to Energy~~

9.6.5. Waste to Energy

H-POWER is a working example of the waste-to-energy (WTE) alternative technology. It is proven in long-term operation in Honolulu where it converts MSW into energy, with residues of ash, by-passed material, and unacceptable waste. An expansion of H-POWER was approved by the Mayor on January 18, 2008. The expansion is included as an alternative that will reduce but not replace the need for a landfill. (PWCG, 2008).

Methodology

There are two general approaches to WTE, mass burn and RDF. In a RDF plant (the H-POWER facility is an RDF plant) MSW is processed through shredders and screens, through which dirt, glass, and other recyclable and non-burnable materials are sorted out. The remaining material is incinerated, resulting in the creation of ash (approximately ten percent of the original volume), residue, and steam used to generate electricity. Metals are separated in the pre-combustion processing and from the ash post-combustion, and are recycled. (PWCG, 2008).

Mass burn plants combust MSW without pre-processing. Waste is introduced into the furnace after being unloaded from the collection vehicle. The waste combustion creates steam, which is used to make electricity. By-products are ash and residual waste. Metals are separated from the ash and are recycled. (PWCG, 2008).

The project host and technology vendor are responsible for the disposal of ash and residual waste. (PWCG, 2008).

The H-POWER facility in Kapolei is a RDF plant and is capable of processing 2,160 TPD of MSW. It generates approximately seven percent of O‘ahu’s energy, enough electricity to support 45,000 homes. Residual waste and ash are disposed at the Waimānalo Gulch Sanitary Landfill. (PWCG, 2008).

Use by Other Jurisdictions

WTE is a proven technology with facilities found throughout the United States. Covanta, the operator of H–POWER, operates plants in Alabama, California, Connecticut, Florida, Indiana, Hawaii, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Oregon, Pennsylvania, and Virginia. WTE is used in many other countries where it has been operating for more than 75 years.[37]

H-POWER has been in continuous operation since 1989.

Physical, Regulatory, and Environmental Requirements

The physical, regulatory, and environmental requirements of a third boiler at H-POWER are well understood based on the existing plant in operation. Environmental controls and regulatory requirements are met with the existing facility. Land is available at the H-POWER site for expansion. (PWCG, 2008).

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[37] Covanta Holding, http://www.covantaholding.com/, March 11, 2008.

Potential Issues

WTE requires a landfill for the disposal of ash and residual waste. The market for H-POWER electricity is already contracted with HECO and the technology and environmental operating characteristics are well understood.

Consistency with City & County of Honolulu Requirements

WTE is consistent with the City's requirements as provided in Section 9.~~5.~~6.2. City & County Requirements for Alternative Technologies.

~~9.5.6. Expanded Recycling~~

9.6.6. Expanded Recycling

Expanding current recycling infrastructure within the City would not eliminate the need for landfills but can decrease the amount of refuse disposed of in landfills[38]. Expanded recycling could include the expansion of the number of sites that accept materials from the HI5 beverage container program, the addition of more sites to the school drop-off program, increasing the frequency of curbside collection of residential green waste, and adding a program to collect other recyclables from residences at curbside. (PWCG, 2008).

~~9.5.6.1. Improvements to Recycling Infrastructure~~

9.6.6.1. Improvements to Recycling Infrastructure

~~Current r~~Recycling infrastructure consists of a pilot program to evaluate weekly MSW collection with weekly curbside recycling and green waste collection, community recycling bins, recycling support for schools, HI5 redemption sites, and curbside green waste recycling. The overall goal is to reduce the amount of waste disposed at the WGSL. The community recycling bin program is supported by participating schools. The program uses a 40 cubic-yard recycling roll-off bin, divided into sections for mixed

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[38] The market for recyclables is limited and not all waste products are feasible for recycling. Waste materials that cannot be recycled or reused would need to be landfilled.

containers and paper. Students, their family members, the community, and school employees drop-off their recyclable materials. The host school receives revenues for the recycled materials collected in their bin(s). Since the program began in 1990, more than $1,000,000 has been paid to the participating schools. (PWCG, 2008).

Schools are also receiving additional support through assistance programs, in which the City offers 96-gallon wheeled toters labeled for aluminum, glass, plastic, and newspaper. Fundraising materials, such as banners, graphics, lists of recycling companies, collection services, and redemption centers are also provided to help advertise a recycling event. The schools use these events as fundraisers. Currently, there are 75 to 80 schools and 35 non-profit organizations participating in this program. A new contract that began in March 2008 will add 40 additional sites for multi-material recycling. (PWCG, 2008).

The City also provides, through the contract, ten HI5 event bins. These 40 cubic yard bins are used at special school or community events for recyclables. The City's contractor removes the bin after the event and the school or community group receives the redemption value from the HI5 containers. (PWCG, 2008).

Another current effort is the expansion of the number of HI5 redemption sites. The HI5 redemption sites are privately-operated for residents to drop-off their recyclable cans, plastic, aluminum, and glass HI5 containers for a 5 cent cash refund. The City also provides curbside green waste pick-up to its residents. The City picks up green waste twice a month on the day following garbage collection days. Approximately 10,000 tons of green waste is collected annually from residences. The collected green waste is turned into mulch and offered to residents at no cost.[39]

The City established a pilot curbside recycling/green waste collection program in the fall of 2007 to evaluate the efficacy of waste collection once per week (rather than the current twice-per-week schedule) and collect either containers and paper, or green

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[39] Department of Environmental Services www.opala.org, March 11, 2008.

wastes on the second collection day (that is green waste one week and containers and paper the next). That program is to be expanded island-wide starting in the fall of 2008. (PWCG, 2008).

~~9.5.6.2. Recycling to Energy~~

9.6.6.2. Recycling to Energy

Recycling materials into products, as is done with the green waste program (mulch and compost) and the collection of bottles and paper (made into new bottles and paper products) is one form of recycling that will be expanded by the City. Recycling to energy (conversion of the waste to energy) is another. (PWCG, 2008).

WTE, such as H-POWER, is a technology of choice based on direct benefits of energy production and reduction in waste disposal volume. Approximately 90 percent of the residential garbage and 77 percent of the commercial waste collected on O‘ahu is disposed of at the H-POWER facility and is turned into energy that powers approximately 45,000 homes.[40] Incinerating 90 percent of the garbage that goes through the H-POWER facility means only one-tenth, by volume, remains to be landfilled. Expanding the H-POWER facility or will be most beneficial to the City in reducing the amount of waste sent to the landfill. (PWCG, 2008).

~~9.5.7. Wet Cell Landfill~~

9.6.7. Wet Cell Landfill

Wet cell, or bioreactor landfills, use accelerated decomposition to create additional landfill gas for conversion to energy and recover landfill space as the waste decomposes. The wet cell would enhance energy recovery from the landfilled waste and extend the life of the landfill. (PWCG, 2008).

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[40] City and County of Honolulu Department of Environmental Services. Solid Waste Integrated Management Plan. Updated: November 2007. Table 63a, Table 63b and Table 2-7.

There are three forms of wet cell landfills: aerobic, with the presence of oxygen; anaerobic, without the presence of oxygen; or a combination of the two. Both processes accelerate the decomposition of waste. Conventional landfills take 30 to 50 years for the waste to decompose, while wet cell landfills take approximately five to ten years.[41] (PWCG, 2008).

Methodology

Aerobic wet cell landfills collect leachate from the bottom layer of the landfill and pump it into a storage unit. Water is added, if required, and the liquids are then redistributed into the landfill. Air is injected to encourage aerobic decomposition and stabilization of the waste (PWCG, 2008).

Anaerobic wet cell landfills add moisture to the landfill through re-circulated leachate and other sources to achieve optimal moisture levels, but do not add air. A biogas is produced comprised mostly of methane, carbon dioxide, and volatile organic compounds. The gas can be used to create electricity. (PWCG, 2008).

Hybrid wet cell landfills use both aerobic and anaerobic processes to rapidly accelerate biodegradation and decomposition of the landfilled waste. Biogas can also be collected from hybrid wet cell landfills; this by-product occurs much earlier than during the anaerobic process. (PWCG, 2008).

Use by Other Jurisdictions

The Environmental Protection Agency (EPA) is conducting case studies of bioreactor landfills within its Project XL, which started in 1995. Project XL provides flexibility to regulated entities to conduct pilot projects demonstrating the ability to "achieve superior environmental performance.” Since September 2001, 51 pilot experiments have been implemented. Of those 51, four have been approved to operate as wet cell landfills. The landfills are Buncombe County Landfill Project, North Carolina; the Maplewood Landfill

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[41] County of Yolo Planning and Public Works Department Division of Integrated Waste Management, EPA Project XL, Final Project Agreement for the Yolo County Accelerated Anaerobic & Aerobic Composting (Bioreactor) Project, September 14, 2000.

and King George County Landfill, Virginia; and the Yolo County Bioreactor Landfill, California. The EPA is evaluating the advantages and disadvantages of bioreactor landfills. The studies are expected to be completed between 2006 and 2026. (PWCG, 2008).

Physical, Regulatory, and Environmental Requirements

A wet cell landfill requires a different liner design, leachate collection system, and monitoring system than used for a conventional sanitary landfill. One concern regarding wet cell landfills is the increased of leachate to facilitate biodegradation and decomposition. Therefore, one of the EPA's requirements for their case study involves a liner design that addresses increased production of leachate.[42] The Yolo County Module D Bioreactor proposes a liner over five feet thick with earth and clay layers alone, as well as a collection system that would recycle the leachate and reintroduce it to the landfill. The permitting process for wet cell landfills is also different. Only the EPA through its XL project program grants permits for wet cell landfills. The expansion space at the WGSL could have cells that could be used for wet cell landfilling; however, major changes in site design, and potentially site life, would be required. The benefit to justify such an expense has not been shown with only four test sites in operation. (PWCG, 2008).

Potential Issues

The cost of the wet cell and potential environmental effects has not been determined for the WGSL. The wet cell technology must also be demonstrated in relation to current plans for use of the WGSL expansion area.

Consistency with City & County of Honolulu Requirements

The wet cell is a variant of traditional landfilling practice and could be consistent with City & County of Honolulu requirements. The cost and environmental implications of using the technology would have to be evaluated by the City and landfill operator. (PWCG, 2008).

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[42] United States Environmental Protection Agency. http://www.epa.gov/

~~9.5.8. Co-Disposal~~
9.6.8. Co-Disposal

Co-disposal is the disposal of MSW and ash together in a landfill, where the ash replaces the dirt cover and fills the voids in the MSW. Combining the two materials would result in the more efficient use of landfill space since ash requires less space for disposal than compacted MSW and would replace the use of soil for cover. (PWCG, 2008).

Methodology
At the end of the operating day, the ash would be used as alternate daily cover to replace the soil cover now used. (PWCG, 2008).

Physical, Regulatory, and Environmental Requirements
The State DOH approved the use of H-POWER ash as ADC at the Waimānalo Gulch Sanitary Landfill provided that a number of requirements are followed[43] (PWCG, 2008):

- A six-month demonstration project to evaluate the performance of ADC in meeting the requirements of daily cover
- Ash must be used within 24 hours of its creation
- Ash must contain less than 25% moisture
- Ash can only be used between 3 and 5 p.m.
- No more than 300 tons of ash can be used per day
- Equipment must not be used on ash, a two foot depth and 15-foot buffer must be in place to protect the general public
- Equipment operators must use positive pressure cabs, while spotters must wear personal protective gear
- Warning signs must be posted to inform the general public

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[43] Hawaii State Department of Health. Response to Comments on the Draft Conditions for the Use of H-POWER MST Ash as Alternative Daily Cover at the Waimānalo Gulch MSW Landfill. April 12, 2001.

- A wind shut-down trigger must be in place (to be determined from the six-month demonstration project)
- A rain shut-down trigger must be in place to prevent ash from entering the storm water system
- Total metals must be tested quarterly
- An engineering study evaluating the landfill's static and seismic stability is required
- A lime depletion study is required

Potential Issues
Operational issues associated with the DOH requirements may preclude the co-disposal option.

Consistency with City & County of Honolulu Requirements
Co-disposal is consistent with the City &County of Honolulu requirements.

~~9.5.9. Conclusion Regarding Alternative Technologies~~
9.6.9. Conclusion Regarding Alternative Technologies

The information presented for this section provides a comprehensive review and analysis of a number of alternative technologies or methods to either significantly reduce or eliminate the disposal of refuse in a municipal sanitary landfill. Major issues involved with the use of alternative technologies or methods include:

- A number of emerging new or existing technology based approaches show promise for use in the City & County of Honolulu. The approaches evaluated included thermal, nonthermal, WTE, expanded recycling, wet cell or bioreactor landfilling, and co-disposal. None of the approaches that were evaluated are capable of completely eliminating the need for a municipal landfill. Each of the processes reviewed result in the generation of waste byproducts that cannot be further reused, recycled, or otherwise recovered for either a commercial or other beneficial public use while meeting the performance requirements of the City & County of Honolulu for demonstrated feasibility.

- Some alternative technologies, such as hydrolysis (generation of process wastewater and other byproducts), involves the potential for environmental impacts that would require further examination to ensure public and environmental safety.
- A number of the technologies that produce a secondary product, e.g., fuels for the generation of electricity or recovered plastic, metal, or glass products, do not have established commercial markets in the State of Hawaiʻi. New markets and users for these products would need to be established to ensure viability of the waste technology. Failure of the technology after start up would otherwise be borne by Oʻahu's residents through: (1) financial subsidization of the alternative technology in order to avert closure of the facility; or (2) the need for additional landfill capacity to handle the MSW stream that would otherwise be processed.
- Certain alternative technologies are viable when considered as part of the City's waste management system. An existing technology, WTE, has benefited the City & County of Honolulu: (1) WTE does not completely eliminate, but does significantly reduce the volume of waste requiring landfilling by a factor of approximately 90 percent; (2) WTE provides a beneficial recyclable product in the form of electricity from refuse that would otherwise be disposed of; and (3) WTE is based on known environmental factors and potential effects which are or have been mitigated by the City as part of its existing operation of H-POWER. It is expected that other technologies and approaches will be developed as they mature and demonstrate feasible application in other municipalities.

~~9.6. Alternative Sites for a Municipal Landfill~~

~~9.6.1. Introduction~~

9.7. Alternative Sites for a Municipal Landfill

9.7.1. Introduction

This section assesses potential landfill sites as alternatives to the proposed lateral expansion of the WGSL. The alternative sites were previously identified in the December 2003 report by the Mayor’s Advisory Committee on Landfill Site Selection (Advisory Committee). The alternative sites considered by the Advisory Committee is useful to this assessment based on the following (PWCG, 2008):

- It used a committee of professionals as well as residents, from the areas most likely to be the location of a future landfill, to identify the screening criteria for evaluation of the new landfill site. The Advisory Committee represented a broad range of interests and expertise and relied on the consultant and ENV staff for technical input. The Advisory Committee made all the decisions relative to inclusion or exclusion of the sites.
- The inventory of potential sites that was the starting point for the Advisory Committee analysis was comprehensive, drawn from reports and other work between two and 28 years old (at the time of the Advisory Committee work in 2003). The Advisory Committee members, were asked, but had no additional sites of sufficient capacity that could be added to the list. In fact, the list of potential sites was reduced substantially due to land use development that encroached on some sites.
- The Advisory Committee focused its evaluations on the community perspective and most of their criteria were community–based considerations. While technical issues were considered, the Committee placed most of its emphasis on potential landfill impacts on the community where the sites were located. These potential impacts are also assessed as part of this EIS.

- The Advisory Committee recommendations were submitted to the Honolulu City Council on December 1, 2003.

The work of the Advisory Committee was considered in the review of potential landfill sites by the City Council Committee on Public Works and Economic Development. The Committee Chair, Mr. Rod Tam, reported the results of his Committee's evaluation to the full Council on November 16, 2004.[44] According to the evaluation:

> "…Landfills, in my view, should no longer be considered our primary depository of unwanted waste. We should be making every effort to divert all of our solid waste to recycling and reprocessing into energy or other useful products. Our goal should be to initially process all our solid waste in some form or fashion so that what ends up in our landfills is only the by-products of that initial processing that has no current use. This will reduce significantly the volume of waste going into our landfills thereby extending its useful life…."

The Committee conducted meetings on the Leeward and Windward sides of the island to receive public input. The memorandum reporting the results[44] made no recommendation regarding a specific site, but provided background for the final site selection. Information gathered in Councilmember Tam's investigation has been used in this analysis (PWCG, 2008).

The following discusses the landfill site selection process, the features of the sites recommended by the Advisory Committee that caused them to have different scores on the evaluation process, and discuses the City's general requirements for a landfill site.

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[44] November 16, 2004 memorandum from Councilmember Rod Tam to Concerned Citizens of Oahu transmitting the report titled "Committee on Public Works and Economic Development's Summary Report on its Landfill Site Selection Process."

~~9.6.2. City & County Requirements for a Landfill~~

9.7.2. City & County Requirements for a Landfill

The City & County of Honolulu has not published its “requirements” for a potential landfill site but uses the following general prerequisites (PWCG, 2008):

- Environmental - The site must not have physical features that make it more difficult to minimize environmental impacts. For example, if two sites were otherwise equal, the one with the lesser impact on wetlands would be preferred.
- Landfill capacity or life span - A site needs to accommodate at least 10 years of disposal to justify the time and expense of permitting it. A landfill with a long life also minimizes environmental impacts compared to landfilling at smaller landfill sites. The longer the life of a landfill the more waste it can accept, thus reducing disposal cost.
- Disaster debris - Having the space and equipment to mange and temporarily store disaster debris will be important. A potential landfill site needs to have space for disaster debris storage or disposal to preserve public health, safety, and welfare.
- Reasonable cost - The City provides the lowest cost, environmentally sound means for disposal of municipal refuse to benefit the taxpayer.
- Proximity to the H-POWER facility - The contract with Covanta to operate H-POWER provides for a price increase for ash transportation if the landfill is more than 12 miles from the plant site. In addition, the more miles traveled by trucks transporting ash, the greater the opportunity for accidents.

In addition to the above, the City considered (1) the use of two more landfill sites for MSW and ash and residue, as well as (2) the use of two or more landfill sites to separately handle MSW in one landfill and ash and residue in another. As in 2002 when the prior City administration sought the expansion of the WGSL, the use of two or more landfill sites was considered by ENV for the proposed project, but was not selected for consideration based on the following (FSEIS, Waimānalo Gulch Sanitary Landfill Expansion, 2002):

1. Land resources on O‘ahu are finite and limited. Use of more than one landfill site for the disposal of MSW and/or ash and residue would foreclose or limit other alternative land uses that might otherwise be provided.

2. Potential for negative environmental impacts associated with the development of any landfill requires major effort to ensure mitigation. Development of two or more landfill sites would increase potential for negative environmental impacts and costs necessary to mitigate such impacts.

3. Economies of scale from an appropriately sized facility would generally result in more efficient use of land than two smaller facilities that may not be as easily planned from a landfill development perspective. The economies of scale would also allow for lower refuse disposal costs than two or more smaller landfills.

~~9.6.3. Mayor's Advisory Committee on Landfill Site Selection~~
9.7.3. Mayor's Advisory Committee on Landfill Site Selection

The Mayor's Advisory Committee on Landfill Site Selection was formed in response to Condition No. 1, of the approved State Special Use Permit[45] calling for the formation of a "Blue Ribbon Site Selection Committee". The Committee started with the reports of studies done by the City over the past approximately 30 years to identify potential

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[45] Decision and Order Approving Amendment to State Special Use Permit, Docket No. SP87-362, Waimānalo Gulch Sanitary Landfill, June 5, 2003.

landfill sites. ENV and the Advisory Committee consultant assembled a list of 45 potential sites for the Advisory Committee to consider from the following prior reports:

(1) Inventory of Potential Sanitary and Demolition Landfill Sites, August 1977.
(2) Supplement to Inventory of Potential Sanitary and Demolition Landfill Sites, November 1979.
(3) Revised Environmental Impact Statement for Leeward Sanitary Landfill at Waimānalo Gulch Site and Ohikilolo Site, 1984.
(4) Solid Waste Integrated Management Plan Update, Final Report, 1995.
(5) Final Supplemental Environmental Impact Statement, Waimānalo Gulch Sanitary Landfill Expansion, December 2002.

The following discusses how the Advisory Committee evaluated the 45 sites, provides the specific criterion used for their evaluation, and summarizes the recommendations of the Committee to the City Council.

~~9.6.3.1. Sites Considered~~
9.7.3.1. Sites Considered

The sites that were considered as potential landfill sites are listed in **Table 9-2, Potential Landfill Sites**. The table shows the site name, tax map key (TMK), estimated acreage, estimated volume, and the landfill life (the number of years the landfill could provide disposal capacity at the estimated disposal needs for the City & County of Honolulu.) The estimated disposal need is provided in **Table 9-7, Estimate of Landfill Capacity Needs**. (PWCG, 2008).

Table 9-2, Potential Landfill Sites

Site Name	TMK	Size (Acres)	Capacity (MM cy)*	Life (Years)
Auloa	4-2-14:por 1	55	2.8	4.7
Ameron Quarry	4-2-15:01	391	9.0	15.0
Barbers Point	9-1-16:18, por 1	15	0.7	1.2
Bellows	4-1-15: por. 01	173	7.5	12.5
Diamond Head Crater	3-1-42:por 6	115	4.3	7.2
Ewa No. 1	9-1-17	-	-	
Ewa No. 2	9-1-10	-	-	
Halawa A	9-9-10:8,9,por 10 & 26	40	1.5	2.5
Halawa B	9-9-10:27, por 10	60	2.2	3.7
Heeia Kai	4-6	-	-	
Heeia Uka	4-6-14:01	163	2.4	4.0
Honouliuli	9-1-17:por 4	22	1.7	2.8
Kaaawa	5-1	150	5.6	9.3
Kaena	6-9-1:por 3, 33 & 34	40	1.5	2.5
Kahaluu	4-7	-	-	
Kahe	9-2-3:por 27	200	7.4	12.3
Kalaheo (landfill reuse)	4-2-15:por 1 & 6	134	4.3	7.2
Kaloi	9-2-02:por 1; 9-2-3:por 2; 9-2-4:por 5	400	24.3	40.5
Kapaa No. 1	4-4-14:por 2	60	3.0	5.1
Kapaa No. 2 & 3 (closed)	4-2-15:por 1, 3, 4, 7	-	-	
Kaukonahua	7-1	34	1.3	2.2
Keekee	6-9-1:por 3 & 4, 6-9-3: por 2	40	1.2	2.0
Koko Crater	3-9-12: por 1	140	5.5	9.2
Kunia A	9-4-4: por 4	150	5.6	9.3
Kunia B	9-4-3: por 19	190	7.0	11.7
Maili	8-7-10:por. 03	200	9.2	15.3
Makaiwa	9-2-3: por. 02	338	15.0	25.0
Makakilo Quarry	9-2-3:82	175	10.0	16.7
Makua	8-1-1, 8-2-1	600	7.4	12.3
Mililani	9-5	34	2.2	3.7
Nanakuli A	8-7-9:1 &3 and 8-7-21:26	179	4.0	6.7
Nanakuli B	8-7-9: pors. 1 & 7	432	9.4	15.6
Ohikilolo	8-3-1: 13	706	15.6	26.0
Olomana	4-2	-	-	
Poamoho	7-1	5	0.7	1.2
Punaluu	5-3	200	7.4	12.3
Sand Island	1-5-41	150	5.6	9.3
Waiahole	4-8	60	2.3	3.8
Waianae Expansion	8-5-3 and 6	140	6.8	11.3
Waihee	4-7	61	2.3	3.8
Waikane	4-8	200	9.0	15.0
Waimanalo Gulch Exp.**	9-2-3: 72 & 73	60	12.0	20.0
Waimanalo North	4-1-8: 13	171	9.6	16.0
Waimanalo South	4-1	355	14.0	23.3
Waipio	9-3-2	60	2.5	4.2

* Million cubic yards (cy)

** Information has been updated since the Mayor's Committee Report. The current lateral expansion acreage is approximately 92.5 acres. The actual area of use may be changed as the design is refined and reviewed by government regulatory agencies.

Note: Based on Final EIS for Waimanalo Gulch Expansion, December 2002.

~~9.6.3.2. Site Evaluation Process~~

9.7.3.2. Site Evaluation Process

The Advisory Committee first developed siting criteria to quantitatively compare the characteristics of one site to another and allow identification of the "best" site. The siting criteria were divided into three groups: exclusionary, evaluation, and Advisory Committee criteria. (PWCG, 2008).

The Exclusionary Criteria included:

- EPA siting criteria as promulgated in the Resource and Conservation Recovery Act, Subtitle D (RCRAD).
- Sites located in areas which have since been developed or are closed landfills with no further expansion potential.
- The Honolulu Board of Water Supply (BWS) evaluation governing whether a site should be protected in consideration of its proximity to the Groundwater Protection Zone and Underground Injection Control (UIC) Line zone; and
- The Advisory Committee's capacity criterion stating that the site must have a minimum life of more than 10 years.

For the qualitative evaluation of the potential sites, the Advisory Committee developed 31 Screening Criteria following extensive discussion and deliberation. After applying the criteria, the Advisory Committee used the numeric scores for the sites, which compared one site to another on the basis of community, economics, land use, and technical considerations. (PWCG, 2008).

The Advisory Committee members applied their own insights regarding each site as the final step in the siting evaluation.

After application of all of the criteria, the Advisory Committee deliberated on the remaining sites and arrived at its recommendations for the Mayor and City Council by vote.

Table 9-3, Sites Eliminated at Each Stage in the Evaluation, shows the number of potential sites eliminated at each step in the evaluation process. (PWCG, 2008).

Table 9-3, Sites Eliminated at Each Stage in the Evaluation

Phase of Evaluation	Number of Sites	
	Before Application of Criteria	After Application of Criteria
Exclusionary Criteria		
RCRA Subtitle D Criteria	45	40
Sites in Developed Areas or Closed Landfills w/No Expansion Potential	40	34
BWS Staff Review and Evaluation	34	16
Committee Evaluation Process		
Landfill Capacity Requirement [46]	16	8
31 Screening Criteria	8	8
Committee Vote	5	4

An initial list of 45 sites was assembled by ENV and the consultant after review of prior work completed by the City in the siting and evaluation of MSW landfills. The *Exclusionary Criteria,* which included EPA criteria and local exclusionary criteria, were applied to the initial list of 45 potential landfill sites. Sixteen of the 45 sites remained after application of the Exclusionary Criteria. The *Landfill Capacity* criterion was applied to the 16 sites remaining with eight remaining for further evaluation. The Advisory Committee's 31 *Screening Criteria* were applied to the remaining eight reducing the number of sites to five and putting them in order of usefulness as a landfill. Up to this point in the evaluation, the Advisory Committee had acted by consensus. At this point in

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[46] The capacity evaluation was completed before the Committee's site evaluations.

the process, the Committee voted to remove the Waimānalo Gulch Sanitary Landfill from consideration.[47] (PWCG, 2008).

This next section contains a description of *Exclusionary Criteria, Landfill Capacity,* and *Screening Criteria* used by the Advisory Committee to rank the sites and identify the five alternative sites appropriate for landfilling.

~~9.6.3.3. EPA Exclusionary Criteria~~
9.7.3.3. EPA Exclusionary Criteria

The EPA Exclusionary Criteria as promulgated in 40 CFR 258, include:

> **Airport Restriction** – Owners/operators must demonstrate that the landfill site does not constitute an aircraft bird strike hazard if the facility is located within 10,000 feet of the end of any airport runway used by turbojet aircraft, or within 5,000 feet of any airport runway used only by piston driven aircraft.
>
> If the owner/operator proposes construction of a landfill or expansion of an existing landfill within five miles of any airport, the airport and the Federal Aviation Administration (FAA) must be notified.
>
> **Floodplains** – Landfills located within a 100-year floodplain cannot restrict storm flows within the floodplain, reduce the temporary water storage capacity of the floodplain, or allow the washout of solid waste.
>
> **Wetlands** – Owners/operators of a proposed landfill may not build or expand into wetlands. An exception to this rule may be permitted by the EPA-approved permitting programs to construct or expand a landfill only if the following can be demonstrated:
>
> - No other siting alternative is available.

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[47] The capacity evaluation was completed before the Committee's site evaluations.

- Construction and operation of the landfill will not violate applicable State regulations governing water quality or discharges of toxic or hazardous effluent; jeopardize threatened or endangered species, or critical wildlife habitat; or, violate protection of a marine sanctuary.
- The landfill will not contribute to the significant deterioration of the wetland.
- Steps are taken to achieve no net loss of wetlands by avoiding potential for impacts where possible, sufficiently minimizing unavoidable impacts; or, making proper compensation; for example, through the restoration of damaged wetlands or the creation of manmade wetlands.

Fault Areas – New landfills or landfill expansions are generally prohibited within 200 feet of fault areas that have shifted since the last Ice Age. However, the DOH may permit an alternative setback distance of less than 200 feet if the owner/operator can demonstrate that the landfill will maintain structural integrity in the event of a fault displacement.

Seismic Impact Zones – Landfills located in a seismic impact zone must demonstrate that the facility including, but not limited to, its liners, leachate collection system, surface water control system, and other engineering features have been designed to resist the effects of ground motion due to earthquakes.

Unstable Areas – All owners/operators must demonstrate that the structure of their units will not be compromised during geologically destabilizing events including:

- Debris flows resulting from heavy rainfall or storm conditions.
- Fast formation of sinkholes caused by excessive groundwater withdrawal.
- Rockfalls that are initiated by explosives or sonic booms.
- The sudden liquefaction of soil after prolonged periods of repeated wetting and drying.

Application of the EPA exclusionary criteria reduced the number of sites under consideration from 45 to 40. **Table 9-4, Site Evaluation with EPA Exclusionary Criteria**, identifies the sites that did not meet the criteria (PWCG, 2008).

Table 9-4, Site Evaluation with EPA Exclusionary Criteria

Site Name	Sites Failing EPA Criteria					
	Airport Restriction	Flood Plain	Wetlands	Fault Areas	Seismic Impact Zone	Unstable Area
Auloa						
Ameron Quarry						
Barbers Point	X					
Bellows						
Diamond Head Crater			X			
Ewa No. 1						
Ewa No. 2						
Halawa A						
Halawa B						
Heeia Kai						
Heeia Uka						
Honouliuli						
Kaaawa						
Kaena	X					
Kahaluu						
Kahe						
Kalaheo (landfill reuse)						
Kaloi						
Kapaa No. 1						
Kapaa No. 2 & 3 (closed)						
Kaukonahua						
Keekee	X					
Koko Crater						
Kunia A						
Kunia B						
Maili						
Makaiwa						
Makakilo Quarry						
Makua						
Mililani						
Nanakuli A						
Nanakuli B						
Ohikilolo						
Olomana						
Poamoho						
Punaluu						
Sand Island	X	X				
Waiahole						
Waianae Expansion						
Waihee						
Waikane						
Waimanalo Gulch Exp.						
Waimanalo North						
Waimanalo South						
Waipio						

~~9.6.3.4. Local Exclusionary Criteria, Developed Areas~~

9.7.3.4. Local Exclusionary Criteria, Developed Areas

In the several decades that have elapsed since most of the sites on the table were identified, many of the original landfill locations have been developed, primarily with residential housing. Some locations that were previously considered possible landfill sites may either have buildings on-site, or are so close to developed areas that a landfill would now be an incompatible land use. The City therefore determined that it would not propose new landfills within such developed areas (PWCG, 2008).

The City also reviewed potential sites that were expansions of closed landfills. Landfills on the original list that have been filled to capacity and closed were removed from further consideration.

This step reduced the potential site list from 40 to 34. **Table 9-5, Site Evaluation with Developed Area Criteria**, indicates the sites eliminated by application of the local exclusionary criterion (PWCG, 2008).

~~9.6.3.5. Local Exclusionary Criteria, Groundwater Restrictions~~

9.7.3.5. Local Exclusionary Criteria, Groundwater Restrictions

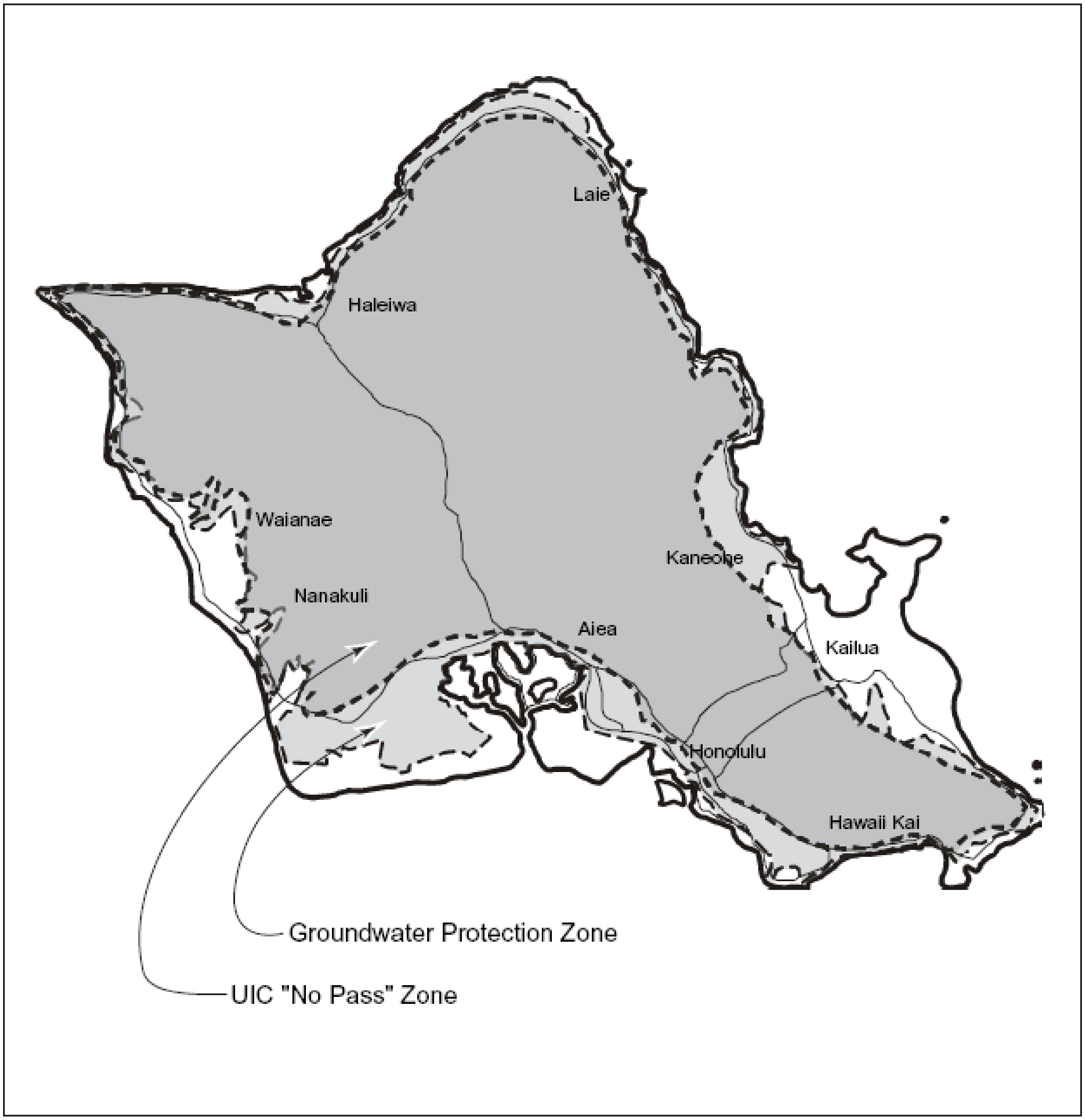
Local exclusionary criteria include restrictions on the possibility of adverse effects to groundwater. Groundwater resources on O‘ahu are protected through the State DOH, UIC program, and the BWS Groundwater Protection Zones.

The UIC program was established in 1984. The purpose of the program is to protect the State’s drinking/potable groundwater resources from pollution by subsurface wastewater disposal. The program regulations are accompanied by UIC maps that demarcate a boundary line known as the “UIC Line.” Landfills are restricted on lands that are landward of the UIC Line. Lands seaward of this line, however, are not restricted from subsurface wastewater disposal by underground injection (**Figure 9-1**). Sanitary landfills and waste disposal facilities may therefore be sited makai of this zone. (PWCG, 2008).

Table 9-5, Site Evaluation with Developed Area Criteria

Site Name	Sites Failing Criteria for	
	Developed Area	Closed Landfill
Auloa		
Ameron Quarry		
Bellows		
Ewa No. 1	X	
Ewa No. 2	X	
Halawa A		
Halawa B		
Heeia Kai	X	
Heeia Uka		
Honouliuli		
Kaaawa		
Kahaluu	X	
Kahe		
Kalaheo (landfill reuse)		
Kaloi		
Kapaa No. 1		
Kapaa No. 2 & 3 (closed)		X
Kaukonahua		
Koko Crater		
Kunia A		
Kunia B		
Maili		
Makaiwa		
Makakilo Quarry		
Makua		
Mililani		
Nanakuli A		
Nanakuli B		
Ohikilolo		
Olomana	X	
Poamoho		
Punaluu		
Waiahole		
Waianae Expansion		
Waihee		
Waikane		
Waimanalo Gulch Expansion		
Waimanalo North		
Waimanalo South		
Waipio		

Figure 9-1
Groundwater Protection Zone and
Underground Injection Control (UIC) Zone
Island of O‘ahu



Prior to 1987, groundwater recharge areas for the Island of O‘ahu were identified by BWS. Since 1987, the State DOH has administered the No Pass Program (also shown in **Figure 9-1**). The BWS Groundwater Protection Zones identifies areas of groundwater recharge, areas of brackish groundwater supplies, and additional areas that may be acceptable for landfill development. Areas that are considered critical for groundwater recharge have been designated within the "No Pass Zone." Within this area sanitary landfill and waste disposal systems are generally not permitted. All other areas are identified as within the "Pass Zone" and have been determined to be areas where landfills and shallow waste disposal systems may be permitted. These facilities are limited to a maximum depth of 30 feet. (PWCG, 2008).

Regulatory protection of ground and surface water, and air quality, from facilities such as sanitary landfills, is through the existing environmental permit process. Protection of ground and surface waters are delegated by EPA to the State DOH under provisions of the Federal Safe Drinking Water Act and Clean Water Act. These federal regulations enable the State DOH to protect Hawaii's drinking and surface waters from the siting of facilities, such as sanitary landfills, through Hawaii Administrative Rules, Chapter 11–23, UIC; Chapter 11–55, Water Pollution Control, and the National Pollution Discharge Elimination System Permit program. Regulation of air quality standards are similarly delegated from EPA to the State DOH, through the Clean Air Permit. (PWCG, 2008).

The State DOH has provided some guidance about what might be needed to establish a landfill outside the UIC line.[48] In part, that guidance stated (PWCG, 2008):

> "Should a solid waste permit applicant propose to site a landfill over drinking water resources, the permittee will be required to demonstrate that the proposed project is protective of our groundwater resource. As seen in other states, the design of this landfill will likely be at a minimum a double composite liner system. In addition, other requirements, such as screening and monitoring, may become more stringent. Needless to say, siting a landfill over drinking water resources will

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[48] Letter dated May 23, 2002, from Dr. Bruce Anderson, Director, State Department of Health, to Mr. Timothy Steinberger, Director, City Department of Environmental Services.

> increase our scrutiny over the design and operation of the landfill, as well as significantly increase the cost to design, construct, and operate the landfill."

After application of the Groundwater Exclusionary Criteria, the potential list of sites decreased from 34 to 16. **Table 9-6, Site Evaluation with Groundwater Criteria**, shows the sites that were eliminated after review by the BWS staff and their comments on each of the 34 sites reviewed.

~~9.6.3.6. Landfill Capacity~~

9.7.3.6. Landfill Capacity

The City & County of Honolulu and Advisory Committee established 10 years of landfill capacity as the lower limit for a site to be considered. The capacity of each site was determined from the earlier siting reports. The capacity calculations were done with topographic data of varying levels of detail and used requirements for landfill design and operation that preceded RCRAD, which made major changes to earlier landfill practice. As a result, the capacity evaluation would likely be different if recalculated with more detailed topographic information following current landfill practice. (PWCG, 2008).

In addition to the comments regarding the capacity calculations made earlier, it should be noted that the WGSL has been designed after extensive evaluations of information such as (PWCG, 2008):

- Civil engineering design supported by geotechnical investigations and soils evaluations so that the landfill will provide environmentally sound containment of the waste and maximize the capacity at the site
- The engineering design calculations that account for slope stability considerations so that the filled areas are stable under normal loading and potential seismic conditions
- Balancing the soil needed for cover with the excavation needed to maximize the landfill capacity is a complex engineering calculation that accounts for sequencing of fill at the landfill and other site specific factors

Table 9-6, Site Evaluation with Groundwater Criteria

Site Name	BWS Evaluation Notes	Sites Failing Review
Auloa	Very little to no groundwater resources. Within a rock complex. BWS does not consider feasible for use.	
Ameron Quarry	Dike type rocks associated with caldera complex. Very little groundwater resources.	
Bellows	No potable resources. Non-potable irrigation developed. BWS does not consider feasible for use.	
Halawa A	Site within BWS groundwater resource.	X
Halawa B	Site within BWS groundwater resource.	X
Heeia Uka	Site outside BWS designed groundwater resource zone.	
Honouliuli	Site just outside BWS designated groundwater resources zone, but within area considered subject to groundwater impact.	X
Kaaawa	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kahe	BWS plans to use site for future desalination facility.	X
Kalaheo (landfill reuse)	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kaloi	Groundwater resources present or nearby.	X
Kapaa No. 1	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kaukonahua	Site within BWS groundwater resource.	X
Koko Crater	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kunia A	Groundwater resources present or nearby.	X
Kunia B	Groundwater resources present or nearby.	X
Maili Quarry	Brackish groundwater present but BWS does not consider feasible for use.	
Makaiwa Gulch	No potable resources. BWS does not consider feasible for use.	
Makakilo Quarry	Groundwater resources present or nearby.	X
Makua	Groundwater resources present or nearby.	X
Mililani	Site within BWS groundwater resource.	X
Nanakuli A	Very little to no groundwater resources. BWS does not consider feasible for use.	
Nanakuli B	Very little to no groundwater resources. BWS does not consider feasible for use.	
Ohikilolo	Only half of site available for development where there is very little to no groundwater resources in the lower half of property. BWS does not consider feasible for use.	
Poamoho	Groundwater resources present or nearby.	X
Punaluu	Groundwater resources present or nearby.	X
Waiahole	Groundwater resources present or nearby.	X
Waianae Expansion	Groundwater resources present or nearby.	X
Waihee	Groundwater resources present or nearby.	X
Waikane	Groundwater resources present or nearby.	X
Waimanalo Gulch Expansion	Very little to no groundwater resources. BWS does not consider feasible for use.	
Waimanalo North	Very little to no groundwater resources. BWS does not consider feasible for use.	
Waimanalo South	Groundwater resources present or nearby.	X
Waipio	Very little to no groundwater resources. BWS does not consider feasible for use.	

These costly analyses can be completed only after a landfill site has been selected and they all impact the amount of capacity, and therefore, the number of years a site can be used as a landfill. The information available for the WGSL reflects these calculations, whereas the information available for the alternative sites does not. As such, one must expect that the estimates of capacity for the alternative sites are subject to much more variability than for the WGSL. (PWCG, 2008).

The amount of capacity needed was estimated using 2003 disposal data updated with the results of the November 2007 draft Update of the Solid Waste Integrated Management Plan. This data provides realistic information to estimate site life. The estimated volume that would be used for the estimated tonnage disposed is calculated below. The volume estimate includes the waste material as compacted before it is covered and the amount of dirt used to cover the waste. The estimated capacity needed assumes that the landfill will be excavated as needed to provide the dirt needed for covering the waste and to create part of the volume to be filled. The key assumptions in estimating the volume are (PWCG, 2008):

- MSW is compacted to a density of approximately 1,600 pounds per cubic yard
- An additional 20 percent of the MSW and ash volume is added as cover material
- The H-POWER ash is covered[49]. It has a density of 2,000 pounds per cubic yard.

Table 9-7, Estimate of Landfill Capacity Needs (TPY) (City & County of Honolulu, November 2007) provides the calculation of estimated volume needed.

Using the estimates from Table 9-7*,* the total landfill volume required for 10 years is 6,712,670 cubic yards (10 times the estimated annual requirement).

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[49] H-POWER ash is required to be covered with intermediate cover material.

Table 9-7, Estimate of Landfill Capacity Needs (TPY)

Year	Landfill	H-Power	Additional WTE *	Landfill w/o Additional WTE	Ash/ Residue **	Total Landfilled	Total Waste
2009	359,980	610,000		359,980		359,980	969,980
2010	379,070	610,000		379,070		379,070	989,070
2011	400,330	610,000	150,000	250,330	37,500	287,830	1,010,330
2012	403,270	610,000	300,000	103,270	75,000	178,270	1,013,270
2013	425,010	610,000	300,000	125,010	75,000	200,010	1,035,010
2014	447,010	610,000	300,000	147,010	75,000	222,010	1,057,010

* Mass burn facility: See Mayor's Press Release January 18, 2008.

** Assumed that the expansion would be operational at mid-year and 25 percent of Additional WTE becomes ash/residue that is landfilled.

This estimate of need will vary with waste flow changes. For example, if a natural disaster occurs there will be an increase in the material entering the landfill and the estimated life of the site will decrease. If the residential curbside recycling program is more successful than expected and the curbside yard waste program is expanded to weekly, the material needing disposal will decrease and the site life will increase. (PWCG, 2008).

The amount of landfill capacity needed will also vary if new means to process MSW prior to disposal are implemented. This Alternatives Analysis includes several technologies that could reduce the need for a landfill. It also discusses the approved addition of a third boiler to H-POWER to reduce the volume of waste that needs disposal. The use of transshipment could divert 100,000 tons per year or more to a landfill off island, reducing the need for a local landfill. Implementation of any of these programs, or economic changes that decrease or increase waste production, will change the estimate of volume needed and change the expected life of the landfill. (PWCG, 2008).

This evaluation assumes that the landfill site is used to its capacity, with the necessary excavation and lateral expansion. Excavation is needed to take advantage of the capacity of the site and minimize the cost and environmental impact of landfilling.

Changes to the site capacity reported in this EIS assume that the landfill will be excavated.

The application of the capacity criterion is shown in **Table 9-8, Results of Application of Landfill Capacity Criterion**. The 16 sites evaluated were reduced to eight after the 10-year site life was considered. (PWCG, 2008). The capacity of the Waimanalo Gulch Sanitary Landfill was based on calculations that are updated as the design of the expansion is being done. As a result, the capacity of the expansion will be revised during the processing of this EIS.

Table 9-8, Results of Application of Landfill Capacity Criterion

Site Name	Landfill Life (years)	Capacity Less Than 10 Years
Auloa	4.7	X
Ameron Quarry	15.0	
Bellows	12.5	
Heeia Uka	4.0	X
Kaaawa	9.3	X
Kalaheo (landfill reuse)	7.2	X
Kapaa No. 1	5.1	X
Koko Crater	9.2	X
Maili	15.3	
Makaiwa	25.0	
Nanakuli A	6.7	X
Nanakuli B	15.6	
Ohikilolo	26.0	
Waimanalo Gulch Expansion	15.0	
Waimanalo North	16.0	
Waipio	4.2	X

Note: Estimates of capacity for all alternative landfill sites were prepared based on information provided by WMH and ENV. The site life for WGSL as prepared for the 2003 Mayor's Advisory Committee assumed no excavation and provided an estimate of landfill capacity only. The results of engineering analysis of soils and site conditions to calculate the quantity of excavation material from WGSL was performed in 2008 by GeoSyntec Consultants. See Section 4.1.3. Waste Stream, Soil Excavation, and Soil Usage. Detailed engineering calculations to obtain excavation quantities for the other landfill sites was not performed.

~~9.6.3.7. Other Considerations~~
9.7.3.7. Other Considerations

Two of the sites shown in the table above were also disqualified based on input from other governmental bodies that had control of the sites. **Table 9-9, Sites Considered After Capacity Criterion Applied**, lists the sites for which input from other agencies was sought. (PWCG, 2008).

Table 9-9, Sites Considered After Capacity Criterion Applied

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9.0	15.0
Bellows	4-1-15: por. 01	173	7.5	12.5
Māʻili	8-7-10:por. 03	200	9.2	15.3
Makaiwa	9-2-3: por. 02	338	15.0	25.0
Nānākuli B	8-7-9: pors. 1 & 7	432	9.4	15.6
Ohikilolo	8-3-1: 13	353	7.8	13.0
Waimānalo Gulch Expansion	9-2-3: 72 & 73	60	12.0	20.0
Waimānalo North	4-1-8: 13	171	9.6	16.0

Comments were received from the U. S. Marine Corps regarding the Bellows site and from the State regarding the Waimānalo North site.

- The Bellows Air Force Base site is in federal control and cannot be condemned. A reply from the Marine Corps further indicated that the site is not available.
- The Waimānalo North site was designated as a State Forest Preserve, according to a letter the City received from the State Department of Land and Natural Resources. The State will not support its use for a landfill and the City cannot condemn state land.

Several Advisory Committee members had reservations about the Ohikilolo site. The site was removed from further consideration based on these reservations (PWCG, 2008):

- The site had the strong possibility of significant archeological and cultural resources (although studies had not been done to confirm the resources).
- It is remote from where the waste is collected and would require trucks to travel long stretches of road through the Wai‘anae and Leeward Coast communities (where frequent accidents have occurred) to get to the site. This thoroughfare (Farrington Highway) is the only road providing access to the site.
- There were potential Native Hawaiian title issues regarding use of this site.
- It is one of very few remote coastal areas left on O‘ahu and is considered culturally sensitive by the community.

Eight sites were on the list before the Advisory Committee discussed its *other considerations*. Five remained on the list after the other considerations were reflected and are shown in **Table 9-10, Potential Sites to Which Advisory Committee Siting Criteria Applied**. (PWCG, 2008).

Table 9-10
Potential Sites to Which Advisory Committee Siting Criteria Applied

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9	15
Mā‘ili	8-7-10:por. 03	200	9	15
Makaiwa	9-2-3: por. 02	338	15	25
Nānākuli B	8-7-9: pors. 1 & 7	432	9	16
Waimānalo Gulch Expansion	9-2-3: 72 & 73	200	9	15

~~9.6.3.8. Advisory Committee Siting Criteria~~

9.7.3.8. Advisory Committee Siting Criteria

The criteria discussed in the previous sections relate to general limitations on locating landfills. The Advisory Committee considered local community concerns to be highly important and not adequately reflected in the above exclusionary criteria. Therefore, Screening Criteria were established to compare potential sites using factors considered important to the Advisory Committee. The Screening Criteria allow numerical comparisons of the different factors (the Advisory Committee identified 31 of them) for different sites to rank the sites in order of suitability for use as a landfill. (PWCG, 2008).

The site evaluations were done using a “double blind” process. That is, the Advisory Committee assigned the amount of "weighting" for each of the factors that would be evaluated without the City or consultant’s knowledge. The consultants evaluated the sites and assigned point values without the Committee's knowledge of which sites were being evaluated. When the two parts of the evaluation were combined, the resulting site scores were insulated from undue influence or bias from any party. (PWCG, 2008).

The Screening Criteria were identified in five categories:

- Community
- Environmental and Land Use
- Economic
- Technical
- Other Considerations (that included employment and access to the sites)

~~9.6.3.9. Screening Criteria Development~~

9.7.3.9. Screening Criteria Development

The general approach to developing local Screening Criteria involved identifying the impacts a landfill could have in a region and a method to numerically measure those impacts. These criteria were organized into two parts: *Point Value* and *Weighting Factor*: (PWCG, 2008).

- The *Point Value* measured how well a potential site satisfied a criterion.
- The *Weighting Factor* reflected the Advisory Committee’s assessment of how important one criterion was compared to the other criteria. The *Weighting Factor* was multiplied by the *Point Value* to calculate the score for each criterion.

The sum of the criterion scores was the site score. The higher the final score for a site, the more appropriate it was for a landfill site.

The *Point Values* ranged from one to three. The higher the *Point Value* the better a site met a criterion. For example, a good landfill should be in an area with low rainfall. A site with annual rainfall of more than 60 inches received one point; a site with 20 to 60 inches of rain received two points; and a site with less than 20 inches of rain received three points.

The *Weighting Factor*s also varied from one to three with a *Factor* of three giving the best score.

The *Weighting Factors* were determined by the Committee members. Each member voted on the 10 criteria most important to them. There were 31 criteria. Criteria that received the most votes were assigned a *Weighting Factor* of three. The votes fell into three distinct groupings. Six criteria received the most votes and were assigned a *Weighting Factor* of three; seven had a *Weighting Factor* of two; and 18 had the fewest votes and were assigned a *Weighting Factor* of one. Several criteria received no votes and were also assigned a Weighting Factor of one. (PWCG, 2008).

The higher the product of the *Weighting Factor* and the *Point Value*, the better the site's characteristics are for use as a landfill.

The Screening Criteria and Weighting Factor assigned to each are shown in **Table 9-11, Screening Criteria**. The type of criteria is shown in the table for convenience. The type of criteria had no influence on the site screening. (PWCG, 2008).

~~9.6.3.10. Site Scoring~~
9.7.3.10. Site Scoring

The five sites listed in **Table 9-10**, **Potential Sites to Which Advisory Committee Siting Criteria Applied**, were scored using the Screening Criteria. Each criterion had a specific method to assess the *Point Value* of the criterion. The information needed to make the assessment was gathered by observation at the site, through review of technical literature, or by calculation from known data. The methods to evaluate the *Point Value* of some of the criterion required the use of general information. For example, the soil data was in soil reports that provide only rough guidance. The criterion relating to cost used the best information available at the time. (PWCG, 2008).

Table 9-11, Screening Criteria

	Criterion	Weighting Factor
	Community	
1	Displacement of residences and businesses	1
2	Distance to nearest residence, school or business	3
3	Wind direction relative to populated areas	2
4	Population density near the site	3
5	Proximity to parks and recreational facilities	1
	Environmental and Land Use	
6	Zoning	1
7	Compatibility with/distance to existing land uses	1
8	Visibility from a general use public road	1
9	Visibility from residences and/or schools.	2
10	Groundwater	3
11	Wetlands	3
12	Flora and fauna habitat	2
13	Site aesthetics	1
14	Residential units along access road	1
15	Schools or hospitals along access road	1
16	Final use of the site when the landfill is closed	1
17	Archeological and/or historical significance	3
	Economic	
18	Cost of site acquisition	1
19	Cost of development	1
20	Cost of operations	1
21	Impact of removal of site on tax base	1
22	Haul distance from H–POWER	2
	Technical	
23	Landfill capacity or site life	3
24	Annual precipitation	2
25	Adequacy of drainage	1
26	Access to fire protection	1
27	Length of haul	2
28	Geology	1
29	Closure and post-closure cost	1
	Other Considerations	
30	Employment	1
31	Access	2

The information for each site was extensive and compiled in several attachments to the Advisory Committee report. A summary of the conditions at each of the five sites is provided in Section 9.~~6.~~7.4. Description of Sites Evaluated.

Table 9-12, Results of Application of Screening Criteria, identifies the scores for each site after application of the criteria. Further detail of the methodology for site scoring for each of the 31 criteria is contained in Attachment C of the Alternatives Analysis for Disposal of Municipal Refuse (PWCG, 2008).

Since the Advisory Committee report was completed, additional information has been provided regarding the cost of acquiring the Ameron Quarry and Makaiwa Gulch sites. In the Advisory Committee report, the cost of acquisition was the assessed value for property purposes. Parties representing Ameron Quarry and Makaiwa Gulch provided information to correct that information in letters appended to a letter from City Councilmember Tam to the State LUC[50].

Mr. Tam's letter reported on a meeting his Committee conducted in which it received testimony from representatives of Ameron Quarry and accepted a letter from the Estate of James Campbell, owner of the Makaiwa Gulch site. Mr. Tam's letter stated that:

> "… A presentation was made by Ameron Hawaii, the lessee of the Kapaa Quarry site, and by the Estate of James Campbell, owner of the Makaiwa Gulch site. Ameron Hawaii cited an economic impact of $109-$133 million should it have to shut down its operations and relocate (full report attached). The Kaneohe Ranch, owner of the Kapaa Quarry site did not testify but offered written testimony which stated its estimate of land acquisition cost to be $22-$46 million as opposed to the City's estimate of $3.7 million (letter attached). The Estate of James Campbell provided testimony suggesting that the economic impact should the Makaiwa Gulch site be chosen would be in the area of $121 million cost to the City …"

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[50] August 3, 2004 letter from Mr. Rod Tam, Chair Committee on Public Works & Economic Development, City Council, City and County of Honolulu to Mr. Anthony Ching, Executive Officer of the State Land Use Commission.

Table 9-12, Results of Application of Screening Criteria

Criterion	Ameron	Maili	Makaiwa	Nanakuli B	Waimanalo Gulch
Community					
1 Displacement of residences and businesses	3	3	3	3	3
2 Distance to nearest residence, school or business	3	3	3	3	3
3 Wind direction relative to populated areas	6	2	2	2	2
4 Population density near the site	3	3	3	6	6
5 Proximity to parks and recreational facilities	2	2	1	2	2
Environmental and Land Use					
6 Zoning	1	3	3	3	3
7 Compatibility with/distance to existing land uses	2	1	1	1	2
8 Visibility from a general use public road	2	3	2	1	3
9 Visibility from residences and/or schools.	6	2	2	2	2
10 Groundwater	9	9	9	9	9
11 Wetlands	3	3	6	6	3
12 Flora and fauna habitat	6	6	6	2	6
13 Site aesthetics	2	1	1	2	3
14 Residential units along access road	3	1	3	3	3
15 Schools or hospitals along access road	3	2	3	3	3
16 Final use of the site when the landfill is closed	1	1	1	1	1
17 Archeological and/or historical significance	6	6	3	6	6
Economic					
18 Cost of site acquisition	2	2	2	3	3
19 Cost of development	2	2	2	2	3
20 Cost of operations	1	2	3	1	3
21 Impact of removal of site on tax base	1	1	1	1	3
22 Haul distance from H–POWER	4	4	6	6	6
Technical					
23 Landfill capacity or site life	6	6	9	6	6
24 Annual precipitation	2	6	4	4	6
25 Adequacy of drainage	1	2	2	2	1
26 Access to fire protection	1	2	2	3	2
27 Length of haul	4	2	6	4	6
28 Geology	2	2	2	2	3
29 Closure and post-closure cost	3	3	2	1	3
Other Considerations					
30 Employment	1	3	2	3	2
31 Access	6	2	4	4	6
Total Site Score	107	102	113	109	131

The cost evaluations used in the Advisory Committee report have been revised to reflect the added costs stated in Mr. Tam's report to the State LUC. The cost of acquiring the site was assessed by criterion number 18, Cost of Site Acquisition. **Table 9-13, Revised Evaluation of Criterion 18, Cost of Site Acquisition**, shows the original calculation of the Point Value for this criterion and the revised calculation using the revised site cost for Ameron Quarry and Makaiwa Gulch. (PWCG, 2008).

Table 9-13, Revised Evaluation of Criterion 18, Cost of Site Acquisition

Item	Ameron	Maili	Makiawa Gulch	Nanakuli B	Waimanalo Gulch
Cost in Advisory Committee Report	$3,184,200	$3,912,500	$16,516,900	$545,200	$0
Years of Life	15	15.33	25	15.7	15
Cost/Year of Life	$212,280	$255,219	$660,676	$34,726	$0
Point Value	2	2	2	3	3
Revised Cost	$46,000,000	$3,912,500	$121,000,000	$545,200	$0
Years of Life	15	15.33	25	15.7	15
Cost/Year of Life	$3,066,667	$255,219	$4,840,000	$34,726	$0
Revised Point Value	1	2	1	3	3

The result of the change is shown in **Table 9-14, Comparison of Site Scores**, which shows the total site score with the original acquisition cost and the revised cost. It also shows that there was no change in the numerical order of the site scores with either acquisition cost. (PWCG, 2008).

Table 9-14, Comparison of Site Scores

Site	Original Acquisition Cost		Revised Acquisition Cost	
	Score	Rank	Score	Rank
Ameron Quarry	97	4	96	4
Mā‘ili	90	5	90	5
Makaiwa Gulch	99	2	98	2
Nānākuli B	97	3	97	3
Waimānalo Gulch	113	1	113	1

The detailed changes resulting from the change in site scoring for criterion number 18 is shown in **Table 9-15, Results of Application of Screening Criteria with Revised Cost of Acquisition**. The only change in this table is in criterion number 18. The number of points for Ameron Quarry and Makaiwa Gulch changed from six to three when using the increased cost numbers provided in Councilman Tam’s report to the State LUC. (PWCG, 2008).

Table 9-15
Results of Application of Screening Criteria with Revised Cost of Acquisition

Criterion		Ameron	Maili	Makaiwa	Nanakuli B	Waimanalo Gulch
Community						
1	Displacement of residences and businesses	3	3	3	3	3
2	Distance to nearest residence, school or busines	3	3	3	3	3
3	Wind direction relative to populated areas	6	2	2	2	2
4	Population density near the site	3	3	3	6	6
5	Proximity to parks and recreational facilities	2	2	1	2	2
Environmental and Land Use						
6	Zoning	1	3	3	3	3
7	Compatibility with/distance to existing land uses	2	1	1	1	2
8	Visibility from a general use public road	2	3	2	1	3
9	Visibility from residences and/or schools.	6	2	2	2	2
10	Groundwater	9	9	9	9	9
11	Wetlands	3	3	6	6	3
12	Flora and fauna habitat	6	6	6	2	6
13	Site aesthetics	2	1	1	2	3
14	Residential units along access road	3	1	3	3	3
15	Schools or hospitals along access road	3	2	3	3	3
16	Final use of the site when the landfill is closed	1	1	1	1	1
17	Archeological and/or historical significance	6	6	3	6	6
Economic						
18	Cost of site acquisition	1	2	1	3	3
19	Cost of development	2	2	2	2	3
20	Cost of operations	1	2	3	1	3
21	Impact of removal of site on tax base	1	1	1	1	3
22	Haul distance from H–POWER	4	4	6	6	6
Technical						
23	Landfill capacity or site life	6	6	9	6	6
24	Annual precipitation	2	6	4	4	6
25	Adequacy of drainage	1	2	2	2	1
26	Access to fire protection	1	2	2	3	2
27	Length of haul	4	2	6	4	6
28	Geology	2	2	2	2	3
29	Closure and post-closure cost	3	3	2	1	3
Other Considerations						
30	Employment	1	3	2	3	2
31	Access	6	2	4	4	6
	Total Site Score	96	90	98	97	113

~~9.6.4. Description of Sites Evaluated~~
9.7.4. Description of Sites Evaluated

Information for this section is based on data collected and analyzed as part of the Report of the Mayor's Advisory Committee on Landfill Site Selection, December 1, 2003 and **Appendix K, Alternatives Analysis** (PWCG, 2008).

~~9.6.4.1. Ameron Quarry~~
9.7.4.1. Ameron Quarry

Description

The Ameron Quarry comprises approximately 391 acres and is located on the windward side of Oʻahu, within the Kapaʻa watershed. (**Figure 9-2**). The site is capable of holding nine million cubic-yards of MSW. The site was once the caldera of an ancient volcano, making the rock almost completely impermeable and of high quality for construction purposes.[51] Due to the fine grained materials of the quarry, such as Alaeloa and Helemano silty clays, there are no sensitive or endangered flora and fauna habitat found inside and within a half-mile of the quarry. Archaeological and/or historical significance is low due largely to late twentieth century land disturbances. However, thirty-one sites of known archaeological and/or historical importance are located within one mile of the quarry.

Landfill Infrastructure: On-Site

Ameron Quarry currently does not have landfilling infrastructure on-site and there is no space on-site for that infrastructure. As the site currently operates as a rock quarry, the existing infrastructure would need to be modified for the quarry to operate as a landfill, but much of the heavy equipment services needed for the quarry could also be used for the landfill.

Landfill Infrastructure: Off-Site

The area within the quarry is used for the necessary infrastructure and for landfilling; space would be needed off-site for offices and other support facilities.

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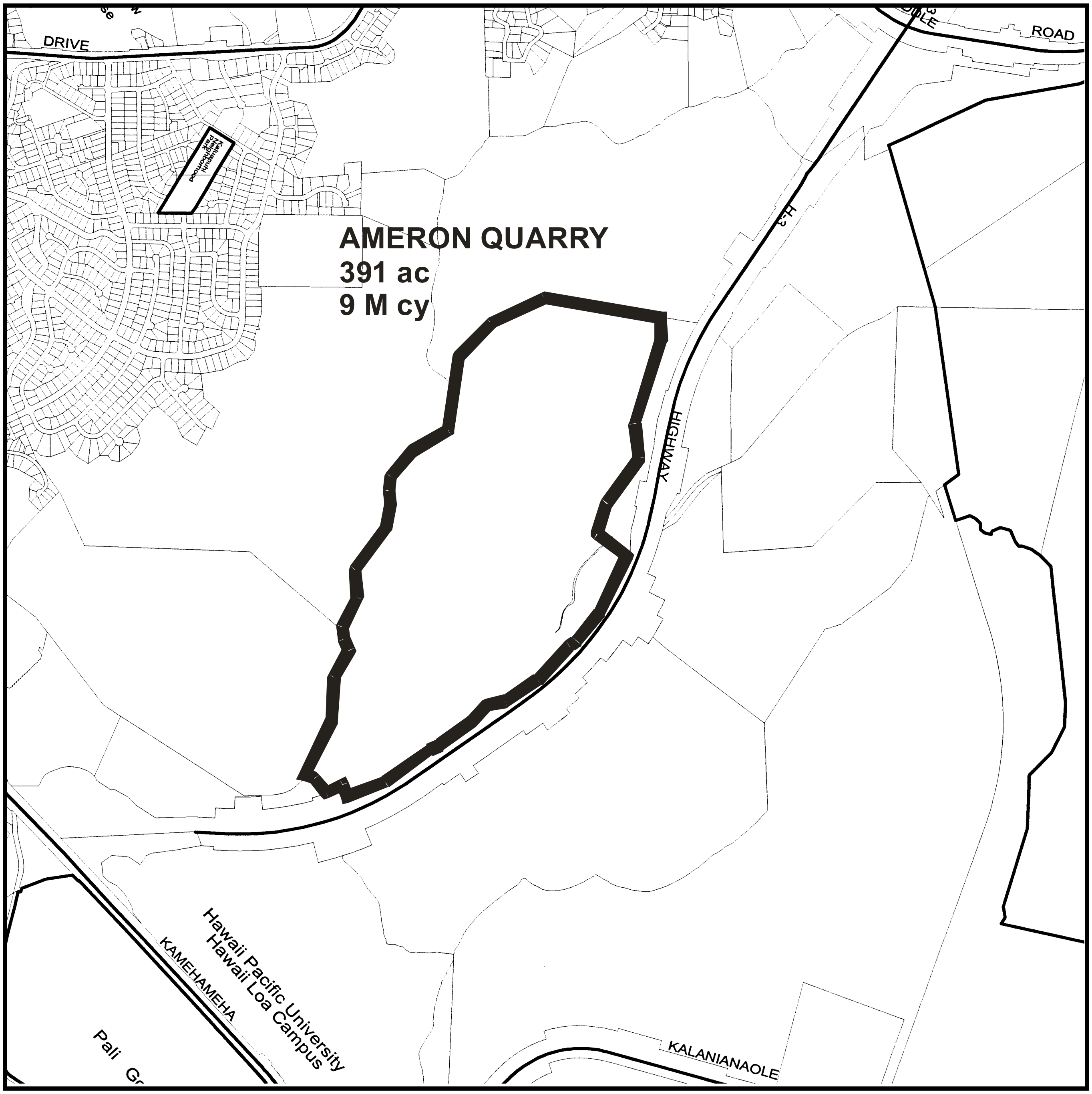
[51] KBAC Streamwalks, http://www.kbac-hi.org/, March 11, 2008.



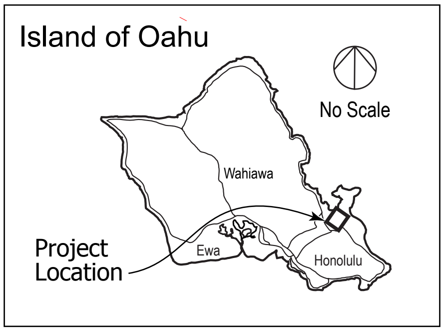


Figure 9-2
Ameron Quarry Alternative
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

Capacity

Ameron Quarry has an estimated 15-year life span as a landfill. The site life was estimated from existing information and does not reflect current landfilling practices. The landfill life was estimated based on data available in existing reports. The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary, and filling to the natural grade.

Opportunities and Constraints

Ameron Quarry has some major advantages as a landfill:

- It has significant capacity in an area where the City has operated a landfill. It will be closer to the point of waste generation for Windward Oʻahu than the WGSL.
- The site has existing infrastructure for quarry operations that could be used for a landfill, reducing startup costs.
- Roadways are wide enough and designed to carry heavy trucks.
- The site geology includes Alaeloa and Helemano silty clays that will help protect against leakage. Under State regulations, a landfill liner would be installed.
- The quarry operation has created a hole that may need to be filled.

Constraints associated with the use of Ameron Quarry as a landfill:

- The quarry receives more than 60 inches of precipitation annually, making this site the wettest of the five alternatives. However, landfills operated in wetter areas on the mainland must do so under stringent EPA Subtitle D regulations.
- The site is the furthest from the H–POWER facility and population centers
- The cost of acquisition is likely to be significantly more than shown in the Advisory Committee siting report. In addition, the land owner has stated

there will be costs associated with moving the operation to another location.[52]

- The Council Committee on Public Works & Economic Development (PWED) commented in its report on the review of sites that: "The PWED Committee has received testimony in opposition to siting a landfill at the Ameron Quarry site including testimony in opposition from the landowner Kaneohe Ranch, the lessee Ameron Hawaii, the Kailua Neighborhood Board and various city and State elected officials. No testimony has been received in support of a landfill at the Ameron Quarry site."
- The loss of construction material resources would be significant, according to the quarry operator. According to the operator, approximately 10 years of capacity remain at the quarry, but would be lost if the site were converted to a landfill, when the Advisory Committee report was issued in December 2003.

~~9.6.4.2. Māʻili Quarry~~

9.7.4.2. Māʻili Quarry

Description

Māʻili Quarry comprises approximately 200 acres and is capable of holding about 9.2-million cubic-yards of MSW. The site is located in the Waiʻanae District of Leeward Oʻahu (**Figure 9-3**). The site is 3,500 feet mauka of Farrington Highway, four miles northwest of Nānākuli, and three miles south of Waiʻanae. Elevation of the site averages approximately 40 feet above mean sea level (MSL). The soils are predominantly sand and gravel materials of the quarry including Lualualei clay and Mamala stony silty clay loam. Sensitive and endangered flora and fauna are not known to exist inside the quarry, nor within a half-mile distance. No archaeological or historical areas of significance have been documented within the site, however, 16 cultural sites do exist within a quarter-mile of the site boundaries; eight sites between a quarter-mile and half-mile; and six sites between a half-mile and mile.

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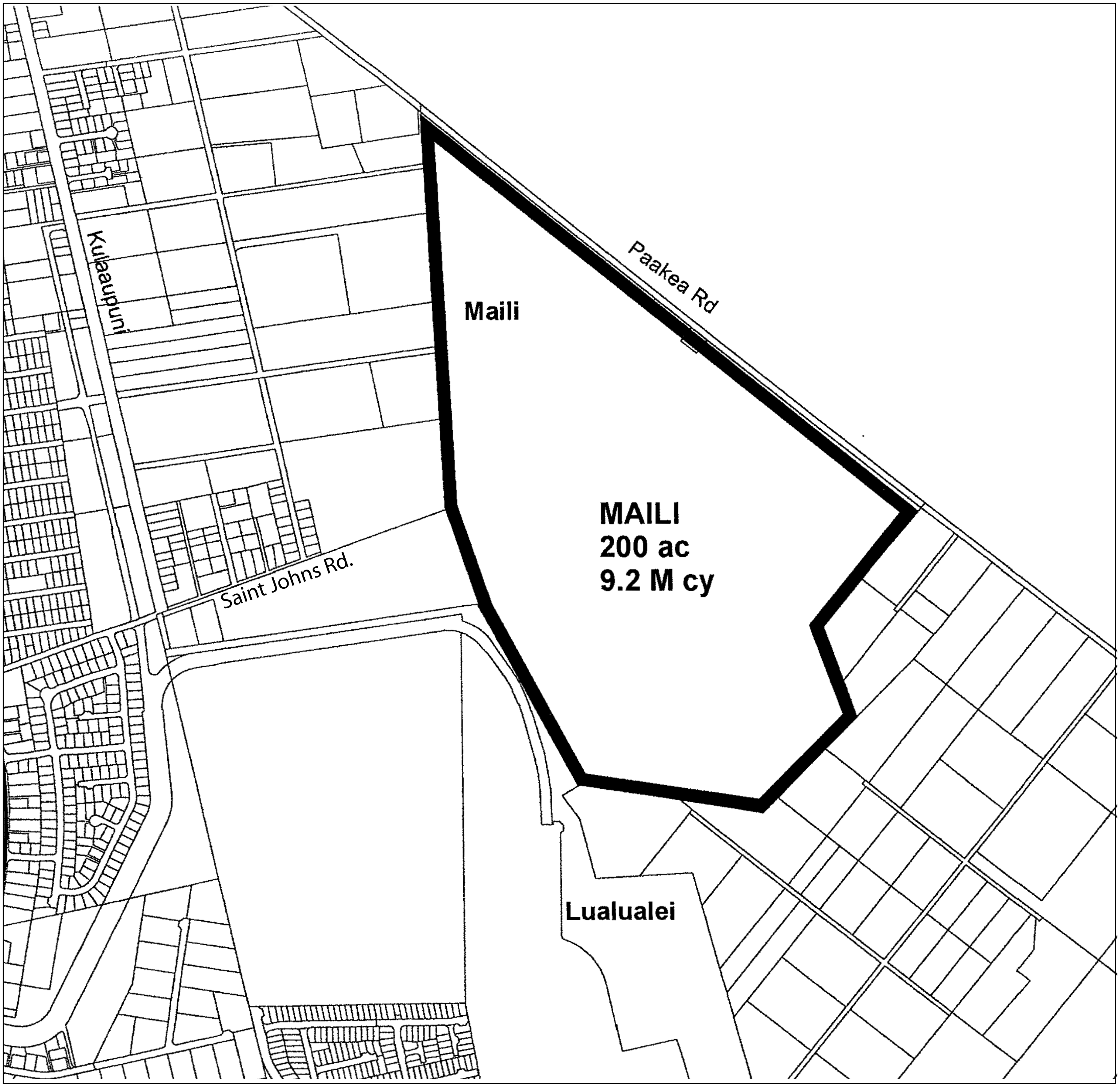
[52] Letter, Mr. Rod Tam to Mr. Anthony Ching, Executive Officer, State Land Use Commission, August 3, 2004, and Memorandum, Mr. Rod Tam to Concerned Citizens of Oʻahu, Summary Report, Landfill Site Selection Process, November 16, 2004



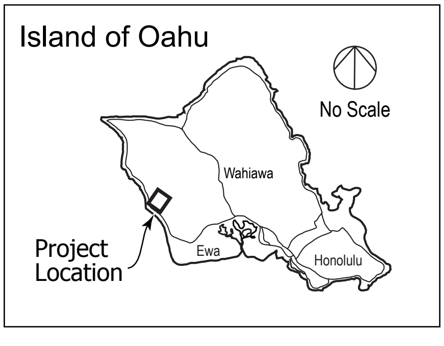


Figure 9-3
Ma'ili Quarry Alternative
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

Landfill Infrastructure: On-Site

Māʻili Quarry currently has infrastructure on-site to support the existing quarrying operation. However, there is space available on-site for necessary landfill infrastructure. As the site currently operates as a recycler of concrete, improvements and modifications to the existing concrete recycling infrastructure may be necessary for Māʻili Quarry to operate as a landfill.

Landfill Infrastructure: Off-Site

No facilities are needed off-site as space appears to be available on-site.

Capacity

Māʻili Quarry has an estimated 15.33 year life span. This equates to an estimated capacity for the disposal of approximately 9.2-million cubic-yards of waste. The landfill life was estimated based on data available in existing reports. The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary and filling to the natural grade.

Opportunities and Constraints

The advantages of using Māʻili Quarry as a landfill are:

- Availability of on-site cover
- On-site brackish well for dust control
- Consistent zoning in the State Agricultural District
- Utilities on-site
- Low precipitation
- Close proximity to H-POWER

Constraints to the use of Māʻili Quarry as a landfill are:

- The distance to residents, schools, and businesses. The site is located 1,139 feet from Māʻili Elementary School and 875 feet from the nearest residence. It is just over 100 feet from single-family residential units, and the Waiʻanae Coast Comprehensive Health Center is located along the access road to the quarry.

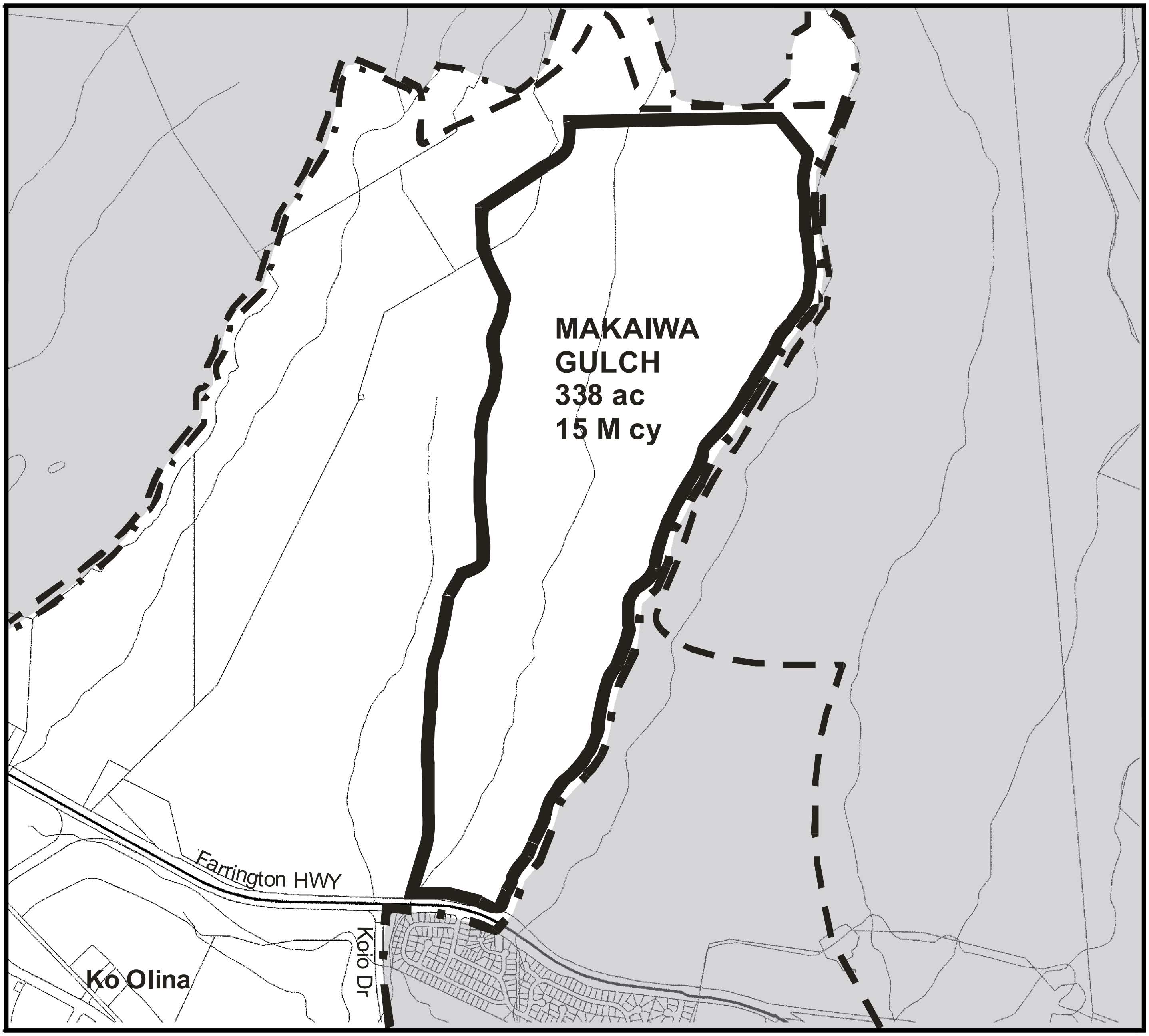
- Traffic accidents cause major delays; only one road access
- Significant pedestrian cross-traffic
- Access road privately owned
- Only coral quarry on-island
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development commented: "The PWED Committee has received testimony in opposition to a landfill at the Māʻili site and anywhere on the Leeward coast in general. No testimony has been received in support of a landfill at the Māʻili site.

~~9.6.4.3. Makaiwa Gulch~~

9.7.4.3. Makaiwa Gulch

Description

Makaiwa Gulch is located next to the WGSL and comprises 338-acres (**Figure 9-4**). The site is capable of holding approximately 15 million cubic yards of MSW (25-years capacity). The site is 1.5 miles northwest of Puu Palailai, north of Farrington Highway, 1.6 miles south of Puu Manawahua, and 1.3 miles east of Kahe Point. Elevation ranges from approximately 120 feet to over 600 feet above MSL. Soils are predominantly sand and gravelly materials associated with the gulch including Stony steep land, Lualualei extremely stony clay, Helemano silty clay, and Mahana-Badland complex soils. Sensitive and endangered flora and fauna are not known to exist within the site but do exist at distances greater than a half-mile away. Seven sites of archaeological and/or historical significance are located within and on the edge of the site. Twenty-three sites are located within one mile, fourteen within a quarter-mile (although only two have been evaluated as possibly meriting preservation), four between a quarter-mile and a half-mile, and five sites are between a half-mile and one mile. Makaiwa Hills, LLC, has ~~submitted~~ an accepted Final EIS for the development of a residential community on 1,781 acres of undeveloped land in ʻEwa, Oʻahu; the same land proposed as an alternative landfill site. ~~The notice is available on the Office of Environmental Quality Control (OEQC) web page.~~ The FEIS was published on November 8, 2007, and the zone change for the project was approved on September 29, 2008, as Ordinance 08-26 (Bill 47, FD1).



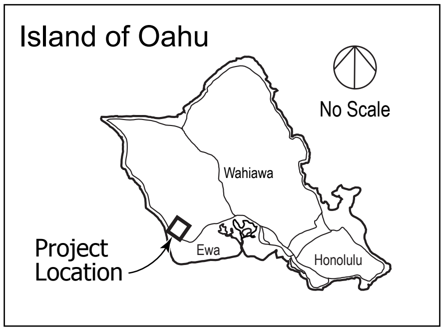


Figure 9-4
Makaiwa Gulch Alternative
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

Landfill Infrastructure: On-Site

There is space available on-site for the construction of landfill infrastructure.

Landfill Infrastructure: Off-Site

Construction of infrastructure off-site is not anticipated to be required.

Capacity

Makaiwa Gulch has an estimated 25 year life as a landfill, or disposal ability to process 15-million cubic-yards of waste. The landfill life was estimated based on data available from existing reports. The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary, and filling to the natural grade. With evaluations based on current practice, it is likely that significantly more life is available at this site than the estimate identified for the EIS.

Opportunities and Constraints

The Makaiwa Gulch site has several advantages:

- It has a significant amount of capacity – 25 years
- Access is potentially available off of Farrington Highway
- Consistent zoning in the State ~~Agricultural~~ Urban District
- The property is currently not being used, although development for a residential subdivision has been proposed
- It is the shortest distance of the alternative sites from the H-POWER facility and close to a major service population (short haul distance)
- Extensive archeological/flora/fauna surveys have been completed
- The area has low precipitation, which will mean less water from rainfall that must be managed at the landfill

There are several major constraints:

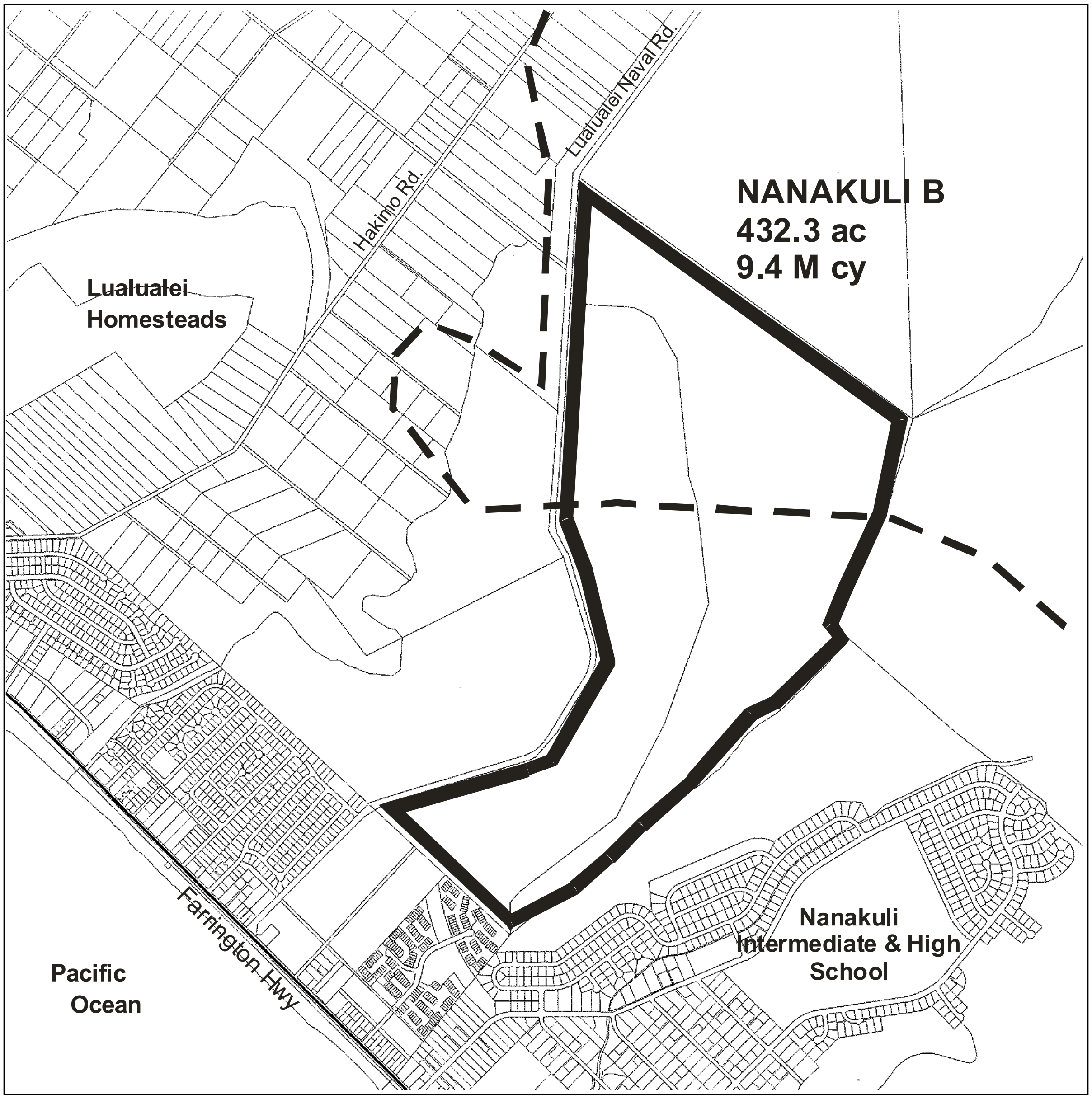
- The project has completed its FEIS for residential development which would preclude its use for a landfill.
- Acquisition costs are likely to be high
- Upwind from heavily populated residential and resort areas
- No on-site utilities or access road

- Rockfall hazards may exist along the highway to Makaiwa Gulch
- Not consistent with the development plan which is for residential subdivision development
- Close to a transition between H-1 and Farrington Highway
- Power lines (138 KV) cross the site
- View planes readily seen
- Perception that a landfill would create a major economic impact that would “close down” residential and resort development
- Close to center of area of major population growth
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development commented: “The PWED Committee has received testimony in opposition to a landfill at the Makaiwa Gulch site including testimony in opposition from the landowner and also testimony was received in opposition to siting a landfill anywhere on the Leeward coast in general. No testimony has been received in support of a landfill at the Makaiwa Gulch site.”

~~9.6.4.4. Nānākuli B~~
9.7.4.4. Nānākuli B

Description

The Nānākuli B site encompasses 432.3-acres and is capable of holding 9.4 million cubic yards of MSW. The site located in West Oʻahu and south of the Māʻili Quarry (**Figure 9-5**). The site is 2,000 feet mauka of Farrington Highway and Nanaikapono Beach Park, 4,000 feet west of Puu Helakala, and 4,000 feet east, southeast of Puu O Hulu Uka. Elevation ranges from approximately 40 feet to over 300 feet above MSL. Nānākuli B borders a critical habitat area for sensitive and endangered flora and fauna. Although the potential landfill site does not contain any archaeological and/or historical sites within its boundaries, sixty-two archaeological and/or historical sites can be found within one mile of the site boundaries; with the majority of the sites located closer to one mile out. Three of the archaeological sites are less than a quarter-mile from the site boundary; nine are located between one-quarter and one-half mile, while fifty are located between one-half and one mile distant.



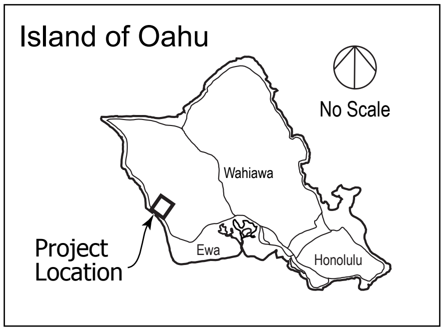


Figure 9-5
Nanakuli B Alternative
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

R.M. TOWILL CORPORATION May 2008

Leeward Land, LLC, has submitted an EISPN for the construction and operation of an MSW landfill and composting facility on an approximate 172 acre site at Nanakuli B. The notice was submitted May 23, 2006, and is located on the State OEQC web page.

Landfill Infrastructure: On-Site
Nānākuli B currently does not have landfilling infrastructure on-site; however, space is expected to be available.

Landfill Infrastructure: Off-Site
Off-site space is not anticipated to be required for infrastructure.

Capacity
Nānākuli B has an estimated 15.6 year life, or capacity of 9.4 million cubic yards. The landfill life was estimated from data available in existing reports. The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary, and filling to the most advantageous grade.

Opportunities and Constraints
The Nānākuli B site has several advantages:

- The zoning is consistent.
- The area gets low precipitation.
- The landfill would be close to existing C&D landfill.
- Utilities are readily accessible.
- The site is not currently being used.
- The acquisition costs relatively low.
- Brackish wells are available on-site for water for dust control.

The disadvantages of this site include:

- Hazardous rockfalls on highway to site.

- Traffic accidents cause major delays on Farrington Highway and could slow access to the site.
- Pedestrian cross traffic on Farrington Highway and the access road.
- The Navy owns the access road, which may necessitate the City paying for access.
- Upwind of Māʻili Elementary School and residences. It is surrounded by single-family residences less than 300 feet away, on the southern and western boundaries. Nānākuli Elementary is 1,372 feet away, Nanaikapono Elementary is 2,190 feet away, and the Pacific Shopping Mall is 1,335 feet away. Residences are located on the far west side of Lualualei Naval Road.
- Dust could impact nearby homes.
- Trucks would pass schools and medical facilities to get to site.
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development commented: “The PWED Committee has received testimony in opposition to a landfill at the Nānākuli B site and anywhere on the Leeward coast in general. No testimony has been received in support of a landfill at the Nānākuli B site.

~~9.6.4.5. Waimānalo Gulch~~
9.7.4.5. Waimānalo Gulch

Description

Waimānalo Gulch Sanitary Landfill is a 200-acre site with approximately 92.5 acres remaining for expansion. The site was preliminarily identified to be capable of holding 9 million cubic yards of MSW. Waimānalo Gulch is owned by the City & County of Honolulu and operated under contract by Waste Management of Hawaiʻi, Inc. The site currently receives the H-POWER facility’s ash and residual wastes. It is also the landfill site for commercial MSW that exceeds the capacity at H–POWER.[53] The site adjoins

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[53] Waste Management, Keeping Hawaii Clean, http://www.keepinghawaiiclean.com/Waimānalo.htm, March 11, 2008.

Farrington Highway. To the northwest is the Hawaiian Electric Kahe Power Generating Station. South of the site is the Ko Olina Resort, while southeast of the site is the Honokai Hale residential subdivision.

The on-site soils including Rock land, Stony steep land, Lualualei extremely stony clay, and Mahana-Badland complex, provide an improved barrier between surface and groundwater. Sensitive and endangered flora and fauna habitat are not known to exist within the boundaries or within a half-mile of the site. Archaeological and/or historically significant sites are not found within the majority of the landfill site. An archaeological site comprised of three stone uprights was recently discovered. Mitigation to address the find is underway with the State Historic Preservation Division and community informants to identify an appropriate and culturally sensitive means of preserving the stones. No other sites are known within the property. Surrounding the site, 30 sites of potential archaeological and/or historical significance can be found between a quarter-mile and half-mile of the site boundaries.

Construction and operating practices at the WGSL are consistent with state and City & County of Honolulu requirements for site and soils stability and environmental compliance. The operation of the landfill had been the subject of DOH action regarding a notice of violation and fine. The DOH and WMH, the site operator, have agreed to a settlement.

Landfill Infrastructure: On-Site
WGSL currently has landfill infrastructure in place as well as additional space available for expansion of such infrastructure. The area permitted ~~for landfilling~~ by the current SUP is 107.5 acres of the total 200 acre site.

Landfill Infrastructure: Off-Site
Major new infrastructure facilities are not needed off-site.

Capacity

WGSL has a minimum estimated 15 year life, or ability to dispose of nine million cubic-yards of waste (This capacity is anticipated to be adjusted as required based on updated technical evaluation performed by WMH).

Opportunities and Constraints

The use of the WGSL offers the following opportunities:

- Least costly site to acquire and operate as it is owned by the City & County of Honolulu and the necessary infrastructure is already in place
- Close to H-POWER
- The technical information needed to design the landfill is known. With the other sites, a significant amount of technical information will be needed before they can be designed and permitted.
- Road access acceptable
- Close to the service population centers – shorter haul distance than all alternative sites, except Makiawa Gulch.
- Low precipitation
- It is good policy to use a resource, such as the WGSL property, until it is no longer capable of providing the service.
- In its report on its review of potential sites the PWED Committee commented: “There was some testimony received in favor of including the Waimānalo Gulch Landfill as one of the sites under consideration by the City Council and some testimony received supporting the continued use of the Waimānalo Gulch Landfill including testimony from the current operator, Waste Management Hawaii."

There are several disadvantages to the continued use of the WGSL including:

- It is located upwind and visible from a major resort area
- Further effort involving landscaping is needed to reduce viewplanes of the landfill facing Farrington Highway and Ko Olina

- Developers' representatives have claimed there would be major economic impact on residential development and resort development with continued operation of the Waimānalo Gulch Sanitary Landfill
- Trucks are visible traversing on-site and along Farrington Highway
- The site is located close to the center of population growth
- In its report on its review of potential sites the PWED Committee commented: "The PWED Committee has received testimony in opposition to continued use of the Waimānalo Gulch Landfill and also testimony in opposition to siting a landfill anywhere on the Leeward coast in general."

~~9.7. Preferred Alternative~~
9.8. Preferred Alternative

There are several alternative technologies and the transshipment of waste that show promise toward reducing the need for landfills. The generation of MSW that exceeds the processing capacity of H-POWER as well as the generation of ash and residue, however, requires that facilities such as a municipal waste landfill be a part of the City's long term waste management system. (PWCG, 2008).

The time between preparation of this EIS and the date of compliance with the State LUC Order, November 1, 2009, is insufficient for the administrative processes to permit another alternative for all of the MSW and H-POWER refuse being disposed of at the WGSL. The State LUC Order calling for a halt to the acceptance of any further MSW deliveries to the WGSL will come into effect on November 1, 2009. Even if this timeframe were extended the schedule for preparation and approval of a new alternative site can be expected to take several years. In order for any alternative to be viable it must address several considerations (PWCG, 2008):

- It must provide for the health and safety of Honolulu's residents and visitors by properly managing the waste produced on the island.

- Any alternative, whether based on new or existing technology, another site, or based on off-island transshipment, will need to be put under contract, permitted, and made operational by November 1, 2009.
- Because of the complexity of siting requirements in Hawaiʻi and the limited availability of land resources for facilities such as a landfill, a significant amount of time is expected to be required for an alternative to become operational. This would involve the need for community consultation, and the environmental and land use permitting process.

The WGSL is the only alternative currently available to dispose of MSW and H–POWER ash and residue. Continued use of the WGSL until it has been filled to its physical capacity to accept waste is the Preferred Alternative. (PWCG, 2008).

Waimānalo Gulch Sanitary Landfill
The WGSL has the capacity to handle MSW including H-POWER ash and residue for at least 15 years. The site provides this service today, but only within the limits of its currently permitted area.

Waste Transshipment Alternative
Transshipment alone cannot handle all of the waste that is generated. Transshipment of waste additionally transfers the responsibility for stewardship of the land to a mainland landfill that disposes of the transshipped waste. However, operation of transshipment in conjunction with the continued use of the WGSL; expansion of recycling alternatives; and addition of a third boiler to H–POWER, offers the City another viable option for reducing the volume of material requiring landfilling.

The regulatory process for transshipment is anticipated to be lengthy. It will involve and require federal approval of the transshipment of waste materials from Honolulu to the mainland, and state and City approval of the facilities used to prepare the waste for shipment.

Three companies have expressed interest in transshipping Honolulu's waste. At this time, Hawaiian Waste Services has received the federal approvals needed to ship the waste from its point of arrival on the mainland up the Columbia River to the Roosevelt Landfill in Washington State. [54]/[55]

Transshipment may offer near term advantages to the City in reducing the disposal of refuse at the WGSL. However, transshipment offers an alternative for reducing only a major part of the MSW stream. There are still portions of the waste stream that cannot be shipped due to federal restrictions; some items cannot be accepted due to the process used; and financial and solid waste management considerations are anticipated to limit transshipment to a selected portion of the waste stream.

The continued use of the WGSL offers a means to handle materials that could otherwise not be shipped and offers an essential safety net should a shipping strike occur, interrupting the flow of barges.

It is noted that with transshipment that the generation of greenhouse gasses (GHG) should be considered. Transshipment would produce approximately 72.6 percent more GHG emissions than disposal at the WGSL. The difference in emissions compared to taking the waste to H–POWER is even more dramatic. H–POWER shows a reduction in island-wide emissions (or negative emissions) of 28,557 metric tons per year (MTY) of CO_2 equivalent compared to a positive generation from transshipment of 19,982 MTY. While the WGSL is not expected to be capable of being replaced by transshipment, the amount of MSW needing on-island landfill disposal could be significantly reduced by the volume of waste transshipped.

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[54] United States Department of Agriculture (USDOA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine. Compliance Agreement with Roosevelt Landfill. January 10, 2007.

[55] USDOA APHIS, Plant Protection and Quarantine. Compliance Agreement with the State of Hawaii. January 19, 2007.

Technology Alternative

Technology has continued to advance since the last EIS was prepared for the Waimānalo Gulch in 2002. The references used for this evaluation note that alternative technologies have operated in Europe and Japan processing MSW for two or more years. Other alternatives are showing promise and other jurisdictions including New York City and Los Angeles County are investing a significant amount of time and money studying technologies and evaluating proposals to provide a technology based solution.

The jurisdictions considering alternative technologies rely on the presence of a landfill within reasonable distance by rail or truck transport to provide backup if the technology does not perform as expected. This is not applicable for Honolulu, making the use of an alternative technology and closure of the WGSL both unwise and inappropriate.

None of the technology based approaches described in the alternatives analysis meets all of the City requirements as cited in Section 9.~~5.~~6.2. (see also Appendix K). In addition, none of the alternative technologies can have the environmental, land use, permitting, and administrative contracting completed before the November 1, 2009, State LUC deadline.

Expansion of recycling offers advantages for reducing waste going into the WGSL. It should be pursued but cannot be relied upon to completely eliminate the need for the landfill because of recycling residue that cannot be further processed or reused. The recycling residue that is in compliance with disposal regulations is landfilled.

Addition of a third boiler to H–POWER will reduce the amount of material needing disposal and generate energy needed on the island. However, landfill capacity is needed for disposal of ash and non-processible residual materials. In addition, the environmental, land use, permitting and administrative contracting cannot be completed before the November 1, 2009, State LUC deadline.

Alternative Landfill Sites

There are no alternative landfill sites that offer the same positive attributes as the WGSL. Because it is an operating site with remaining capacity, it has many benefits the others do not have. Assuming that the State LUC and DOH both extend the existing permits, there will be no significant delay in the proposed use.

The four alternative sites considered in the analysis have the capacity and other important features that make them reasonable candidates. However:

- Representatives for the Ameron Quarry and the James Campbell Estate, owner of the Makaiwa Gulch site, have both provided estimates of significantly increased cost to acquire the sites and have highlighted several additional complicating issues. Using either of these two sites as a landfill will require potentially protracted action to obtain the site in addition to lengthy time for the environmental, land use, and permitting processes. In addition, the Makaiwa Gulch site is already in the process of development of the site.
- The other two sites, the Māʻili Quarry and Nānākuli B are both located further within Coastal Waiʻanae, which would probably result in increased opposition from the community. Also, the Nānākuli B site has been proposed as a landfill by a private developer, so the cost of acquiring the site should be expected to be greater than estimated.

Section 10
Irreversible and Irretrievable Commitment of Resources and The Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

10.1 Irreversible and Irretrievable Commitment of Resources

The proposed expansion of the Waimānalo Gulch Sanitary Landfill will require the irreversible and irretrievable commitment of a number of resources. These resources include materials, capital, manpower and energy needed to plan, construct, operate, and maintain the proposed lateral expansion of the landfill.

The commitment of the additional 92.5 acres of land to expand the site will be irreversible and irretrievable, but will not constitute a land use that is inconsistent with the present use of the site for a municipal sanitary landfill. The use of the site for landfilling will eliminate it from other uses for a ~~period of approximately~~ minimum of 15 years, following acquisition of the required environmental and development permits. Thereafter, the site will be closed and monitored for a period of not less than 30 years to maintain the safety and security of the site, and in accordance with EPA regulations. The WGSL property is already limited in potential uses, permitted or otherwise.

The proposed expansion will result in the use of soils for landfill cover material which will be an irretrievable loss of this resource. However, the surface of the completed landfill will be sloped and covered with a final engineered cover layer that will be revegetated to promote soil retention and ensure a visual appearance compatible with the existing dry, lowland scrub vegetation found surrounding the project site. All work related to the closure of the landfill will be in accordance with federal, state and City & County of Honolulu laws and regulations. Accordingly, whether or not used as municipal sanitary landfill, the project site will involve the reestablishment of revegetation and set aside of the site for future use as open space, with opportunities for recreational uses similar to other closed landfills on O‘ahu.

Implementation of the project will not result in the significant adverse loss of natural or cultural resources.

The site is not a significant wildlife habitat. There are no federal or state listed endangered species known to inhabit the area. While there is a known archaeological and historic site present within the project boundary, proposed mitigation measures will ensure against potential for negative adverse impacts.

Site preparation and development will utilize fiscal, manpower, and material resources for planning, engineering and design, construction, and operations and maintenance (O&M) purposes. Expenditure of these resources will not be recoverable. Capital expenditures will be required for management and the expansion of facilities and utilities over the proposed period of use.

The site will be limited in the number of feasible uses which may be available upon closure of the proposed expansion area. The long-term stabilization of the landfill site and potential generation of landfill gases will further preclude development of the site for near term residential, recreational, or other related urban purposes. It is possible, however, that with future long term stabilization of the site that some uses may be permitted including parkland or recreational facilities. This practice has successfully been applied to other sites previously used for landfilling purposes including Kakaʻako Waterfront Park, and the Sand Island State Recreational Park.

10.2 Relationship Between Local Short-Term Uses Of The Environment And The Maintenance And Enhancement Of Long-Term Productivity

This EIS provides information on many promising methods for the reduction, recycling, and reuse of various components of the municipal solid waste stream. All technology based solutions including waste transshipment, however, involves the generation of waste or waste by-products that cannot now be feasibly disposed of by methods other than landfilling.

A safe, efficient, and feasible means of disposal of municipal solid waste, therefore, must continue to be made available for the broader island community of O‘ahu. The proposed project is at this time the most viable method for the disposal of municipal solid waste in Honolulu.

Potential for negative adverse impacts to the community and environmental resources will be addressed through the use of appropriate mitigation measures as described in this document. Mitigation to address potential for impacts to area residents will include operational procedures and practices, use of new equipment, and management measures involving coordination with the community to address concerns and issues involving landfill operational practices. A major effort that is currently on-going involves the WGSL Advisory Oversight Committee established by the present City Administration to provide direct input and community consultation over issues or concerns involving landfill operating practices and procedures. The advice and guidance of the WGSL Advisory Oversight Committee will continue to be sought to allow for a responsive and well run facility.

ENV, as supported by the Administration and City Council, will also continue to develop feasible new technologies and practices to further reduce the volume of waste requiring disposal in a municipal sanitary landfill. Effort in this direction has been already implemented with the construction of a waste digester at Sand Island Wastewater Treatment Plant that has significantly reduced the need for the disposal of raw sewage sludge.

Potential for contamination of non-potable/non-drinking groundwater resources is a long-term concern since leachate migration could occur during landfill operations as well as during post closure of the landfill. The project site, however, is permitted within an area located over a groundwater region that is not suitable for drinking water uses.

There is concern that the underlying non-potable/non-drinking brackish water supply may be withdrawn in the future and desalinated to produce a potable/drinking water resource. However, on-going water quality monitoring as indicated that the landfill is currently within the allowable standards for the protection of water quality as regulated by the State Department of Health. In addition, if and when desalination is implemented, there are other locations on Oʻahu where non-potable/non-drinking brackish water can be withdrawn. Although there are no definitive future plans for the withdrawal of non-potable/non-drinking water from the area for desalination and potable/drinking use, the proposed project will be designed in accordance with federal, state, and City & County of Honolulu laws and regulations governing the protection of Hawaiʻi's groundwater resources. All practicable measures to minimize and mitigate against contamination from leachate or unmanaged stormwater discharges, therefore, will be maintained.

The proposed project will not result in the significant loss of environmental resources. Although implementation of the project will preclude the use of the site for other purposes for the duration of the project, existing conditions and land use regulations governing the site already restrict other uses.

The proposed expansion of the site will require the irretrievable use of the land from other purposes for the duration of the proposed project. As a result, other potentially feasible uses will be limited. However, the project will promote the maintenance and enhancement of long-term productivity through maximizing the use of an existing public land resource for a municipal sanitary landfill. The project will fulfill an essential public service and provide for the desired social and economic growth of the broader islandwide population of Oʻahu.

Section 11
Unresolved Issues

11.1 Preservation of Stone Uprights

The final preservation of the three stone uprights discovered at the project site are presently in the process of review and coordination with the SHPD, Office of Hawaiian Affairs, and the SHPD identified community cultural informants to develop and define an appropriate course of preservation.

While the location of the stone uprights in the southwestern edge of the WGSL would affect planned construction activities in that portion of the site, other portions of the landfill property also could be affected depending on the need for site adjustments to accommodate the area containing the uprights. This effect on the landfill design is expected to be known only after the SHPD decision regarding the preservation plan for the uprights. As applicable, this decision will be factored into the final design and engineering, and construction drawings that will be prepared for the proposed project.

11.2 Final Engineering and Construction Details

The detailed final landfill phasing and engineering plans will be prepared by the operator of the site, Waste Management of Hawaii, Inc. Although the final phasing and design documents for the project are not yet complete, the overall site that will be prepared for active landfill cells is approximately ~37 acres within the planned 92.5 acres of lateral expansion. The remaining areas of the 92.5 acre not planned for active landfill cells will be used for stockpiling of landfill cover material, utilities including access roadways and drainage controls, landscaping, and related landfill associated purposes.

Final landfill boundary areas will be examined to ensure that sufficient slope and grades can be designed within appropriate engineering standards to maintain stability of the site. Once the final boundary has been determined a landfill phasing plan, and construction plans will be prepared. All final plans and specifications will be reviewed for conformance with federal, state, and City & County of Honolulu laws and regulations to ensure the landfill is operating in a safe and secure manner.

11.3 Release of Crushed Rock from the Site

The proposed project will result in the generation of recovered soil, cobbles and boulders from excavation and grading of the site. Soils suitable use as cover material will be stockpiled and used for landfill cover. The landfill cover will be used for establishment of vegetative cover, landscaping, intermediate cover, and eventual final covering of the completed landfill surface.

Cobbles (rocks less than approximately 10 pounds in weight) and boulders will be used for various purposes including feed for rock crushing operations to produce aggregate, and for landscaping. The completed crushed rock or aggregate will later be used onsite to facilitate operations within the landfill or for use by the City & County of Honolulu for other projects that require material.

A decision regarding the release or possible sale of any excess material has not yet been determined. The City & County of Honolulu, however, retains the ownership rights to any excavated materials. On May 30, 1991, the City received bids for the material excavated, processed, and removed from Waimanalo Gulch Sanitary Landfill. Since August 1, 1991, the City has received royalties for any excavated and processed material removed from the WGSL. Until the final design has been approved, it will be difficult to determine the volume of excess materials that could be removed from the site.

11.4. EPA Finding and Notice of Violation (NOV)

On April 5, 2006, the EPA announced by press release that WMH and the City & County of Honolulu were alleged to have violated certain provisions of the Clean Air Act at WGSL. The EPA's Finding and Notice of Violation ("EPA NOV") contained an allegation that that WMH violated EPA's regulations by failing to meet certain deadlines for designing and installing a landfill gas collection and control system (GCCS). WMH has addressed that alleged violation by installing and now operating the WGSL's GCCS.

In addition, EPA alleged that the WGSL continues to operate in violation of EPA regulations because the WGSL's wellhead gas temperatures exceed 131°F in some of the landfill gas wells. WMH continues to monitor and evaluate the potential causes of the elevated gas temperatures and is working with DOH and EPA to demonstrate that the Landfill can be safely operated at these higher temperatures, as discussed in Section 11.5. Elevated Temperatures.

11.5 Elevated Temperatures

Due to a complex combination of naturally occurring biological and chemical processes, the gas temperatures of some of the wells at the WGSL exceed the standard operational temperature (131°F) established by the EPA for municipal solid waste landfills. Federal regulations allow the owner or operator of a landfill to establish a higher operating temperature at a particular well of the gas collection and control system ("GCCS") if the owner or operator demonstrates that the elevated temperature does not cause fires or significantly inhibits anaerobic decomposition by killing methanogens. Many landfills have made such demonstrations for operating temperatures higher than 131°F.

WMH has been carefully monitoring and evaluating the landfill since the elevated temperatures were first detected, and has been regularly submitting monitoring data to

EPA and DOH to confirm the continued environmentally safe operation of the landfill. The wells with temperatures above 131° F average approximately 165° F. One well has had an isolated temperature reading of 184° F, which is the highest recorded temperature of any well at the landfill. Extensive scientific investigation has confirmed that the higher temperatures are not the result of subsurface combustion or fire. As allowed by federal regulations, WMH has prepared and submitted information to the EPA and DOH demonstrating that the elevated temperatures have not caused a subsurface fire within the landfill and that the landfill can be safely operated at the elevated landfill temperatures. WMH will continue to coordinate appropriate measures to maintain compliance with all regulations as required by law.

11.6 Appeals of Decisions to Extend SUP

On February 12, 2008, Colleen Hanabusa and Ko Olina Community Association (collectively, “Intervenors”) filed a Notice of Appeal to Circuit Court, appealing the Planning Commission’s Findings of Fact, Conclusions of Law, and Decision and Order dated January 16, 2008, and naming the Planning Commission and ENV as appellees. See Ko Olina Community Association v. Planning Commission, Circuit Court of the First Judicial Circuit, State of Hawaii, Civil No. 08-1-0313-02 (Agency Appeal). On February 15, 2008, Intervenors filed an Amended Notice of Appeal to Circuit Court, adding DPP as an appellee. This appeal challenges the Planning Commission’s decision to extend the deadline for acceptance of waste at WGSL from May 1, 2008, to May 1, 2010, or until the approved area reaches its permitted capacity, whichever occurs first.

On April 10, 2008, Intervenors filed a Notice of Appeal to Circuit Court, appealing the Findings of Fact, Conclusions of Law, and Decision and Order adopting with Modifications, the City and County of Honolulu Planning Commission’s Recommendation to Approve Amendment to Special Use Permit dated March 14, 2008, and naming the LUC and ENV as appellees. See Ko Olina Community Association v. Land Use Commission, Circuit Court of the First Judicial Circuit, State of Hawaii, Civil No. 08-1-0727-04 (Agency Appeal). This second appeal challenges the LUC’s decision to extend the deadline for acceptance of waste at WGSL from May 1, 2008, to November 1, 2009, or until the approved area reaches its permitted capacity, whichever occurs first.

The two appeals were consolidated on June 25, 2008. On October 1, 2008, the Circuit Court heard oral argument from the parties on the consolidated appeals. On October 3, 2008, the court entered its order affirming the LUC's decision in Civil No. 08-1-0727-04, and dismissing as preliminary and not appealable the Planning Commission's decision in Civil No. 08-1-0313-02, but maintaining the consolidated appeals and records on appeal. On October 7, 2008, the court entered an amended order correcting two internally inconsistent errors in its October 1, 2008 order. Final judgment had not been entered as of October 8, 2008.

Section 12
Permits and Regulatory Approvals That May Be Required

Except as otherwise noted, the following permit and regulatory approval applications are planned to be filed for the proposed project upon completion of the EIS process.

12.1. Federal

EPA, Title V, Clean Air Act, Covered Source Permit
Federal Communications Commission (FCC) License, Radio Station Authorization (Land Module Control Station - 4 frequencies, site radios) This authorization has been approved.

12.2. State of Hawai‘i

Department of Agriculture (DOA), License for Commercial Measuring Devices (scale). This license has been approved.
Department of Health (DOH), Solid Waste Management Permit
National Pollutant Discharge Elimination System (NPDES) Permits
  Notice of Intent (NOI) Form C, Construction Stormwater Permit
  NOI Form B, Industrial Stormwater Permit
State Land Use Commission, State Land Use District Boundary Amendment (or State Special Use Permit, see below[1])

12.3. City & County of Honolulu

Department of Planning and Permitting (DPP)
  State Special Use Permit (SUP) Amendment[2]

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[1],[2] The filing of a new SUP or a new Land Use District Boundary Amendment (LUDBA) constitutes a viable means of addressing the use of the site for a municipal landfill.

Building Permits (for various miscellaneous improvements including electrical, pump, scale, and related facilities)
Grubbing, Grading, Stockpiling Permits

Section 13

Organizations, Agencies, and Public Parties Consulted in the Environmental Impact Statement Process

13.1. Federal Agencies

Environmental Protection Agency, Pacific Islands Contact Office (PICO)
U.S. Air Force Palehua Solar Observatory
Department of the Army, Corps of Engineers
U.S. Fish and Wildlife Service

13.2. State Agencies

- Department of Agriculture
- Department of Business, Economic Development and Tourism
- Department of Defense
- Department of Hawaiian Home Lands
- Department of Health
  - Environmental Management Division
    - Clean Air Branch
    - Clean Water Branch
    - Solid and Hazardous Waste Branch
    - Office of Environmental Quality Control
- Department of Land and Natural Resources
  - Historic Preservation Division
  - Land Division
- State Land Use Commission
- Office of Hawaiian Affairs
- Department of Transportation
- University of Hawai‘i

13.3. City & County of Honolulu

Board of Water Supply
Department of Planning and Permitting
Department of Transportation Services
Honolulu Fire Department
Honolulu Police Department

13.4. Private and Community Organizations and Elected Officials

Hawaiian Electric Company
Honolulu Star-Bulletin and Advertiser
Sun Press
State Senator Will Espero, 20th Senate District, 'Ewa Beach, 'Ewa by Gentry, Ocean Pointe, 'Ewa Villages, West Loch, Honoʻuliʻuli, Lower Waipahu
State Senator Colleen Hanabusa, 21st Senate District, Ko 'Olina, Kahe Point, Nānākuli, Ma'ili, Wai'anae, Mākaha, Makua, Ka'ena Point
State House Representative Maile S. L. Shimabukuro, 45th House District, Waiʻanae, Mākaha, Makua
State House Representative Karen Leinani Awana, 43rd House District, Honokai Hale, Nānākuli, Lualualei, Maile
State House Representative Rida T.R. Cabanilla, 42nd House District, Waipahu, Honoʻuliʻuli, West Loch, ʻEwa
Honolulu City Councilman Todd K. Apo, District 1, ʻEwa, Kapolei, Waiʻanae Coast
Honolulu City Council
Makakilo-Kapolei-Honokai Hale Neighborhood Board No. 34
Waiʻanae Coast Neighborhood Board No. 24

Section 14

Significance Criteria

In accordance with the content requirements of HRS, Chapter 343, and the thirteen significance criteria in HAR, Section 11-200-12 of Title 11, Chapter 200, it is anticipated that this project will have no significant adverse environmental impact. All anticipated potential impacts will be addressed through the use of mitigation measures and practices as set forth in this EIS document.

According to the significance criteria:

> *Criteria 1 - Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The proposed project is not expected to result in the adverse loss of natural or cultural resources. There are no known threatened or endangered species of plants and wildlife present or which utilize the site for habitat.

An archaeological inventory survey of the project site found the presence of three stone uprights that have been identified as a historic resource. The uprights were found in a cluster located near the southwestern edge of the WGSL in an area that would be affected by the lateral expansion. No other significant archaeological resources were discovered as a result of surveying the project's 92.5 acre area of potential effect.

To address the discovery of the uprights: (1) the SHPD was notified to report the find and to ascertain further actions or requirements to ensure no disturbance until an appropriate plan for treatment is determined; and (2) notification and coordination with appropriate parties as determined by SHPD that includes the Office of Hawaiian Affairs (OHA) and SHPD designated cultural informants from the area.

The process of coordination to develop an appropriate treatment plan and to ascertain further the purpose and function of the uprights is in progress. The owner of the site, the City & County of Honolulu, intends to work with the SHPD and the community to provide appropriate treatment to ensure protection and preservation of the stone uprights. All required provisions of Chapter 6E, HRS, as well as other provisions of law governing archaeological preservation and protection will be complied with to prevent the irrevocable loss of this resource.

> *Criteria 2 - Curtails the range of beneficial uses of the environment;*

The proposed project site is located on undeveloped land within the existing Waimānalo Gulch property owned by the City & County of Honolulu. The planned area of expansion is presently unused, with rocky soil and little vegetation. Development of the site is not anticipated to significantly detract from the function or use of the environment. Potential for negative adverse environmental impacts will be addressed through adherence to the mitigation measures and practices as described in this document.

> *Criteria 3 - Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS;*

The project proposal is consistent with the environmental polices, goals, and guidelines expressed in Chapter 343, HRS. Potential sources of adverse impacts have been identified and appropriate measures have been developed to either mitigate or minimize the potential for impacts.

> *Criteria 4 - Substantially affects the economic or social welfare of the community or State;*

The potential for negative adverse socioeconomic impacts was reviewed in a Socioeconomic Impact Assessment (SIA) prepared for the proposed project by SMS Research (SMS Research, 2008). Based on the findings of the SIA appropriate treatment to minimize, mitigate, or reduce the potential for adverse effects associated with the economic or social welfare of the community and State, were prepared for the EIS document.

Economic Impacts - The fiscal impact of continuing operations of the WGSL, and City & County of Honolulu costs and revenues for solid waste disposal, are expected to result in no new, secondary, or cumulative impacts. The proposed project is expected to make possible the conditions necessary for economic growth and development through providing an essential public facility used by all the communities on O‘ahu for the safe and efficient disposal of municipal waste.

Public Facilities and Services Impacts - The SIA considered the potential impact of the project on the continued provision of police, fire, public education, library, medical, emergency, recreation and public transportation services. The proposed project is not anticipated to adversely affect the continued provision of these services. The potential for nuisance impacts associated with odor, windblown litter, and visual aesthetics, are described and discussed in the subject EIS. Where appropriate, mitigative measures are proposed to reduce or ameliorate the potential for adverse effects.

Social Impacts - Continued operation of the landfill, once all required permits are obtained will assure effective near-term management of solid waste on O‘ahu and allow time for development of new waste disposal technologies and/or a new municipal solid waste landfill site. In addition, the operation of the landfill will be modified or augmented according to the mitigative measures and practices developed in the course of the EIS process. These measures and practices are intended to promote and facilitate a well run facility.

Overall Mitigation Measures - The proposed lateral expansion of the WGSL is expected to have a beneficial effect on the economic and social welfare for all communities in the City & County of Honolulu. The lateral expansion will meet existing and future needs of the Island of Oʻahu for the safe and efficient disposal of MSW and H-POWER ash and residue. Any potential for adverse effects will be addressed through the application of the mitigation measures as described in the EIS document.

Criteria 5 - Substantially affects the public health;

Factors affecting public health, including air quality, water quality, litter, noise levels, and other items were assessed and are addressed through the application of appropriate mitigation measures and practices. Mitigation measures and practices have been included in the design, operation, and maintenance of the proposed lateral expansion to avoid potential for negative adverse impacts to public health and safety of the community and City & County of Honolulu.

Criteria 6 - Involves substantial secondary impacts, such as population changes or effects on public facilities;

Development of the proposed project will not result in substantial secondary or cumulative impacts to the natural or built environment or to the social and economic community. The proposed project will not stimulate unexpected change in population, but will accommodate the current and anticipated future needs of the population of the Island of Oʻahu. The proposed lateral expansion will utilize portions of an existing public facility, including access roads and utilities, but will not place significant additional burden on those facilities as the project transitions to the use of currently unused portions of the Waimānalo Gulch.

Criteria 7 - Involves a substantial degradation of environmental quality;

Analysis of air and water quality, geology, flora and faunal resources, and land use associated with the construction, operation and maintenance of the proposed expansion project has determined that environmental quality will not be substantially degraded.

A number of the environmental studies undertaken for the proposed project are provided as appendices to this EIS document. Where the analyses are not provided as appendices, the documents are cited as references.

> *Criteria 8 - Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*

The proposed project will be developed in accordance with federal, state, and City & County of Honolulu laws, regulations, and policies. The proposed facility is under development by the City & County of Honolulu to provide for the safe and efficient disposal of municipal waste. The proposed lateral expansion project is designed to meet existing and anticipated future needs within O‘ahu for waste disposal within the anticipated period of use, and will not result in cumulative effects upon the environment nor involve a commitment for larger actions. The eventual closure of the landfill however, is anticipated to require that new methods and technologies for the disposal of municipal waste be identified in conjunction with the identification of a new landfill site.

> *Criteria 9 - Substantially affects a rare, threatened, or endangered species, or its habitat;*

The investigation of the project site for rare, threatened, or endangered botanical and faunal species has been completed. No species were identified as present that are listed as rare, threatened, or endangered by the State of Hawai‘i or federal government.

> *Criteria 10 - Detrimentally affects air or water quality or ambient noise levels;*

Short-term impacts to air quality and ambient noise levels will result from construction activities; however, potential for negative adverse impacts are anticipated to be minimal and will cease when construction is complete. Due to specific care taken in the design (including mitigation measures and practices) no detrimental long-term effects to the environment are expected or anticipated.

> *Criteria 11 - Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;*

The project site is located mauka or inland from coastal waters and is within an area determined by the Federal Emergency Management Agency to be outside of the 500-year flood zone. The proposed expansion will be developed and built according to federal and state standards, regulations, and laws for sanitary waste disposal facilities.

> *Criteria 12 - Substantially affects scenic vistas and view planes identified in County or State plans or studies;*

The project site is not located within any scenic vista or view plane as identified in state or City & County of Honolulu Plans. The existing administrative building is designed with a two-story roof line. Closure of each landfill cell will be accompanied with a final cover including vegetation similar to that found along the slopes which adjoin the site. Any potential visual impact associated with initial construction of landfill cells will be temporary. The potential for visual impacts during operation of the landfill will be minimized and mitigated with vegetative controls including the use of hydromulching, and plantings of grass, dryland shrubs, and trees, as provided in the project's landscaping plan. Careful placement of access roadways will also be practiced to reduce the potential for visual impacts to the adjoining Ko Olina Resort.

> *Criteria 13 - Requires substantial energy consumption.*

Construction associated with the proposed lateral expansion project will require the use of energy during activities that include grading, excavation, application of landfill cover materials, and during implementation of landscaping. It is anticipated that use of energy for the operation of machinery, equipment, and administrative buildings will utilize the same or less energy than the existing facility.

Daily operational activities are not anticipated to result in a substantial burden to the available power supply. The electrical energy required from Hawaiian Electric Company will involve a continuation of existing service.

Future plans will call for the generation of electricity from the landfill. This can be considered a positive benefit based on the use of an existing resource.

Section 15
Comments and Responses to the Environmental Impact Statement Preparation Notice

~~This Final EIS has been prepared and modified to address comments received during the 30-day public comment period for the Environmental Impact Statement Preparation Notice (EISPN). As appropriate project mitigation measures have been proposed to address substantive concerns.~~

A list of the comment letters received for the EISPN is provided in **Table 15-1**. The comments and the written responses prepared for the comments are attached and included in this section.

Table 15-1
Comment Letters Received for the WGSL Lateral Expansion EISPN

No.	Date	Commentor
1	1/2/2007	Dept. of Land and Natural Resources
2	12/28/2006	Dept. of Transportation
3	12/29/2006	Dept. of Business, Economic Dev. & Tourism
4	12/27/2006	Dept. of Transportation Services
5	2/9/2007	Dept. of Health, Solid Waste Branch
6	1/23/2007	Natural Resources Conservation Service
7	12/27/2006	Dept. of Accounting and General Services
8	12/26/2006	Robert Au
9	12/26/2006	Dept. of Planning and Permitting
10	12/26/2006	Senator Colleen Hanabusa, State Senate
11	8/30/2006	Senator Colleen Hanabusa, State Senate
12	12/26/2006	Cynthia Rezentes, Aide to Senator Hanabusa
13	12/26/2006	Sierra Club
14	12/26/2006	Ken Williams, Manager, Ko Olina Comm. Assn.
15	12/26/2006	Carol Cox, EnviroWatch Inc.
16	12/26/2006	Robert Kaialau, III,
17	12/26/2006	David Reantaso
18	12/23/2006	Ralph Harris, Pres., AOAO, Fairways at Ko Olina
19	12/22/2006	Representative Rida Cabanilla, State Representative
20	12/22/2006	Dept. of Facility Maintenance
21	12/21/2006	Office of Hawaiian Affairs
22	12/19/2006	Honolulu Fire Dept.
23	12/20/2006	James Hodge, Hawaiian Waste Systems
24	12/18/2006	Board of Water Supply
25	12/15/2006	Office of Environmental Quality Control
26	12/14/2006	Dept. of Community Svcs.
27	12/13/2006	Steve Kelley, Mgr. Infra. & Support, Makaiwa Hills LLC
28	12/12/2006	Dept. of Design and Construction
29	12/12/2006	Hawaii Housing Finance Dev. Corp.
30	12/11/2006	S.B. Teramoto, VP, Coconut Plantations
31	12/8/2006	Dept. of Education
32	11/30/2006	Dept. of Health, Clean Water Branch
33	11/30/2006	Dept. of Parks and Recreation
34	11/28/2006	Honolulu Police Dept.

A

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

January 2, 2007

'07 JAN -4 A11:37
DEPARTMENT OF ENVIRONMENTAL SVCS

Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street Suite 308
Kapolei, Hawaii 96707

Attention: Wilma Namumnant

Gentlemen:

Subject: Environmental Impact Statement Preparation Notice for Waimanalo Gulch Sanitary Landfill Expansion, Kahe, Oahu, Tax Map Key: (1) 9-2-3:72 and 73

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to the DLNR Divisions for their review and comment:

Engineering Division
Division of Water Resource Management
Land Division – Oahu District

Based on the attached responses, the Department of Land and Natural Resources has no comment to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Russell Y. Tsuji
Administrator

Cc: Central Files

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

December 1, 2006

RECEIVED
LAND DIVISION
2006 DEC 27 A 8:45

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
___ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
___ Office of Conservation & Coastal Lands
_x_ Land Division – Oahu District

FROM: Russell Y. Tsuji
SUBJECT: Environmental Impact Statement Preparation Notice for Waimanalo Gulch Sanitary Landfill Expansion
LOCATION: Kahe, Oahu, TMK: (1) 9-2-3:72 and 73
APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 25, 2006.

A copy of the document is available for your review in Land Division office, Room 220.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed:
Date: 12/23/06

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LM/RYT

REF.: EISPNWAIMANALOGULCHLANDFILL
OAHU:532

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone D. The National Flood Insurance Program (NFIP) does not have any regulations for development within Zone D.**

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional comments: ______________________________

( ) Other: ______________________________

Should you have any questions, please call Ms. Alyson Yim of the Planning Branch at 587-0259.

Signed: ______________________________
ERIC T. HIRANO, CHIEF ENGINEER

Date: 12/23/06

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

12/21/06
due

RECEIVED
06 DEC 4 A11:57
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
LAND DIVISION
2006 DEC -6 P 4: 2

December 1, 2006

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
___ Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
___ Div. of State Parks
FR x Div. of Water Resource Management
~~Office of Conservation & Coastal Lands~~
x Land Division – Oahu District

TO

FROM: Russell Y. Tsuji
SUBJECT: Environmental Impact Statement Preparation Notice for Waimanalo Gulch Sanitary Landfill Expansion
LOCATION: Kahe, Oahu, TMK: (1) 9-2-3:72 and 73
APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 25, 2006.

A copy of the document is available for your review in Land Division office, Room 220.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: ______________________________
Date: 12/5/06

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

December 1, 2006

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__Div. of State Parks
x Div. of Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division – Oahu District

FROM: Russell Y. Tsuji
SUBJECT: Environmental Impact Statement Preparation Notice for Waimanalo Gulch Sanitary Landfill Expansion
LOCATION: Kahe, Oahu, TMK: (1) 9-2-3:72 and 73
APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by December 25, 2006.

A copy of the document is available for your review in Land Division office, Room 220.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

(✓) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: Cecil Santos
Date: 12/15/06

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-059

May 12, 2008

Mr. Russell Y. Tsuji, Administrator
Land Division
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Tsuji:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated January 2, 2007 concerning the subject project. We appreciated the comments of your Engineering Division, Division of Water Resource Management, and Land Division. The following is prepared in response.

Engineering Division
We acknowledge that the Waimanalo Gulch landfill is located in Zone D and that the National Flood Insurance Program (NFIP) does not have any regulations for development within this zone.

Division of Water Resource Management
We acknowledge that this division has no comments at this time.

Land Division
We acknowledge that this division has no comments and no objection to the proposed project.

Thank you for this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

B

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BARRY FUKUNAGA
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.2371

December 28, 2006

DEPARTMENT OF
ENVIRONMENTAL SVCS
'07 JAN -4 A11 :36

Dr. Eric S. Takamura, P.E.
Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Dr. Takamura:

Subject: Environmental Impact Statement Preparation Notice
Chapter 343, Hawaii Revised Statutes
Waimanalo Gulch Sanitary Landfill Expansion
TMK: (1) 9-2-003: 072 and 073

We have the following initial comments on the proposed landfill expansion as described in the EIS Preparation Notice (EISPN):

1. The EISPN discussed alternative actions involving transporting refuse to another landfill facility outside of Hawaii. If one of the alternatives involves possible use of facilities at the State harbors, particularly Honolulu or Kalaeloa Barbers Point Harbor, to collect and stage refuse before shipping, further EIS evaluation should fully analyze the impacts to handling refuse at the harbors, including the congestion already being experienced at the harbors.

2. The EISPN stated that a traffic assessment report is being prepared. The report should address traffic conditions and ingress/egress at the landfill facility. Prior situations or events involving vehicle movements at the access on Farrington Highway should be reviewed, especially for incidents or conditions where improvements at and around the entry intersection may be needed. The report should also cover having sufficient on-site queue area for vehicle waiting lines to avoid any back ups at or onto the highway.

We appreciate the opportunity to provide our comments. We request that we receive at least five (5) copies of the forthcoming draft environmental impact statement report for our further review and comment of the landfill project.

Very truly yours,

Francis Paul Keeno

for RODNEY K. HARAGA
Director of Transportation

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-075

May 12, 2008

Mr. Brennon Morioka, P.E.
Director of Transportation
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Morioka:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 28, 2006, concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. *The EISPN discussed alternative actions involving transporting refuse to another landfill facility outside of Hawaii. If one of the alternatives involves possible use of facilities at the State harbors, particularly Honolulu or Kalaeloa Barbers Point Harbor, to collect and stage refuse before shipping, further EIS evaluation should fully analyze the impacts to handling refuse at the harbors, including the congestion already being experienced at the harbors.*

The investigation of alternatives in the Draft EIS (DEIS) will include waste transshipment and the potential for impacts to harbor facilities under jurisdiction of the Department of Transportation (DOT). We appreciate there is congestion already present at the harbors and will note this in the DEIS. The full assessment of traffic impacts, however, should be investigated by the party or parties responsible for the transshipment of waste from Oahu for the specific locations where it is proposed.

2. *The EISPN stated that a traffic assessment report is being prepared. The report should address traffic conditions and ingress/egress at the landfill facility. Prior situations or events involving vehicle movements at the access on Farrington Highway should be reviewed, especially for incidents or conditions where improvements at and around the entry intersection may be needed. The report should also cover having sufficient on-site queue area for vehicle waiting lines to avoid any back ups at or onto the highway.*

We confirm the traffic assessment will investigate traffic conditions and ingress/egress at the facility, review vehicular movement along Farrington Highway from and to the facility, and provide recommendations concerning vehicle queuing to avoid congestion at or onto the highway.

We appreciate your review of the subject document. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

E

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
LAURA H. THIELEN
DIRECTOR
OFFICE OF PLANNING

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-11609

December 29, 2006

Dr. Eric S. Takamura, P.E., Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei. Hawaii 96707

Dear Dr. Takamura:

Subject: Waimanalo Gulch Sanitary Landfill Expansion
Environmental Impact Statement Preparation Notice (EISPN)
TMK(s): (1) 9-2-003: 072 and 073
Honouliuli, Ewa, Island of Oahu

Thank you for sending the Office of Planning the EISPN for the above referenced project.

The Office of Planning will be coordinating the State's position on areas of crosscutting State concern. I am writing to request that the Draft EIS consider the impacts of the proposed project on the following issues:

1. **Ocean Resources** – The State has an affirmative duty to project Hawaii's nearshore waters. Please discuss how stormwater and wastewater generated by the project will be prevented from reducing the quality of nearshore water.

2. **Water Supply** – Water resource protection is a critical State issue. The proposed project is within a designated Water Management Area. Please include information on the drinking water and non-potable water sources that will be utilized for the project.

3. **Public Health** – If the project will have a potential to generate hazardous materials or result in the possible contamination of the air, soil, or water, please discuss how public health and safety will be protected.

4. **Cultural/Historic Resources** – Please include an inventory survey of cultural and historic sites, with monitoring and preservation plans approved by the State Historic Preservation Division. Please discuss how access for Native Hawaiians for traditional and customary practices will be preserved to include visual landmarks if applicable.

5. **Environmental, Recreational and Scenic Resources** – Please include an inventory of flora and fauna on the project site and any required protections. Consider in the design of your field observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. In addition, a description of scenic resources should also be included.

6. **Coastal Zone Management** – The State oversees protection of natural, cultural, and economic resources within the coastal zone. Please discuss how the proposed project will balance the competing values of economic development and preservation of coastal resources, including protection from hurricane, storm surge, flood hazard, volcano, and soil erosion as applicable.

The Office of Planning looks forward to receiving the DEIS with the potential impacts and mitigation measures for the above issues addressed. If you have any questions, please call Scott Derrickson in the Land Use Division at 587-2805.

Sincerely,

Laura Thiel

Laura H. Thielen
Director

c: Genevieve Salmonson, OEQC

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-060

May 12, 2008

Ms. Mary Lou Kobayashi, Acting Director
Office of Planning
State of Hawaii
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Ms. Kobayashi:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 29, 2006 concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

"1. Ocean Resources - The State has an affirmative duty to project Hawaii's nearshore waters. Please discuss how stormwater and wastewater generated by the project will be prevented from reducing the quality of nearshore water."

The Draft EIS (DEIS) will provide information on environmental management of stormwater and wastewater associated with the proposed project. Potential for impacts and proposed mitigation measures will be described to prevent degradation of nearshore state waters.

"2. Water Supply - Water resource protection is a critical State issue. The proposed project is within a designated Water Management Area. Please include information on the drinking water and non-potable water sources that will be utilized for the project."

And,

"3. Public Health - If the project will have a potential to generate hazardous materials or result in the possible contamination of the air, soil, or water, please discuss how public health and safety will be protected."

"4. Cultural/Historic Resources - Please include an inventory survey of cultural and historic sites, with monitoring and preservation plans approved by the State Historic Preservation Division. Please discuss how access for Native Hawaiians for traditional and customary practices will be preserved to include visual landmarks if applicable."

And,

"5. Environmental, Recreational and Scenic Resources - Please include an inventory of flora and fauna on the project site and any required protections. Consider in the design of your field observations including both wet and dry season surveys to capture the fullest range of flora and fauna. Please include a description of recreational uses on or near the project site. In addition, a description of scenic resources should also be included."

Information relating to water supply, public health, and cultural/historic resources is under investigation and will be provided as a part of the DEIS.

"6. Coastal Zone Management - The State oversees protection of natural, cultural, and economic resources within the coastal zone. Please discuss how the proposed project will balance the competing values of economic development and preservation of coastal resources, including protection from hurricane, storm surge, flood hazard, volcano, and soil erosion as applicable."

The relationship of the proposed project to these concerns will be provided in the DEIS.

We appreciated the time you have taken to review the subject document. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

D

Refuse

DEPARTMENT OF ENVIRONMENTAL SVCS

'07 JAN -4 P3:15

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 523-4730 • Internet: www.honolulu.gov

MUFI HANNEMANN
MAYOR

MELVIN N. KAKU
DIRECTOR

RICHARD F. TORRES
DEPUTY DIRECTOR

TP11/06-183362R

December 27, 2006

MEMORANDUM

TO: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: MELVIN N. KAKU, DIRECTOR

SUBJECT: WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your November 8, 2006 letter, requesting our review of and comments on the Environmental Impact Statement (EIS) Preparation Notice for the subject project. We have the following comments for your consideration as you prepare the draft EIS:

1. The draft EIS should identify which roadways will be providing access to the project site during construction of the landfill expansion.
2. Comments should be requested from the State Department of Transportation (SDOT) because access to the landfill is from Farrington Highway, which is under SDOT jurisdiction.

We look forward to reviewing the draft EIS. Should you have any questions regarding these comments, please contact Ms. Faith Miyamoto of the Transportation Planning Division at Local 8350.

Melvin N. Kaku
MELVIN N. KAKU

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-062

May 12, 2008

MEMORANDUM

TO: WAYNE YOSHIOKA, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 27, 2006 concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. *"The Draft EIS should identify which roadways will be providing access to the project site during construction of the landfill expansion."*

This information will be provided in the subject Draft EIS (DEIS).

2. *"Comments should be requested from the State Department of Transportation (SDOT) because access to the landfill is from Farrington Highway, which is under SDOT jurisdiction."*

Comments for the subject project have been requested from the State Department of Transportation who, in addition to the Department of Transportation Services, will continue to be consulted parties for the duration of this EIS process.

We appreciated your review of the subject document. Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

B

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD/SHWB

February 9, 2007

S0228LO

The Honorable Eric S. Takamura, P.E., Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia St., Suite 308
Kapolei, HI 96707

Dear Mr. Takamura:

SUBJECT: Waimanalo Gulch Sanitary Landfill Expansion
Environmental Impact Statement Preparation Notice

Thank you for the opportunity to review and provide comments on this document. The Solid Waste Section (SWS) offers the following comments:

It is noted on page 2-5 that a 100-foot buffer will be maintained between landfill activities and the property line will be maintained. We note that the Makaiwa Hills residential development is proposed on land adjacent to the landfill. Ideally, buffers would be able to contain the impacts of landfill activities, such as odor and windblown litter, entirely within facility boundaries. We are concerned that the proposed buffers are not sufficient to minimize impacts on housing and/or associated land uses.

The SWS also notes that the proposed landfill expansion requires a solid waste management permit, and will address all other issues through the permit application process.

If you have any questions regarding this letter, please contact Lane Otsu of our Solid Waste Section at (808) 586-4226.

Sincerely,

STEVEN Y.K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

'07 FEB 22 P2:30

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-073

May 12, 2008

Mr. Steven Y.K. Chang, P.E., Chief
Solid and Hazardous Waste Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Chang:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated February 9, 2007 concerning the subject project. The following is prepared in response to your comments (your comments are italicized for reference):

1. *"It is noted on page 2-5 that a 100-foot buffer will be maintained between landfill activities and the property line will be maintained. We note that the Makaiwa Hills residential development is proposed on land adjacent to the landfill. Ideally, buffers would be able to contain the impacts of landfill activities, such as odor and windblown litter, entirely within facility boundaries. We are concerned that the proposed buffers are not sufficient to minimize impacts on housing and/or associated land uses."*

The area of buffer is intended to remain free of actual landfilling and placement of waste. As required, other measures to reduce the potential impacts of nuisance concerns including odor and windblown litter will be described in the Draft EIS (DEIS).

2. *"The SWS also notes that the proposed landfill expansion requires a solid waste management permit, and will address all other issues through the permit application process."*

We acknowledge that a solid waste management permit application will be required for the proposed project and look forward to further working with you to address the requirements of the Solid and Hazardous Waste Branch.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

F

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
P.O. Box 50004 Rm. 4-118
Honolulu, HI 96850
808-541-2600

January 23, 2007

Dr. Eric S. Takamura, P. E.
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Subject: EISPN for Waimanalo Gulch, Oahu, Hawaii; TMK: (1) 9-2-003: 072 & 073

Dear Dr. Takamura,

We have reviewed the above mentioned document and have no comment at this time.

Thank you for the opportunity to comment.

Sincerely,

LAWRENCE T. YAMAMOTO
Director
Pacific Islands Area

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-061

May 12, 2008

Mr. Lawrence T. Yamamoto, Director
Pacific Islands Area
Natural Resources Conservation Service
P.O. Box 50004, Room 4-118
Honolulu, Hawaii 96850

Dear Mr. Yamamoto:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated January 23, 2007 concerning the subject project. We acknowledge that you have no comments at this time.

We appreciated your review of the subject document. Should you have any written comments please direct them to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

1

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

(P)1310.6

DEC 27 2006

Mr. Eric S. Takamura
Director
Department of Environmental Services
City & Country of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Mr. Takamura:

Subject: Waimanalo Gulch Sanitary Landfill Expansion
Environmental Impact Statement Preparation Notice

Thank you for the opportunity to review the information regarding the subject project. We support the City and County of Honolulu's efforts in resolving the issues related to the island of Oahu's municipal refuse. We have no additional comments to offer at this time.

If there are any questions regarding the above, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

DD:vca
c: Ms. Genevieve Salmonson, OEQC

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-063

May 12, 2008

Mr. Ernest Y. W. Lau
Public Works Administrator
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Lau:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 27, 2006 concerning the subject project. We appreciate the time you have taken to offer your support to our efforts to manage Oahu's municipal refuse issues and acknowledge you have no additional comments to offer.

Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

2

FROM (WED)DEC 27 2006 17:00/ST. 16:58/No. 7500000600 P 1

Department of Environmental Services
Attn: Wilma Namummart
Fax: 808-692-5402
Date: 12/26/06

Page 1/2

Reference: Current proposal to expand and extend the life of Waimanalo Gulch Sanitary Landfill at Kahe Point.

To Whom It May Concern:

As a representative of the Au Family, who has property interest in this area, we would like to voice opposition to the current proposal to expand and extend the life of Waimanalo Gulch Landfill at Kahe Point.

We have endured many hardships with this landfill:

1. A fire that originated from the landfill burned down one of our homes, and we will now have to go through the new building permit procedures to have it established again.

2. We feel that the health qualities of living in this area are compromised, and that property values have been suppressed because of the current environment that the landfill has created. Through the years of its existence, the smell, dust, and trash carried over by the wind from the landfill needs to end.

3. We feel that the environment has been jeopardized:
    (1) A study should be done on the impact of Hawaii Electric's Kahe Power Plant and Waimanalo Gulch Landfill on the fresh water table in this area and the long term effects to our island. This has been an ongoing issue for sometime. Please note that the pre-existing water line was changed to allow this landfill to be legal during the 1980's

    (2) To our understanding, this Kahe valley (Waimanalo Gulch) has a 10 year flood plane prior to the creation of the landfill. There is a stream bed with a bridge under this landfill which is a good indication what can happen at this location.
    We are very concern about this potential, now and in the future.

4. We feel that the original premise for this landfill has not been honored. It was presented to the public as a solid waste Waimanalo Gulch landfill, at a certain size, and set time limitation for it existence. The City has expanded and change these factors twice, and are now trying to do it again. These tactics have miss led and manipulated the public. It is time that agreements are honored, and not changed at the City's convenience.

DEC-27-2006 02:56PM FAX: ID:CC HNL ENV REFUSE PAGE:001 R=96%

5. The landfill is part of a historical sight. Fort Arizona is located on top of a mountain ridge at Kahe Point adjacent to and part of "Waimanalo Gulch Landfill". It is being mired with the stigma of this landfill. This Fort housed the main canon for the US Arizona, which was removed from the ship and placed at this Fort. Its purpose was to protect that area of the island during World War II. President Roosevelt slept there during a visit and inspection to Fort Arizona. Currently, to get to it, one has to drive through the landfill. So why is there still a landfill at a historical sight?

There is one special note on the naming of Waimanalo Gulch Landfill. Prior to its existence, the property tax assessments always listed it as Kahe Point.

Respectfully, submitted as testimony.

Sincerely,

Robert Au
For the Au Family
1715 Anapuni St. # H
Honolulu, Hawaii 96822

Cc: to Department of Building and Permits, Mr. Henry Eng @ 808-527-5041

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

May 12, 2008

IN REPLY REFER TO:
RA 08-076

Mr. Robert Au
1715 Anapuni Street, #H
Honolulu, Hawaii 96822

Dear Mr. Au:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006, concerning the subject project. We have prepared the following in response to your comments (your comments have been italicized for reference):

"1. A fire that originated from the landfill burned down one of our homes, and we will now have to go through the new building permit procedures to have it established again."

We are not aware of a fire from the landfill causing the loss of the home that you describe. We ask that you contact us concerning this matter so that it can be properly investigated. Please contact Ms. Wilma Namumnart, of our office at 692-5358.

"2. We feel that the health qualities of living in this area are compromised, and that property values have been suppressed because of the current environment that the landfill has created. Through the years of its existence, the smell, dust, and trash carried over by the wind from the landfill needs to end."

A number of environmental factors will be investigated as part of the Draft EIS (DEIS). This will include air, hydrology and geology, flora and fauna, and socioeconomic factors associated with use of the site for the proposed project. Potential for adverse environmental effects will be researched and as appropriate, mitigation measures will be recommended to minimize or ameliorate the potential for impacts.

"3. We feel that the environment has been jeopardized:"

"(1) A study should be done on the impact of Hawaii Electric's Kahe Power Plant and Waimanalo Gulch Landfill on the fresh water table in this area and the long term effects to our island. This has been an ongoing issue for sometime. Please note that the pre-existing water line was changed to allow this landfill to be legal during the 1980's"

> "(2) *To our understanding, this Kahe valley (Waimanalo Gulch) has a 10 year flood plane [sic] prior to the creation of this landfill. There is a stream bed with a bridge under this landfill which is a good indication what can happen at this location. We are very concern [sic] about this potential, now and in the future."*

Although the City does not operate the Kahe Point Power Generating Station, the DEIS for the proposed Waimanalo Gulch Sanitary Landfill Expansion project will provide water quality and hydrogeological information on surface and ground water resources that may be affected by the use of the landfill. This research will be undertaken by a licensed professional. Data collected from the course of the study will be included as part of the DEIS.

Information concerning storm water drainage and planned drainage control features to ensure short- and long-term protection of the land and nearshore waters will also be provided.

> "4. *We feel that the original premise for this landfill has not been honored. It was presented to the public as a solid waste Waimanalo Gulch landfill, at a certain size, and set time limitation for it [sic] existence. The City has expanded and change [sic] these factors twice, and are now trying to do it again. These tactics have miss led and manipulated the public. It is time that agreements are honored, and not changed at the City's convenience."*

Please refer to Section 1 of the EISPN that provided important information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of Oahu.

> "5. *The landfill is part of a historical sight [sic]. Fort Arizona is located on top of a mountain ridge at Kahe Point adjacent to and part of "Waimanalo Gulch Landfill". It is being mired with the stigma of this landfill. This Fort housed the main canon for the US Arizona, which was removed from the ship and paced at this Fort. Its purpose was to protect that area of the island during World War II. President Roosevelt slept there during a visit and inspection to Fort Arizona. Currently, to get to it, one has to drive through the landfill. So why is there still a landfill at a historical sight [sic]."*

Your recognition of the Battery Arizona site is noted. For clarification, we note that the Battery Arizona bunker complex lies within the landfill property, however, the location of the turret is within the adjacent Hawaiian Electric Company property. An examination of this site as well as other potentially important historical sites and features will be further described in the DEIS. As appropriate, mitigation measures will be recommended to ensure against adverse effects.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

3

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4432 • FAX: (808) 527-6743
DEPT. INTERNET: www.honoluludpp.org • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2006/GEN-32
86/SUP-5

December 26, 2006

MEMORANDUM

TO: DR. ERIC S. TAKAMURA, PH.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: HENRY ENG, FAICP, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

We have reviewed the subject EISPN and have the following comments:

1. Pg. 1-1, paragraphs 2 and 3: Condition 12 of the Land Use Commission's Decision and Order date June 9, 2003 states:

   Within five (5) years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

   We interpret the above condition to mean that the landfill cannot accept all forms of waste, including H-POWER ash, residue, and unacceptable wastes.

   On paragraph 3, we suggest the word 'accepted' be used instead of 'approved'.

2. Pg. 1-2, paragraph 1: The date the Special Use Permit amendment is approved is the date the Land Use Commission's Order is effective, June 9, 2003. The footnote should be revised accordingly. Also, please delete the word 'municipal' in the last sentence.

3. Pg. 1-13, paragraphs 1 and 2: The site should be consistently described as being located in Waimanalo Gulch, Honouliuli, Ewa, Oahu. Please make the necessary changes to all references on location. The DEIS should avoid unnecessary confusion as to the project's location.

   When the landfill received its Special Use Permit (SUP) approval on April 20, 1987, the approved landfill area was 60.5 acres. On October 31, 1989, the Land Use Commission (LUC) approved a 26-acre addition to the original approved area to include support areas of the area approved for landfilling. Thus, at the time when the landfill began initial operations, the landfill and support areas was limited to 86.5 acres and should not be described as being 200 acres.

4. Pg. 2-3, paragraph 1: Please indicate what uses are proposed for the 100-foot buffer. Also, will there be any part of the 200-acre property left undisturbed or as it was prior to landfilling operations? If so, please describe and map these areas.

5. Pg. 2-4, paragraph 4: Condition 12 of the LUC Decision and Order of June 9, 2003, applies to the entire 107.5-acre approved area, not just the 21-acre expansion area.

6. Pg. 2-15, paragraph 1: The Draft Environmental Impact Statement (DEIS) should indicate that portions of the 92.5-acre proposed expansion area was graded, for what purpose, when, and whether these areas are still being disturbed for landfill operations.

7. Pg. 3-1, Section 3.2.: This section should state whether regulated hazardous waste is accepted, examples of unacceptable waste and all types of residue, the quantity and frequency of sewer sludge and related sewage residue accepted, and whether delivery of wastes after normal business hours also include other processes involving spreading, compacting, covering, relocation, or other waste disposal/landfilling processes normally associated with operations during regular business hours.

8. Pg. 3-4, Section 3.3.: Detailed information on irrigation for landscaping/revegetation should be provided in the DEIS.

9. The DEIS should describe existing and proposed cell construction, reclamation, revegetation, closure, monitoring, and reuse across the entire 200-acre property and what will be/have been disposed in each cell, the order in which each cell has been/will be completed and reclaimed/revegetated/reused.

10. The DEIS should disclose how the expansion area will be integrated into its overall phasing of operations, from cell construction to reuse, and whether phasing such operations would outweigh the benefits, if any, of maintaining portions of its operations at the makai portion of the property, i.e., support services and ash monofils.

Discussions regarding whether impacts to the community and the environment could be minimized by closing/reclaiming/reusing the completed portions of the existing landfill closest to Farrington Highway and relocating its operations further into the gulch should be included in the DEIS. This could include relocation of the scale house, maintenance operations, and other noxious activities since much of the 92-acre expansion area is located at the northern portion of the property.

11. Details should be provided as to what drainage and berming techniques will be applied at the property's mauka boundary since the gulch extends further mauka of the property line.
12. The DEIS should include a timeline showing all permit processing timeframes, start of construction within the expansion area, projected closure and reclamation of completed cells within the entire 200-acre property.
13. The DEIS should include a visual analysis of the landfill from current conditions to closure and reclamation by cells/monofils from public vantage points such as Ko Olina, Farrington Highway, Makaiwa Hills, and Honokai Hale.
14. A detailed landscape plan showing screening along Farrington Highway and proposed vegetation/topographic features on completed cells/monofils/other waste disposal site on the 200-acre property.
15. Initial construction activities for the expansion of the existing landfill may require grubbing, grading and stockpiling permits. Furthermore, a grading permit may be required for the final cover that will be placed prior to landfill closure.
16. A drainage report may be required at a later date.
17. The DEIS should include a current (imaged in 2007) high resolution aerial photo of the entire 200-acre property.

Should you have any questions, please contact Raymond Young of our staff at 527-5839 or by email at: ryoung@honolulu.gov.

HE:mo

c: Site Development

Doc. 505285

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-070

May 12, 2008

TO: HENRY ENG, FAICP, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 26, 2006 concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. *"Pg. 1-1, paragraphs 2 and 3: Condition 12 of the Land Use Commission's Decision and Order date June 9, 2003 states: Within five (5) years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan."*

   "We interpret the above condition to mean that the landfill cannot accept all forms of waste, including H-POWER ash, residue, and unacceptable wastes. On paragraph 3, we suggest the word 'accepted' be used instead of 'approved'."

This recommendation is noted. However, in reviewing the OEQC's requirements for the preparation of EIS documents, the term "approved" is correct in usage.

2. *"Pg. 1-2, paragraph 1: The date the Special Use Permit amendment is approved is the date the Land Use Commission's Order is effective, June 9, 2003. The footnote should be revised accordingly. Also, please delete the word 'municipal' in the last sentence."*

This recommendation is noted and will be addressed in the DEIS.

3. *"Pg. 1-13, paragraphs 1 and 2: The site should be consistently described as being located in Waimanalo Gulch, Honouliuli, Ewa, Oahu. Please make the necessary changes to all references on location. The DEIS should avoid unnecessary confusion as to the project's location."*

"When the landfill received its Special Use Permit (SUP) approval on April 20, 1987, the approved landfill area was 60.5 acres. On October 31, 1989, the Land Use Commission (LUC) approved a 26-acre addition to the original approved area to include support areas of the area approved for landfilling. Thus, at the time when the landfill began initial operations, the landfill and support areas was limited to 86.5 acres and should not be described as being 200 acres."

This recommendation is noted and will be addressed in the DEIS.

4. *"Pg. 2-3, paragraph 1: Please indicate what uses are proposed for the 100-foot buffer. Also, will there be any part of the 200-acre property left undisturbed or as it was prior to landfilling operations? If so, please describe and map these areas."*

The area of buffer is intended to remain free of actual landfilling and placement of waste. Other locations encompassed by the 92.5 acres where uses are known at this time will be provided in the DEIS. Some of the proposed uses include landscaping, access roads, grading, environmental monitoring and stockpiling of excavated materials that will be reused on-site for cover material.

5. *"Pg. 2-4, paragraph 4: Condition 12 of the LUC Decision and Order of June 9, 2003, applies to the entire 107.5-acre approved area, not just the 21-acre expansion area."*

and,

6. *Pg. 2-1 5, paragraph 1: The Draft Environmental Impact Statement (DEIS) should indicate that portions of the 92.5-acre proposed expansion area was graded, for what purpose, when, and whether these areas are still being disturbed for landfill operations.*

This recommendation is noted and will be addressed in the DEIS.

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7. *Pg. 3-1, Section 3.2.: This section should state whether regulated hazardous waste is accepted, examples of unacceptable waste and all types of residue, the quantity and frequency of sewer sludge and related sewage residue accepted, and whether delivery of wastes after normal business hours also include other processes involving spreading, compacting, covering, relocation, or other waste disposal landfilling processes normally associated with operations during regular business hours.*

The types of waste that are accepted at the landfill will be provided in the DEIS. Processed sewage solids deliveries have recently been reduced in volume and frequency with the operation of the Synagro waste digester at the Sand Island Wastewater Treatment Plant. Other landfill associated practices will be described in the DEIS.

8. *Pg. 3-4, Section 3.3.: Detailed information on irrigation for landscaping/revegetation should be provided in the DEIS.*

and,

9. *The DEIS should describe existing and proposed cell construction, reclamation, revegetation, closure, monitoring, and reuse across the entire 200-acre property and what will be/have been disposed in each cell, the order in which each cell has been/will be completed and reclaimed/revegetated/reused.*

The DEIS will provide information on operational practices and site development that will include the proposed location of cells, infrastructure, and landscaping for the proposed project. Other points of detail including the order of use of the cells, or the waste content of the cells, or the final reuse across the 200 acre site have not yet been fully determined. As much as possible, the information that is available for the proposed project will be provided.

10. *The DEIS should disclose how the expansion area will be integrated into its overall phasing of operations, from cell construction to reuse, and whether phasing such operations would outweigh the benefits, if any, of maintaining portions of its operations at the makai portion of the property, i.e., support services and ash monofils.*

Discussions regarding whether impacts to the community and the environment could be minimized by closinglreclaiminglreusing the completed portions of the existing landfill closest to Farrington Highway and relocating its operations further into the gulch should be included in the DEIS. This could include relocation of the scale house, maintenance operations, and other noxious activities since much of the 92-acre expansion area is located at the northern portion of the property.

Preliminary site and engineering plans of the relationship of the proposed project to the existing area of use will be provided in the DEIS. The specific phasing plan has not yet been developed. However, the project phasing will be designed to minimize the potential for environmental impacts due to operation of the landfill.

11. Details should be provided as to what drainage and berming techniques will be applied at the property's mauka boundary since the gulch extends further mauka of the property line.

A discussion of drainage and geotechnical soils stability controls that will be implemented for the proposed project will be provided in the DEIS.

12. The DEIS should include a timeline showing all permit processing timeframes, start of construction within the expansion area, projected closure and reclamation of completed cells within the entire 200-acre property.

The schedule for the proposed lateral expansion of the site will commence upon approval of all required permits and land use approvals. The status of these approvals will be provided in the DEIS.

The rate of use of the proposed landfill cannot be precisely projected. This is because the capacity available will continue to be influenced by (1) the rate at which refuse is disposed of due to economic and population conditions, and (2) the rate at which refuse diversion efforts are successful.

13. "The DEIS should include a visual analysis of the landfill from current conditions to closure and reclamation by cells/monofils from public vantage points such as Ko Olina, Farrington Highway, Makaiwa Hills, and Honokai Hale."

A visual analysis will be undertaken to assess the potential for adverse viewplane impacts associated with the proposed expansion of the site. This information will be provided in the DEIS.

14. "A detailed landscape plan showing screening along Farrington Highway and proposed vegetation/topographic features on completed cells/monofils/other waste disposal site on the 200-acre property."

Proposed mitigative measures that will include landscaping will be provided in the DEIS.

15. "Initial construction activities for the expansion of the existing landfill may require grubbing, grading and stockpiling permits. Furthermore, a grading permit may be required for the final cover that will be placed prior to landfill closure."

The permits that may be required for the expansion of the site will be provided in the DEIS.

16. "A drainage report may be required at a later date."

This is acknowledged. Information concerning stormwater drainage will be provided in the DEIS.

17. "The DEIS should include a current (imaged in 2007) high resolution aerial photo of the entire 200-acre property."

A current aerial photograph will be provided in the DEIS.

We appreciate your review of the subject document. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

4

Office of the President
The Senate
State of Hawaii
State Capitol
Honolulu, Hawaii

December 26, 2006

Dr. Eric S. Takamura, P.E., Director
Ms. Wilma Namumnart, Refuse Division
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, HI 96707

Re: Environmental Impact Statement Preparation Notice
Chapter 343, Hawaii Revised Statutes

Dear Dr. Takamura and Ms. Namumnart:

In accordance with the provisions of Hawai`i Revised Statutes §§ 343-1 *et.seq* ("HRS 343") and Title 11 Chapter 200 of the Department of Health State of Hawai`i Environmental Impact Statement Rules ("EIS Rules"), I hereby respectfully request to be "a consulted party" and "make written comments regarding the environmental effects of the proposed action" to the Environmental Impact Statement Preparation Notice ("EISPN") dated November 2006. (EIS Rules § 11-200-15).

Though the EISPN is not a Draft EIS or the Final EIS, it does set forth what appears to be the outline that you will be following in the preparation of yet another Supplemental Draft or Final EIS on the Waimanalo Gulch Sanitary Landfill ("WGSL"). In this light, the comments are as follow:

At the outset, I incorporate by reference my comments set forth in a letter of August 30, 2006 which is found in the EISPN Appendix A. The EISPN fails to address the comments made therein and the Draft and/or Final EIS must do so to comply with the laws.

For ease of reference, my comments of the EISPN will be made by its Sections.

Section 1 Project Background

This Section fails to address whether the FSEIS prepared in December 2002 was a "shibai." Clearly it was inadequate and remains a subject to challenge in the Courts. Though a discussion is made about the Landfill Site Selection Process, the EISPN does not address how the preparer of the this document, as well as the consultant for the Landfill Site Selection Process can conclude that the service life of WGSL is fifteen (15) more years. This is especially troubling when the preparer of the EISPN was also the consultant to the site selection committee and the criteria was NO EXCAVATION. There should be a concern as whether this consultant is in a conflict of interest given the differing reports. Moreover, there must be a clear statement as to who is paying for the preparation of the various documents and studies required in the EIS process. If, for example, Waste Management is paying then the Final EIS will not truly be that of the City and/or the Department of Environmental Services which should have the general public's interest as its primary goal.

The public needs to know whether any representation made by a Mayor and/or City Council is binding on subsequent administrations. This is especially critical when looking at the Decision and Order of the State of Hawai`i Land Use Commission ("LUC Order") and State of Hawai`i Department of Health's Notice of Violations and Order ("DOH NVO"). The culpability, remedial action and cause of these violations must be discussed.

A detailed discussion is necessary as to the consequence of the LUC Order and the DOH NVO for the decision maker to have sufficient information to fully consider the proposed action. In that the Operator was selected in 1999; and there have obviously been problems with the manner in which they have performed, there should be a discussion as to whether that contract will be honored or should be honored. The Contract must be made public and the legal rights of all parties addressed.

Section 2 Introduction

This introductory section is presented as if this issue is new. The expansion of the WGSL and the larger issue of disposal of municipal solid waste on this island are far from a new issue. This section also begs the issue of the problems with the operations and the operator of the WGSL.

Section 3 Project Description

This Section of the EISPN is in most parts verbatim from the FSEIS of December 2002. It would appear that given the difference in the slope and other physical characteristics of the expansion that this critical point should have been discussed versus a rehashing of the prior FSEIS.

For example the proposed expansion will be primarily in the rRK soil type. This means rock over a large percentage of the surface. There must be a more detailed discussion as to the slope differential for WGSL in the proposed expansion area.

The expansion will clearly be where the land is steepest and will require excavation. It is, therefore, curious that this EISPN fails to address the amount of native soil and rock which will have to be removed; a fact which has been discussed in prior Draft EISs and the 1999 Contract with Waste Management.

There needs to be a discussion as to the extent of that construction activity; its impact on the neighbors; and more importantly where will the materials go. The cost of such an activity must be calculated to do a true cost benefit analysis. The rights to the native soil (rock, etc.) must also be addressed. It is believed that with the present operation, the contractor who does the excavation is permitted to sell the rock and soil and keep the funds. If this is the case, the practice must change and the benefit should be to the taxpayers.

There needs to be an honest discussion as to whether the expansion of WGSL will require almost a 2 to 1 removal of the native soils. That is to say for 2 cubic feet of air space, 1 cubic feet of native soils will have to be removed. If that is not the case then the assumptions made in the Waste Management contract of 1999 require additional discussion.

Section 4 Environmental Setting

Given the recent decisions by the Hawai`i Supreme Court, it is necessary to discuss the concept of public trust. This is especially true when looking at the waters of this State. What occurred with the operations of WGSL and the leachate is inexcusable and a violation of that public trust. Note that the leachate was disposed of, for most part, in the Waianae Sewage Treatment Plant.

In this light, there is inadequate discussion of the leachate. This is especially troubling given the DOH NVO. This requires a discussion as to the how the build up of the leachate affected or could affect the integrity of liner and the stability of the landfill. It must also be addressed in light of the expansion and the stress it will have upon the liner and the stability of the landfill.

It is unacceptable for government to rely upon Waste Management's consultants or experts for stability calculations. This is not acting in the best interest of the public.

The recent construction of the rock berm wall or as some call it the "Great Wall of Waimanalo," requires discussion as to why it was constructed and how it is necessary for the structural integrity of the landfill. The berm wall is not to be used as a retaining wall and/or the basis for height expansions in the existing landfill.

It is a given fact that the height limitations in certain parts of the WGSL have been exceeded. Yet, to date, not hearings have been held on the height expansion. There needs to be a discussion as to capacity and how the City and Waste Management continue to operate the WGSL and address the violations set forth in the DOH NVO.

Prior EISs have not acknowledged the cultural significance of the pathway to Palehua which Waimanalo Gulch served as. Also lacking is a discussion as to the environmental impact to the natural preserves for various native birds which Waimanalo Gulch serves as a habitat.

The visual impact of WGSL has not been adequately addressed especially with the construction of the rock berm wall. How is this area going to be restored to its original state with a rock berm wall?

Odors continue for those who live by the WGSL.

The role that Ko Olina plays as it relates to the economic growth for West Oahu is significant. While no one would consider placement of a landfill near Waikiki, the City does not hesitate to continue a landfill operations directly across the street from Ko Olina.

Given the concern of the stability of the landfill and the recent earthquake on the Big Island, a discussion must be had as to what can be done if such a natural disaster caused the landfill to slip onto Farrington Highway. This discussion must look to the fact that expansion will be at steepest part of the footprint of the parcel of land and the stress it will place on the existing landfill. The people of the Waianae Coast have only one way in and one way out.

There is no discussion as to how the expansion of WGSL continues to dump on and places the burden on the Waianae Coast. There needs to be a discussion of the concept of environmental justice.

Section 5 Relationship to Land Use Plans, Policies And Controls of the Potentially Affected Area

The Legislature is presently developing a plan on Sustainability for the year 2050. It is without any basis that the EISPN arrives at the conclusion that the expansion of WGSL is in conformance with the General Plan. The analysis which led to this conclusion is needed.

The discussion of the Land Use Policies of the area cannot be made without a discussion of the LUC's D&O on the SUP. The D&O states that no later than May 1, 2008, the area shall be "restricted from accepting any additional waste material and be closed in accordance with an approved closure plan." This is the controlling Land Use Order on the site of the proposed expansion.

The issue of the protection of the aquifer requires further discussion. The EPA has a map which includes WGSL in the aquifer area. The Board of Water Supply has a map of convenience as it addresses WGSL. These maps must be explained.

Section 6 Alternatives to the Proposed Action

This discussion in the FSEIS and other documents has been inadequate and continues to be so. After all these years, the City must have a better response on alternative technologies, transshipment and other sites than what is provided. Again, it appears that it is simply easier to continue to the existing landfill; and therefore all attempts to address alternatives in good faith will never be a reality. In that a private landfill is also proposed, the City's position on the landfill and how it will impact on the flow of trash needs discussion.

Section 7 Permits and Regulatory Approvals that May be Required

The State Land Use Commission is a State agency not within the City & County of Honolulu. There is also a requirement to secure the DOH permits.

Section 8 Organizations, Agencies and Public Parties Consulted In the Preparation of the Environmental Impact Statement Preparation Notice

No Comment

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-054

May 12, 2008

The Honorable Colleen Hanabusa
President of the Senate
21st District
State Capitol, Room 409
415 South Beretania Street
Honolulu, Hawaii 96813

Dear Senator Hanabusa:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006 concerning the subject project. We acknowledge your request to be a consulted party to the EIS process for the proposed project. The following is prepared in response to your comments (your comments havebeen italicized for reference):

1. *"At the outset, I incorporate by reference my comments set forth in a letter of August 30, 2006 which is found in the EISPN Appendix A. The EISPN fails to address the comments made therein and the Draft and/or Final EIS must do so to comply with the laws."*

A response to your letter of August 30, 2006 has also been prepared and will be forwarded to you concurrently with this reply. Our response to your August 30th letter is incorporated by reference in this letter.

2. *Section 1 Project Background. "This Section fails to address whether the FSEIS prepared in December 2002 was a "shibai." Clearly it was inadequate and remains a subject to challenge in the Courts. Though a discussion is made about the Landfill Site Selection Process, the EISPN does not address how the preparer of the this [sic] document, as well as the consultant for the Landfill Site Selection Process can conclude that the service life of WGSL is fifteen (15) more years. This is especially troubling when the preparer of the EISPN was also the consultant to the site selection committee and the criteria was NO EXCAVATION. There should be a concern as whether this consultant is in a conflict of interest given the differing reports. Moreover, there must be a clear statement as to who is paying for the preparation of the various documents and studies required in the EIS process. If, for example, Waste Management is paying then the Final EIS will not truly be that of the City and/or the Department of Environmental Services which should have the general public's interest as its primary goal."*

We offer the following clarification to the above: (1) we acknowledge that your lawsuit concerning the 2002 Final Supplemental Environmental Impact Statement remains the subject of litigation. We do note however that Section 1 contains important information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of Oahu; (2) The service life of the landfill as presented to the Mayor's Advisory Committee in 2004 was twenty (20) years. The capacity for the current project will be discussed in the Draft EIS (DEIS); (3) The no excavation remark that you cite comes from the Waimānalo Gulch Expansion, Potential Landfill Site Data Sheets, prepared for the Mayor's Advisory Committee on Landfill Siting, October 2003. The specific reference is to information provided for Criteria No. 23, Landfill Capacity or Site Life. According to the data sheet, "The volume was calculated assuming a 100 foot buffer around the site boundary, 30 acres for infrastructure facilities, no excavation, and filling to the natural grade." The rationale for not incorporating excavation as a factor involved the following:

A. It was not in the consultant's scope of work to do field studies including drilling borings to obtain subsurface information. This is typically the case when doing preliminary siting studies both due to difficulty in gaining access to the property and the high cost of doing field studies. Without these studies, it is not possible to determine excavation depths or difficulty with any degree of certainty. Therefore, it is typical to assume minimal or no excavation in order to compare site capacities;

B. Criteria No. 23, therefore, was established to provide an estimate of capacity only based on: an area adjusted with an approximately 100 foot buffer around the perimeter of the site; the use of 30 acres for infrastructure to operate the facility; no detailed engineering calculations incorporating soils conditions to produce information on excavation; and filling of the site to the natural grade of the terrain of the finished site. It is incorrect to conclude or imply on the basis of information from the data sheet alone that in the course of developing a landfill site that no excavation would be required.

(4) The City Department of Environmental Services and Waste Management of Hawaii, Inc., are financing the preparation of the EIS. The interest of the general public, and the responsibility for and integrity of the document rests with the City and County of Honolulu.

3. *"The public needs to know whether any representation made by a Mayor and/or City Council is binding on subsequent administrations. This is especially critical when looking at the Decision and Order of the State of Hawai'i Land Use Commission ("LUC Order") and State of Hawai'i Department of Health's Notice of Violations and Order ("DOH NVO"). The culpability, remedial action and cause of these violations must be discussed."*

Representations of officials may become law and be binding when appropriately enacted into law, or through other acts that have the force and effect of law. Subsequent Mayors and/or City Councils may, however, change prior law through appropriate legal processes.

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved-the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

4. *"A detailed discussion is necessary as to the consequence of the LUC Order and the DOH NVO for the decision maker to have sufficient information to fully consider the proposed action. In that the Operator was selected in 1999; and there have obviously been problems with the manner in which they have performed, there should be a discussion as to whether that contract will be honored or should be honored. The Contract must be made public and the legal rights of all parties addressed."*

Please refer to our comment above regarding the NVO. The contract between the City and Waste Management of Hawaii is a public document. The City has monitored the performance of Waste Management under this contract and has taken appropriate action to protect the public interest. As a result, significant improvements to landfill operations have occurred. The City intends to continue to administer the contract to ensure that the rights and responsibilities of the parties involved are addressed and the public interest is protected.

5. *Section 2 Introduction. "This introductory section is presented as if this issue is new. The expansion of the WGSL and the larger issue of disposal of municipal solid waste on this island are far from a new issue. This section also begs the issue of the problems with the operations and the operator of the WGSL."*

The use of Waimanalo Gulch is not new and as indicated in the EISPN the site has been in use since 1989, approximately 19 years ago. The NVO will be discussed in the DEIS.

6. *Section 3 Project Description. "This Section of the EISPN is in most parts verbatim from the FSEIS of December 2002. It would appear that given the difference in the slope and other physical characteristics of the expansion that this critical point should have been discussed versus a rehashing of the prior FSEIS."*

"For example the proposed expansion will be primarily in the rRK soil type. This means rock over a large percentage of the surface. There must be a more detailed discussion as to the slope differential for WGSL in the proposed expansion area."

According the Office of Environmental Quality Control (OEQC), "The EISPN does not give full detail of the proposal but defines the scope of analysis that will be covered in the subsequent environmental impact statement." (A Guidebook for the Hawaii State Environmental Review Process, June 2004). In this regard the EISPN is not intended to itself serve as the full disclosure document as required by Chapter 343, Hawaii Revised Statutes (HRS). The proposed grades and use of the site including details and information will be provided as a part of the DEIS.

7. *"The expansion will clearly be where the land is steepest and will require excavation. It is, therefore, curious that this EISPN fails to address the amount of native soil and rock which will have to be removed; a fact which has been discussed in prior Draft EISs and the 1999 Contract with Waste Management."*

The anticipated amount of soils excavation that will be necessary will be described in the DEIS. As indicated in the EISPN, "Information concerning these construction details and discussion of potential impacts and recommended mitigation measures relating to construction associated noise, odor, airborne litter, and storm water erosion will be provided in the DEIS."

8. *"There needs to be a discussion as to the extent of that construction activity; its impact on the neighbors; and more importantly where will the materials go. The cost of such an activity must be calculated to do a true cost benefit analysis. The rights to the native soil (rock, etc.) must also be addressed. It is believed that with the present operation, the contractor who does the excavation is permitted to sell the rock and soil and keep the funds. If this is the case, the practice must change and the benefit should be to the taxpayers."*

The extent of construction, its potential impact on adjoining property owners, and where and how the excavated materials will be utilized will be a part of the DEIS. The owner of the property, the City and County of Honolulu, retains the ownership rights to the excavated materials. Since August 1, 1991, the City has received royalties for any excavated and processed material removed for Waimanalo Gulch Sanitary Landfill.

9. *"There needs to be an honest discussion as to whether the expansion of WGSL will require almost a 2 to 1 removal of the native soils. That is to say for 2 cubic feet of air space, 1 cubic feet of native soils will have to be removed. If that is not the case then the assumptions made in the Waste Management contract of 1999 require additional discussion."*

The final design of the proposed project, including the height and elevation of the expansion area of the landfill and use of excavated materials, will follow the general guidelines set forth in the 1999 contract. The final design will be based on the use of sound engineering practices and compliance with environmental protection and regulatory requirements.

10. *Section 4 Environmental Setting. "Given the recent decisions by the Hawai'i Supreme Court, it is necessary to discuss the concept of public trust. This is especially true when looking at the waters of this State."*

"What occurred with the operations of WGSL and the leachate is inexcusable and a violation of that public trust. Note that the leachate was disposed of, for most part, in the Waianae Sewage Treatment Plant."

There has been no violation of the public trust. Leachate that is accepted by the plant operator for disposal at the Waianae Wastewater Treatment Plant was, and continues to be in accordance with regulatory requirements to ensure public health and safety. Leachate management and monitoring will be a part of the Solid Waste Management Permit application.

11. *"In this light, there is inadequate discussion of the leachate. This is especially troubling given the DOH NVO. This requires a discussion as to the how the build up of the leachate affected or could affect the integrity of liner and the stability of the landfill. It must also be addressed in light of the expansion and the stress it will have upon the liner and the stability of the landfill."*

An explanation of the leachate that is generated by the landfill will be provided in the DEIS. A discussion concerning the leachate collection and removal system design, including liner integrity and landfill stability, associated with the generation of leachate will be provided.

12. *"It is unacceptable for government to rely upon Waste Management's consultants or experts for stability calculations. This is not acting in the best interest of the public."*

The consultants involved with the design of the Waimanalo Gulch Sanitary Landfill do work for both public and private organizations, are registered professional engineers, and are recognized experts in landfill design and stability analysis. Their work has been peer reviewed by outside experts to ensure the work meets professional engineering standards. All of the work completed is available for public review including all analyses completed during the design.

13. *"The recent construction of the rock berm wall or as some call it the "Great Wall of Waimanalo," requires discussion as to why it was constructed and how it is necessary for the structural integrity of the landfill. The berm wall is not to be used as a retaining wall and/or the basis for height expansions in the existing landfill."*

The stability berm that is referred to was reviewed and approved by the DOH for construction under the current Solid Waste Management Permit. The purpose of the berm is to ensure that the ash monofil area of the landfill meets or exceeds regulatory and engineering design standards.

14. *"It is a given fact that the height limitations in certain parts of the WGSL have been exceeded. Yet, to date, not [sic] hearings have been held on the height expansion. There needs to be a discussion as to capacity and how the City and Waste Management continue to operate the WGSL and address the violations set forth in the DOH NVO."*

Our request to seek a height modification was submitted to DOH in February 2006. The height modification was approved by DOH on February 20, 2008. A discussion of the capacity of the site and the NVO will be provided in the DEIS.

15. *"Prior EISs have not acknowledged the cultural significance of the pathway to Palehua which Waimanalo Gulch served as. Also lacking is a discussion as to the environmental impact to the natural preserves for various native birds which Waimanalo Gulch serves as a habitat."*

We have forwarded this information to Cultural Surveys of Hawaii, our archaeological and cultural consultant, which is preparing the Cultural Impact Assessment report for further investigation. Their findings will be provided in the DEIS. The potential for impacts to habitat for native flora and fauna will also be provided in the DEIS.

16. *"The visual impact of WGSL has not been adequately addressed especially with the construction of the rock berm wall. How is this area going to be restored to its original state with a rock berm wall?"*

An assessment of the potential visual impacts of the proposed project will be provided in the DEIS. This will include the investigation of views from both the landfill as well as from selected points along Farrington Highway and other locations.

Landscaping will be provided to improve the aesthetics of the site. However, given the nature of use of the site involving landfilling, it will not be possible to return the site to its original condition.

17. *"Odors continue for those who live by the WGSL."*

The management and mitigation of odors associated with the use and operation of the landfill will be addressed in the DEIS.

18. *"The role that Ko Olina plays as it relates to the economic growth for West Oahu is significant. While no one would consider placement of a landfill near Waikiki, the City does not hesitate to continue a landfill operations directly across the street from KO Olina."*

The City does not discount the importance of economic growth wherever it is occurring on the Island of Oahu. While there are no viable landfill sites near Waikiki we do note that places such as Ala Moana Park and the Kakaako Waterfront Park once served as landfills, and that various parts of Windward Oahu once supported landfills.

19. *"Given the concern of the stability of the landfill and the recent earthquake on the Big Island, a discussion must be had as to what can be done if such a natural disaster caused the landfill to slip onto Farrington Highway. This discussion must look to the fact that expansion will be at steepest part of the footprint of the parcel of land and the stress it will place on the existing landfill. The people of the Waianae Coast have only one way in and one way out."*

A discussion about the stability of the landfill in relation to the potential for natural disasters will be provided in the DEIS.

20. *"There is no discussion as to how the expansion of WGSL continues to dump on and places the burden on the Waianae Coast. There needs to be a discussion of the concept of environmental justice."*

A discussion of the environmental justice of siting the proposed project at Waimanalo Gulch will be provided in the DEIS.

21. *Section 5 Relationship to Land Use Plans, Policies And Controls of the Potentially Affected Area. "The Legislature is presently developing a plan on Sustainability for the year 2050. It is without any basis that the EISPN arrives at the conclusion that the expansion of WGSL is in conformance with the General Plan. The analysis which led to this conclusion is needed."*

The sustainability for our island State is important. The use of Waimanalo Gulch promotes sustainability through the use of an on-island facility that has remaining but unused capacity. Without Waimanalo Gulch, new land, a precious resource, would need to be prematurely used when there is remaining capacity at this existing public facility.

The basis for the conformity of the proposed project with the General Plan is stated in the EISPN. It is noted that the Waimanalo Gulch Sanitary Landfill is in accordance with the Ewa Sustainable Communities Plan (Development Plan), and that this proposed project can only be implemented if it is in accordance with the General Plan.

22. *"The discussion of the Land Use Policies of the area cannot be made without a discussion of the LUC's D&O on the SUP. The D&O states that no later than May 1, 2008, the area shall be "restricted from accepting any additional waste material and be closed in accordance with an approved closure plan." This is the controlling Land Use Order on the site of the proposed expansion."*

Necessary approvals, including those of the Land Use Commission and others, will be sought to allow for the proposed project. Further discussion of this item will be provided in the DEIS.

23. *"The issue of the protection of the aquifer requires further discussion. The EPA has a map which includes WGSL in the aquifer area. The Board of Water Supply has a map of convenience as it addresses WGSL. These maps must be explained."*

The DEIS will identify the agencies with jurisdiction for the establishment of the Groundwater Protection Zone (GPZ) and Underground Injection Control (UIC) Line. A discussion of the relationship between the proposed project and the regulation of the GPZ, UIC, and other water resource requirements will be provided.

24. *Section 6 Alternatives to the Proposed Action. "This discussion in the FSEIS and other documents has been inadequate and continues to be so. After all these years, the City must have a better response on alternative technologies, transshipment and other sites than what is provided. Again, it appears that it is simply easier to continue to the existing landfill; and therefore all attempts to address alternatives in good faith will never be a reality. In that a private landfill is also proposed, the City's position on the landfill and how it will impact on the flow of trash needs discussion."*

Alternative technology, transshipment, and other on-island landfill sites will be discussed in the DEIS. The City acknowledges a proposed private landfill in Nānākuli. However, the Waimānalo Gulch Sanitary Landfill is considered the most viable site for O'ahu's future landfill needs for the next approximately 15 years, or until an alternative becomes available that would completely replace the need for a landfill on island.

25. *Section 7 Permits and Regulatory Approvals that May be Required. "The State Land Use Commission is a State agency not within the City & County of Honolulu. There is also a requirement to secure the DOH permits."*

The reference to the State Land Use Commission is based on their participation in the decision making for the State Special Use Permit administered by the City Department of Planning and Permitting. Department of Health administered permit applications including the Solid Waste Management Permit application will be filed for this project.

26. *"In the preparation of the Draft Supplemental EIS for this proposed expansion, it is critical that the decision maker and the general pubic are made to understand why the promises of government need not be kept. There must also be a discussion as to how much money the City and County makes in the landfill business."*

The DEIS will include a discussion of the past history of events related to the future of the landfill, and provide information as to how the decision to propose expansion of the landfill, rather than closure, was reached. Please also see our response to Item No. 3, above.

The City combines tip fee revenue from City transfer stations and the landfill. The revenue for FY06 was $14,051,214 as reported in the City and County of Honolulu Operating Budget, Detailed Statement of Revenues and Surplus, Solid Waste Special Fund (250) Disposal Charges.

A small portion of the tip fee revenue is attributed to commercial accounts disposal at transfer stations. Most of the tip fee revenue is generated by commercial accounts disposal at the landfill. In accordance with Chapter 9, Section 9-4.2, Revised Ordinances of Honolulu (ROH), only businesses, and federal and state agencies accounts are charged a landfill tip fee. Homeowners and eleemosynary organizations pay no fees.

27. *"What is also lacking is the fact that in a few years, the status of H Power will also be an issue. If the City decides to re purchase H Power, then that cost must be made known and its impact on the cost of solid waste disposal."*

And,

28. *"If a private landfill operation is permitted and the transshipment of rubbish is also approved, then the impact of such action must also be discussed in terms of the environmental impacts to the public."*

As noted, the City acknowledges a proposed private landfill in Nānākuli but considers the Waimānalo Gulch Sanitary Landfill a more viable alternative. The consideration of the Nānākuli site and waste transshipment will be provided in the DEIS.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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The Senate
The Twenty-Third Legislature
of the
State of Hawaii
STATE CAPITOL
HONOLULU, HAWAII 96813

August 30, 2006

Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, HI 96707

RE: Comments for EIS preparation on the Expansion of Waimanalo Gulch Sanitary Landfill

To the Department of Environmental Services, Refuse Division:

The following are my comments which will set forth issues and concerns pertinent to the preparation of an EIS for this project.

Standard To Be Met.

The EIS process is governed by HRS §343. An EIS is:

> §343-2 Definitions. As used in this chapter unless the context otherwise requires: . . .
>
> "Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The statute also sets forth what the Rules must contain, at minimum. HRS §343-6. The legal effect of administrative rules are well settled in this jurisdiction. Administrative Rules are to be followed and given the full effect of law. ***Williams v. Hawaii Medical Service Association,*** 71 Haw. 545, 549, 7984 P.2d 442, 444 (1990). The Supreme Court has clearly stated that arbitrary and

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capricious application of the Rules will not be tolerated. ***Windward Marine Resorts v. Sullivan,*** 86 Haw. 171, 948 P.2d 592 (ICA 1997).

HAR §11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The "General Provisions" highlight the expectation of the EIS process.

I have grave concerns that you will comply with what is required of an EIS.

The following standard set in ***Life of the Land v. Ariyoshi,*** 59 Haw. 156, 164-165, 577 P.2d 1116 (1978) for a court to determine the sufficiency of an EIS:

> In making such a determination the court is guided by the "rule of reason," under which an EIS need not be exhaustive to the point of discussing all possible details bearing on the proposed action but will be upheld as adequate if it has been compiled in good faith and sets forth sufficient information to enable the decision-maker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. County of Suffolk v. Secretary of Interior, 562 F.2d 1368, 1375 (2d Cir. 1977), cert. den., 434 U.S. 1064, 98 S. Ct. 1238, 55 L. Ed. 2d 764 (1978). [Emphasis added.]

The condition precedent to all EISs is that it be compiled in "good faith" and sets forth sufficient information. The past practice of the City has shown that EISs have not been compiled in good faith and nor does it provide sufficient information.

At the very minimum the City must take its past EISs and explain the discrepancies that have now been found and set forth whatever information it now relies upon to justify its change in position.

The best place to begin is with the discussion as to why we in the community have no rights to rely upon the representation of government that the WGSL will close. This is the position of the community that the WGSL should close.

What Was Represented As To The Closure.

At the outset, the City must explain why it has changed its position from an expansion of only 5 years to now an additional 15 years. I have heard comments from the City that there was never a "promise" to close the WGSL in 5 years; however, this is contrary to the statements made under oath to the Land Use Commission during their hearings on the conditional use permit as well as statements made in the Final Supplemental Environmental Impact Statement (FSEIS) for the 5 year expansion. The LUC was very clear in its questioning as to what the City intended to do. How does the City explain its statement under oath and the change in the FSEIS. A discussion should be had as to whether the City can be bound by its statements under oath like a person.

The EIS must address the following.

1. Waste Management's Contract

An EIS is "meaningless" if it is self-serving and rationalizes an outcome. The contract between Waste Management, Inc. and the City for the operation of WGSL was entered into in 1999 for 15 years. This was two years before the first Draft EIS in 2000; and three years before the FSEIS. At the very minimum, this shows the decision to expand WGSL was a done deal in 1999. Explain this contract and why the City entered into it in 1999. Also explain what was done after the City said the expansion would be for only 5 years. Was the contract amended?

2. Alternatives.

HRS §343-2 defines an EIS as one that discloses, among other items, the "alternatives to the action and their environmental effects."

HAR §11-200-17 addresses the requirement as to alternatives as follows:

> F. The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. Examples of alternatives include: . . . (Emphasis added.)

Money is not the paramount criteria in arriving at a decision which is environmentally sound.

HAR §11-200-17 F. 5 states that "For any agency actions, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency." In ***Westlands Water District v. U.S. Dept. of Interior,*** 376 F.3d 853, 866 (9th Cir. 2004), the Ninth Circuit recently reaffirmed that alternatives must be rigorously explored and that "reasonable alternatives" include those not within the jurisdiction of the lead agency. ***Westlands, supra,*** at 868. The Ninth Circuit went on to say that "[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate." ***Id.***, citing to ***Morongo Band of Mission Indians v. FAA,*** 161 F.3d 569, 575 (9th Cir. 1998).

3. Failure to Comply with the City's Ordinance.

Ordinance 9-1/1(a)(6)(b)(1) states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill. What is the status and what is the consequence of this non-compliance?

4. Sludge

A major source of "odor" for the landfill is sludge. What is the City's treatment of sludge and for what period of time will it continue to be dumped in the landfill.

5. Purpose and Need.

HAR §11-200-17 D requires the Draft SEIS to "contain a separate and distinct section that includes a statement of purpose and need for a proposed action." It is a similar provision under NEPA, which is looked upon to guide the discussion on alternatives. ***Westlands, supra,*** at 866. In ***Westlands,*** the Ninth Circuit looked to whether the preparers had "arbitrarily and capriciously" narrowed the scope of the statement, thereby affecting the discussion on the alternative.

There is an application for a private landfill pending and also the fact that the Department of Agriculture will now permit the transshipment of MSW. These points must be addressed in discussing any need of the expansion, especially in light of the prior statements that there will be no need for landfills in 5 years.

6. Excavation

The City must address the discrepancies in all the draft EISs along with the reports provided by RM Towill to the Blue Ribbon Commission which was tasked with siting the new landfill. The criteria was no excavation. RM Towill determined that WGSL had a life of 20 more years with the criteria. This is in direct conflict with other EISs also prepared by RM Towill. What does the City intend to do about this obvious misrepresentation? How does the City explain this discrepancy.

The extreme slope of WGSL for the proposed expansion and the newly constructed rock berm are related. What is the stability of the expansion? How much native soil will have to be removed? Where will it be removed to? Will the excavated materials be sold?

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7. Stability of the Slope

In light of the concern over the stability of slope as evidenced by the construction of the rock berm wall, how will the community be assured about its stability? How is the integrity of the liner tested? Will the rock berm wall act as the retaining wall to justify and increase in the slope?

8. The Violations of the Existing Permit

The Notice and Finding of Violation ("Notice and Finding") and Order dated January 31, 2006, of the Department of Health ("DOH") as to the operations of WGSL must be addressed. The first point of discussion is why the City had no oversight and permitted these activities to go unchecked. These violations resulted in the largest fine in the history of the State of Hawai`i.

The following violations are the most critical and must be addressed, though all violations should be addressed:

1. Since 2003, the City has placed ash above the 2002 grades and exceeded the design grades for over a year from discovery in January 2004.
2. The control of leachate and the monitoring was discovered. The DOH found 16.3 feet of leachate on the liner and 22 feet and 3 inches in the sump area. More troubling is no monitoring has been conducted since October 26, 2003. This was attributed to the ash monofill landfill.
3. As for the MSW landfill, in April 2005 and May 2005, 74 feet of leachate was measured. This was in an area where the sump was installed in November, 2003 (MSW Cell E-1). There was a gross failure to monitor the leachate
4. The leachate level in the area of 4B was unavailable because no monitoring had taken place since May.
5. The removal of soil and its impact on stability. DOH has found that in January of 2005, they were notified of the fact that grades were exceeded. The City knew that the ash had exceeded the approved grades by January, 2004 as to the ash landfill

6. Disposal of asbestos is a major concern. DOH found that the City and its operator accepted asbestos at the landfill but do not have any logs as to where it has been buried.
7. Surface Water Management. There are no surface water management plans as required by the permit for the years 2003-2004.
8. DOH found a failure to control dust.
9. DOH found a failure to control litter.
10. DOH found that there has been no monitoring of methane gas at the landfill.

The DOH Order entered in this action demonstrates the seriousness of the violations and its agency's (including County's) responsibility to monitor. There are also additional violations that were not included in the DOH Order, such as the applicant's failure to submit a revised Closure and Post-Closure Plan no later than May 1, 2005, which was finally submitted on February 22, 2006 and the operators unauthorized night work preparing a new cell for receiving waste.

9. How the Public Trust Is Being Met

The recent Hokulia case makes clear the State's public trust for the waters of our State. How has this trust obligation been met?

10. Cumulative Effects

This EIS cannot merely address the proposed expansion. It must address the cumulative effects of the operation of WGSL since the 1980s in addition to the proposed expansion on the Coast, including the disposal of leachate off site at the Waianae Wastewater Treatment plant.

11. Environmental Justice

The EIS must address the concept of environmental justice and how the City's use of this landfill and others in the Waianae Coast affect the community.

These are concerns and issues which must be addressed in the EIS. It continues to remain my position that WGSL must close. I continue to be perplexed as to how the City can change its position without any sense of obligation of keeping its word to its people.

Sincerely,

Colleen Hanabusa
Senator, Twenty-First District

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
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DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-053

May 12, 2008

The Honorable Colleen Hanabusa
President of the Senate
21st District
State Capitol, Room 409
415 South Beretania Street
Honolulu, Hawaii 96813

Dear Senator Hanabusa:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated August 30, 2006, concerning the subject project. The following is prepared in response to your comments (as appropriate your comments have been italicized for reference):

Standard To Be Met

We appreciate your references to our legal responsibilities under the Hawaii EIS law. Please also refer to Section 1 of the EISPN thatcontains information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of O'ahu.

What Was Represented As To The Closure

Prior representations concerning the closure of Waimanalo Gulch have been identified in the EISPN. This information will also be provided in the Draft EIS (DEIS).

"The EIS must address the following:

"1. Waste Management's Contract
An EIS is "meaningless" if it is self-serving and rationalizes an outcome. The contract between Waste Management, Inc. and the City for the operation of WGSL was entered into in 1999 for 15 years. This was two years before the first Draft EIS in 2000; and three years before the FSEIS. At the very minimum, this shows the decision to expand WGSL was a done deal in 1999. Also explain what was done after the City entered into it in 1999. Also explain what was done after the City said the expansion would be for only 5 years. Was the contract amended?"

The contract amendment dated May 1, 1999, provided for the expansion of the Waimānalo Gulch site. Subsequently, the prior administration decided on a five-year limit for the use of the site. The contract was not amended to a shorter term because the exact date of termination could not have been determined. Although the contract was not amended, the City retains control of the contract and can terminate it at any time when it is in the best interest of the City. As provided in Contract Special Provision 29, the contract can be terminated,". . .in whole or in part, whenever the Director shall determine that termination of the contract, in whole or in part, is in the best interest of the City."

"2. Alternatives
"HRS §343-2 defines an EIS as one that discloses, among other items, the "alternatives to the action and their environmental effects.""

"HAR §11-200-17 addresses the requirement as to alternatives as follows:"

"F. The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhanceenvironmental quality of avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. Examples of alternatives include: . . . (Emphasis added.)"

"Money is not the paramount criteria in arriving at a decision which is environmentally sound."

"HAR §11-200-17 F. 5 states that "For any agency actions, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency." In Westlands Water District v. U.S. Dept.of Interior, 376 F.3d 853, 866 (9th Cir. 2004), the Ninth Circuit recently reaffirmed that alternatives must be rigorously explored and that "reasonable alternatives" include those not within the jusidiction of the lead agency. Westlands, supra, at 868. The Ninth Circuit went on to say that "[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate." Id., citing to Morongo Band of Mission Indians v. FAA, 161 F.3d 569, 575 (9th Cir. 1998)."

An examination of alternatives that include other potential landfill sites, waste transshipment, and technology based solutions, will be provided in the DEIS. This will include the consideration of factors that do not involve funding as the major criteria for evaluation.

"3. Failure to Comply with the City's Ordinance"
"Ordinance 9-1/1(a)(6)(b)(1) states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill. What is the status and what is the consequence of this non-compliance?"

The City acknowledges that it was not possible to increase recycling, reuse, composting and waste diversion to a level that could support up to a 75 percent reduction by 2002. At the same time, ENV is committed to pursuing all reasonable and feasible options that can contribute to reducing our dependency on the use of landfilling. Recent actions involve the establishment of pilot programs for waste recycling and a major decision to expand the capacity of HPOWER to promote recycling through the generation of energy from municipal refuse. We will continue to pursue these and other options with the City Council as well as O'ahu's communities.

"4. Sludge"

"A major source of "odor" for the landfill is sludge. What is the City's treatment of sludge and for what period of time will it continue to be dumped in the landfill."

Major improvements in the City's handing of sludge at the Sand Island Wastewater Treatment Plant have occurred since the initial start up of the recently constructed waste digester. These improvements have significantly reduced odors and the requirement for the disposal of untreated sewage sludge. We expect that as the facility becomes fully operational that further improvements will result.

"5. Purpose and Need"

"HAR §11-200-17 D requires the Draft SEIS to "contain a separate and distinct section that includes a statement of purpose and need for a proposed action. "It is a similar provision under NEPA, which is looked upon the guide the discussion on alternatives. Westlands, supra, at 866. In Westlands, the Ninth Circuit looked to whether the preparers had "arbitrarily and capriciously" narrowed the scope of the statement, thereby affecting the discussion on the alternative."

"There is an application for a private landfill pending and also the fact that the Department of Agriculture will now permit the transshipment of MSW. These points must be addressed in discussing any need of the expansion, especially in light of the prior statements that there will be no need for landfills in 5 years."

We appreciate your citation of prior case law concerning the purpose and need for the EIS. The application for the private landfill in Nānākuli and the potential for transshipment as methods to eliminate the need for the proposed Waimanalo Gulch Sanitary Landfill lateral expansion will be provided in the DEIS.

"6. Excavation"

"The City must address the discrepancies in all the draft EISs along with the reports provided by RM Towill to the Blue Ribbon Commission which was tasked with siting the new landfill. The criteria was no excavation. RM Towill determined that WGSL had a life of 20 more years with the criteria. This is in direct conflict with other EISs also prepared by RM Towill. What does the City intend to do about this obvious misrepresentation? How does the City explain this discrepancy."

The no excavation remark that you cite comes from the Waimānalo Gulch Expansion, Potential Landfill Site Data Sheets, prepared for the Mayor's Advisory Committee on Landfill Siting, October 2003. The specific reference is to information provided for Criteria No. 23, Landfill Capacity or Site Life. According to the data sheet, "The volume was calculated assuming a 100 foot buffer around the site boundary, 30 acres for infrastructure facilities, no excavation, and filling to the natural grade." Criteria No. 23, therefore, was established to provide an estimate of capacity only based on: an area adjusted with an approximately 100 foot buffer around the perimeter of the site; the use of 30 acres for infrastructure to operate the facility; no detailed engineering calculations incorporating soils conditions to produce information on excavation; and filling of the site to the natural grade of the terrain of the finished site. It is incorrect to conclude on the basis of information from the data sheet alone that in the course of developing a landfill site that no excavation would be required.

The 2002 Final Supplemental EIS for the Waimānalo Gulch Expansion, as well as other prior Waimānalo Gulch EIS documents, were prepared by our consultants based on civil engineering design studies supported by geotechnical investigations and/or soils evaluations that are referenced in the EIS documents. The engineering information for the 2002 EIS was provided by Waste Management of Hawai'i, Inc., who utilized licensed professionals to conduct the studies. The factors that can result in different capacities or life of the site would include refinements to the planned design of the site, knowledge of how the soils conditions or topographic changes would affect the design, or adjustments to the site to accommodate new infrastructure or stability features in order to maintain safety or improve the efficient use of the site.

There are other factors that can affect capacity or life of the site that will be provided in the DEIS for the proposed project.

> *"The extreme slope of WGSL for the proposed expansion and the newly constructed rock berm are related. What is the stability of the expansion? How much native soil will have to be removed? Where will it be removed to? Will the excavated materials be sold?"*

A discussion of the anticipated excavation requirements for the proposed project will be provided in the DEIS. This will include an estimate on how much soil will need to be excavated, and the stability of the site. The soils removed from the site that will be used for cover material will be stored on site.

A decision regarding the release or possible sale of any cover material cannot be made at this time based on the status of the project within the EIS process. The owner of the property, the City and County of Honolulu, however, retains the ownership rights to the excavated materials. Since August 1, 1991, the City has received royalties for any excavated and processed material removed for the Waimānalo Gulch Sanitary Landfill.

"7. Stability of the Slope"

"In light of the concern over the stability of slope as evidenced by the constuction of the rock berm wall, how will the community be assured about its stability? How is the integrity of the liner tested? Will the berm wall act as the retaining wall to justify and increase the slope?"

The DEIS will provide information concerning engineering design standards and practices that ensure the stability of the site. The most recent test of the site's stability involved the recent earthquake event of October 15, 2006, when a magnitude 6.7 earthquake occurred about 10 miles north-northwest of Kailua-Kona. According to our site operator, Waste Management of Hawai'i, Inc., an inspection following the earthquake indicated there was no failure or damage to the landfill and its supporting infrastructure as a result

The stability berm that is referred to was reviewed and approved by the DOH for construction under the current Solid Waste Management Permit. The purpose of the berm is to ensure that the ash monofill area of the landfill meets or exceeds regulatory and engineering design standards, including those for soil retention.

> *"8. The Violations of the Existing Permit"*
> *"The Notice and Finding of Violation ("Notice and Finding") and Order dated January 31, 2006, of the Department of Health ("DOH") as to the operations of WGSL must be addressed. The first point of discussion is why the City had no oversight and permitted these activities to go unchecked. These violations resulted in the largest fine in the history of the State of Hawai'i."*
>
> *"The following violations are the most critical and must be addressed, though all violations should be addressed:"*
>
> *"1. Since 2003, the City has placed ash above the 2002 grades and exceeded the design grades for over a year from discovery in January 2004.*
> *2. The control of leachate and the monitoring was discovered. The DOH found 16.3 feet of leachate on the liner and 22 feet and 3 inches in the sump area. More troubling is no monitoring has been conducted since October 26, 2003. This was attributed to the ash monofill landfill.*
> *3. As for the MSW landfill, in April 2005 and May 2005, 74 feet of leachate was measured. This was in an area where the sump was installed in November, 2003 (MSW Cell E-1). There was a gross failure to monitor the leachate"*
> *4. The leachate level in the area of 4B was unavailable because no monitoring had taken place since May.*
> *5. The removal of soil and its impact on stability. DOH has found that in January of 2005, they were notified of the fact that grades were exceeded. The City knew that the ash had exceeded the approved grades by January, 2004 as to the ash landfill*
> *6. Disposal of asbestos is a major concern. DOH found that the City and its operator accepted asbestos at the landfill but do not have any logs as to where it has been buried.*
> *7. Surface Water Management. There are no surface water management plans as required by the permit for the years 2003-2004.*
> *8. DOH found a failure to control dust.*
> *9. DOH found a failure to control litter.*
> *10. DOH found that there has been no monitoring of methane gas at the landfill."*

> *"The DOH Order entered in this action demonstrates the seriousness of the violations and its agency's (including County's) responsibility to monitor. There are also additional violations that were not included in the DOH Order, such as the applicant's failure to submit a revised Closure and Post-Closure Plan no later than May 1, 2005, which was finally submitted on February 22, 2006 and the operators unauthorized night work preparing a new cell for receiving waste."*

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

> *"9. How the Public Trust Is Being Met"*
> *"The recent Hokulia case makes clear the State's public trust for the waters of our State. How has this trust obligation been met."*

A discussion of state waters and efforts that have been taken by the City and Waste Management to ensure the protection of this important resource will be provided in the DEIS.

> *"10. Cumulative Effects"*
> *"The EIS cannot merely address the proposed expansion. It must address the cumulative effects of the operation of WGSL since the 1980s in addition to the proposed expansion on the Coast, including the disposal of leachate off site at the Waianae Wastewater Treatment plant."*

A discussion of cumulative effects as a result of the proposed project will be provided in the DEIS.

> *"11. Environmental Justice"*
> *"The EIS must address the concept of environmental justice and how the City's use of this landfill and others in the Waianae Coast affect the community."*

A discussion of the concept of environmental justice and its relationship to the proposed project will be provided in the DEIS.

> *Final Comment*
> *These are the concerns and issues which must be addressed in the EIS. It continues to remain my position that WGSL must close. I continue to be perplexed as to how the City can change its position without any sense of obligation of keeping its word to its people.*

We acknowledge your opposition to the proposed project and have included you as a consulting party to the EIS process for this project.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

12/23/2006 08:18 808-5867797 SEN HANABUSA PAGE 01

5

Facsimile transmittal

To:	Ms. Wilma Namumnart	**Fax:**	692-5402
From:	Cynthia K.L. Rezentes	**Date:**	12/26/2006
Re:	WGSL EISPN Comments	**Pages:**	4 (including the cover sheet)
CC:			

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Wilma,

Attached please find my comments, due December 28, 2006, regarding the Waimanalo Gulch Sanitary Landfill (WGSL) EISPN for an expansion of WGSL. A hard copy will follow and also be provided to Mr. Henry Eng, Mr. Brian Takeda, and OEQC.

Mahalo,

Cynthia K.L. Rezentes

DEC-26-2006 01:34PM FAX:808 5867797 ID:CC HNL ENV REFUSE PAGE:001 R=96%

Cynthia K.L. Rezentes
87-149 Maipela Street
Wai`anae, HI 96792-3154
(808) 696-0131
Email: Rezentesc@aol.com

December 26, 2006

Eric Takamura, Director
Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

RE: Environmental Impact Statement Preparation Notice (EISPN)
Chapter 343, Hawaii Revised Statutes

Dear Director Takamura:

Thank you for the opportunity to submit additional comments regarding the proposed Waimanalo Gulch Sanitary Landfill Expansion Environmental Impact Statement via the EISPN Comment period.

Per portions of HRS 343 and Title 11 Chapter 200 of the Department of Health, State of Hawai`I Environmental Impact Statement Rules, I am respectfully requesting to be "a consulted party" and make these additional written comments to complement those submitted on August 29, 2006 and published in the EISPN Appendix A.

This EISPN falls short of accurately representing past statements made about the location of this proposed expansion. In the 1984 EIS, approximately 56+/- acres were identified as being available for a landfill with the rest of the property being labeled as having slopes (8-18%) which limit the useful area to be used for landfills. The topography has not changed but it is being proposed that the area is now useful for landfills. How has this happened? There has not been an overt statement made that we are making land available for a landfill by manipulating the land (creating a hole to receive material). If this is the case, the EISPN should include a section on a soils analysis and evaluation being done or planned and scheduled to demonstrate the safety factor of manipulating the soils structure found in the area.

There should also be included how this proposed EIS addresses the State Land Use Commission Decision and Order which calls for the closure of the WGSL in May 2008 (which implies no further waste will be accepted at WGSL). This was the date presented by the previous City and County of Honolulu administration.

Considering the current facility is still out of compliance with the last EIS/permit which allowed for the expansion of the facility by another 21 acres and a height limitation which has been exceeded, the document should include how the current violations will be mitigated prior to the request for further expansion of the active landfill site.

The discussion on water flow and direction is inadequate. While it addresses underground water and discusses flow direction, it does not address any affects on the near shore waters. The near shore waters off the Leeward Coast have been severely impacted over the years and any addition to the burdens felt on the near shore waters need to be considered and discussed. How does the storm water run-off affect the near shore waters? What about the underground water movement and its' contents affect the near shore

---

waters? How is that being considered? Then again, what about the leachate? The leachate levels as related in the February State Dept. of Health Notice of violations identified a significant amount of leachate that exceeded permit limitations. Most of that leachate was disposed of at the Wai`anae Wastewater Treatment Plant. What were the affects of the leachate being added to normal processes with disposal in off-shore waters?

There does not appear to be any discussion regarding the noise consideration being given to the location of the newest expansion and how it might impact the Makaiwa Hills development being proposed. While there is no development currently in the region, there will, in all likelihood, be housing built near the boundary where the landfill will be operating in the near future. There should be a discussion about what the impacts will be to those new neighbors. This discussion should also extend to litter and odor mitigation. The affects of the landfill expansion should include these considerations as a prudent course of discussion since the plans to develop the area are known at this time.

While there is a discussion regarding the visual impacts of the landfill from the makai side of the landfill, there is no discussion regarding the visual impact of the landfill from the Wai`anae direction. Currently, the landfill construction of the cells for the permitted expansion is visible over the ridgeline from the Wai`anae direction. The landfill should preserve the integrity of the visual planes and is currently not doing so. How will that be handled?

Regarding the traffic situation and ingress and egress onto Farrington Highway, although the State Dept. of Transportation is responsible for maintenance of Farrington Highway, there needs to be some discussion about the responsibility of the operator to keep mud and dirt on the landfill property and not allow it to be deposited on Farrington Highway. It has been the norm more than the exception that the merge lane from trucks turning onto Farrington Highway headed toward Honolulu is covered with dirt or mud deposited there from those same trucks making the area less safe for regular vehicles utilizing Farrington Highway.

The City's Solid Waste Integrated Management Plan (SWIMP) has Waimanalo Gulch Sanitary Landfill as a critical integral part of the plan. Unfortunately, the plan is now significantly behind schedule. The new plan should not only include the landfill but also include a serious discussion about alternatives to landfills and therefore, could have an impact on whether or not the expansion should be for the amount of time being proposed or be reduced or eliminated. This should be discussed further in the EIS.

The EISPN talks about the lack of time with which to pursue other alternatives to the landfills but fails to state that the time to pursue other alternatives actually started from 2002, when the City committed to the communities that other methods would be pursued and no landfills would be needed after 2008. A more comprehensive discussion should be included as to actions already taken and why there was a failure to find any alternatives that could have been implemented to make the five year target.

There is no discussion regarding the contract commitments to both H-POWER and Waste Management, Inc. This is significant to making an informed decision as to whether an expansion of the landfill is required if the City believes it is needed, the real length of time that makes sense for the proposal of an expansion.

The proposed EIS for this expansion of WGSL needs to be as comprehensive as today's knowledge base allows us to have considering the consequences of the action proposed will continue to have effects on our residents for many years to come. The EISPN should do no less and should address all issues brought up in the scoping meetings and via written comments.

Mr. Eric Takamura
December 26, 2006
Page 3

The submittal of these comments should not be construed as support for the expansion of Waimanalo Gulch Sanitary Landfill but should be viewed as open concerns that continue to not be fully addressed and should be in both the EISPN and EIS.

Sincerely,

Cynthia K L Rezentes
Cynthia K.L. Rezentes

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

May 12, 2008

IN REPLY REFER TO:
RA -08-052

Ms. Cynthia K. L. Rezentes
87- 149 Maipela Street
Waianae, Hawaii 96792-3154

Dear Ms. Rezentes:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006 concerning the subject project. We acknowledge your request to be a consulted party to the EIS process for the proposed project. The following is in response to your comments (your comments have been italicized for reference):

1. *"This EISPN falls short of accurately representing past statements made about the location of this proposed expansion. In the 1984 EIS, approximately 56+/- acres were identified as being available for a landfill with the rest of the property being labeled as having slopes (8 - 18%) which limit the useful area to be used for landfills. The topography has not changed but it is being proposed that the area is now useful for landfills. How has this happened? There has not been an overt statement made that we are making land available for a landfill by manipulating the land (creating a hole to receive material). If this is the case, the EISPN should include a section on a soils analysis and evaluation being done or planned and scheduled to demonstrate the safety factor of manipulating the soils structure found in the area."*

Since 1984 there have been various permitted changes to the project site as a result of changing technology, the characteristics of the solid waste disposed of, and the regulatory framework associated with operating the site. Practical on-site experience has also maximized the efficient use of the site. The capacity and the proposed development of the planned expansion area will be described in the Draft EIS (DEIS). This will include a discussion of the soils and stability of the site.

2. *"There should also be included how this proposed EIS addresses the State Land Use Commission Decision and Order which calls for the closure of the WGSL in May 2008 (which implies no further waste will be accepted at WGSL). This was the date presented by the previous City and County of Honolulu administration."*

Necessary approvals, including those of the Land Use Commission and others, will be sought by the City to allow for the lateral expansion of the landfill footprint. Further discussion of this item will be provided in the DEIS.

> *3. "Considering the current facility is still out of compliance with the last EIS/permit which allowed for the expansion of the facility by another 21 acres and a height limitation which has been exceeded, the document should include how the current violations will be mitigated prior to the request for further expansion of the active landfill site."*

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

> *4. "The discussion on water flow and direction is inadequate. While it addresses underground water and discusses flow direction, it does not address any affects on the near shore waters. The near shore waters off the Leeward Coast have been severely impacted over the years and any addition to the burdens felt on the near shore waters need to be considered and discussed. How does the storm water run-off affect the near shore waters? What about the underground water movement and its' [sic] contents affect the near shore waters? How is that being considered? Then again, what about the leachate? The leachate levels as related in the February State Dept. of Health Notice of violations identified a significant amount of leachate that exceeded permit limitations. Most of that leachate was disposed of at the Wai'anae Wastewater Treatment Plant. What were the affects of the leachate being added to normal processes with disposal in off-shore waters?"*

According to the Office of Environmental Quality Control (OEQC), "The EISPN does not give full detail of the proposal but defines the scope of analysis that will be covered in the subsequent environmental impact statement." (<u>A Guidebook for the Hawaii State Environmental Review Process, June 2004</u>). In this regard the EISPN is not intended to itself serve as the full disclosure document as required by Chapter 343, Hawaii Revised Statutes (HRS).

Accordingly, a detailed description and discussion of surface and groundwater characteristics and the potential for impacts will be addressed in the DEIS.

The leachate that is accepted by the operator of the Waianae Wastewater Treatment Plant was, and continues to be, in accordance with regulatory requirements to ensure public health and safety. Leachate management and monitoring will be part of the Solid Waste Operating Permit application. As noted in a memorandum to ENV from the operators of the Waianae Wastewater Treatment Plant, the leachate accepted by the plant for processing has had very little or no impact on the wastewater effluent quality that is being discharged to the ocean outfall (see attached memorandum dated October 2, 2007).

> *5. "There does not appear to be any discussion regarding the noise consideration being given to the location of the newest expansion and how it might impact the Makaiwa Hills development being proposed. While there is no development currently in the region, there will, in all likelihood, be housing built near the boundary where the landfill will be operating in the near future. There should be a discussion about what the impacts will be to those new neighbors. This discussion should also extend to litter and odor mitigation. The affects of the landfill expansion should include these considerations as a prudent course of discussion since the plans to develop the area are known at this time."*

The DEIS will include a discussion of the potential for environmental impacts to the proposed Makaiwa Hills development as a result of the proposed expansion of Waimanalo Gulch. This will include consideration of potential impacts and proposed mitigative measures not only for the Makaiwa Hills project, but other adjoining land owners that include Ko Olina.

> *6. "While there is a discussion regarding the visual impacts of the landfill from the makai side of the landfill, there is no discussion regarding the visual impact of the landfill from the Wai'anae direction. Currently, the landfill construction of the cells for the permitted expansion is visible over the ridgeline from the Wai'anae direction. The landfill should preserve the integrity of the visual planes and is currently not doing so. How will that be handled?"*

Further visual or view plane analyses will be provided in the DEIS. This will include the investigation of views from both the landfill as well as from selected points along Farrington Highway and other locations. It is noted that landscaping will be provided to improve the aesthetics of the site.

> *7. "Regarding the traffic situation and ingress and egress onto Farrington Highway, although the State Dept. of Transportation is responsible for maintenance of Farrington Highway, there needs to be some discussion about the responsibility of the operator to keep mud and dirt on the landfill property and not allow it to be deposited on Farrington Highway. It has been the norm more than the exception that the merge lane from trucks turning onto Farrington Highway headed toward Honolulu is covered with dirt or mud deposited there from those same trucks making the area less safe for regular vehicles utilizing Farrington Highway."*

Traffic concerns that involve the off-site vehicle tracking of debris from the site will be discussed in the DEIS. This will include a description of maintenance and preventive measures.

8. "The City's Solid Waste Integrated Management Plan (SWIMP) has Waimanalo Gulch Sanitary Landfill as a critical integral part of the plan. Unfortunately, the plan is now significantly behind schedule. The new plan should not only include the landfill but also include a serious discussion about alternatives to landfills and therefore, could have an impact on whether or not the expansion should be for the amount of time being proposed or be reduced or eliminated. This should be discussed further in the EIS."

An update of the Solid Waste Integrated Management (SWIM) Plan is on-going by the City. As much as possible the preparation of the SWIM Plan is being coordinated as the DEIS is being prepared. Alternatives to landfilling will be provided in the DEIS.

9. "The EISPN talks about the lack of time with which to pursue other alternatives to the landfills but fails to state that the time to pursue other alternatives actually started from 2002, when the City committed to the communities that other methods would be pursued and no landfills would be needed after 2008. A more comprehensive discussion should be included as to actions already taken and why there was a failure to find any alternatives that could have been implemented to make the five year target."

Further discussion of the efforts taken by the City to manage solid waste will be provided in the DEIS.

10. "There is no discussion regarding the contract commitments to both H-POWER and Waste Management, Inc. This is significant to making an informed decision as to whether an expansion of the landfill is required if the City believes it is needed, the real length of time that makes sense for the proposal of an expansion."

Although no discussion of the contractual agreements between the City and the operators of the H-POWER and Waimanalo Gulch landfill was provided in the EISPN, we note that the contracts are public documents. The role of H-POWER and landfilling to better manage our solid waste will be provided in the DEIS.

11. "The proposed EIS for this expansion of WGSL needs to be as comprehensive as today's knowledge base allows us to have considering the consequences of the action proposed will continue to have effects on our residents for many years to come. The EISPN should do no less and should address all issues brought up in the scoping meetings and via written comments."

And,

12. "The submittal of these comments should not be construed as support for the expansion of Waimanalo Gulch Sanitary Landfill but should be viewed as open concerns that continue to not be fully addressed and should be in both the EISPN and EIS."

We have directed our consultant to address the issues raised during the EISPN public comment period as required under Chapter 343, HRS. As you are aware, these issues have been documented and will be discussed in the DEIS.

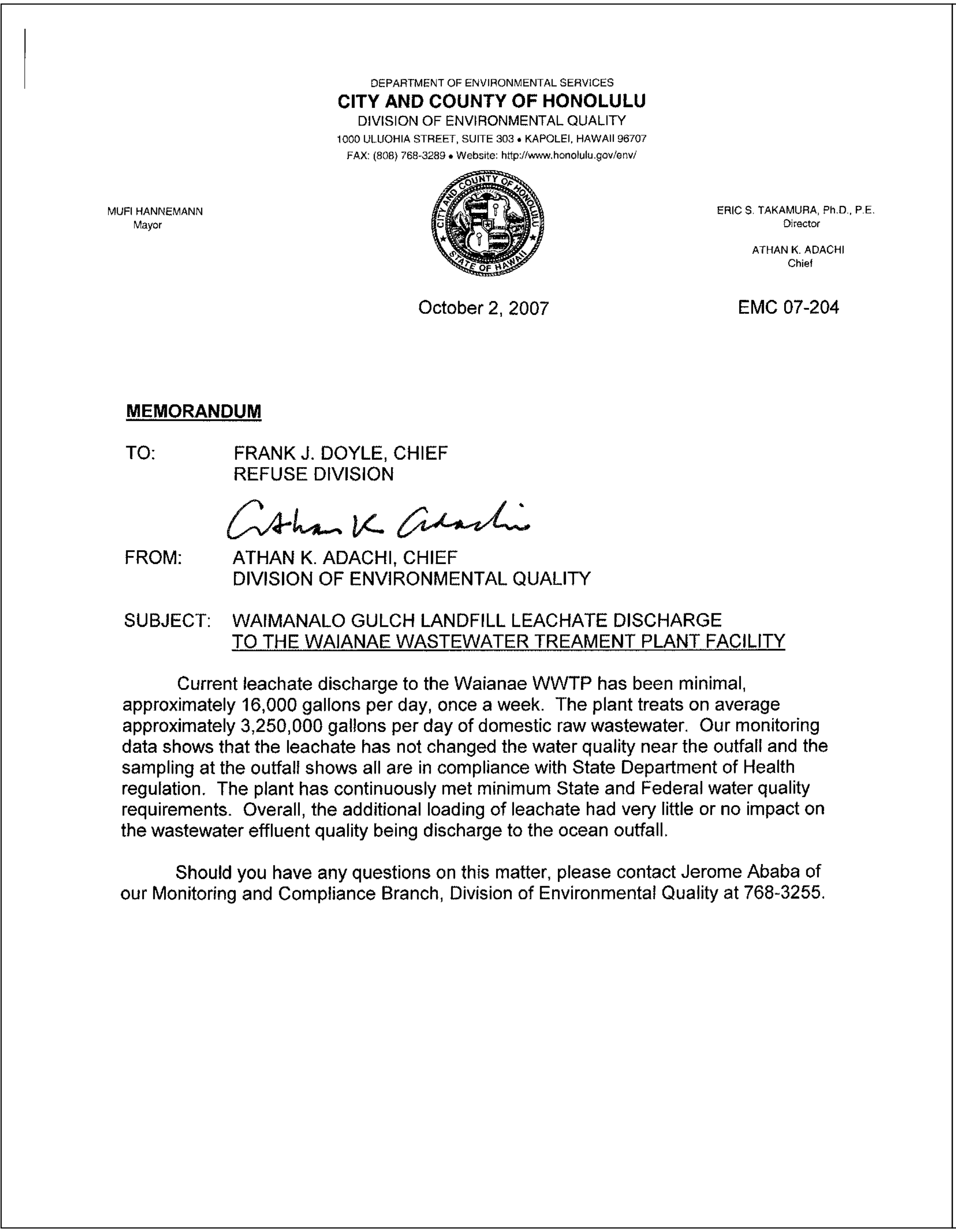
We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura, Ph.D., P.E.
Director

Attachment

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
DIVISION OF ENVIRONMENTAL QUALITY
1000 ULUOHIA STREET, SUITE 303 • KAPOLEI, HAWAII 96707
FAX: (808) 768-3289 • Website: http://www.honolulu.gov/env/

MUFI HANNEMANN
Mayor

ERIC S. TAKAMURA, Ph.D., P.E.
Director

ATHAN K. ADACHI
Chief

October 2, 2007

EMC 07-204

MEMORANDUM

TO: FRANK J. DOYLE, CHIEF
REFUSE DIVISION

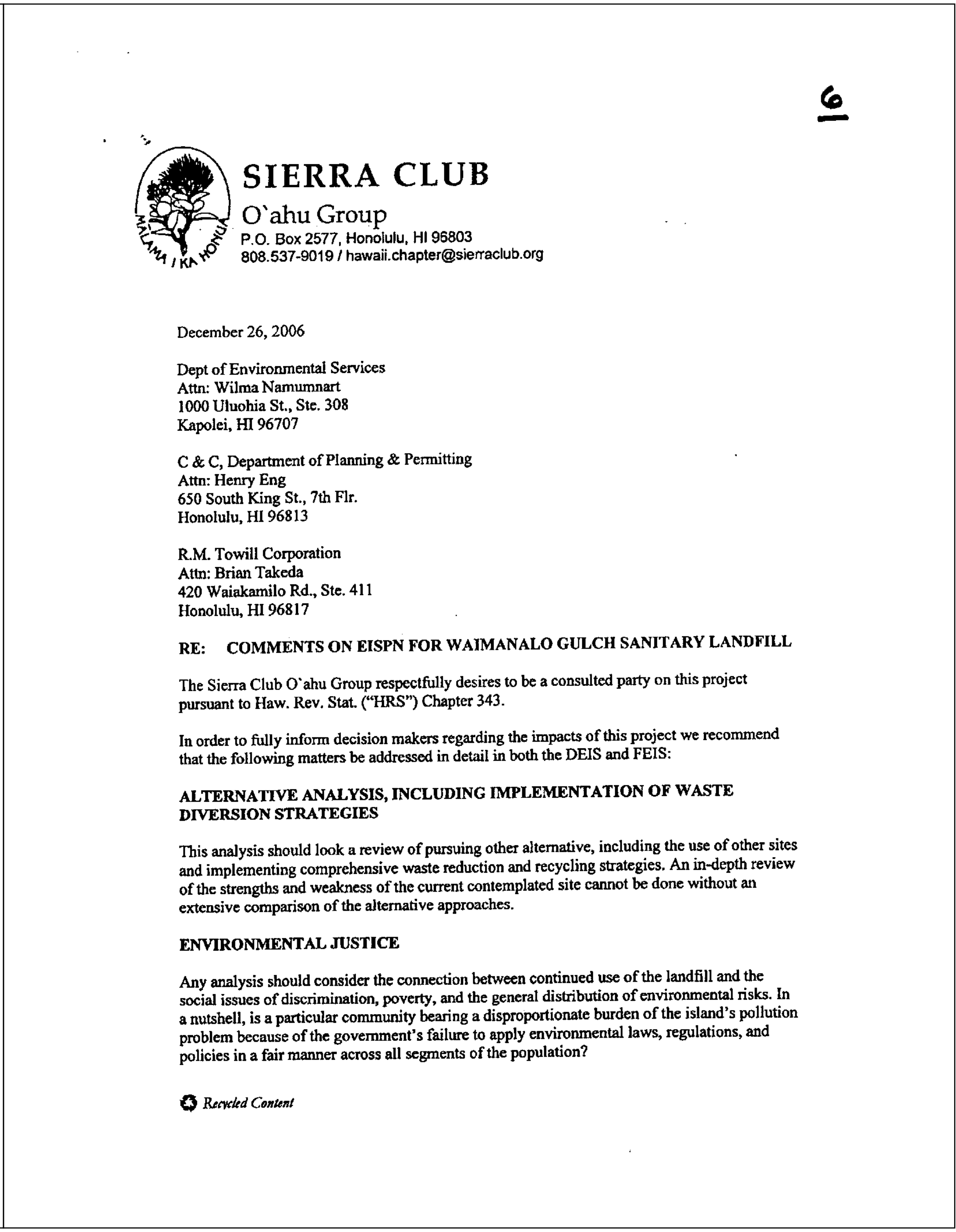
Athan K. Adachi

FROM: ATHAN K. ADACHI, CHIEF
DIVISION OF ENVIRONMENTAL QUALITY

SUBJECT: WAIMANALO GULCH LANDFILL LEACHATE DISCHARGE
TO THE WAIANAE WASTEWATER TREAMENT PLANT FACILITY

Current leachate discharge to the Waianae WWTP has been minimal, approximately 16,000 gallons per day, once a week. The plant treats on average approximately 3,250,000 gallons per day of domestic raw wastewater. Our monitoring data shows that the leachate has not changed the water quality near the outfall and the sampling at the outfall shows all are in compliance with State Department of Health regulation. The plant has continuously met minimum State and Federal water quality requirements. Overall, the additional loading of leachate had very little or no impact on the wastewater effluent quality being discharge to the ocean outfall.

Should you have any questions on this matter, please contact Jerome Ababa of our Monitoring and Compliance Branch, Division of Environmental Quality at 768-3255.



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SIERRA CLUB
O`ahu Group
P.O. Box 2577, Honolulu, HI 96803
808.537-9019 / hawaii.chapter@sierraclub.org

December 26, 2006

Dept of Environmental Services
Attn: Wilma Namumnart
1000 Uluohia St., Ste. 308
Kapolei, HI 96707

C & C, Department of Planning & Permitting
Attn: Henry Eng
650 South King St., 7th Flr.
Honolulu, HI 96813

R.M. Towill Corporation
Attn: Brian Takeda
420 Waiakamilo Rd., Ste. 411
Honolulu, HI 96817

RE: COMMENTS ON EISPN FOR WAIMANALO GULCH SANITARY LANDFILL

The Sierra Club O`ahu Group respectfully desires to be a consulted party on this project pursuant to Haw. Rev. Stat. ("HRS") Chapter 343.

In order to fully inform decision makers regarding the impacts of this project we recommend that the following matters be addressed in detail in both the DEIS and FEIS:

ALTERNATIVE ANALYSIS, INCLUDING IMPLEMENTATION OF WASTE DIVERSION STRATEGIES

This analysis should look a review of pursuing other alternative, including the use of other sites and implementing comprehensive waste reduction and recycling strategies. An in-depth review of the strengths and weakness of the current contemplated site cannot be done without an extensive comparison of the alternative approaches.

ENVIRONMENTAL JUSTICE

Any analysis should consider the connection between continued use of the landfill and the social issues of discrimination, poverty, and the general distribution of environmental risks. In a nutshell, is a particular community bearing a disproportionate burden of the island's pollution problem because of the government's failure to apply environmental laws, regulations, and policies in a fair manner across all segments of the population?

♻ *Recycled Content*

IMPACTS ON SURROUNDING RESIDENTIAL AREAS, INCLUDING THE PROPOSED MAKAIWA HILLS DEVELOPMENT

Residents in surrounding areas have long complained about odors, plastic bag litter, and other nuisances and environmental hazards from Waimanalo Gulch Landfill. Future housing may be built in the immediate vicinity of the landfill, including the proposed Makaiwa Hills development of nearly 5000 units by Campbell Estate / Makaiwa Hills LLC. A detailed analysis of all anticipated and potential impacts of the Waimanalo Gulch Sanitary Landfill on this housing should be included in the DEIS and FEIS.

CUMULATIVE IMPACTS

Hawaii Administration Rules ("HAR") § 11-200-2 defines cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." HAR § 11-200-17 requires that an EIS discuss "significant beneficial and adverse impacts (including cumulative impacts and secondary impacts)."

Present and future volume of truck traffic, the levels of odor, gas emissions, fugitive dust and debris, and runoff from the existing land fill has affected the water, air and life quality of nearby residential and commercial properties, and the extent to which the proposed expansion of the landfill itself, will further affect these parameters.

The relatively undisturbed forested Palehua and Hono`uli`uli areas surrounding the Waimanalo Gulch landfill are home to a number of rare and endangered plants, mollusks and birds. Sections of these land areas are recognized as critical habitat for what is may be the last remaining population of the O`ahu *elepai`o*. It is probable that the upper areas of the proposed project could also be a part of the habitat utilized by this bird species.

Very thorough studies must be undertaken to determine the presence of any native and endemic animals and plants, both listed and non-listed, within the boundaries of the project and in areas immediately adjacent to it, particularly those *mauka* of the project that are contiguous with the Palehua and Hono`uli`uli land areas. Continuity between these land areas must be maintained to promote the survival and recovery of those native endemic biota. A plan for restoration of the native forest cover should be developed, particularly for the *mauka* areas of the project, and should extend into the adjacent parcels to join with the existing "natural" forest cover in the Hono`uli`uli forest reserve area.

WATER QUALITY

The DEIS should include sufficient baseline data for meaningful analysis of the adverse impact of runoff and other anthropogenic inputs related to existing and proposed landfill activities. For instance, what are the current levels of inorganic nutrients and pesticides that enter the soils, ephemeral water sources, and subterranean aquifers from those existing developments, both mauka and makai of the landfill, and the affects of the proposed chemical pollutant load?

The EIS should include a report by a hydrologist discussing how water flows through the project area into local aquifers, ephemeral water sources and weather or not it cold impact nearshore ocean waters.

Any water quality plan should spell out in detail any mitigation plan rather than leaving the term ambiguous.

The EIS should include an edaphic study that fully discusses the highly permeable and fragile nature of the soils and the effectiveness of any leachete collection system at the project area.

The EIS should include any calculations or models used to support any conclusion regarding runoff and drainage into local aquifers and erosion of soils from the project and onto adjacent parcels.

A complete EIS will reveal the cumulative impact of all runoff and leaching on local aquifers, adjacent lands and coastal waters. This includes pesticides/biocides (including the impact of the alternative biocides that are lower in toxicity), fertilizers, sedimentation, heavy metals, grease, and other urban runoff. The EIS should study the amount of nonpoint source water pollution associated with similar large sanitary landfill developments and discuss the degradation of aquifers, soils, air quality, and landscapes caused by similar projects. A complete EIS would not glibly assume that mitigation measures would take care of all nonpoint source water pollution problems.

How much contaminated water (by nutrients, pesticides, or other contaminants) can be expected to leach through soil and make its way into local aquifers waters (i.e., not surface runoff, but percolation)? What specific studies of similar areas in West O`ahu does the EIS rely on to support its conclusions?

SCENIC IMPACT

The EIS should use both of the two most useful methodologies of Visual Impact Analysis:

1) Given a structure at point "x," where will it be seen from; and

2) From point "y," what can you see of the development?

PAST VIOLATIONS AND MITIGATION MEASURES

The operators of Waimanalo Gulch Sanitary Landfill was recently fined $2.8 million for various environmental violations. Please discuss steps taken to remedy these violations and ensure that future violations do not occur. Please fully discuss how the public can be assured that any proposed mitigation measures will be performed and will be effective. Please describe the county and state government's monitoring and enforcement programs so that we can be assured that promises made will be kept. Are the staffing levels at the State Health Department's Solid Waste Branch, the City and County's Department of Environmental Services, and the City and County's Planning and Permitting Department sufficient to ensure that promises are kept? How often is the staff expected to visit the site? Please do not argue that it is beyond your ability to answer these questions. Please ask the departments themselves and indicate the response.

The applicant should identify all proposed mitigation measures in a consolidated list. These measures should be written in plain language that is easily enforceable when incorporated into a permit. It is unacceptable, for example, to list as a mitigation measure that "apply pesticides only when and where necessary" since such language is vague and subject to a multitude of interpretations.

HAWAII STATE PLAN

The EIS should mention and fully discuss many key provisions in the Hawaii State Plan:

§226-6(b) To achieve the general economic objectives, it shall be the policy of this State to:
(14) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.

§226-11 (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:
  (1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.
  (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.

§226-12 (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:
  (1) Promote the preservation and restoration of significant natural and historic resources.
  (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
  (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.

§226-104 (b) Priority guidelines for regional growth distribution and land resource utilization:
(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources.

Mahalo for the opportunity to offer these comments on the Waimanalo Gulch EISPN. Please direct all future correspondence to the Sierra Club, O`ahu Group, PO Box 2577, Honolulu, HI 96803.

Sincerely,

Robert D. Harris
Sierra Club, O`ahu Group, Excom Member
2458 Wilder Avenue, Apartment #6
Honolulu, Hawai`i, 96822

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
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KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

May 12, 2008

IN REPLY REFER TO:
RA 08-048

Mr. Robert D. Harris
Sierra Club, O'ahu Group
P.O. Box 2577
Honolulu, Hawaii 96803

Dear Mr. Harris:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006,concerning the subject project. We acknowledge your request to be a consulted party to the EIS process for the proposed project. The following is in response to your comments (your comments have been italicized for reference):

1. *Alternative Analysis, Including Implementation of Waste Diversion Strategies. "This analysis should look [sic] a review of pursuing other alternative [sic], including the use of other sites and implementing comprehensive waste reduction and recycling strategies. An in-depth review of the strengths and weakness of the current contemplated site cannot be done without an extensive comparison of the alternative approaches."*

An alternatives analysis will be undertaken as part of the Draft EIS (DEIS) that will include other on-island waste reduction and recycling alternatives, as well as transshipment.

2. *Environmental Justice. "Any analysis should consider the connection between continued use of the landfill and the social issues of discrimination, poverty, and the general distribution of environmental risks. In a nutshell, is a particular community bearing a disproportionate burden of the island's pollution problem because of the government's failure to apply environmental laws, regulations, and policies in a fair manner across all segments of the population?"*

A discussion concerning environmental justice will be provided in the DEIS.

3. Impacts on Surrounding Residential Areas, Including the Proposed Makaiwa Hills Development. "Residents in surrounding areas have long complained about odors, plastic bag litter, and other nuisances and environmental hazards from Waimanalo Gulch Landfill. Future housing may be built in the immediate vicinity of the landfill, including the proposed Makaiwa Hills development of nearly 5000 units by Campbell Estate/Makaiwa Hills LLC. A detailed analysis of all anticipated and potential impacts of the Waimanalo Gulch Sanitary Landfill on this housing should be included in the DEIS and FEIS."

The DEIS will include a discussion of the potential for adverse effects to the proposed Makaiwa Hills development as a result of the proposed expansion of Waimanalo Gulch.

4. Cumulative Impacts. "Hawaii Administration Rules ("HAR") §11-200-2 defines cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." HAR §11-200-17 requires that an EIS discuss "significant beneficial and adverse impacts (including cumulative impacts and secondary impacts)."

"Present and future volume of truck traffic, the levels of odor, gas emissions, fugitive dust and debris, and runoff from the existing land fill has affected the water, air and life quality of nearby residential and commercial properties, and the extent to which the proposed expansion of the landfill itself, will further affect these parameters."

"The relatively undisturbed forested Palehua and Hono'uli'uli areas surrounding the Waimanalo Gulch landfill are home to a number of rare and endangered plants, mollusks and birds. Sections of these land areas are recognized as critical habitat for what is may be the last remaining population of the O'ahu elepai'o. It is probable that the upper areas of the proposed project could also be a part of the habitat utilized by this bird species."

"Very thorough studies must be undertaken to determine the presence of any native and endemic animals and plants, both listed and non-listed, within the boundaries of the project and in areas immediately adjacent to it, particularly those mauka of the project that are contiguous with the Palehua and Hono'uli'uli land areas. Continuity between these land areas must be maintained to promote the survival and recovery of those native endemic biota. A plan for restoration of the native forest cover should be developed, particularly for the mauka areas of the project, and should extend into the adjacent parcels to join with the existing "natural" forest cover in the Hono'uli'uli forest reserve area."

The potential for the impacts you identify, including cumulative impacts, will be discussed as part of the DEIS. This will include a study of flora and fauna resources as part of the DEIS.

5. Water Quality. "The DEIS should include sufficient baseline data for meaningful analysis of the adverse impact of runoff and other anthropogenic inputs related to existing and proposed landfill activities. For instance, what are the current levels of inorganic nutrients and pesticides that enter the soils, ephemeral water sources, and subterranean aquifers from those existing developments, both mauka and makai of the landfill, and the affects of the proposed chemical pollutant load?"

"The EIS should include a report by a hydrologist discussing how water flows through the project area into local aquifers, ephemeral water sources and weather [sic] or not it cold [sic] impact nearshore ocean waters."

"Any water quality plan should spell out in detail any mitigation plan rather than leaving the term ambiguous."

"The EIS should include an edaphic study that fully discusses the highly permeable and fragile nature of the soils and the effectiveness of any leachete [sic] collection system at the project area."

"The EIS should include any calculations or models used to support any conclusion regarding runoff and drainage into local aquifers and erosion of soils from the project and onto adjacent parcels."

"A complete EIS will reveal the cumulative impact of all runoff and leaching on local aquifers, adjacent lands and coastal waters. This includes pesticides/ biocides (including the impact of the alternative biocides that are lower in toxicity), fertilizers, sedimentation, heavy metals, grease, and other urban runoff. The EIS should study the amount of nonpoint source water pollution associated with similar large sanitary landfill developments and discuss the degradation of aquifers, soils, air quality, and landscapes caused by similar projects. A complete EIS would not glibly assume that mitigation measures would take care of all nonpoint source water pollution problems."

"How much contaminated water (by nutrients, pesticides, or other contaminants) can be expected to leach through soil and make its way into local aquifers waters (i.e., not surface runoff, but percolation)? What specific studies of similar areas in West O'ahu does the EIS rely on to support its conclusions?"

Hydrogeological information prepared by a licensed geologist will be provided as part of the DEIS. This will include the nature and characteristics of groundwater at the site and how regional and site groundwater flow may potentially affect offshore ocean waters. Stormwater drainage and management controls will also be described.

6. Scenic Impact. "The EIS should use both of the two most useful methodologies of Visual Impact Analysis: 1) Given a structure at point "x," where will it be seen from; and 2) From point "y," what can you see of the development?"

The DEIS will address the potential for visual impacts from various points of reference toward the proposed project site.

7. Past violations and Mitigation Measures. "The operators of Waimanalo Gulch Sanitary Landfill was recently fined $2.8 million for various environmental violations. Please discuss steps taken to remedy these violations and ensure that future violations do not occur. Please fully discuss how the public can be assured that any proposed mitigation measures will be performed and will be effective. Please describe the county and state government's monitoring and enforcement programs so that we can be assured that promises made will be kept. Are the staffing levels at the State Health Department's Solid Waste Branch, the City and County's Department of Environmental Services, and the City and County's Planning and Permitting Department sufficient to ensure that promises are kept? How often is the staff expected to visit the site? Please do not argue that it is beyond your ability to answer these questions. Please ask the departments themselves and indicate the response."

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

> *8. "The applicant should identify all proposed mitigation measures in a consolidated list. These measures should be written in plain language that is easily enforceable when incorporated into a permit. It is unacceptable, for example, to list as a mitigation measure that "apply pesticides only when and where necessary" since such language is vague and subject to a multitude of interpretations."*

Potential impacts and proposed mitigation measures will be described in the DEIS in accordance with Chapter 343, Hawaii Revised Statutes (HRS). Mitigation measures will incorporate comments of appropriate licensed professionals and governmental agencies.

> *9. Hawaii State Plan. "The EIS should mention and fully discuss many key provisions in the Hawaii State Plan: §226-6(b) To achieve the general economic objectives, it shall be the policy of this State to:*
>
> *(14) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy."*
>
> *"§226-1 1 (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:*
>
> *(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.*
>
> *(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems."*
>
> *"§226-12 (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:*
>
> *(l) Promote the preservation and restoration of significant natural and historic resources.*
>
> *(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.*
>
> *(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage."*

> *"§226-104 (b) Priority guidelines for regional growth distribution and land resource utilization:*
>
> *(13) Protect and enhance Hawaii's shoreline, open spaces, and scenic resources."*

The above sections of the Hawaii State Plan have been forwarded to our consultant for appropriate action in the preparation of the DEIS.

Thank you for taking the time to share your comments and allowing us this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura, Ph.D. P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

7

Ko Olina
RESORT & MARINA
HONOLULU

DEPARTMENT OF
ENVIRONMENTAL SVCS

'06 DEC 27 P2:53

December 26, 2006

Dr. Eric Takamura
Director, Dept. of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Re: Waimanalo Gulch Landfill - Environmental Impact Statement Preparation Notice

Dr. Takamura:

Pursuant to your November 8, 2006 letter enclosing the Environmental Impact Statement Preparation Notice (EISPN), we provide the following comments:

Opening Comments:

- The EISPN fails to address the inadequacies of the 2002 FEIS, and the continued litigation concerning that document. We believe it is an important disclosure as the City moves into a new EIS process for a further expansion of the Waimanalo Gulch Landfill.

- As was part of the complaint against the 2002 FEIS, it appears from the EISPN that the planned process fails to adequately consider the social and economic impacts of the landfill. Clearly, those impacts are greatest at the areas directly surrounding the landfill, including Ko Olina Resort & Marina and the residents within the Resort. However, those impacts also extended to the communities of Kapolei, Honokai Hale, Makakilo and the Leeward Coast.

- The Draft and Final EIS must incorporate the City's Solid Waste Masterplan, which was supposed to be completed by the City in December 2006.

- The EISPN fails to address the Department of Health Notice of Violations, citing a multitude of violations with the operation of the Waimanalo Gulch Landfill. These violations include filling cells beyond the permitted heights and extreme leachate control violations, amounting to 21 feet of leachate being located within the Landfill when only 1 foot is allowable. Beyond the operational issues raised by these violations, the structural integrity of the landfill, based on these two violations alone, must be questioned and specifically and independently investigated. Clearly, the $2.8 million fine demonstrates the extreme nature of these violations, and affects any and all future proposed operations of the Landfill, including its proposed expansion.

92-1480 ALIINUI DRIVE • HONOLULU, HAWAII 96707 • TEL: 808 671-2512 • FAX: 808 671-3640

- The EISPN fails to address the EPA violation concerning the methane gas collection system.

- Given these violations and the concerns raised by them, the EIS must disclose the impacts that would be caused by the structural failure of the Waimanalo Gulch Landfill. Whether by structural deficiency or, as recently experienced, earthquake, because of the landfill's formation within a gulch at the sole entrance to the Leeward Coast, a failure of the landfill sliding across Farrington Highway would have a significant impact that must be disclosed and discussed.

- The EIS must address the well documented and continued escape of waste from the Landfill site. This includes an analysis of the fact that HECO had identified the area as one of the windiest locations on the island and how the proposed expansion to higher elevations will create greater problems for waste being blown off the landfill. These disclosures must also identify where this escaping trash is landing and its impact on the land and, more importantly the ocean. The escaping waste goes much further than the "valley rim" as implied by the EISPN.

Comments Concerning the Background Information Identified in the EISPN:

- The background section fails to identify the specific, sworn statements made by the City at the 2003 Planning Commission Meetings and State Land Use Commission meetings regarding the promised closure of Waimanalo Gulch Landfill, and which resulted in the specific language regarding the Landfill's closure in 2008 being included in both the Planning Commission and Land Use Commission Decision and Orders.

- In describing the process followed by the Mayor's Advisory Committee, the EISPN fails to recognize that the Committee agreed that the "double blind methodology" was to be advisory only to the group, and was not to be used as a means of "ranking" the potential sites. Furthermore, it is inaccurate to state that the results of the methodology caused "a division in the Committee" or a change in the decision making process. Finally, despite the language in Council Resolution 04-348, the EISPN should accurately reflect that the Office of Informational Practices did not rule that the Committee's report was "void due to violations of the sunshine law." OIP does not have the legal authority to void such action or report.

- From the Council's actions in passing Council Resolution 04-348 and Bill 37 (2005), it is clear that the Council's position on the City's policy for its solid waste is to close Waimanalo Gulch Landfill.

Visual and Other Impacts of Waimanalo Gulch Landfill:

- There are many inaccuracies in Section 4.11 of the EISPN. They include the following:
    - A more complete disclosure of the visibility of the Landfill is required. Whether from Farrington Highway, at ground level, or elevated level, the visual impact is much more than a "gray-hued ash fill that resembles a quarry."
    - Vehicles driving on the hillside and higher elevation portions of the landfill can be seen from the ground and from driving along Farrington Highway. It is not only "From sea" that these impacts are visible.
    - Landfill operations vehicles ***CAN*** be visible – not "may be visible."
    - The queuing of vehicles, whether infrequent or not, ***DO*** make the presence of the landfill apparent – not "may" and this does not make the landfill "momentarily apparent." The continued visibility of trucks, machinery and flying waste make the landfill ***continually apparent*** to all who live in the area, visit the area, or drive through the area.
    - As mentioned above, waste being blown off the landfill consists of more than just plastic bags and end up in more places than just the valley rim. Significant amounts of this waste has blown into adjacent properties and into the ocean. Evidence of this has been presented to the City and to Waste Management in the past.

- The EISPN mentioned the hydromulching that has attempted to "landscape" the Landfill. However, it fails to address the less than adequate success of these efforts, and the visible canyons and rivulets created along the face of the landfill during heavy rains as the water erodes the dirt slope of the landfill.

- The EIS must disclose the fact that because of the operator's failure to handle leachate problems at the landfill, large amounts of leachate were pumped in trucks and taken to the Waianae Waste Water Treatment Plant. The amount of that leachate must be disclosed and its true impacts must be investigated. While it has been said that it was allowable, that answer is insufficient. The EIS must disclose how that leachate changed the water discharged from the Treatment Plant, directly into the ocean. This question was raised many times at the Waianae Neighborhood Board.

Examination of Alternatives:

- The EISPN fails to address the significant changes that has occurred in the potential of shipping waste to other landfills since the last EIS. In examining this alternative, the EIS must acknowledge and identify the multitudes of other cities and municipalities throughout the country that truck or ship their waste to other cities and states. Furthermore, the EIS must examine the recent changes in the Federal Rules allowing for the shipping of waste specifically from Hawaii to the mainland.

- In examining alternatives for landfills, the EIS must recognize that ash and MSW landfills do not need to be located together. The impacts from these two types of waste are significantly different and given Honolulu's situation and history, the EIS must examine possible solutions where MSW and ash can be landfilled in different locations. This will increase the potential for possible locations for future landfill sites.

Overall, the EIS must encompass the multitude of comments – formal and informal – that have been received by the City and Waste Management over the last nearly six years, since the City started the attempts to expand the operations at Waimanalo Gulch Landfill. The operational problems at the Landfill, including those cited by the Department of Health in its Notice of Violation, must be directly addressed, as those have shown a clear failure of operations and proved that the concerns and complaints over the last six years were well founded.

All of our members will continue to be directly impacted by the plans and actions concerning Waimanalo Gulch Landfill, and we will continue to be an interested and consulted party throughout this process.

Thank you for the opportunity to provide these comments to you.

Very truly yours,

Ken Williams
Vice President - Resort Operations
Ko Olina Community Association

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-051

May 12, 2008

Mr. Ken Williams
Vice President - Resort Operations
Ko Olina Community Association
Ko Olina Resort and Marina
92-1480 Aliinui Drive
Kapolei, Hawaii 96707

Dear Mr. Williams:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006 concerning the subject project. The following is in response to your comments (your comments have been italicized for reference):

Opening Comments

1. "The EISPN fails to address the inadequacies of the 2002 FEIS, and the continued litigation concerning that document. We believe it is an important disclosure as the City moves into a new EIS process for a further expansion of the Waimanalo Gulch Landfill."

"As was part of the complaint against the 2002 FEIS, it appears from the EISPN that the planned process fails to adequately consider the social and economic impacts of the landfill. Clearly, those impacts are greatest at the areas directly surrounding the landfill, including Ko Olina Resort & Marina and the residents within the Resort. However, those impacts also extended to the communities of Kapolei, Honokai Hale, Makakilo and the Leeward Coast."

As you note, the 2002 Final Supplemental Environmental Impact Statement is currently the subject of litigation. Although neither the City nor Waste Management of Hawaii may therefore discuss the specific matters at issue in the lawsuit for legal reasons, it is important to note that Section 1 of the EISPN contains important information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of Oahu.

Concerning the information provided in the EISPN, according the Office of Environmental Quality Control (OEQC), "The EISPN does not give full detail of the proposal but defines the scope of analysis that will be covered in the subsequent environmental impact statement." (A Guidebook for the Hawaii State Environmental Review Process, June 2004). In this regard the EISPN is not intended to itself serve as the full disclosure document as required by Chapter 343,

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Hawaii Revised Statutes (HRS). Accordingly, a detailed description and discussion of socioeconomic characteristics and the potential for impacts will be addressed in the Draft EIS (DEIS).

2. "The Draft and Final EIS must incorporate the City's Solid Waste Masterplan, which was supposed to be completed by the City in December 2006."

The last Solid Waste Integrated Management (SWIM) Plan was completed by the City in 2004. As much as possible the preparation of the subject DEIS is being coordinated with the SWIM Plan. However, the plan is currently under draft and will be coordinated with the DOH and other appropriate parties for approval. We are hopeful that with the increased attention and importance that solid waste is receiving, that the SWIM Plan will encourage discussion by the City Council and all the communities of Oahu.

3. "The EISPN fails to address the Department of Health Notice of Violations, citing a multitude of violations with the operation of the Waimanalo Gulch Landfill. These violations include filling cells beyond the permitted heights and extreme control violations, amounting to 21 feet of being located within the Landfill when only 1 foot is allowable. Beyond the operational issues raised by these violations, the structural integrity of the landfill, based on these two violations alone, must be questioned and specifically and independently investigated. Clearly, the $2.8 million fine demonstrates the extreme nature of these violations, and affects any and all future proposed operations of the Landfill, including its proposed expansion."

"The EISPN fails to address the EPA violation concerning the methane gas collection system."

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved. The NVO, settlement and grade modification will be discussed in the DEIS.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

4. "Given these violations and the concerns raised by them, the EIS must disclose the impacts that would be caused by the structural failure of the Waimanalo Gulch Landfill. Whether by structural deficiency or, as recently experienced, earthquake, because of the landfill's formation within a gulch at the sole entrance to the Leeward Coast, a failure of the landfill sliding across Farrington Highway would have a significant impact that must be disclosed and discussed."

A discussion of the stability of the landfill in relation to the potential for failure by natural disasters will be provided in the DEIS. This will include a discussion of the standards under which the landfill is designed to ensure against structural deficiency. Concerning the structural integrity of the existing site please refer to Section 4.5.2. Seismic Characteristics, of the EISPN, describing the effects of the recent earthquake. No failure or damage to the landfill and supporting infrastructure occurred as a result of the October 15, 2006, magnitude 6.7 earthquake off the island of Hawaii.

5. "The EIS must address the well documented and continued escape of waste from the Landfill site. This includes an analysis of the fact that HECO had identified the area as one of the windiest locations on the island and how the proposed expansion to higher elevations will create greater problems for waste being blown off the landfill. These disclosures must also identify where this escaping trash is landing and its impact on the land and, more importantly the ocean. The escaping waste goes much further than the "valley rim" as implied by the EISPN."

Discussion of litter management at the site will be provided in the DEIS including measures that will be implemented to mitigate against adverse impacts, such as those of concern to you.

Comments Concerning the Background Information Identified in the EISPN

6. "The background section fails to identify the specific, sworn statements made by the City at the 2003 Planning Commission Meetings and State Land Use Commission meetings regarding the promised closure of Waimanalo Gulch Landfill, and which resulted in the specific language regarding the Landfill's closure in 2008 being included in both the Planning Commission and Land Use Commission Decision and Orders."

The City acknowledges that prior commitments were made by the previous administration to close Waimānalo Gulch by 2008. This is the basis for the inclusion of the information contained in the EISPN.

7. "In describing the process followed by the Mayor's Advisory Committee. The EISPN fails to recognize that the Committee agreed that the "double blind methodology" was to be advisory only to the group, and was not to be used as a means of "ranking" the potential sites. Furthermore, it is inaccurate to state that the results of the methodology caused "a division in the Committee" or a change in the decision making process. Finally, despite the language in Council Resolution 04-348, the EISPN should accurately reflect that the Office of Informational Practices did not rule that the Committee's report was "void due to violations of the sunshine law." OIP does not have the legal authority to void such action or report."

"From the Council's actions in passing Council Resolution 04-348 and Bill 37 (2005), it is clear that the Council's position on the City's policy for its solid waste is to close Waimanalo Gulch Landfill."

The City acknowledges your comments. The final decision making by the Mayor's Advisory Committee was within the purview of its individual members to consider, reject, or ignore the results of the double blind process as it considered the optimal site for a landfill. As was noted in the Report of the Mayor's Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection, December 1, 2003, four of the members of the Committee resigned prior to the taking of a vote to move from consensus decision making to voting. The reasons for the resignations are clearly stated in the Report, as is the results of the voting that led to the removal of the Waimānalo Gulch landfill site.

We acknowledge that information concerning the results of Resolution 04-038 and Bill 37 are documented in the EISPN.

Visual and Other Impacts of Waimanalo Gulch Landfill

8. "There are many inaccuracies in Section 4.11 of the EISPN. They include the following:

- *A more complete disclosure of the visibility of the Landfill is required. Whether from Farrington Highway, at ground level, or elevated level, the visual impact is much more than a "gray-hued ash fill that resembles a quarry."*
- *Vehicles driving on the hillside and higher elevation portions of the landfill can be seen from the ground and from driving along Farrington Highway. It is not only "From sea" that these impacts are visible.*
- *Landfill operations vehicles **CAN** be visible - not "may be visible."*
- *The queuing of vehicles, whether infrequent or not, **DO** make the presence of the landfill apparent - not "may" and this does not make the landfill "momentarily apparent." The continued visibility of trucks. Machinery and flying waste make the landfill **continually apparent** to all who live in the area, visit the area, or drive through the area.*
- *As mentioned above, waste being blown off the landfill consists of more than just plastic bags and end up in more places than just the valley rim. Significant amounts of this waste has blown into adjacent properties and into the ocean. Evidence of this has been presented to the City and to Waste Management in the past."*

The concerns you indicate will be addressed in the DEIS as appropriate.

9. "The EISPN mentioned the hydromulching that has attempted to "landscape" the Landfill. However, it fails to address the less than adequate success of these efforts, and the visible canyons and rivulets created along the face of the landfill during heavy rains as the water erodes the dirt slope of the landfill."

Landscaping that is proposed for the project will be described in the DEIS. Stormwater management controls in compliance with applicable regulations will also be described.

10. "The EIS must disclose the fact that because of the operator's failure to handle leachate problems at the landfill, large amounts of leachate were pumped in trucks and taken to the Waianae Waste Water Treatment Plant. The amount of that leachate must be disclosed and its true impacts must be investigated. While it has been said that it was allowable, that answer is insufficient. The EIS must disclose how that leachate changed the water discharged from the Treatment Plant, directly into the ocean. This question was raised many times at the Waianae Neighborhood Board."

The leachate that is accepted by the operator of the Waianae Wastewater Treatment Plant was, and continues to be, in accordance with regulatory requirements to ensure public health and safety. Leachate management and monitoring will be part of the Solid Waste Operating Permit application. As noted in a memorandum to ENV from the operators of the Waianae Wastewater Treatment Plant, the leachate accepted by the plant for processing has had very little or no impact on the wastewater effluent quality that is being discharged to the ocean outfall (see attached memorandum dated October 2, 2007).

Examination of Alternatives

11. "The EISPN fails to address the significant changes that has occurred in the potential of shipping waste to other landfills since the last EIS. In examining this alternative, the EIS must acknowledge and identify the multitudes of other cities and municipalities throughout the country that truck or ship their waste to other cities and states. Furthermore, the EIS must examine the recent changes in the Federal Rules allowing for the shipping of waste specifically from Hawaii to the mainland."

The DEIS will provide an alternatives analysis that includes the transshipment of waste as an alternative to the continued use of the landfill.

12. "In examining alternatives for landfills, the EIS must recognize that ash and MSW landfills do not need to be located together. The impacts from these two types of waste are significantly different and given Honolulu's situation and history, the EIS must examine possible solutions where MSW and ash can be landfilled in different locations. This will increase the potential for possible locations for future landfill sites."

The alternative of using more than one landfill site will be discussed as part of the DEIS.

12. "Overall, the EIS must encompass the multitude of comments - formal and informal - that have been received by the City and Waste Management over the last nearly six years, since the City started the attempts to expand the operations at Waimanalo Gulch Landfill. The operational problems at the Landfill, including those cited by the Department of Health in its Notice of Violation, must be directly addressed, as those have shown a clear failure of operations and proved that the concerns and complaints over the last six years were well founded."

As noted above, the matter of the NVO has been resolved and will be discussed in the DEIS. The comments that were received for the EISPN will be addressed in the DEIS in accordance with applicable requirements.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura, Ph.D., P.E.
Director

Attachment

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
DIVISION OF ENVIRONMENTAL QUALITY
1000 ULUOHIA STREET, SUITE 303 • KAPOLEI, HAWAII 96707
FAX: (808) 768-3289 • Website: http://www.honolulu.gov/env/

MUFI HANNEMANN
Mayor

ERIC S. TAKAMURA, Ph.D., P.E.
Director

ATHAN K. ADACHI
Chief

October 2, 2007

EMC 07-204

MEMORANDUM

TO: FRANK J. DOYLE, CHIEF
REFUSE DIVISION

Athan K. Adachi

FROM: ATHAN K. ADACHI, CHIEF
DIVISION OF ENVIRONMENTAL QUALITY

SUBJECT: WAIMANALO GULCH LANDFILL LEACHATE DISCHARGE TO THE WAIANAE WASTEWATER TREAMENT PLANT FACILITY

Current leachate discharge to the Waianae WWTP has been minimal, approximately 16,000 gallons per day, once a week. The plant treats on average approximately 3,250,000 gallons per day of domestic raw wastewater. Our monitoring data shows that the leachate has not changed the water quality near the outfall and the sampling at the outfall shows all are in compliance with State Department of Health regulation. The plant has continuously met minimum State and Federal water quality requirements. Overall, the additional loading of leachate had very little or no impact on the wastewater effluent quality being discharge to the ocean outfall.

Should you have any questions on this matter, please contact Jerome Ababa of our Monitoring and Compliance Branch, Division of Environmental Quality at 768-3255.

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EnviroWatch, inc.
www.EnviroWatch.org
PO Box 89-3062, Mililani, HI 96789
envirowatch@envirowatch.org
ph/fx: 808-625-2176

December 26, 2006

Ms. Wilma Namumnart
Department of Environmental Services
1000 Uluohia St. Ste. 308
Kapolei, HI. 96707

Testimony in opposition to the planned expansion of the
Waimanalo Gulch Sanitary Landfill, TMK 9-2-03

On behalf of EnviroWatch, Inc. a non profit organization based in Mililani Hawaii, I wish to express our strong opposition to the planned expansion of the Waimanalo Gulch Sanitary Landfill, TMK 9-2-03. This opposition is based a number of concerns related to earlier management practices and the overall operation of the Waimanalo Gulch Sanitary Landfill, which has resulted in an Issuance of Notice and Finding of Violation Docket NO. 05-SHW-SWS-004 consisting of eighteen counts and two hundred and twelve documented incidences supporting the Notice and Finding of Violation.

We are also believe that the City and County of Honolulu's Department of Environmental Services continues to permit the operation of the Waimanalo Gulch Sanitary Landfill in breach of the original contract between the contractor, Waste Management of Hawaii, and the City and County of Honolulu, which is corroborated by the eighteen counts and two hundred and twelve documented incidences supporting the Notice and Finding of Violation. And, we are concerned that the current facility's permit and permit application is inadequate and does not address the concerns of regarding the Surface Water Management System Design and Final Cover Design.

The City and County of Honolulu has failed to meet all of the conditions required by the Land Use Commission. We do not have a curbside recycling program. We are failing to divert a large portion of the municipal and solid waste from the Waimanalo Gulch Sanitary Landfill. This is confirmed in the City and County of Honolulu's routine practice of closing the H-Power Plant in excess of one hundred days per year and diverting the municipal and solid waste to the Waimanalo Gulch Sanitary Landfill.

Finally, we are concerned that the City and County of Honolulu has failed to utilize alternative methods of managing Municipal Solid Waste.

Sincerely,

Carroll E. Cox

Carroll E. Cox

'06 DEC 26 P1:48

DEPARTMENT OF
ENVIRONMENTAL SVCS

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-050

May 12, 2008

Mr. Carroll E. Cox
EnviroWatch, Inc.
P.O. Box 89-3062
Mililani, Hawaii 96789

Dear Mr. Cox:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006 concerning the subject project. We have prepared the following in response to your comments (your comments have been italicized for reference):

> *1. "I wish to express our strong opposition to the planned expansion of the Waimanalo Gulch Sanitary Landfill, TMK 9-2-03. This opposition is based a [sic] number of concerns related to earlier management practices and the overall operation of the Waimanalo Gulch Sanitary Landfill, which has resulted in an Issuance of Notice and Finding of Violation Docket NO. 05-SHW-SWS-004 consisting of eighteen counts and two hundred and twelve documented incidences supporting the Notice and Finding of Violation."*

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

> *2. "We are [sic] also believe that the City and County of Honolulu's Department of Environmental Services continues to permit the operation of the Waimanalo Gulch Sanitary Landfill in breach of the original contract between the contractor, Waste Management of Hawaii, and the City and County of Honolulu, which is corroborated by the eighteen counts and two hundred and twelve documented incidences supporting the Notice and Finding of Violation. And, we are concerned that the current facility's permit and permit application is inadequate and does not address the concerns of [sic] regarding the Surface Water Management System Design and Final Cover Design."*

The contract between the City and Waste Management of Hawaii is a public document. The City has monitored the performance of Waste Management under this contract and has taken appropriate action to protect the public interest. As noted above, all alleged violations in the NVO have been resolved.

The management of stormwater, surface water runoff, and the use of final cover for the proposed project will be described in the DEIS.

> *3. "The City and County of Honolulu has failed to meet all of the conditions required by the Land Use Commission. We do not have a curbside recycling program. We are failing to divert a large portion of the municipal and solid waste from the Waimanalo Gulch Sanitary Landfill. This is confirmed in the City and County of Honolulu's routine practice of closing the H-Power Plant in excess of one hundred days per year and diverting the municipal and solid waste to the Waimanalo Gulch Sanitary Landfill."*
>
> *"Finally, we are concerned that the City and County of Honolulu has failed to utilize alternative methods of managing Municipal Solid Waste."*

The City has an on-going green waste curbside recycling program and sought public input for a curbside mixed recycling program that is now ongoing. The City has actively sought to increase the use of alternative technologies to reduce dependency on landfilling. In 2007 the City released a request for proposals (RFP) to investigate technology based alternatives, and in early 2008 related a request for proposals for waste transshipment. A discussion of these items as well as efforts taken by the City since 2002 will be provided in the DEIS.

Concerning the State Land Use Commission and the status of the existing State Special Use Permit, an amendment to this permit will be required to allow for the proposed project. Further discussion of this matter will also be provided in the DEIS.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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Robert H Kaialau III
565 Kokea Street, Suite D7 ◆ Honolulu, HI 96817
(808) 306-9787 ◆ robert@fightdrugs.us

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26 December 2006

Ms. Wilma Namumnart
Dept of Environmental Services
1000 Uluohia St., Ste. 308
Kapolei, HI 96707
wnamumnart@honolulu.gov

RE: **Concerns and comments in response to the City and County of Honolulu – Department of Environmental Services WAIMANALO GULCH (TMK (1) 9-2-03) SANITARY LANDFILL EXPANSION Environmental Impact Statement Preparation Notice dated November 2006**

Dear Ms. Namumnart:

Thank you for this opportunity to provide testimony regarding the recently published Prep Notice.

Attached please find my detailed, written comments and concerns regarding the aforementioned subject matter.

Respectfully submitted,

Robert H. Kaialau III

Robert H Kaialau III

C: Mr. Henry Eng, AICP
Director, Department of Planning and Permitting
City and County of Honolulu
650 S. King Street, 7th Floor
Honolulu, HI 96813
heng@honolulu.gov

Mr. Brian Takeda
R.M. Towill Corporation
420 Waiakamilo Rd., Ste. 411,
Honolulu, HI 96817
rmtowill@rmtowill.com

Office of Environmental Quality Control
Leiopapa A Kamehameha
235 South Beretania St., Suite 702
Honolulu, HI 96813
OEQC@doh.hawaii.gov

As I have previously testified, I remain opposed to the proposed expansion of the Waimanalo Gulch Sanitary Landfill (TMK s: (1) 9-2-003:072 and 073) - owned by the City and County of Honolulu and operated by Waste Management of Hawaii, Inc.

After reviewing, the preparation notice document and attending the public scoping meetings the following are my comments and concerns regarding the proposed expansion.

The validity of the following mandates for closure is as pertinent today as when they were issued:

- The State of Hawaii Special Use Permit calls for the closure of the landfill by May 1, 2008 barring the facility from accepting municipal waste (excluding H-Power ash, residue and unacceptable waste.
- The planned completion and final closure of the last cell is projected for the end of 5 years from the start of use of the last 14.9-acre expansion area on December 24, 2002.
- Summary report and Council Resolution 04-348, CD1, FD1mandated that the City and County of Honolulu " . . . devote all available resources to ensuring the maximum use of recycling and the development of alternative technologies for disposal of municipal solid waste with the intention to effectively eliminate, to the extent possible, the need for a landfill by 2008;"
- Council Bill 37 (2005), CD2 states "After May 1, 2008, it is in the best interests of the city to comply with the state land use commission's special use permit granted to the city, the terms and conditions of which require that no additional waste be deposited at the facility and that the facility be closed in accordance with an approved closure plan."

  Section 5 of the Bill further directed the City to submit to the Council by December 31, 2006, its plan to comply with the ordinance, noted that at a minimum, the City administration shall include in the plan the strategies for, and costs of compliance.

Any action to further expand the existing Waimanalo Gulch Sanitary Landfill satisfies the description in the Hawaii Administrative Rules, Title 11, Chapter 200 §11-200-12 – *Significance Criteria* as " . . . an action . . . determined to have a significant effect on the environment . . ." Approval of a permit to expand the current Waimanalo Gulch Sanitary Landfill will allow the following adverse environmental acts to occur:

1. Involve an irrevocable commitment to loss or destruction of any natural or cultural resource
2. Conflict with the State's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS
3. Substantially affect public health
4. Involve substantial degradation of environmental quality

The pending expansion permit application is in direct contradiction to all commitments made to date of the City's intent to systematically reduce and eventually cease operation of the existing Waimanalo Gulch Sanitary Landfill.

While I have many concerns, in the interest of brevity I will detail a few.

Ground water

Of the 18 counts of violation identified in the Department of Health – Notice and Finding of Violation dated January 31, 2006 (Docket No. 05-SHW-SWS-004); five[1] violations related directly to excess leachate[2] levels, and the operators failure to measure and report as required by the existing permit.

Adverse effects on groundwater[3] and aquifers[4] are widely documented, not to mention the direct contamination witnessed on Farrington Highway fronting the landfill site caused by runoff resulting from over saturation during heavy rains (as experienced during March 2006).

Air Quality – including incidences of litter, dust and odors

The existing Solid Waste Management Permit Number LF-0054-02 requires the current facility operator to provide a written plan and relative record keeping documenting the actions taken to minimize free litter through out the landfill facility as well as preventing the occurrence of litter, dust and odors beyond the facility's property line.

The failure of the facility operator to insure these mandates are met is well documented by the Department of Health inspectors as well the public. Citation of these violations can also be found in the Jan 2006 Notice and Finding document.

Traffic hazards

Large trucks and loose debris from the facility are an on-going problem. As mentioned above, litter that makes it way beyond the facility's property line attach to automobile windshields and antennas often-endangering drivers.

Daily, large trucks exiting the facility speed across the two westbound lanes of traffic in an effort to beat on-coming traffic as they make their way to the east bound lanes headed toward Honolulu often creating near miss traffic accidents.

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[1] Count V – pg. 12; Count VI – pg. 14; Count VII – pg. 15; Count IX – pg. 17; Count XV – pg. 25

[2] Leachate: a solution resulting from the empting; draining, as of soluble components from soil, landfill, etc., by downward percolating ground water: *Leachates in the town's water supply have been traced to a chemical-waste dump.* leachate. (n.d.). *Dictionary.com Unabridged (v 1.1).*

[3] Groundwater comes from rain and snowmelt that seeps into the ground. Gravity pulls the water down through the spaces between particles of soil or through cracks in rocks. Eventually the water reaches a depth where all openings in soil or rock are filled with water. This is called the saturated zone. The water in the saturate zone is called groundwater.

[4] A saturated soil or rock layer with spaces that allow water to move through it is called an aquifer. Aquifers may be separate by layers of rock or clay that do not allow water to move through it.

Trucks, waiting to enter the landfill facility are often forced to line-up along the westbound shoulder of Farrington Highway are documented regularly. While waiting to enter the facility, these trucks often leak and seep sludge and other toxic, odorous liquid.

Assertion that a "NO ACTION" alternative would result in adverse island wide impacts

The City and County of Honolulu's administration; both the Mayor's office and the Department of Environmental Services continue to operate in direct contradiction to every written plan – accepted and proposed mandating that the existing landfill facility located at Waimanalo Gulch on the Leeward Coast of Oahu be closed. Postponing the solicitation and selection of alternative waste processing technologies, refusal to consider transshipment of waste off-island and the failure to complete the long over-due Solid Waste Integrated Management Plan are the short list of examples. In turn, the City and County has done little to identify and expedite the selection and implementation of any number of available alternative waste processing technologies. Resting on the notion that there is expansion potential for the current site – the City and County continues the use of land filling to meet Oahu's Refuse Disposal Requirements.

In conclusion, The General Plan[5] for the City and County of Honolulu, "(*the plan*) is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of Oahu's residents and the strategies of actions to achieve them." The plan further sets forth the following policy statement found in Chapter 5: Transportation and Utilities, Objective B *(five of seven policy statements relate to solid-waste management)*:

> **To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal.**
>
> **Policy 3:** Encourage the development of new technology which will reduce the cost of providing water and the cost of waste disposal.
> **Policy 4:** Encourage a lowering of the per-capita consumption of water and the per-capita production of waste.
> **Policy 5:** Provide safe, efficient, and environmentally sensitive waste-collection and waste- disposal services.
> **Policy 6:** Support programs to recover resources from solid-waste and recycle wastewater.
> **Policy 7:** Require the safe disposal of hazardous waste.

As documented in the preparation notice, when the Waimanalo Gulch Sanitary Landfill was designated in 1989, "there was limited to growth in the Ewa region."

Today, almost 20 years later, the City of Kapolei and the surrounding region known as the Ewa Plain are the most rapidly growing areas on the Island of Oahu. This region is where both city and state officials are directing the majority of future growth on the Island of Oahu,

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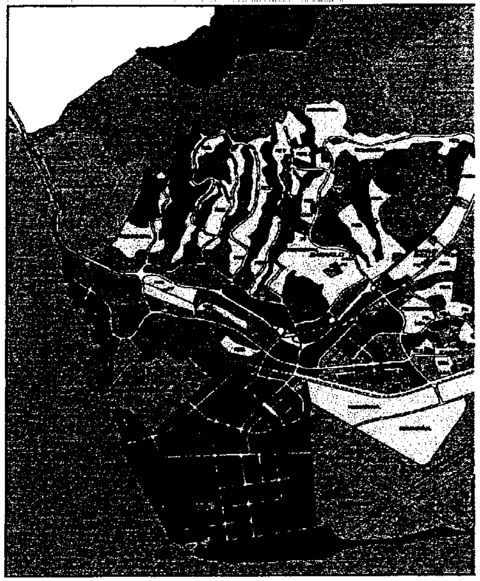
[5] *This revised 1992 edition of the General Plan reinforces this planning concept. It supersedes all previous editions and includes all changes, which were adopted through the end of 1991.* It is the focal point of a comprehensive planning process that addresses physical, social, economic and environmental concerns affecting the City and County of Honolulu. This planning process serves as the coordinative means by which the City and County government provides for the future growth of the metropolitan area of Honolulu. *Since the adoption of the General plan in 1977, a number of amendments were subsequently adopted in 1979, 1982, 1985,1987,1989,1990, 1991, 1992, and 2002. However, in spite of these changes, the basic themes and directions for growth remain valid, and require continued pursuit.*

planned City of Kapolei a resounding success. With no less than 20 major residential communities built, planned or under construction at this time and homes selling as fast as they can be built, Kapolei has truly come of age.

Businesses and services needed to support the rapidly growing community have been moving to the area in unmatched numbers. Recent additions have included nationally known businesses such as The Home Depot, Gannett's $85.0 million dollar newspaper plant, K-Mart, Consolidated Theaters, Ace Hardware, Starbucks, Jamba Juice, Burger King, Wendy's, Jack in the Box, Chili's, McDonald's, KFC, Safeway, Longs Drugs, Blockbuster Video, Payless Shoesource and many more. Over 425 local, regional and national businesses have chosen to make the City of Kapolei their home.

Therefore, based on the blatant and egregious counts identified in the Notice of Violations issued against the City's current landfill operator and the administration's failure to both oversee and monitor their own contractor. Moreover, because of the administration's indurate response to the Honolulu City Council's request that the SWIM plan be completed in a timely manner; it is incumbent on all permit granting agencies to be influenced by the subsequent Environmental Impact Statement and related State Special Use Permit (SUP) Amendment application to deny any further expansion of the existing Waimanalo Gulch Sanitary Landfill facility.

Hawaii's most populous island.



The City of Kapolei was designed as a complete master planned community with the intentions of becoming a major urban center rivaling Downtown Honolulu, providing a place to live, work, shop and enjoy recreational activities, eliminating the need to travel into the densely populated Downtown Honolulu or Waikiki areas.

Complimenting Campbell Estates' efforts is the rapid growth of the adjacent Ko Olina master planned resort area, which provides world-class resort accommodations. Championship golf and spa facilities, hotel and timeshare lodging, a yacht harbor and yacht club, beach clubs and residential resort developments are springing up at unprecedented rates. Not only has the area gained credibility from the international hospitality community, but the area has also become a favored destination by Oahu's residents as a quick get-a-way from the hustle and bustle of Downtown Honolulu.

Kapolei is strategically situated at the intersection of technologies in the Pacific. Globally connected by both fiber-optic cabling and satellite transmissions, Kapolei is well positioned to take forward-thinking businesses into the information age.

Over the past 20 years, Campbell Estates' vision has become a reality and the master

DEPARTMENT OF ENVIRONMENTAL SERVICES
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MUFI HANNEMANN
MAYOR

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DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-049

May 12, 2008

Mr. Robert H. Kaialau, III
565 Kokea Street, Suite D7
Honolulu, Hawaii 96817

Dear Mr. Kaialau:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006 concerning the subject project. The following is in response to your comments (your comments have been italicized for reference):

1. "The validity of the following mandates for closure is as pertinent today as when they were issued:

- *The State of Hawaii Special Use Permit calls for the closure of the landfill by May 1, 2008 barring the facility from accepting municipal waste (excluding H-Power ash, residue and unacceptable waste.*
- *The planned completion and final closure of the last cell is projected for the end of 5 years from the start of use of the last 14.9-acre expansion area on December 24, 2002.*
- *Summary report and Council Resolution 04-348, CDI, FDI mandated that the City and County of Honolulu " . . . devote all available resources to ensuring the maximum use of recycling and the development of alternative technologies for disposal of municipal solid waste with the intention to effectively eliminate, to the extent possible, the need for a landfill by 2008";*
- *Council Bill 37 (2005), CD2 states "After May 1, 2008, it is in the best interests of the city to comply with the state land use commission's special use permit granted to the city, the terms and conditions of which require that no additional waste be deposited at the facility and that the facility be closed in accordance with an approved closure plan.""*

"Section 5 of the Bill further directed the City to submit to the Council by December 31, 2006, its plan to comply with the ordinance, noted that at a minimum, the City administration shall include in the plan the strategies for, and costs of compliance."

The following clarification is provided concerning Resolution 04-348, CD1, FD1, and Bill 37 (2005). Resolution 04-348 called for the selection of Waimanalo Gulch as the City's landfill. The reasons for this selection were provided in the EISPN, Section 1.2.2. Council Resolution 04-348, CD1, FD1, Selecting a Site for a New City Landfill.

Bill 37 was vetoed by the Mayor and did not become law. Please refer to the EISPN, Section 1.2.3.

2. "Any action to further expand the existing Waimanalo Gulch Sanitary Landfill satisfies the description in the Hawaii Administrative Rules, Title 11, Chapter 200 §11-200-12 - Significance Criteria as " . . . an action . . . determined to have a significant effect on the environment. . ." Approval of a permit to expand the current Waimanalo Gulch Sanitary Landfill will allow the following adverse environmental acts to occur:

1. *Involve an irrevocable commitment to loss or destruction of any natural or cultural resource*
2. *Conflict with the State's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS*
3. *Substantially affect public health*
4. *Involve substantial degradation of environmental quality"*

Your comments regarding regulatory requirements are noted. The potential impacts associated with the lateral expansion of the landfill footprint will be provided in the Draft EIS (DEIS).

3. "The pending expansion permit application is in direct contradiction to all commitments made to date of the City's intent to systematically reduce and eventually cease operation of the existing Waimanalo Gulch Sanitary Landfill."

The DEIS will include discussion of the prior City administration's statements regarding the closing of the landfill within the five-year or 2008 timeframe, as documented in the 2003 State Special Use Permit. The DEIS will provide the history of governmental actions since those earlier statements up to the current DEIS.

4. "Ground water"

"Of the 18 counts of violation identified in the Department of Health - Notice and Finding of Violation dated January 31, 2006 (Docket No, 05-SHW-SWS-004); five[1] violations related directly to excess leachate[2] levels, and the operators failure to measure and report as required by the existing permit."

"Adverse effects on groundwater[3] and aquifers[4] are widely documented, not to mention the direct contamination witnessed on Farrington Highway fronting the landfill site caused by runoff resulting from over saturation during heavy rains (as experienced during March 2006)."

Footnotes:
"[1] Count V - pg. 12; Count VI - pg. 14; Count VII - pg. 15; Count IX - pg. 17; Count XV - pg. 25
[2] Leachate: a solution resulting from the empting; draining, as of soluble components from soil, landfill, etc., by downward percolating ground water: Leachates in the town's water supply have been traced to a chemical-waste dump. leachate, (n.d.). Dictionary.com Unabridged (v1.1).

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[4]A saturated soil or rock layer with spaces that allow water to move through it is called an aquifer. Aquifers may be separate by layers of rock or clay that do not allow water to move through it."

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved. The NVO, settlement and grade modification will be discussed in the DEIS.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

5. "Air Quality - including incidences of litter, dust and odors"
"The existing Solid Waste Management Permit Number LF-0054-02 requires the current facility operator to provide a written plan and relative record keeping documenting the actions taken to minimize free litter through out the landfill facility as well as preventing the occurrence of litter, dust and odors beyond the facility's property line."
"The failure of the facility operator to insure these mandates are met is well documented by the Department of Health inspectors as well the public. Citation of these violations can also be found in the Jan 2006 Notice and Finding document."

Please refer to our response to comment no. 4, above. Concerning air quality, the DEIS will provide further information concerning the potential for impacts and mitigation measures associated with the expansion of the landfill.

6. "Traffic hazards"
"Large trucks and loose debris from the facility are an on-going problem. As mentioned above, litter that makes it way beyond the facility's property line attach to automobile windshields and antennas often-endangering drivers."
"Daily, large trucks exiting the facility speed across the two westbound lanes of traffic in an effort to beat on-coming traffic as they make their way to the east bound lanes headed toward Honolulu often creating near miss traffic accidents."
"Trucks, waiting to enter the landfill facility are often forced to line-up along the westbound shoulder of Farrington Highway are documented regularly. While waiting to enter the facility, these trucks often leak and seep sludge and other toxic, odorous liquid.

Some of the impacts you describe have been mitigated or curtailed. There is an active litter management program in place that will be further discussed in the DEIS. Vehicular queuing and measures to reduce and prevent such occurrences will also be discussed in the DEIS.

Vehicles entering the landfill are required to have their loads covered and a clean out area for truck operators is provided to allow the clean out of debris before it can become windblown when vehicles leave the City's property. Vehicle operators who violate these provisions are at risk of being prohibited from using the landfill. The Department of Environmental Services (692-5358) asks that if anyone witnesses such events taking place, that they contact us or Waste Management of Hawaii (668-2985), so appropriate immediate action can be taken to prevent such occurrences.

Any vehicles using the landfill, or any public roads, which operate in an unsafe manner are also subject to sanctions. Do not hesitate to contact us, Waste Management of Hawaii, or the police, if you witness vehicle operators behaving in an unsafe manner.

Vehicles that spill their loads onto the highway and public right-of-way, whether solid or liquid, are also not tolerated. While our operator, Waste Management, regularly enforces this provision within the landfill property, the City does not have a police force that can monitor the actions of all private and commercial drivers using the public highway system. We ask that when you witness such events taking place that you report such incidences to us, Waste Management, or the police immediately for proper action.

7. "Assertion that a "NO ACTION" alternative would result in adverse island wide impacts
The City and County of Honolulu's administration; both the Mayor's office and the Department of Environmental Services continue to operate in direct contradiction to every written plan - accepted and proposed mandating that the existing landfill facility located at Waimanalo Gulch on the Leeward Coast of Oahu be closed. Postponing the solicitation and selection of alternative waste processing technologies, refusal to consider transshipment of waste off-island and the failure to complete the long over-due Solid Waste Integrated Management Plan are the short list of examples. In turn, the City and County has done little to identify and expedite the selection and implementation of any number of available alternative waste processing technologies. Resting on the notion that there is expansion potential for the current site - the City and County continues the use of land filling to meet Oahu's Refuse Disposal Requirements."

The DEIS will identify a number of activities that the City has been engaged in since 2002 regarding alternatives to reduce our dependency on landfilling. In addition, there will be further discussion of alternatives to reduce and recycle waste, including the use of transshipment.

8. "In conclusion, *The General Plan[5] for the City and County of Honolulu,* *"(the plan) is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of Oahu's residents and the strategies of actions to achieve them." The plan further sets forth the following policy statement found in Chapter 5: Transportation and Utilities, Objective B (five of seven policy statements relate to solid-waste management):"*

> ***"To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal."***
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> *"Policy 3: Encourage the development of new technology which will reduce the cost of providing water and the cost of waste disposal."*
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> *"Policy 5: Provide safe, efficient, and environmentally sensitive waste-collection and waste- disposal services."*
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> *"Policy 7: Require the safe disposal of hazardous waste."*
>
> *Footnote: "[5]This revised 1992 edition of the General Plan reinforces this planning concept. It supersedes all previous editions and includes all changes, which were adopted through the end of 1991. It is the focal point of a comprehensive planning process that addresses physical, social, economic and environmental concerns affecting the City and County of Honolulu. This planning process serves as the coordinative means by which the City and County government provides for the future growth of the metropolitan area of Honolulu. Since the adoption of the General plan in 1977, a number of amendments were subsequently adopted in 1979, 1982, 1985, 1987, 1989, 1990, 1991, 1992, and 2002. However, in spite of these changes, the basic themes and directions for growth remain valid, and require continued pursuit."*

The above sections of the General Plan have been forwarded to our consultant for appropriate action in the preparation of the DEIS.

> *9. "As documented in the preparation notice, when the Waimanalo Gulch Sanitary Landfill was designated in 1989, "there was limited to [sic] growth in the Ewa region."*
> *"Today, almost 20 years later, the City of Kapolei and the surrounding region known as the Ewa Plain are the most rapidly growing areas on the Island of Oahu. This region is where both city and state officials are directing the majority of future growth on the Island of Oahu, Hawaii's most populous island."*
> *"The City of Kapolei was designed as a complete master planned community with the intentions of becoming a major urban center rivaling Downtown Honolulu, providing a place to live, work, shop and enjoy recreational activities, eliminating the need to travel into the densely populated Downtown Honolulu or Waikiki areas."*
> *"Complimenting Campbell Estates' efforts is the rapid growth of the adjacent Ko Olina master planned resort area, which provides world-class resort accommodations. Championship golf and spa facilities, hotel and timeshare lodging, a yacht harbor and yacht club, beach clubs and residential resort developments are springing up at unprecedented rates. Not only has the area gained credibility from the international hospitality community, but the area has also become a favored destination by Oahu's residents as a quick get-a-way from the hustle and bustle of Downtown Honolulu."*
> *"Kapolei is strategically situated at the intersection of technologies in the Pacific. Globally connected by both fiber-optic cabling and satellite transmissions, Kapolei is well positioned to take forward-thinking businesses into the information age."*

> *"Over the past 20 years, Campbell Estates' vision has become a reality and the master planned City of Kapolei a resounding success. With no less than 20 major residential communities built, planned or under construction at this time and homes selling as fast as they can be built, Kapolei has truly come of age."*
> *"Businesses and services needed to support the rapidly growing community have been moving to the area in unmatched numbers. Recent additions have included nationally known businesses such as The Home Depot, Gannett's $85.0 million dollar newspaper plant, K-Mart, Consolidated Theaters, Ace Hardware, Starbucks, Jamba Juice, Burger King, Wendy's, Jack in the Box, Chili's, McDonald's, KFC, Safeway, Longs Drugs, Blockbuster Video, Payless Shoesource and many more. Over 425 local, regional and national businesses have chosen to make the City of Kapolei their home."*
> *"Therefore, based on the blatant and egregious counts identified in the Notice of Violations issued against the City's current landfill operator and the administration's failure to both oversee and monitor their own contractor. Moreover, because of the administration's indurate response to the Honolulu City Council's request that the SWIM plan be completed in a timely manner; it is incumbent on all permit granting agencies to be influenced by the subsequent Environmental Impact Statement and related State Special Use Permit (SUP) Amendment application to deny any further expansion of the existing Waimanalo Gulch Sanitary Landfill facility."*

Your comments regarding growth occurring in West Oahu are noted and will be discussed in the DEIS.

Please refer to our response to the DOH NVO, above.

As much as possible the preparation of the subject DEIS is being coordinated with the SWIM Plan. However, the plan is currently under draft and will be coordinated with the DOH and other appropriate parties for approval.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

10

December 26, 2006

Ms. Wilma Namumnart
Dept. of Environmental Services
1000 Uluohia St., Ste. 308
Kapolei, HI 96707

Re: Waimanalo Gulch Sanitary Landfill Expansion, TMK (1) 9-2-03
Environmental Impact Statement Preparation Notice

Dear Ms. Namumnart

I would like to take the opportunity to voice my concerns about the proposed expansion of the Waimanalo Gulch Sanitary Landfill. It is interesting that the landfill is now a mountain and not a gulch anymore. This should be the first indication that we as a City and County are addressing this situation incorrectly. There are many obvious reasons why the landfill should not be expanded.

These include environmental hazards – ground water contamination, underground methane fires, potential ocean runoff, and air pollution. Other reasons include the wasting of the City and County of Honolulu natural and financial resources.

Many private entities offer recycling solutions that would not be harmful to our delicate ecosystem and also offer financially profitability. By not seriously exploring these alternative technologies, the leadership of the City and County of Honolulu will do a disservice to our community. We live in an age that we understand the harmful effects of landfills.

If nothing else, close it for monetary reasons. We have already had large fines levied – fines that to this day have not been paid. The fines that will have to be eventually paid – will be paid with our increasingly harder to come by tax dollars. The City's leadership has promised to close Waimanalo Gulch Sanitary Landfill twice.

It's time to keep that promise. The permit for expansion should not be granted.

Sincerely,

David J. Reantaso
davidreantaso@yahoo.com

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-047

May 12, 2008

Mr. David J. Reantaso
e-mail: davidreantaso@yahoo.com

Dear Mr. Reantaso:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 26, 2006, concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. *"I would like to take the opportunity to voice my concerns about the proposed expansion of the Waimanalo Gulch Sanitary Landfill. It is interesting that the landfill is now a mountain and not a gulch anymore. This should be the first indication that we as a City and County are addressing this situation incorrectly. There are many obvious reasons why the landfill should not be expanded.*
These include environmental hazards - ground water contamination, underground methane fires, potential ocean runoff, and air pollution. Other reasons include the wasting of the City and County of Honolulu natural and financial resources."

Your objection to the proposed project is acknowledged. The potential for adverse environmental impacts including those you describe will be provided in the Draft EIS (DEIS). The DEIS will include the cost of the proposed project, and the relationship of the proposed project to the future waste management needs of the City & County of Honolulu.

2. *"Many private entities offer recycling solutions that would not be harmful to our delicate ecosystem and also offer financially profitability. By not seriously exploring these alternative technologies, the leadership of the City and County of Honolulu will do a disservice to our community. We live in an age that we understand the harmful effects of landfills."*

Information pertinent to the feasibility and environmental impacts associated with alternative technologies to the handling and disposal of municipal solid waste will be provided in the alternatives analysis that will be part of the DEIS.

> 3. *"If nothing else, close it for monetary reasons. We have already had large fines levied - fines that to this day have not been paid. The fines that will have to be eventually paid - will be paid with our increasingly harder to come by tax dollars. The City's leadership has promised to close Waimanalo Gulch Sanitary Landfill twice.*
> *It's time to keep that promise. The permit for expansion should not be granted."*

The immediate closure of the Waimanalo Gulch Sanitary Landfill without a feasible alternative to the disposal of all of the forms of municipal refuse that are generated on the island of Oahu is not a reasonable nor prudent course of action that can be taken.

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved. The NVO, settlement and grade modification will be discussed in the DEIS.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

The reason for the City's current EIS involve a number of actions that have transpired since completion of the last EIS in December 2002. Documentation of the prior commitment to close Waimanalo Gulch was provided in the EISPN, Section 1, Project Background.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D. P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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TheFairways
Ko Olina Resort

Ralph F. Harris, President
Ko Olina Fairways - Association of Apartment Owners
92-1527-H Aliinui Drive
Kapolei, Hawaii 96707

Phone: (808) 679-0085
Fax: (808) 679-0086
Email: rfh@hawaii.rr.com

December 23, 2006

Via Fax: (808) 692-5402

'06 DEC 27 P2:53
DEPARTMENT OF ENVIRONMENTAL SVCS

Dr. Eric S. Takamura, P.E., Director
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

RE: Environmental Impact Statement Preparation Notice
Chapter 343, Hawaii Revised Statutes

Project Name: Waimanalo Gulch Sanitary Landfill Notice
Applicant: Department of Environmental Services
City and County of Honolulu
Agent: R.M. Towill Corporation
Landowner: City & County of Honolulu
Location: Waimanalo Gulch, [Kapolei] Oahu, Hawaii
Tax Map Key: (1) 9-2-003:072 and 073

Ko Olina Fairways Association of Apartment Owners Comments on EISP Notice

Dear Director Takamura:

As President of the Ko Olina Fairways Association of Apartment Owners ("AOAO") representing 280 townhouses at Ko Olina Resort, we are responding to your notice for comments to the EIS Preparation Notice addressed in your November 8, 2006 letter. We did not receive a copy of the letter or the report from your office. We did hear about the EIS Preparation Notice through a friend and we recovered a copy from another source. Please place me on your mailing list again.

Your letter and the efforts of your department are unbelievable in that you seek a resurrection of the EIS process for the Waimanalo Gulch (located in Kapolei) as a site for a continuing landfill. Did we just waste all the money and efforts of the Draft EIS in 1999 and the Supplemental EIS of 2002?

Our community and our neighbors in abutting communities have relied on the pending closure of the Landfill. We have invested enormous time and effort since the incomplete and flawed DEIS and SEIS effort of 1999 and 2002 ended with a commitment from the City government and the Mayor to close the site to Municipal Waste in 2008. For the City to change directors in the Department of Environmental Services and then re-launch a plan to continue using the Waimanalo Dump past the closure date is an insult to our island community and an example of a government system out of control.

Yes we attended the community meeting sponsored by your department at Nanakuli High School and although you have made this resurrection attempt with consultant facilitators there was not one person supporting the City's effort! In fact, Kumu Kamaki Kanahele said it all at the meeting with the same emotion and disbelief that most of us believe in seeing the City's total disregard and disrespect of previous community input facing the flawed efforts of the past and through meetings too numerous to recall.

The best I can say is that homeowners in our association are dumbfounded by this re-assessment of the problem after (please count them) **EIGHT (8) years** [1999-2006] wherein the City does not have a solid waste alternate site but does have a plan and commitment to the community to close Waimanalo Gulch in Kapolei! When you look at the time line over the past eight (8) years the City could have located and prepared the alternate site for business well before the closure date in 2008 for Waimanalo Gulch in Kapolei.

Notwithstanding the lack of progress, now we change the players and restart the process? Isn't this baffling to you? Our community members have no tolerance for the blatant dismissal of all the efforts to get the project closed. We are opposed to this restart of the EIS preparation process for the subject site and recommend that the alternative site or alternative waste disposal methods are developed and close Waimanalo Gulch at Kapolei on time in May 2008.

We agree with the comments of Cynthia Rezentes and Senator Colleen Hanabusa and others published in the EIS Preparation report regarding the many detailed issues and comments that have not been resolved and will need to be a part of the new EIS process. We find that in the face of litigation and mismanagement of the facility that the City continues to shape the decision making process to match a predetermined objective.

Our association will be actively involved in every effort to close the Waimanalo Gulch Landfill located in Kapolei as we believe there is a conflict in land use, there are pending legal issues involving $2.8 million dollars in fines to the City that are directed at the poorly operated facility and that this location is not acceptable.

You must agree that the Waimanalo Gulch Landfill at Kapolei continues as blight on this beautiful island. The State and the City have designated Kapolei and West Oahu as growth areas with designated mass transit needs and increasing populations.

Please drive the roads and highways in Kapolei and see for yourself the litter and filth that travels here daily by truck. Most of my neighbors are in shock that we are about to head down the EIS road again.

Please call anytime.

Sincerely,
for Ko Olina Fairways
Association of Apartment Owners

Ralph F. Harris
President

cc: Members of the Ko Olina Fairways Board of Directors and Association Members
Ko Olina Community Association Board of Directors
First Class US Mail
Other Interested Parties

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

May 12, 2008

IN REPLY REFER TO:
RA 08-045

Mr. Ralph F. Harris, President
Ko Olina Fairways - Association of Apartment Owners
92-1 527-H Aliinui Drive
Kapolei, Hawaii 96707

Dear Mr. Harris:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 23, 2006, concerning the subject project. We acknowledge your request to be a consulted party to the EIS process for the proposed project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. "Your letter and the efforts of your department are unbelievable in that you seek a resurrection of the EIS process for the Waimanalo Gulch (located in Kapolei) as a site for a continuing landfill. Did we just waste all the money and efforts of the Draft EIS in 1999 and the Supplemental EIS of 2002?"

"Our community and our neighbors in abutting communities have relied on the pending closure of the Landfill. We have invested enormous time and effort since the incomplete and flawed DEIS and SEIS effort of 1999 and 2002 ended with a commitment from the City government and the Mayor to close the site to Municipal Waste in 2008. For the City to change directors in the Department of Environmental Services and then re-launch a plan to continue using the Waimanalo Dump past the closure date is an insult to our island community and an example of a government system out of control."

Your comments concerning the proposed project are noted. Section 1 of the EISPN provided important information that establishes why the City must act at this time to provide a solid waste refuse facility for use by all the communities of Oahu. Further information concerning this requirement will be provided in the Draft EIS (DEIS).

2. "Yes we attended the community meeting sponsored by your department at Nanakuli High School and although you have made this resurrection attempt with consultant facilitators there was not one person supporting the City's effort! In fact, Kumu Kamaki Kanahele said it all at the meeting with the same emotion and disbelief that most of us believe in seeing the City's total disregard and disrespect of previous community input facing the flawed efforts of the past and through meetings too numerous to recall."

Several important events led to the current proposal to expand Oahu's only municipal sanitary landfill. The parties that were involved are documented in the EISPN and included the Mayor's Advisory Committee on Landfill Site Selection under a prior administration, the Honolulu City Council, and the current Administration. It is important to note that during the events outlined in the EISPN that community input was sought by the Council and ENV not only from the Leeward Coast, but islandwide based on the need for a municipal landfill serving all the communities of O'ahu.

3. "The best I can say is that homeowners in our association are dumbfounded by this re-assessment of the problem after (please count them) EIGHT (8) years [I999-2006] wherein the City does not have a solid waste alternate site but does have a plan and commitment to the community to close Waimanalo Gulch in Kapolei! When you look at the time line over the past eight (8) years the City could have located and prepared the alternate site for business well before the closure date in 2008 for Waimanalo Gulch in Kapolei."

Since completion of the 2002 Final Supplemental EIS for the Waimanalo Gulch landfill, the City has undertaken a number of actions regarding alternatives to the continued use of the landfill. A description of these actions will be provided in the forthcoming DEIS.

4. "Notwithstanding the lack of progress, now we change the players and restart the process? Isn't this baffling to you? Our community members have no tolerance for the blatant dismissal of all the efforts to get the project closed. We are opposed to this restart of the EIS preparation process for the subject site and recommend that the alternative site or alternative waste disposal methods are developed and close Waimanalo Gulch at Kapolei on time in May 2008."

Your opposition to the proposed project and your recommendation that an alternative landfill site or alternative disposal method be used are noted. A discussion of the proposed project in relation to alternative technologies and sites will be provided in the DEIS.

5. "We agree with the comments of Cynthia Rezentes and Senator Colleen Hanabusa and others published in the EIS Preparation report regarding the many detailed issues and comments that have not been resolved and will need to be a part of the new EIS process. We find that in the face of litigation and mismanagement of the facility that the City continues to shape the decision making process to match a predetermined objective."

"Our association will be actively involved in every effort to close the Waimanalo Gulch Landfill located in Kapolei as we believe there is a conflict in land use, there are pending legal issues involving $2.8 million dollars in fines to the City that are directed at the poorly operated facility and that this location is not acceptable."

Issues that are raised as part of the EIS process will be addressed as required by law. The City is proceeding with the necessary environmental review procedures for a lateral footprint expansion.

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

The Environmental Protection Agency's (EPA) Notice of Violation (NOV) concerning the landfill's gas collection system is currently under discussion amongst the EPA, the City and Waste Management. Until those negotiations are concluded, there can be no final determination as to the validity of the alleged violations. The NOV will be discussed in the DEIS.

> 6. *"You must agree that the Waimanalo Gulch Landfill at Kapolei continues as blight on this beautiful island. The State and the City have designated Kapolei and West Oahu as growth areas with designated mass transit needs and increasing populations."*
>
> *"Please drive the roads and highways in Kapolei and see for yourself the litter and filth that travels here daily by truck. Most of my neighbors are in shock that we are about to head down the EIS road again."*

The presence of the existing Waimanalo Gulch has made possible economic growth and development through the use of a site for the safe and efficient disposal of municipal refuse. In this regard, the landfill has supported economic growth and development of not only the Ewa region, but islandwide for all the communities of Oahu. Potential impacts concerning litter and litter control will be addressed in the DEIS.

A number of operational improvements to the landfill have also been implemented since 2002 when the last EIS was completed. A description of these efforts and planned mitigation measures to address traffic and traffic related potential impacts will be described in the DEIS.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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Refuse

HOUSE OF REPRESENTATIVES
STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

December 22, 2006

Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Attention: Wilma Namumnart

RE: WAIMANALO GULCH SANITARY LANDFILL EXPANSION, WAIANAE

Please consider the sentiments of those that took possession of property nearby the landfill with the understanding that their ownership would not be subjected to particular operations of the landfill, let alone another expansion of it beyond May 1st, 2008.

When I think of all the broken treaties in America's past history with communities of Native American peoples subjugated to acts of ill-will and done so in bad faith, I never thought such practice would still be coddled into this century. The comparison rests in the fact that an agreement was brokered by the City with Leeward communities decades ago whereby the burden and aftermath of landfill operations in their "backyard" would terminate- not expand.

It is the duty and obligation of Legislators and the Judiciary to oversee that agreements tended to, are adhered to within their respective jurisdictions. In the capacity of being a State Representative, I urge those making the decision on the expansion to include approximately 92.5 acres be rendered inappropriate and dismissed.

Your favorable consideration to explore other means to mitigate the disposal/storage of waste is greatly appreciated. Thank you for this opportunity to provide written opposition to the proposal being advocated by the Department of Environmental Services.

Respectfully,

Rida Cabanilla

CC: Director Henry Eng, Dept. of Planning and Permitting

DEPARTMENT OF
ENVIRONMENTAL SVCS
'06 DEC 26 P2:46

State Representative Rida Cabanilla
State Capitol, Room 442 • Honolulu, Hawaii 96813
Telephone: (808) 586-6080 • Fax: (808) 586-6081 • Email: repcabanilla@capitol.hawaii.gov

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 • FAX: (808) 768-3487 • WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-055

May 12, 2008

The Honorable Rida T.R. Cabanilla
State Representative
State Capitol, Room 442
415 South Beretania Street
Honolulu, Hawaii 96813

Dear Representative Cabanilla:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 22, 2006 concerning the subject project. We appreciate the time you have taken to share your concerns and have prepared the following in response.

Your request that the proposed expansion of the Waimanalo Gulch Sanitary Landfill be rendered inappropriate and be dismissed are noted. Unfortunately, for reasons that are cited in the EISPN, Section 1, Project Background, this option is not now available to the City.

Alternatives to the continued long-term use of the landfill that have been investigated by the City include increased recycling, waste reduction by both nonthermal and thermal processes, and transshipment. Further discussion of these items will be provided in the Draft EIS (DEIS) for this project.

We appreciate the time you have taken to review the subject document and this opportunity to respond to your comments. Please do not hesitate to direct further written comments to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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Refuse

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 692-5054 • Fax: (808) 692-5857
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LAVERNE HIGA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 06-1253

December 22, 2006

MEMORANDUM

TO: ERIC S. TAKAMURA, P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

Laverne Higa

FROM: LAVERNE HIGA, P.E., DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF FACILITY MAINTENANCE

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for the opportunity to review and comment on the Environmental Impact Statement Preparation Notice dated November 2006, for the expansion of the Waimanalo Gulch sanitary landfill.

We have no comments to offer at this time. Expansion of the landfill will have negligible impact on our facilities and operations.

Should you have any questions, please call Charles Pignataro of the Division of Road Maintenance, at 484-7697.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 064

May 12, 2008

MEMORANDUM

TO: CRAIG NISHIMURA, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF FACILITY MAINTENANCE

Eric S Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 22, 2006 concerning the subject project. We acknowledge that you have no comments to offer at this time and that the proposed project will have negligible impact on your facilities and operations.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

14

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

DEPARTMENT OF
ENVIRONMENTAL SVCS
'06 DEC 27 P2 53

December 21, 2006

HRD06/2756B

Dr. Eric S. Takamura
City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawai'i 96707

RE: Waimanalo Gulch Landfill Environmental Impact Statement Preparation Notice (EISPN); Kahe Valley, O'ahu; TMK:9-7-003:072 and 073

Dear Mr. Takamura,

The Office of Hawaiian Affairs (OHA) is in receipt of your November 8, 2006 request for comments on above referenced Environmental Impact Statement Preparation Notice (EISPN) to expand 92.5 acres of the Waimanalo Gulch landfill in leeward O'ahu. This expansion will result in noncompliance with the applicant's Amended State Special Use Permit (SUP), issued by the State Land Use Commission (LUC) on March 27, 2003, which required the Waimanalo Gulch landfill to close by May 1, 2008.

Although we appreciate that an Environmental Impact Statement (EIS) is being prepared for this project, we point out that the purpose of Hawaii's EIS law is not to justify the environmental effects of government actions after economic and technical decisions have been made. Rather, the purpose is to "ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical consideration." Hawai'i Administrative Rules (HAR) § 11-200-1 (emphasis added). In line with this purpose is the requirement that "the agency shall assess at the earliest practicable time the significance of potential impacts of its actions, including the overall, cumulative impact in light of related actions in the region and further actions contemplated." HAR § 11-200-5.

This EISPN appears to address the isolated issue of expanding a landfill, and not the comprehensive issue of sustainable waste management on O'ahu. For example, the fact that the City and County's Solid Waste Integrated Management Plan is currently being updated, but will be completed after the Waimanalo Gulch Landfill EIS is underway or completed, illustrates the applicant's failure to consider "cumulative impact[s] in light of related actions in the region," as required by HAR § 11-200-5. Without guidance of a comprehensive waste management plan for the island, the cumulative impacts of a single landfill cannot be analyzed.

Further, it appears that this EIS is being prepared merely to discuss and possibly mitigate environmental effects, rather than to serve as an "informational document" to guide the County's decision-making. While there is still much value to discussion and mitigation of environmental problems, this use of the EIS process misses the point of the EIS law to encourage discussion of environmental issues before important decisions are made. We realize that O'ahu's solid waste problems will not be resolved overnight; however, rather than continuing to bury the problem by expanding landfills, the County must comprehensively analyze innovative and environmentally friendly waste disposal methods that are appropriate for our island state.

We request that the forthcoming EIS include a detailed analysis of the reasons behind the current SUP condition to close the landfill by 2008. We also request that the EIS clearly state the changed circumstances or other reasons that prevent the applicant from honoring its commitment to close Waimanalo Gulch Landfill. The EISPN at page 1-3 notes that the Mayor's Advisory Committee, which was formed in December 2003 to recommend different landfill sites, chose to consider Waimanalo Gulch, which was then ranked the highest among the choices. Please discuss the ranking criteria used, as well as the why Waimanalo Gulch was still considered, despite the goal of the Committee to recommend a different site. Please also discuss what good faith efforts were made to find other suitable landfill sites, and how the applicant attempted to comply with the LUC's purpose and intent behind conditioning the SUP on closure by 2008. For example, have the concerns of the LUC been addressed by the applicant's current proposal to expand the Waimanalo Gulch landfill?

We also request that the EIS address the various health concerns that have been raised by the Department of Health, and how these problems will be addressed and prevented in the future. In addition, please provide detailed analysis of how impacts to the surrounding community will be mitigated, including proposed benefits packages.

Thank you for your continued correspondence and the opportunity to comment. We look forward to reviewing the Draft EIS. If you have any further questions or concerns please contact Koa Kaulukukui at (808) 594-0244 or koalanik@oha.org.

Sincerely,

Clyde W. Nāmu'o
Administrator

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-071

May 12, 2008

Mr. Clyde W. Nāmu'o, Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Nāmu'o:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 21, 2006 concerning the subject project. The following is in response to your comments (your comments have been italicized for reference):

1. *"Although we appreciate that an Environmental Impact Statement (EIS) is being prepared for this project, we point out that the purpose of Hawaii's EIS law is not to justify the environmental effects of government actions after economic and technical decisions have been made. Rather, the purpose is to "ensure that environmental concerns are given appropriate consideration in decision making along with economic and technical consideration." Hawai'i Administrative Rules (HAR) § 11-200-1 (emphasis added). In line with this purpose is the requirement that "the agency shall assess at the earliest practicable time the significance of potential impacts of its actions, including the overall, cumulative impact in light of related actions in the region and further actions contemplated. "HAR § 11-200-5."*

The potential for the cumulative impacts you indicate will be discussed as part of the Draft EIS (DEIS).

> 2. *"This EISPN appears to address the isolated issue of expanding a landfill, and not the comprehensive issue of sustainable waste management on O'ahu. For example, the fact that the City and County's Solid Waste Integrated Management Plan is currently being updated, but will be completed after the Waimanalo Gulch Landfill EIS is underway or completed, illustrates the applicant's failure to consider "cumulative impact[s] in light of related actions in the region," as required by HAR § 11-200-5. Without guidance of a comprehensive waste management plan for the island, the cumulative impacts of a single landfill cannot be analyzed."*

The subject EIS is being developed in conjunction with the preparation of the Solid Waste Integrated Management (SWIM) Plan. While the SWIM Plan will provide the policy guidance and direction for the future handling of Oahu's solid waste through a number of projects and facilities that include Waimanalo Gulch, the subject EIS will discuss impacts, including the potential for cumulative impacts.

> 3. *"Further, it appears that this EIS is being prepared merely to discuss and possibly mitigate environmental effects, rather than to serve as an "informational document" to guide the County's decision-making. While there is still much value to discussion and mitigation of environmental problems, this use of the EIS process misses the point of the EIS law to encourage discussion of environmental issues before important decisions are made. We realize that O'ahu's solid waste problems will not be resolved overnight; however, rather than continuing to bury the problem by expanding landfills, the County must comprehensively analyze innovative and environmentally friendly waste disposal methods that are appropriate for our island state."*

We add to our above statement that the Department of Environmental Services has been actively involved in the exploration of alternative methods and technologies to waste reduction and disposal and will continue to do so. This information will be provided in the DEIS.

> 4. *"We request that the forthcoming EIS include a detailed analysis of the reasons behind the current SUP condition to close the landfill by 2008. We also request that the EIS clearly state the changed circumstances or other reasons that prevent the applicant from honoring its commitment to close Waimanalo Gulch Landfill. The EISPN at page 1-3 notes that the Mayor's Advisory Committee, which was formed in December 2003 to recommend different landfill sites, chose to consider Waimanalo Gulch, which was then ranked the highest among the choices. Please discuss the ranking criteria used, as well as the why Waimanalo Gulch was still considered, despite the goal of the Committee to recommend a different site. Please also discuss what good faith efforts were made to find other suitable landfill sites, and how the applicant attempted to comply with the LUC's purpose and intent behind conditioning the SUP on closure by 2008. For example, have the concerns of the LUC been addressed by the applicant's current proposal to expand the Waimanalo Gulch landfill?"*

Further information concerning these items will be provided in the DEIS. This will include a detailed description and discussion of the landfill site selection process.

> 5. *"We also request that the EIS address the various health concerns that have been raised by the Department of Health, and how these problems will be addressed and prevented in the future. In addition, please provide detailed analysis of how impacts to the surrounding community will be mitigated, including proposed benefits packages."*

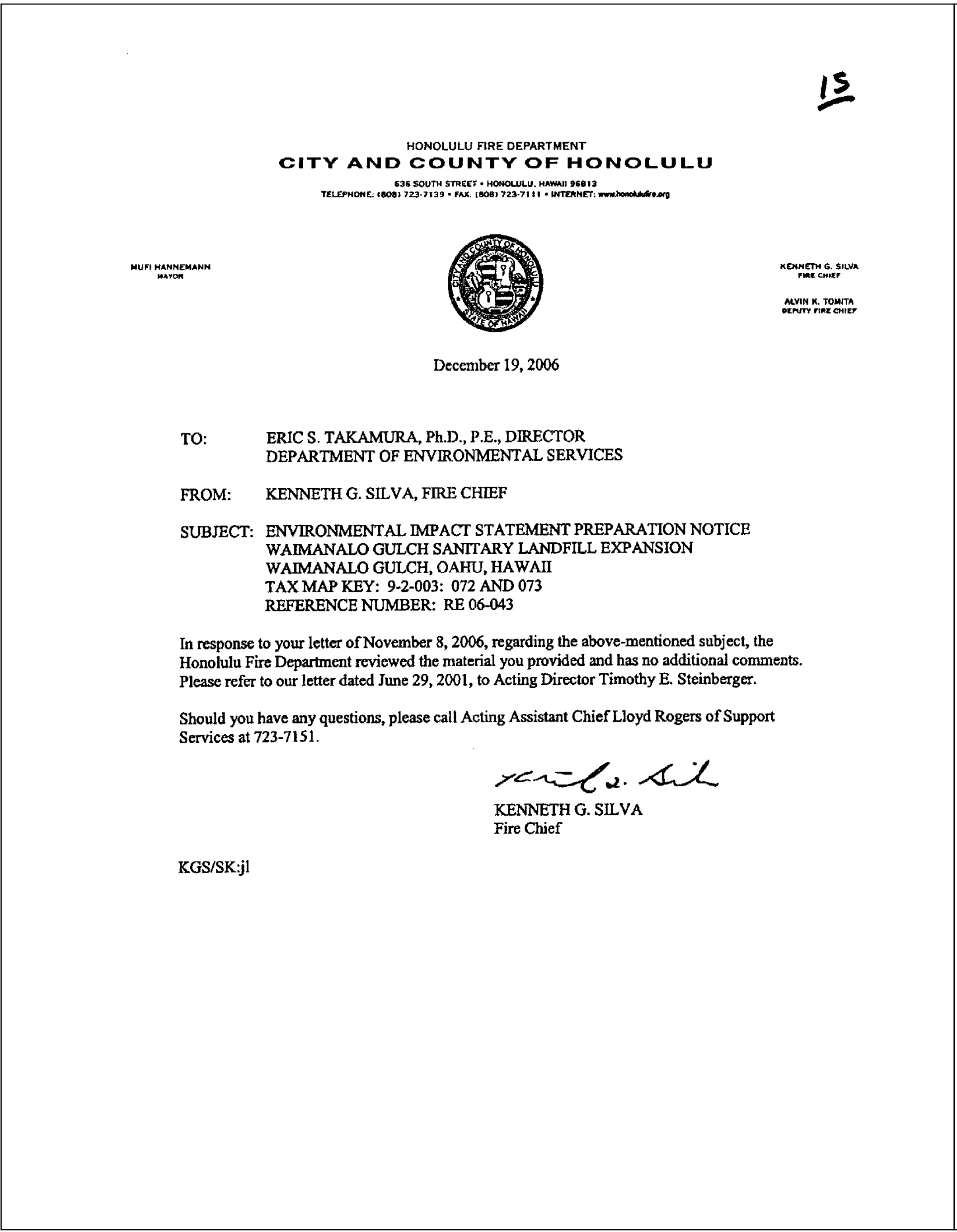
While the EIS will provide information regarding the appropriate operational practices and procedures that will be employed at the landfill to maintain public health and safety, we note that the Notice of Violation and Order (NVO) that was issued by the State Department of Health (DOH) occurred after it had been self-reported by Waste Management of Hawai'i, Inc., and that the great majority of the alleged violations were addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

We appreciate the time you have taken to provide your comments and allowing us this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



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HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
636 SOUTH STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 723-7139 • FAX: (808) 723-7111 • INTERNET: www.honolulufire.org

MUFI HANNEMANN
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

December 19, 2006

TO: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: KENNETH G. SILVA, FIRE CHIEF

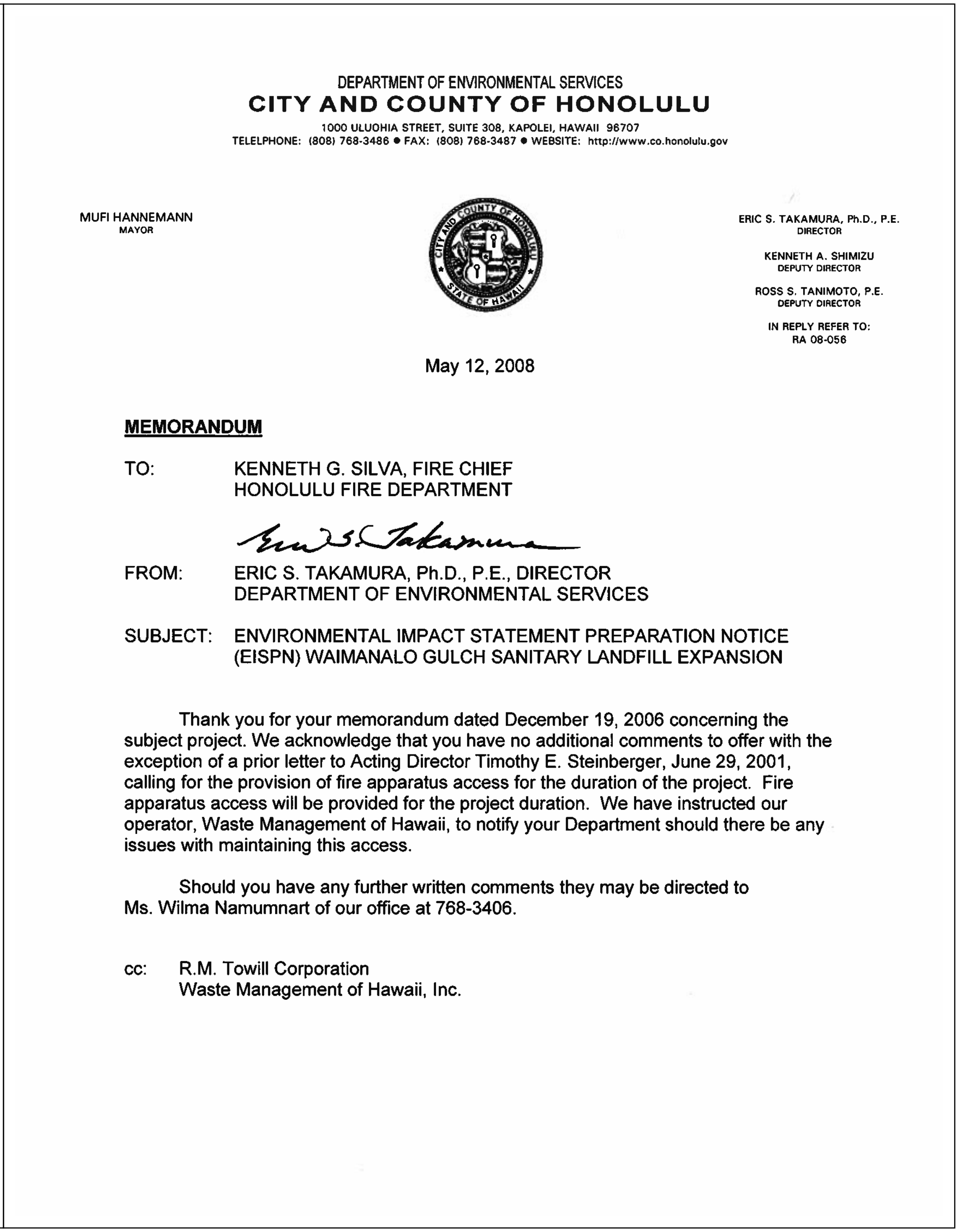
SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
WAIMANALO GULCH SANITARY LANDFILL EXPANSION
WAIMANALO GULCH, OAHU, HAWAII
TAX MAP KEY: 9-2-003: 072 AND 073
REFERENCE NUMBER: RE 06-043

In response to your letter of November 8, 2006, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the material you provided and has no additional comments. Please refer to our letter dated June 29, 2001, to Acting Director Timothy E. Steinberger.

Should you have any questions, please call Acting Assistant Chief Lloyd Rogers of Support Services at 723-7151.

KENNETH G. SILVA
Fire Chief

KGS/SK:jl



DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-056

May 12, 2008

MEMORANDUM

TO: KENNETH G. SILVA, FIRE CHIEF
HONOLULU FIRE DEPARTMENT

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
(EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 19, 2006 concerning the subject project. We acknowledge that you have no additional comments to offer with the exception of a prior letter to Acting Director Timothy E. Steinberger, June 29, 2001, calling for the provision of fire apparatus access for the duration of the project. Fire apparatus access will be provided for the project duration. We have instructed our operator, Waste Management of Hawaii, to notify your Department should there be any issues with maintaining this access.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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Hawaiian WASTE Systems, LLC

December 20, 2006

Wilma Namumnart
Department of Environmental Services
1000 Uluohia St., Ste. 308
Kapolei, HI 96707

Re: Comment on the Environmental Impact Statement (EIS) Preparation Notice for the Waimanalo Gulch Sanitary Landfill Expansion (HRS 343 EISPN)

Wilma,

Hawaiian Waste Systems, LLC (HWS) appreciates the opportunity to comment on the above-referenced EIS Preparation Notice, particularly with respect to Section 6.4 of the Alternatives Analysis, "Transshipment of Waste Off-Island."

HWS recognizes that the Hawaiian Islands face numerous unique challenges and requirements regarding its solid waste disposal, and has thus developed a system of waste densification, wrapping and shipment to export waste from Honolulu to Roosevelt Regional Landfill in Klickitat County, Washington in an environmentally secure and operationally efficient manner. The United States Department of Agriculture is the regulatory agency with authority over this export given the potential risk of introduction of non-indigenous plant pests. USDA has found that the system proposed by HWS poses an insignificant risk of infestation and has issued a Final Rule allowing the importation of waste from Hawaii under a specific handling protocol designed to contain the risk of plant-pest dissemination.

The following is some additional information regarding HWS' system and waste export in general that addresses some of the specific issues/questions discussed in Section 6.4 of the EIS preparation notice:

1) *Identification of appropriate waste; acceptable versus unacceptable waste.*

   - Because Roosevelt Landfill is a RCRA Subtitle D facility, it does not accept any hazardous or "dangerous" wastes as defined by the Resource Conservation and Recovery Act. Thus, multiple layers of protection against the inclusion of hazardous waste in Hawaiian waste bales will be in effect in HWS' process. First, the waste collection points in Honolulu will be pre-screened per industry standards and HWS' protocol; collection from industrial sites or known producers of hazardous or dangerous wastes will be directed to a facility other than HWS' for processing. Second, waste containers will be subject to visual inspection upon entry into HWS' Honolulu processing facility to ensure that only loads from approved collection points enter the facility and that loads that appear to contain an undue amount of hazardous or potentially hazardous material will be redirected. Third, loads that are tipped on the ground at the transfer station/processing facility in Honolulu will be subject to visual inspection by HWS employees. In the event that a load is found to consist of hazardous materials, that load will be physically segregated by a loader or other machine on site, then re-loaded into a roll-off container for redirection to an alternate, appropriate facility.

   - HWS' screening process will be reviewed and regulated by the State of Hawaii Department of Health, USDA and the Klickitat County Health Department, all subject to US EPA Subtitle D regulations.

2) *Locations for staging, handling and processing of waste for subsequent shipment/export.*

   - Oahu has a number of suitable locations for waste processing facilities that could be easily developed. The Industrial zoning designations in Honolulu generally permit waste transfer stations and related activities, and several locations with this designation would have adequate ingress/egress, processing space and storage space to accommodate the needs of a processing facility. HWS has identified a location for waste transshipment and is currently proceeding with its development.

3) *The range of (financial) costs associated with transshipment:*

   - It is estimated that the cost of transshipment will be dramatically less than other "new technology" alternatives that have been examined by the City of Honolulu, and competitive (considering relative capital investment) with traditional alternatives such as new landfills or incinerators.

4) *Potential environmental costs for the City and County of Honolulu:*

   - Waste transshipment will have a positive environmental impact on essential sanitary services in the City and County of Honolulu. The City and County has tried unsuccessfully to site new landfills or secure alternative technologies. Waimanalo Gulch Sanitary Landfill is no longer located in an optimal area due to urban infill. Because of these issues, Honolulu is in desperate need of disposal alternatives. HWS' export system presents an alternative that is environmentally secure over a short or long-term period. Without such an option, the City is faced with myriad environmental concerns, including but not limited to inability to site a new landfill, landfills that fail due to overburden, illegal ocean and land dumping, and human and animal health concerns related to improper disposal or solid waste handling.

5) *Potential environmental costs for the mainland U.S. facility receiving the waste:*

- Roosevelt Landfill was designed and engineered to be one of the world's most environmentally secure landfills. It is situated on 3,000 acres in the arid climate of Southeastern Washington State and its unique hydrogeological characteristics, combined with engineered features that meet or exceed all state, local and federal regulations, makes for an environmentally secure facility. The Roosevelt facility has been in service for over 15 years and currently handles over 10,000 tons per day of various waste materials from throughout the Pacific Northwest region (including Alaska). Given its excellent operational and environmental safety record and its existing infrastructure, it is uniquely suited to accept and safely dispose of waste from Hawaii. Allied Waste, the second largest solid waste company in the United States and owner/operator of Roosevelt Landfill, provides complete indemnification to its solid waste customers by taking title to all solid waste entering the facility.

6) *Transshipment leading to Oahu's dependency on resources out of its control.*

- Waste export has become such an integral part of solid waste management in the United States that Hawaii is now the only US state that does not export or import any waste. Roosevelt Landfill accepts or has accepted imported waste from municipalities in Oregon, Idaho, California, British Columbia (CA) and Alaska. These municipalities rely on long-term disposal and transportation contracts to assure continuous uninterrupted service. The case of Alaska is very similar to that of Hawaii; numerous municipalities in Southeast Alaska rely on barge shipment of waste to Washington State for disposal at Roosevelt, and they do so on the basis of long term (10+ years) transportation and disposal contracts. They are reliant on tug and barge operations and have enjoyed reliable service for many years. We encourage the EIS process to review the prevalence and commonality of regional landfilling throughout the mainland US.

7) *The receiving state will assume the long term environmental management issues and problems associated with accepting Oahu's refuse.*

- Klickitat County, host municipality of the Roosevelt Landfill, conceived of and developed the facility via a public procurement process as an economic development initiative. Roosevelt is now the County's third largest employer and, through host-County fees, is its single greatest source of municipal revenue. As such, Klickitat County welcomes new waste streams into the facility, to the extent that its Board of Commissioners often takes an active role in Landfill marketing with respect to municipal relationships. The Klickitat County Commissioners have been kept apprised of HWS' export project in Honolulu, and have sent letters to officials in Hawaii supporting the concept and inviting them to visit Roosevelt.

- Roosevelt Landfill's capacity – permitted for 5 million tons annually and 220 million tons overall, with room for expansion – is such that waste from Honolulu would not significantly impact its ability to meet current and future domestic waste disposal needs.

HWS believes that waste transshipment is a necessary and viable alternative to the proposed action that can serve as a long-term solution or as a bridge to future domestic disposal alternatives. Thank you again for the opportunity to comment on this EIS Preparation Notice. Please do not hesitate to contact me at 206.292.2929 to discuss these issues further or for additional information as you prepare the Draft EIS.

Sincerely,

James Hodge
Hawaiian Waste Systems, LLC

Cc:

Henry Eng
C & C, Department of Planning & Permitting
650 South King St., 7th Floor
Honolulu, HI 96813

Brian Takeda
R.M. Towill Corporation
420 Waiakamilo Rd., Ste. 411
Honolulu, HI 96817

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813-2437

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-077

May 12, 2008

Mr. James Hodge
Hawaiian Waste Systems, LLC
1011 SW Klickitat Way, #C-109
Seattle, Washington 98134

Dear Mr. Hodge:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 20, 2006, concerning the subject project. We have prepared the following in response to your comments (your comments have been italicized for reference):

"1) Identification of appropriate waste; acceptable versus unacceptable waste.

- ○ *Because Roosevelt Landfill is a RCRA Subtitle D facility, it does not accept any hazardous or "dangerous" wastes as defined by the Resource Conservation and Recovery Act. Thus, multiple layers of protection against the inclusion of hazardous waste in Hawaiian waste bales will be in effect in HWS' process. First, the waste collection points in Honolulu will be prescreened per industry standards and HWS' protocol; collection from industrial sites or known producers of hazardous or dangerous wastes will be directed to a facility other than HWS' for processing. Second, waste containers will be subject to visual inspection upon entry into HWS' Honolulu processing facility to ensure that only loads from approved collection points enter the facility and that loads that appear to contain an undue amount of hazardous or potentially hazardous material will be redirected. Third, loads that are tipped on the ground at the transfer station/processing facility in Honolulu will be subject to visual inspection by HWS employees. In the event that a load is found to consist of hazardous materials, that load will be physically segregated by a loader or other machine on site, then re-loaded into a roll-off container for redirection to an alternate, appropriate facility.*
- ○ *HWS' screening process will be reviewed and regulated by the State of Hawaii Department of Health, USDA and the Klickitat County Health Department, all subject to US EPA Subtitle D regulations."*

Your description of the proposed handling of transshipment waste to Roosevelt Landfill, and that hazardous waste will not be accepted by the Roosevelt Landfill, are noted.

"2) Locations for staging, handling and processing of waste for subsequent shipment/export.

- ○ *Oahu has a number of suitable locations for waste processing facilities that could be easily developed. The Industrial zoning designations in Honolulu generally permit waste transfer stations and related activities, and several locations with this designation would have adequate ingress/egress, processing space and storage space to accommodate the needs of a processing facility. HWS has identified a location for waste transshipment and is currently proceeding with its development."*

Your current efforts to develop transshipment are noted. Transshipment requires special handling that will result in by-products that cannot be transshipped. We ask that you identify the materials that are unacceptable for shipping using your process, and how you plan to dispose of these unacceptable materials.

"3) The range of (financial) costs associated with transshipment:

- ○ *It is estimated that the cost of transshipment will be dramatically less than other "new technology" alternatives that have been examined by the City of Honolulu, and competitive (considering relative capital investment) with traditional alternatives such as new landfills or incinerators."*

Your point is noted. However, costs that are associated with the adoption of any alternative will require analysis of not only immediate short-term, but long-term costs as well. Multiple factors that influence cost, including the long term cost of disposing of waste that cannot now be handled by transshipment must also be understood in order to properly assess the true costs associated with transshipment.

"4) Potential environmental costs for the City and County of Honolulu:

- ○ *Waste transshipment will have a positive environmental impact on essential sanitary services in the City and County of Honolulu. The City and County has tried unsuccessfully to site new landfills or secure alternative technologies. Waimanalo Gulch Sanitary Landfill is no longer located in an optimal area due to urban infill. Because of these issues, Honolulu is in desperate need of disposal alternatives. HWS' export system presents an alternative that is environmentally secure over a short or long-term period. Without such an option, the City is faced with myriad environmental concerns, including but not limited to inability to site a new landfill, landfills that fail due to overburden, illegal ocean and land dumping, and human and animal health concerns related to improper disposal or solid waste handling."*

Your point concerning the potential environmental effect of transshipment is noted. However, it is not possible to conclude that transshipment is not without environmental risk or cost since it will require the major combustion of fossil fuel resources in order to accomplish the journey to Washington State, approximately 2,500 or more miles away. Furthermore, the proper environmental handling of transshipment refuse is also required potentially triggering the need for the filing of a Chapter 343, HRS, document as well as other environmental entitlements.

"5) *Potential environmental costs for the mainland U.S. facility receiving the waste:*

○ *Roosevelt Landfill was designed and engineered to be one of the world's most environmentally secure landfills. It is situated on 3,000 acres in the arid climate of Southeastern Washington State and its unique hydrogeological characteristics, combined with engineered features that meet or exceed all state, local and federal regulations, makes for an environmentally secure facility. The Roosevelt facility has been in service for over 15 years and currently handles over 10,000 tons per day of various waste materials from throughout the Pacific Northwest region (including Alaska). Given its excellent operational and environmental safety record and its existing infrastructure, it is uniquely suited to accept and safely dispose of waste from Hawaii. Allied Waste, the second largest solid waste company in the United States and owner/operator of Roosevelt Landfill, provides complete indemnification to its solid waste customers by taking title to all solid waste entering the facility."*

This point of information concerning the engineering and operating standards of the Roosevelt Landfill, approximately 2,500 miles or more from Honolulu, is noted.

"6) *Transshipment leading to Oahu 's dependency on resources out of its control.*

○ *Waste export has become such an integral part of solid waste management in the United States that Hawaii is now the only US state that does not export or import any waste. Roosevelt Landfill accepts or has accepted imported waste from municipalities in Oregon, Idaho, California, British Columbia (CA) and Alaska. These municipalities rely on long-term disposal and transportation contracts to assure continuous uninterrupted service. The case of Alaska is very similar to that of Hawaii; numerous municipalities in Southeast Alaska rely on barge shipment of waste to Washington State for disposal at Roosevelt, and they do so on the basis of long term (10+ years) transportation and disposal contracts. They are reliant on tug and barge operations and have enjoyed reliable service for many years. We encourage the EIS process to review the prevalence and commonality of regional landfilling throughout the mainland US."*

We note that Hawaii is also the only U.S. state that is separated from the mainland U.S. by a vast ocean. While the DEIS will examine the potential for waste transshipment, the arrangements for states other than Hawaii, are based on and benefit from the relative close proximity of shipping and waste handling infrastructure thatcan be called upon in the event of natural or man-induced interruptions or problems with waste delivery. This shipping and waste handling infrastructure will not be present along most of the ocean journey to the Roosevelt Landfill.

"7) *The receiving state will assume the long term environmental management issues and problems associated with accepting Oahu's refuse.*

○ *Klickitat County, host municipality of the Roosevelt Landfill, conceived of and developed the facility via a public procurement process as an economic development initiative. Roosevelt is now the County's third largest employer and, through host-County fees, is its single greatest source of municipal revenue. As such, Klickitat County welcomes new waste streams into the facility, to the extent that its Board of Commissioners often takes an active role in Landfill marketing with respect to municipal relationships. The Klickitat County Commissioners have been kept apprised of HWS' export project in Honolulu, and have sent letters to officials in Hawaii supporting the concept and inviting them to visit Roosevelt*

○ *Roosevelt Landfill's capacity - permitted for 5 million tons annually and 220 million tons overall, with room for expansion - is such that waste from Honolulu would not significantly impact its ability to meet current and future domestic waste disposal needs."*

The points you offer concerning Klickitat County and the Roosevelt Landfill are noted.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart ofour office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

17

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

December 18, 2006

TO: ERIC S. TAKAMURA, P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

K. Shida

FROM: KEITH S. SHIDA, PRINCIPAL EXECUTIVE
CUSTOMER CARE DIVISION

SUBJECT: YOUR LETTER DATED NOVEMBER 8, 2006 REGARDING
ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
CHAPTER 343, HAWAII REVISED STATUTES FOR
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for the opportunity to comment on the proposed project.

We have no objections to the proposed project.

If you have any questions, please contact Robert Chun at 748-5440.

DEPARTMENT OF
ENVIRONMENTAL SVCS
'06 DEC 20 P3:02

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

IN REPLY REFER TO:
RA 08-065

May 12, 2008

MEMORANDUM

TO: CLIFFORD P. LUM, MANAGER AND CHIEF ENGINEER,
BOARD OF WATER SUPPLY

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
(EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 18, 2006 concerning the subject project. We acknowledge that you have no objections to the proposed project.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

18

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

December 15, 2006

Eric Takamura
Department of Environmental Services
1000 Uluohia Street #308
Kapolei, Hawaii 96707

Attn: Wilma Namumnart

Dear Dr. Takamura:

Subject: Environmental Impact Statement (EIS) Preparation Notice
Waimanalo Gulch Sanitary Landfill Expansion

We have the following comments to offer:

Nanakuli B Landfill: Notice of the Nanakuli EISPN was published in our May 23rd, 2006 *Environmental Notice.* In the draft EIS fully discuss the relation between the currently proposed expansion of Waimanalo Gulch and Nanakuli B.

Violations of conditions: In February 2006 the State DOH issued a Notice and Finding of Violation and Order against Waste Management of Hawaii and the City & County of Honolulu for 18 alleged violations of solid waste management laws, regulations, and permit conditions at Waimanalo Gulch Landfill. When and how will these alleged violations be corrected? What assurance does the public have that these alleged violations will not occur in the expansion area?

Acronyms list: A list of acronyms and abbreviations used in the text would be helpful for the reviewer. Please include such a list in the draft EIS.

Consultation: A list of agencies and community groups to be consulted during the EIS process was not included in the EISPN. Include this list in the EIS.

Permits and approvals: In the DEIS permits list (or chart) be sure indicate the status of each.

Figure 4-6, "Land Uses": The text accompanying this figure indicates that the Kahe power plant lies to the east of the landfill, while in the figure it lies to the west. Please correct this in the draft EIS.

If you have any questions, call Nancy Heinrich at 586-4185.

Sincerely,

Genevieve Salmonson
GENEVIEVE SALMONSON
Director

c: Brian Takeda,
Raymond Young, DPP

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-046

May 12, 2008

Ms. Katherine Puana Kealoha, Director
Office of Environmental Quality Control
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813-2437

Dear Ms. Kealoha:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 15, 2006, concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. "Nanakuli B Landfill: Notice of the Nanakuli EISPN was published in our May 23rd, 2006 Environmental Notice. In the draft EIS fully discuss the relation between the currently proposed expansion of Waimanalo Gulch and Nanakuli B."

The relationship between the proposed expansion of the Nanakuli B landfill and the proposed expansion of the Waimanalo Gulch landfill will be further discussed in the Draft EIS (DEIS).

2. "Violations of conditions: In February 2006 the State DOH issued a Notice and Finding of Violation and Order against Waste Management of Hawaii and the City & County of Honolulu for 18 alleged violations of solid waste management laws, regulations, and permit conditions at Waimanalo Gulch Landfill. When and how will these alleged violations be corrected? What assurance does the public have that these alleged violations will not occur in the expansion area?"

The Notice of Violation and Order (NVO) was issued by the State Department of Health (DOH) after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NVO was issued. On December 7, 2007, DOH, the City and Waste Management of Hawaii, Inc., agreed to a settlement which resolved the NVO. At that time, there was only a single remaining violation that had not been resolved--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which resolved the grade exceedance issue. Thus, all alleged violations in the NVO have been resolved.

3. "Acronyms list: A list of acronyms and abbreviations used in the text would be helpful for the reviewer. Please include such a list in the draft EIS."

We have directed our consultant to prepare a list of acronyms for inclusion in the DEIS to help the reviewers of the document.

4. "Consultation: A list of agencies and community groups to be consulted during the EIS process was not included in the EISPN. Include this list in the EIS."

We will supplement our list of agencies and community members provided in Section 8, Organizations, Agencies, and Public Parties Consulted in the Preparation of the Environmental Impact Statement Preparation Notice, with a new list identifying the consultation undertaken for the EIS process.

5. "Permits and approvals: In the DEIS permits list (or chart) be sure indicate the status of each."

The DEIS will include the status of the permits and approval that may be required for the proposed project.

6. Figure 4-6, "Land Uses": The text accompanying this figure indicates that the Kahe power plant lies to the east of the landfill, while in the figure it lies to the west. Please correct this in the draft EIS."

Your point of correction is noted and appreciated. This will be corrected in the DEIS.

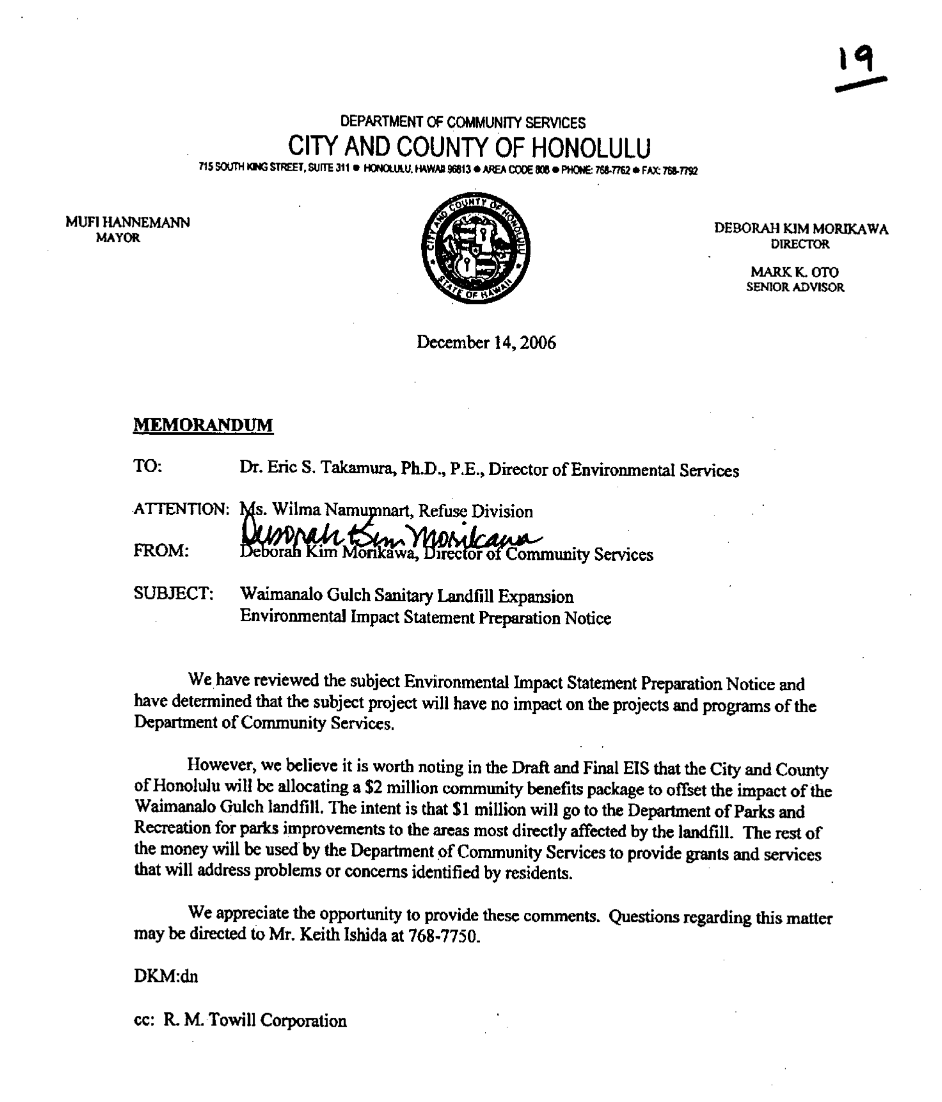
We thank you for this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D. P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



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DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
715 SOUTH KING STREET, SUITE 311 ● HONOLULU, HAWAII 96813 ● AREA CODE 808 ● PHONE: 768-7762 ● FAX: 768-7792

MUFI HANNEMANN
MAYOR

DEBORAH KIM MORIKAWA
DIRECTOR

MARK K. OTO
SENIOR ADVISOR

December 14, 2006

MEMORANDUM

TO: Dr. Eric S. Takamura, Ph.D., P.E., Director of Environmental Services

ATTENTION: Ms. Wilma Namumnart, Refuse Division

Deborah Kim Morikawa

FROM: Deborah Kim Morikawa, Director of Community Services

SUBJECT: Waimanalo Gulch Sanitary Landfill Expansion
Environmental Impact Statement Preparation Notice

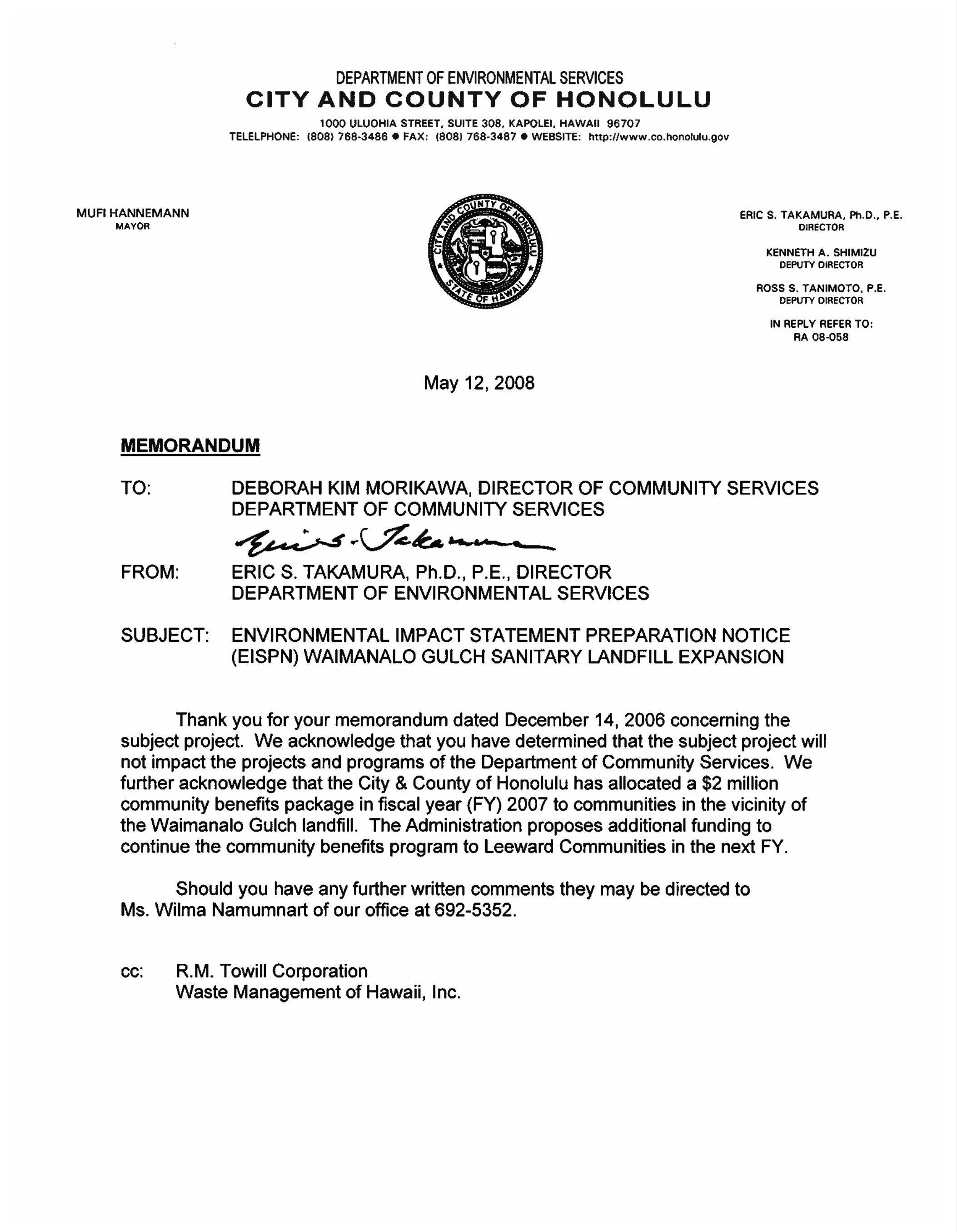
We have reviewed the subject Environmental Impact Statement Preparation Notice and have determined that the subject project will have no impact on the projects and programs of the Department of Community Services.

However, we believe it is worth noting in the Draft and Final EIS that the City and County of Honolulu will be allocating a $2 million community benefits package to offset the impact of the Waimanalo Gulch landfill. The intent is that $1 million will go to the Department of Parks and Recreation for parks improvements to the areas most directly affected by the landfill. The rest of the money will be used by the Department of Community Services to provide grants and services that will address problems or concerns identified by residents.

We appreciate the opportunity to provide these comments. Questions regarding this matter may be directed to Mr. Keith Ishida at 768-7750.

DKM:dn

cc: R. M. Towill Corporation



DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-058

May 12, 2008

MEMORANDUM

TO: DEBORAH KIM MORIKAWA, DIRECTOR OF COMMUNITY SERVICES
DEPARTMENT OF COMMUNITY SERVICES

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 14, 2006 concerning the subject project. We acknowledge that you have determined that the subject project will not impact the projects and programs of the Department of Community Services. We further acknowledge that the City & County of Honolulu has allocated a $2 million community benefits package in fiscal year (FY) 2007 to communities in the vicinity of the Waimanalo Gulch landfill. The Administration proposes additional funding to continue the community benefits program to Leeward Communities in the next FY.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 692-5352.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

20

MAKAIWA HILLS LLC

James Campbell Building, Suite 250
1001 Kamokila Boulevard
Kapolei, Hawaii 96707
Tel 808 674-3541 / Fax 808 674-3111

December 13, 2006

City & County of Honolulu
Department of Environmental Services, Refuse Division
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

To Whom It May Concern:

Subject: Comments on the Waimanalo Gulch Sanitary Landfill Expansion Environmental Impact Statement Preparation Notice dated November 2006

Makaiwa Hills LLC ("MH LLC") is the fee owner of approximately 1,700 acres of property ("Property") located on the eastern boundary of the Waimanalo Gulch Landfill ("Waimanalo Gulch"). As part of the Environmental Impact Statement ("EIS") Public Scoping process, MH LLC submitted a letter dated August 29, 2006, which outlined concerns regarding blasting activity that had been occurring near the western portion of the Property. MH LLC expressed concern that the aforementioned blasting activity, as well as any future activity could threaten the Property's structural integrity. At this time, we would like to reiterate our position that the EIS address the following issues:

- Structural integrity of the slope along Waimanalo Gulch's eastern boundary line.
- Proposed operations near Waimanalo Gulch's eastern boundary line.
- Proposed access points for any expansion of Waimanalo Gulch near the eastern boundary.
- The eventual height of Waimanalo Gulch along its eastern boundary.
- The distance from the top of slope to the Waimanalo Gulch eastern property line.
- Blast distances from Waimanalo Gulch's eastern property line.

Thank you for the opportunity to comment on the proposed EIS.

Sincerely,

Steve Kelly, AICP
Manager
Entitlements and Infrastructure

15034500\K10008

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-072

May 12, 2008

Mr. Steve Kelly, AICP, Manager
Entitlements and Infrastructure
Makaiwa Hills LLC
James Campbell Building, Suite 250
1001 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Kelly:

Subject: Environmental Impact Statement Preparation Notice (EISPN) Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 13, 2006 concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. *"Makaiwa Hills LLC ("MH LLC") is the fee owner of approximately 1,700 acres of property ("Property") located on the eastern boundary of the Waimanalo Gulch Landfill ("Waimanalo Gulch"). As part of the Environmental Impact Statement ("EIS") Public Scoping process, MH LLC submitted a letter dated August 29,2006, which outlined concerns regarding blasting activity that had been occurring near the western portion of the Property. MH LLC expressed concern that the aforementioned blasting activity, as well as any future activity could threaten the Property's structural integrity."*

The operation of the proposed project that will involve blasting will be discussed as a part of the Draft EIS (DEIS). The potential for geologic structural and related impacts and planned mitigation measures will be provided as part of the discussion.

2. *"At this time, we would like to reiterate our position that the EIS address the following issues:*

- *Structural integrity of the slope along Waimanalo Gulch's eastern boundary line.*
- *Proposed operations near Waimanalo Gulch's eastern boundary line.*
- *Proposed access points for any expansion of Waimanalo Gulch near the eastern boundary.*
- *The eventual height of Waimanalo Gulch along its eastern boundary.*
- *The distance from the top of slope to the Waimanalo Gulch eastern property line.*
- *Blast distances from Waimanalo Gulch's eastern property line."*

The specific locations and details associated with some of the items you describe will not be fully known at the time the EIS is processed. Our intention, and the intention of Waste Management of Hawaiʻi, Inc., is to closely coordinate and inform you of the work activities that are required to mitigate and minimize any potential for impacts to your project. As much as possible, the DEIS will describe the structural integrity of the site, operational practices, the use of controlled blasting, and other practices that will be used to ensure a well run and operated facility.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Very truly yours,

Eric S. Takemura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

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[illegible]

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4564 • Fax: (808) 523-4567
Web site: www.honolulu.gov

MUFI HANNEMANN
MAYOR

EUGENE C. LEE, P.E.
DIRECTOR

CRAIG I. NISHIMURA, P.E.
DEPUTY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL
'06 DEC 12 P4:14

December 12, 2006

MEMORANDUM

TO: Dr. ERIC S. TAKAMURA, P.E. DIRECTOR, DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

Eugene C. Lee

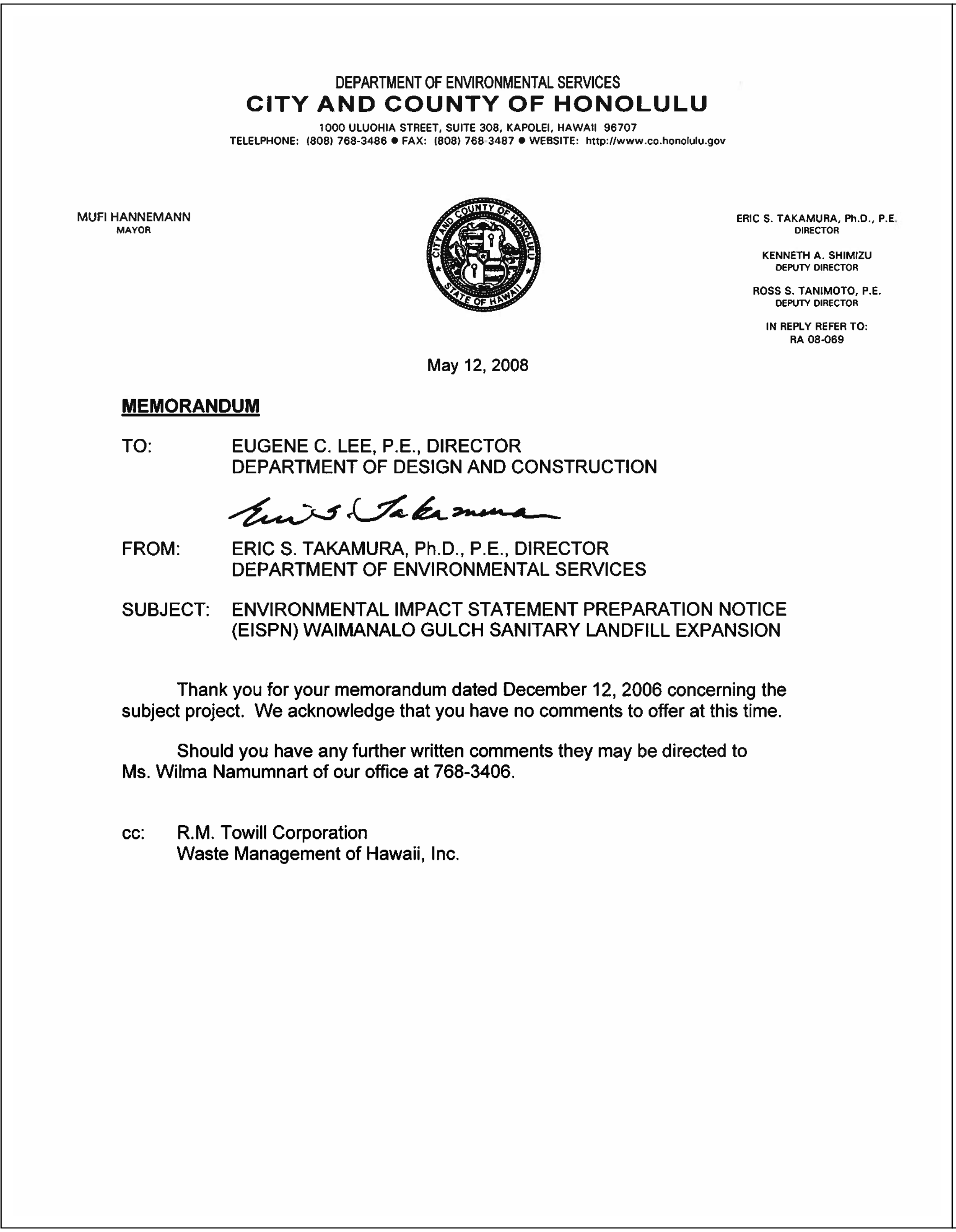
FROM: EUGENE C. LEE, P.E., DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
WAIMANALO GULCH SANITARY LANDFILL EXPANSION
TAX MAP KEY: (1) 9-2-003: 072 AND 073

Thank you for giving us the opportunity to comment on the above Environmental Impact Statement.

The Department of Design and Construction has no comments to offer at this time.

ECL:lt (183284))



DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-069

May 12, 2008

MEMORANDUM

TO: EUGENE C. LEE, P.E., DIRECTOR
DEPARTMENT OF DESIGN AND CONSTRUCTION

Eric S. Takamura

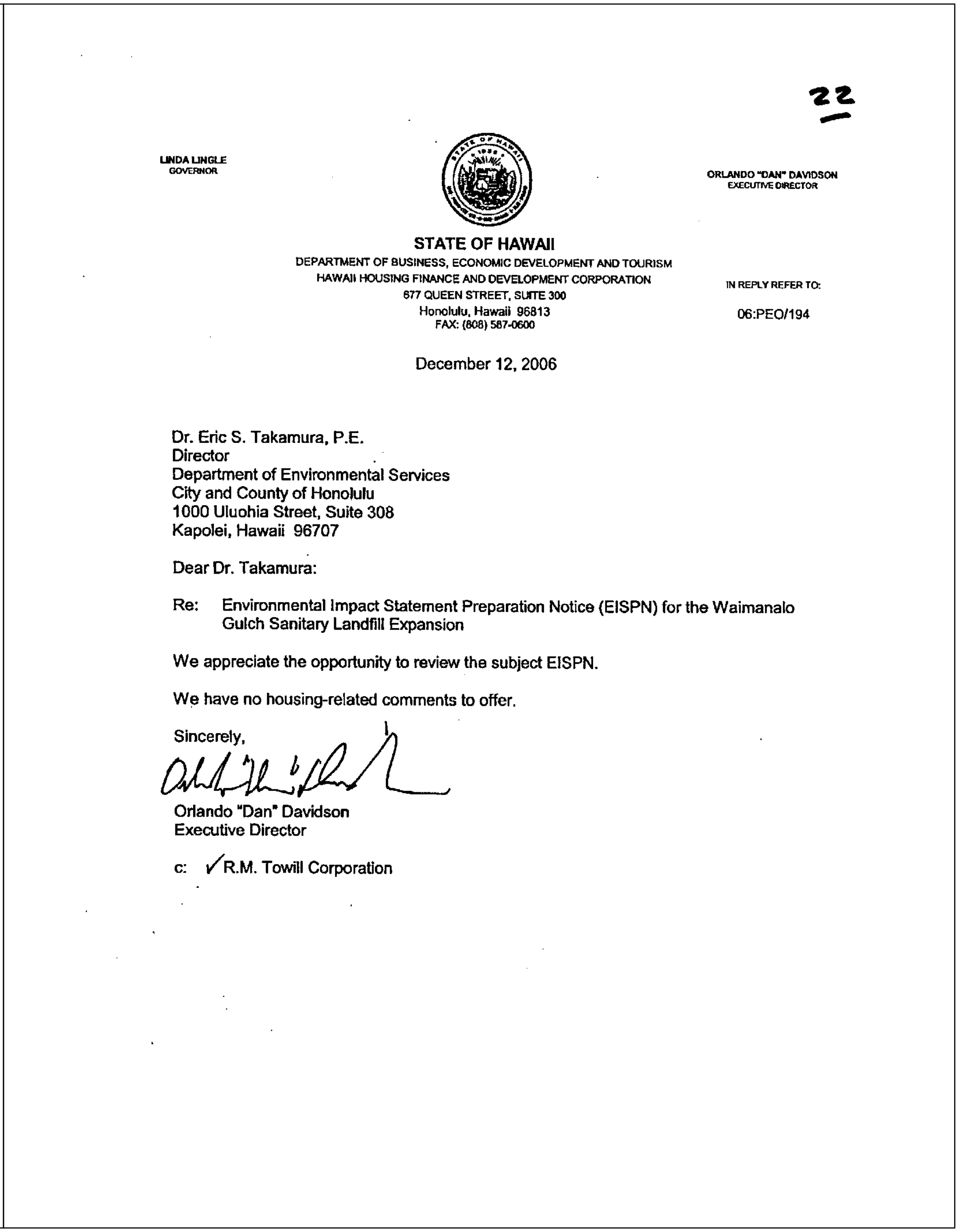
FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated December 12, 2006 concerning the subject project. We acknowledge that you have no comments to offer at this time.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



22

LINDA LINGLE
GOVERNOR

ORLANDO "DAN" DAVIDSON
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT AND TOURISM
HAWAII HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
Honolulu, Hawaii 96813
FAX: (808) 587-0600

IN REPLY REFER TO:
06:PEO/194

December 12, 2006

Dr. Eric S. Takamura, P.E.
Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Dr. Takamura:

Re: Environmental Impact Statement Preparation Notice (EISPN) for the Waimanalo Gulch Sanitary Landfill Expansion

We appreciate the opportunity to review the subject EISPN.

We have no housing-related comments to offer.

Sincerely,

Orlando "Dan" Davidson
Executive Director

c: ✓R.M. Towill Corporation

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-068

May 12, 2008

Mr. Orlando "Dan" Davidson
Executive Director
State of Hawaii
Hawaii Housing Finance and Development Corporation
Department of Business, Economic Development and Tourism
677 Queen Street, Suite 300
Honolulu, Hawaii 96813

Dear Mr. Davidson:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 12, 2006 concerning the subject project. We acknowledge that you have no housing related comments to offer.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Very truly yours,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

23

Mr. S. B. Teramoto
92-1198-2 Olani Street
Kapolei, HI 96707
December 13, 2006

Mr. Eric Takamura
P.E. Director
City & County of Honolulu
Department of Environmental Services
650 South King Street
Honolulu, HI 96813

Subject: Environmental Impact Statement Preparation Notice (EISPN) – Waimanalo Gulch Sanitary Landfill Expansion

Dear Mr. Takamura:

The Waimanalo Gulch Landfill continues to adversely impact the surrounding areas of Ko Olina with odors, dust and a constant stream of trucks. The Association of Apartment Owners at The Coconut Plantation, whom I am representing, are very concerned with the open issues of garbage still being piled higher than a permit allows and the level of leachate - liquid seepage from garbage is not totally monitored. We have seen flying trash and plastic bags that litter the roadways, parks, nearby residences and eventually polluting our ocean.

The Coconut Plantation consists of 270 units and is located near Kai Lani within the Ko Olina Resort and near the base of the landfill. This landfill has reached its safe limit for its size and proximity to the ocean. It has previously been determined that the area between the gulch and the waterfront can only handle the load point that is now being reached.

Another concern is the run-off of storm water that comes from the landfill. This run-off is detrimental to our reefs, which are of great importance to the tourism business, here on the Leeward Coast. The artificial reef created by the warm water discharge pipe at the power station is the best snorkeling on the Leeward Coast of the Island and the life blood for numerous charter operations for both Ko Olina Marina and Waianae Harbor. All around this small section (about 500 yards to the right of the gulch), the reefs are dying as the coral heads and fish are smothered by the mud and contaminates that are allowed to flow into our ocean. To expand the landfill beyond it current limits is guaranteed to adversely effect the ocean environment here for decades.

Local government must improve management of reef resources by addressing land pollution. It has been stated that the current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impacts, odors, airborne waste, litter and dust control. However, it appears that inspecting and regulating the landfill falls short of what should be expected from the State and City and County of Honolulu. It is imperative to have the environmental study incorporate how compliance enforcement is to be adhere to. So far it appears we have been failed by the watch dog organizations.

These are the concerns and issues which must be addressed in the draft EIS. It is our position that the Waimanalo Landfill be closed

Sincerely,

Bob Teramoto
Board Vice President
AOAO at The Coconut Plantation

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

May 12, 2008

IN REPLY REFER TO:
RA 08-078

Mr. S. B. Teramoto
92-1198-2 Olani Street
Kapolei, Hawaii 96707

Dear Mr. Teramoto:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 13, 2006, concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

1. *"The Waimanalo Gulch Landfill continues to adversely impact the surrounding areas of Ko Olina with odors, dust and a constant stream of trucks. The Association of Apartment Owners at The Coconut Plantation, whom I am representing, are very concerned with the open issues of garbage still being piled higher than a permit allows and the level of leachate - liquid seepage from garbage is not totally monitored. We have seen flying trash and plastic bags that litter the roadways, parks, nearby residences and eventually polluting our ocean."*

The matter involving the height of the existing landfill was coordinated with the State Department of Health (DOH) through a request for a height modification submitted in February 2006. On February 20, 2008, the DOH approved the height modification request based on thorough stability analyses.

Leachate generated from the operation of the existing area of landfill is currently being monitored in accordance with DOH requirements.

Discussion of litter management at the existing and future proposed site will be provided in the DEIS including measures that will be implemented to mitigate against adverse impacts, such as those of concern to you.

Further discussion of these and other operational matters as they relate to the proposed expansion will also be provided in the Draft EIS (DEIS).

2. *"The Coconut Plantation consists of 270 units and is located near Kai Lani within the Ko Olina Resort and near the base of the landfill. This landfill has reached its safe limit for its size and proximity to the ocean. It has previously been determined that the area between the gulch and the waterfront can only handle the load point that is now being reached."*

A discussion concerning the ability of the site to support the planned lateral expansion of the landfill will be provided in the DEIS. This will include a description of the proposed area of use and its capacity. This planned area of expansion will lie entirely within the approximately 200 acre landfill property owned by the City and County of Honolulu.

3. *"Another concern is the run-off of storm water that comes from the landfill. This run-off is detrimental to our reefs, which are of great importance to the tourism business, here on the Leeward Coast. The artificial reef created by the warm water discharge pipe at the power station is the best snorkeling on the Leeward Coast of the Island and the life blood for numerous charter operations for both Ko Olina Marina and Waianae Harbor. All around this small section (about 500 yards to the right of the gulch), the reefs are dying as the coral heads and fish are smothered by the mud and contaminates that are allowed to flow into our ocean. To expand the landfill beyond it [sic] current limits is guaranteed to adversely effect the ocean environment here for decades."*

And,

"Local government must improve management of reef resources by addressing land pollution. It has been stated that the current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impacts, odors, airborne waste, litter and dust control. However, it appears that inspecting and regulating the landfill falls short of what should be expected from the State and City and County of Honolulu. It is imperative to have the environmental study incorporate how compliance enforcement is to be adhere [sic] to. So far it appears we have been failed by the watch dog organizations."

"These are the concerns and issues which must be addressed in the draft EIS. It is our position that the Waimanalo Landfill be closed"

Your objection to the proposed project is noted. The DEIS will describe the stormwater management controls of the existing and planned lateral landfill expansion. This will include a discussion of the potential for impacts to nearshore waters as well as mitigative measures, as appropriate, to ensure protection of the ocean coastal resources.

The DEIS will also discuss the potential for visual impacts, and odor and windblown litter and dust control.

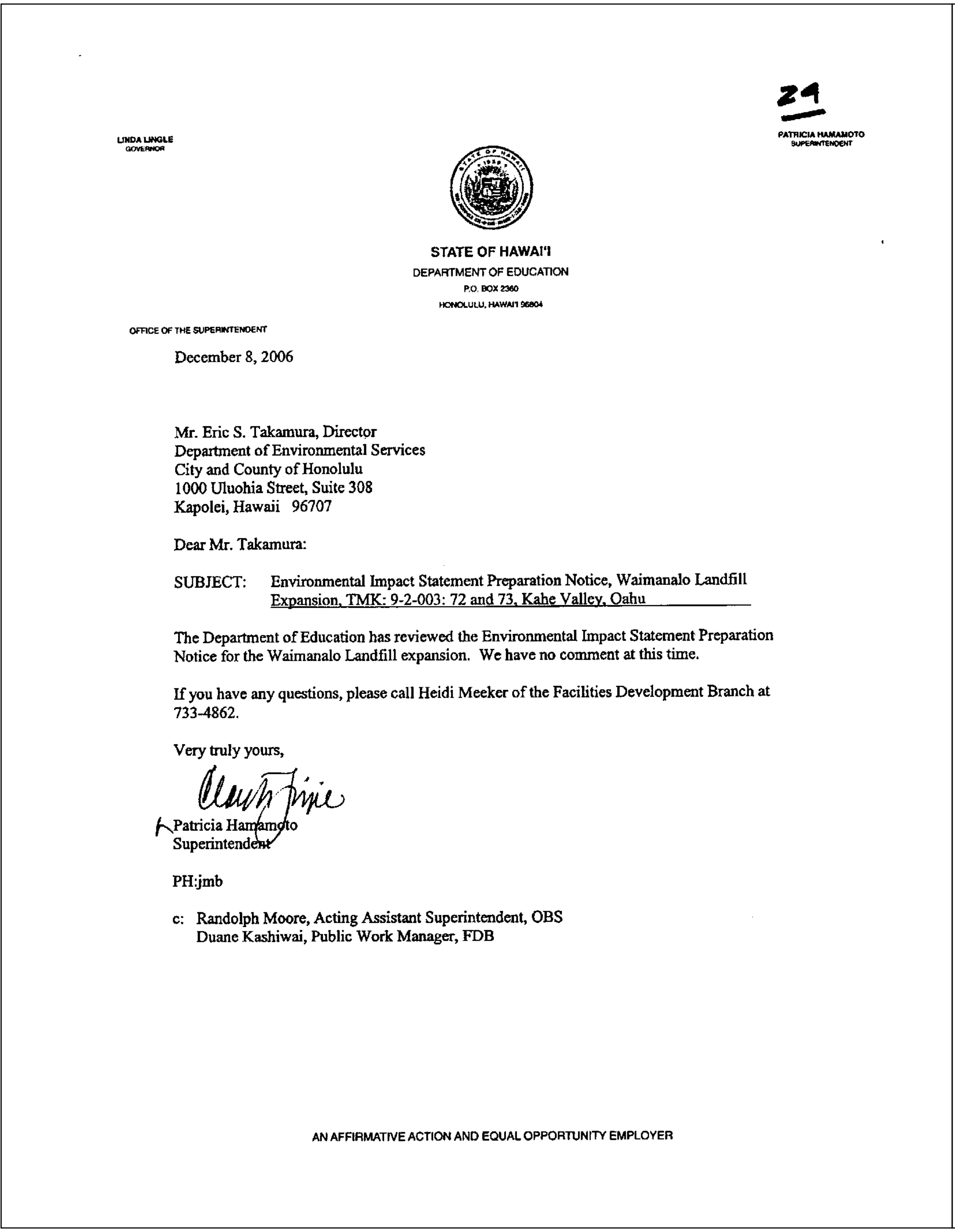
We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



24

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

December 8, 2006

Mr. Eric S. Takamura, Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Mr. Takamura:

SUBJECT: Environmental Impact Statement Preparation Notice, Waimanalo Landfill Expansion, TMK: 9-2-003: 72 and 73, Kahe Valley, Oahu

The Department of Education has reviewed the Environmental Impact Statement Preparation Notice for the Waimanalo Landfill expansion. We have no comment at this time.

If you have any questions, please call Heidi Meeker of the Facilities Development Branch at 733-4862.

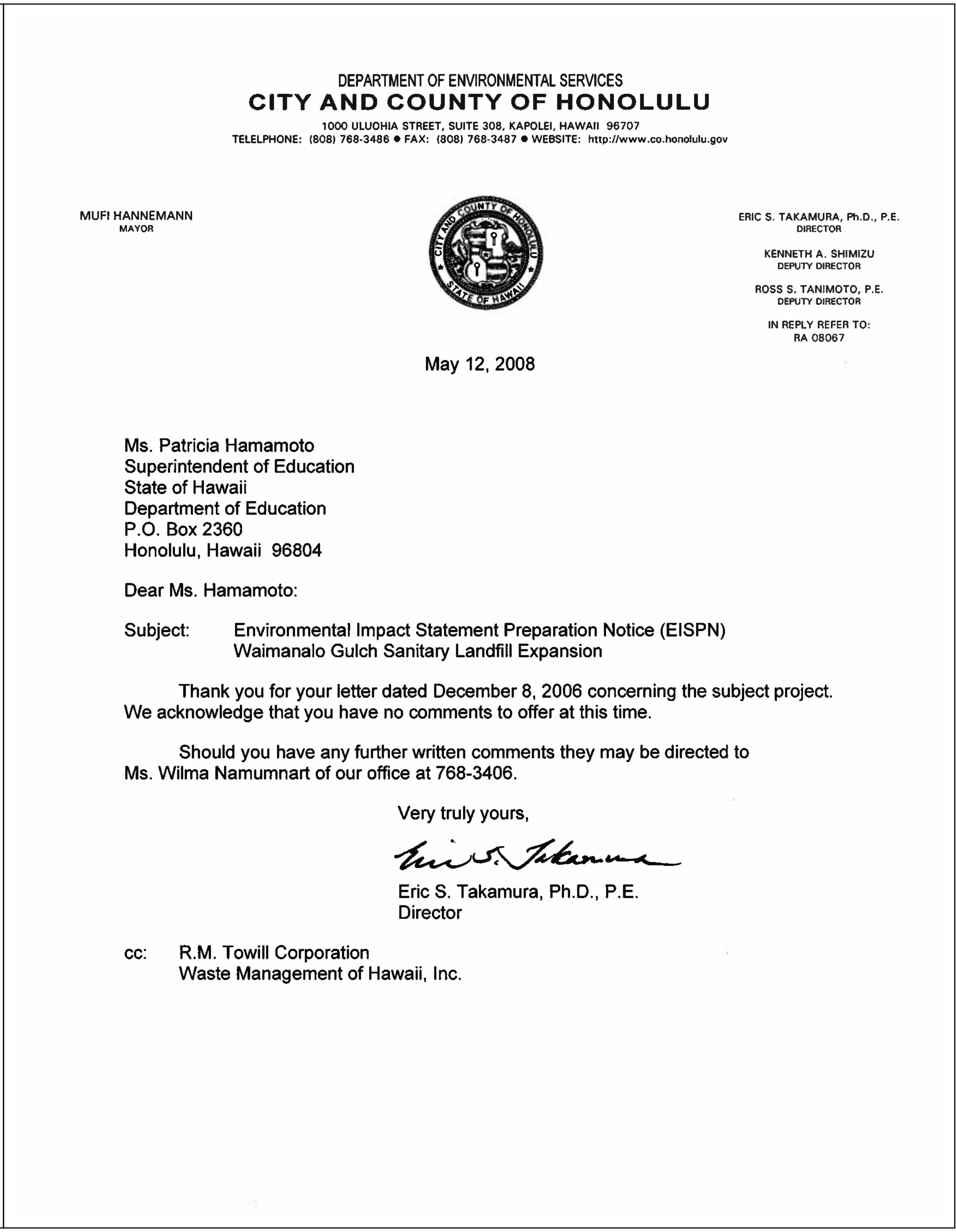
Very truly yours,

Patricia Hamamoto
Superintendent

PH:jmb

c: Randolph Moore, Acting Assistant Superintendent, OBS
Duane Kashiwai, Public Work Manager, FDB

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER



DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08067

May 12, 2008

Ms. Patricia Hamamoto
Superintendent of Education
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Ms. Hamamoto:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated December 8, 2006 concerning the subject project. We acknowledge that you have no comments to offer at this time.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Very truly yours,

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

25

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD / CWB

11076PKP.06

November 30, 2006

Dr. Eric S. Takamura, P.E.
Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Attention: Ms. Wilma Namumnart
Refuse Division

Dear Dr. Takamura:

Subject: Environmental Impact Statement Preparation Notice
Waimanalo Gulch Sanitary Landfill Expansion
Waimanalo Gulch, Oahu, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of the subject document, dated November 2006. The CWB has reviewed the limited information contained in the subject document and offers the following comments:

1. The Draft Environmental Impact Statement should address the impacts to state waters and controlling pollutants in storm water runoff in accordance with Hawaii Administrative Rules (HAR), Chapters 11-54, 11-55 and 11-58.1.

2. Construction activities related to the expansion requires National Pollutant Discharge Elimination System (NPDES) general permit coverage for storm water associated with construction activity. A Notice of Intent (NOI) form for NPDES general permit coverage should be submitted at least 30 days before the commencement of construction activities. The NOI form may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. Any other discharge from the project, including, but not limited to, treated effluent from leaking underground storage tank remedial activities, hydrotesting water, and construction dewatering effluent, requires separate NPDES general permit coverages. Please see Item 2 above for information regarding the submittal of NOI.

4. The existing portion of the facility currently has coverage under the NPDES general permit for discharges of storm water associated with industrial activity. This coverage expires on November 6, 2007, and a renewal NOI must be submitted before the expiration date. A reminder will be sent to you next year. When the expansion project is completed, the Storm Water Pollution Control Plan for the facility must be revised to address the expanded area and submitted to our office.

5. In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. If applicable, please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

6. Any discharges related to project construction or operation activities, with or without a Section 401 Water Quality Certification or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54.

The Hawaii Revised Statutes, Subsection 342D-50(a), requires that "[n]o person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this Chapter, or a permit or variance issued by the director."

If you have any questions, please contact Mr. Alec Wong, Supervisor of the Engineering Section, CWB, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:np

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

May 12, 2008

IN REPLY REFER TO:
RA 08-074

Mr. Alec Wong, P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Wong:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated November 30, 2006. concerning the subject project. The following is prepared in response to your comments (your comments have been italicized for reference):

"1. *The Draft Environmental Impact Statement should address the impacts to state waters and controlling pollutants in storm water runoff in accordance with Hawaii Administrative Rules (HAR), Chapters 11-54, 11-55 and 11-58.1."*

The Draft EIS (DEIS) will describe the potential for impacts and provide mitigative measures concerning the control of pollutants in storm water runoff in accordance with HAR 11-54, 11-55, and 11-58.1.

"2. *Construction activities related to the expansion requires National Pollutant Discharge Elimination System (NPDES) general permit coverage for storm water associated with construction activity. A Notice of Intent (NOI) form for NPDES general permit coverage should be submitted at least 30 days before the commencement of construction activities. The NOI form may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/healt/environment/water/ cleanwater/forms/genl index.html."*

A permit application for the NOI Form C, Construction Stormwater permit application will be prepared and filed in accordance with the regulations you have cited. The DEIS will also identify this as a requirement of the proposed project.

"3. *Any other discharge from the project, including, but not limited to, treated effluent from leaking underground storage tank remedial activities, hydrotesting water, and construction dewatering effluent, requires separate NPDES general permit coverages. Please see Item 2 above for information regarding the submittal of NOI."*

Construction activities for the proposed project that generate storm and non-stormwater discharges to state waters will be subject to the NPDES regulations. Should the proposed project be approved, the appropriate NPDES permit applications will be prepared and filed for the area of expansion. A list of the permit applications that may be required will be provided in the DEIS.

"4. *The existing portion of the facility currently has coverage under the NPDES general permit for discharges of storm water associated with industrial activity. This coverage expires on November 6, 2007, and a renewal NOI must be submitted before the expiration date. A reminder will be sent to you next year. When the expansion project is completed, the Storm Water Pollution Control Plan for the facility must be revised to address the expanded area and submitted to our office."*

Our regulatory responsibilities for the NPDES NOI Form B are noted and will be complied with. It is understood that a revised Storm Water Pollution Control Plan will be required for the proposed area of expansion.

"5. *In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. If applicable, please submit a copy of the request for review by SHPD or SHPD's determination letter for the project."*

Information concerning compliance with SHPD regulatory requirements will be provided in the DEIS. Documents that will be submitted to the SHPD for review will include an archaeological study of the planned area of expansion, and copies of the NPDES permit applications, as applicable.

"6. *Any discharges related to project construction or operation activities, with or without a Section 401 Water Quality Certification or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54."*

The requirement that all project construction activities must comply with HAR, Chapter 11-54, Water Quality Standards, is noted and will be complied with should the proposed project be approved.

Closing Remark

"The Hawaii Revised Statutes, Subsection 342D-50(a), requires that "[n]o person, including any public body, shall discharge any water pollutants into state waters,or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this Chapter, or a permit or variance issued by the director.""

This requirement is also noted and acknowledged. The City and its operator, Waste Management of Hawaii, will comply with the requirements of law.

We appreciate this opportunity to respond to your comments. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

26

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
KAPOLEI HALE • 1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
TELEPHONE: (808) 692-5561 • FAX: (808) 692-5131 • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LESTER K.C. CHANG
DIRECTOR

DANA TAKAHARA-DIAS
DEPUTY DIRECTOR

November 30, 2006

TO: DR. ERIC S. TAKAMURA, P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: LESTER K. C. CHANG, DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION
NOTICE WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for the opportunity to review and comment on the Environmental Impact Statement Preparation Notice relating to the Waimanalo Gulch Sanitary Landfill Expansion.

The Department of Parks and Recreation has no comment and as the proposed expansion will have no impact on any program or facility of this department, you are invited to remove us as a consulted party to the balance of the EIS process.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

Lester Chang

LESTER K. C. CHANG
Director

LKCC:mk
(183701)

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-057

May 12, 2008

MEMORANDUM

TO: LESTER K. C. CHANG, DIRECTOR
DEPARTMENT OF PARKS AND RECREATION

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated November 30, 2006 concerning the subject project. We acknowledge that the proposed project will have no impact on any program or facility of your department. We further acknowledge your notification that your Department has requested to be removed as a consulted party to the EIS process.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

27

Refuse

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

DEPARTMENT OF
ENVIRONMENTAL SVCS
'06 DEC -1 P3:52

OUR REFERENCE BS-DK

November 28, 2006

TO: DR. ERIC S. TAKAMURA, P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: BOISSE P. CORREA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
CHAPTER 343, HAWAII REVISED STATUTES

This is in response to your letter of November 8, 2006, regarding the Waimanalo Gulch Sanitary Landfill Expansion project.

This project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Michael Moses of District 8 at 692-4253 or Mr. Brandon Stone of the Executive Office at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By
JOHN P. KERR
Assistant Chief of Police
Support Services Bureau

Serving and Protecting With Aloha

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-066

May 12, 2008

MEMORANDUM

TO: BOISSE P. CORREA, CHIEF OF POLICE
HONOLULOU POLICE DEPARTMENT

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated November 28, 2006 concerning the subject project. We acknowledge that the proposed project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

Section 16

Comments and Responses to the Draft Environmental Impact Statement

This Final EIS has been prepared and modified to address comments received during the 45-day public comment period for the Draft Environmental Impact Statement (DEIS). As appropriate, project mitigation measures are proposed to address substantive concerns.

A list of the comment letters received for the DEIS is provided in **Table 16-1**. The comments and the written responses prepared for the comments are attached and included in this section.

Table 16-1
Comment Letters Received for the WGSL Lateral Expansion DEIS

No.	Date	Commentor
1	6/2/2008	Honolulu Fire Department
2	No Date	G. Niotta
3	6/9/2008	Department of Design and Construction
4	6/10/2008	Honolulu Police Department
5	6/13/2008	Department of Facility Maintenance
6	6/28/2008	Imagawa
7	7/3/2008	Land Use Commission
8	7/4/2008	Saelid
9	7/6/2008	Department of Health
10	7/7/2008	UH Environmental Center
11	7/7/2008	Colleen Hanabusa
12	7/7/2008	Cynthia Rezentes
13	7/7/2008	Department of Planning and Permitting
14	7/7/2008	Ken Williams, Ko Olina Community Association
15	7/9/2008	Department of Accounting and General Services
16	7/10/2008	DBEDT Office of Planning
17	7/11/2008	Department of Land and Natural Resources
18	7/11/2008	Office of Hawaiian Affairs
19	7/14/2008	Board of Water Supply
20	7/15/2008	Department of Health, Solid & Hazardous Waste Branch
21	7/16/2008	Hawaiian Electric Company
22	7/21/2008	Commission on Water Resource Management

#01

HONOLULU FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

MUFI HANNEMANN
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ALVIN K. TOMITA
DEPUTY FIRE CHIEF

June 2, 2008

TO: ERIC TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: ALVIN K. TOMITA, ACTING FIRE CHIEF

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
WAIMANALO GULCH SANITARY LANDFILL LATERAL EXPANSION
TAX MAP KEY: 9-2-003: PORTIONS 072 AND 073

In response to your letter of May 20, 2008, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the materials provided and has no objections to the project.

Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Alvin K. Tomita
ALVIN K. TOMITA
Acting Fire Chief

AKT/SK:jl

cc: Henry Eng, Department of Planning and Permitting
Office of Environmental Quality Control
Brian Takeda, R.M. Towill Corporation✓

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-103

October 23, 2008

MEMORANDUM

TO: KENNETH G. SILVA, FIRE CHIEF
HONOLULU FIRE DEPARTMENT

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated June 2, 2008, concerning the subject project. We acknowledge that you have no objections to the proposed project. Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

G. Niotta
92-1128 Olani St. Apt 2
Kapolei

#02

City & County of Honolulu
Dept. of Environmental Svs.

Ref: The draft Environmental report.

The report states "no increase in traffic". Kapolei is the "2nd City" and more than 1000 new homes and businesses are scheduled here. Are you assuming that these homes & businesses will create no trash? Will there be no additional trucks taking trash to the dump? Will the streets be less torn up by the increased traffic?

I realize that the City & County has made up its mind to expand the dump, but at least be honest — "no adverse environmental impact" is definately not true or honest.

George W. Niotta
Kapolei, HI

Copies:
- Director, office of Environmental Quality
- R.M. Towill Corp.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-127

Mr. George W. Niotta
92-1128 Olani Street, Apt. 2
Kapolei, Hawaii 96707

Dear Mr. Niotta:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your undated letter we received in July 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *Will there be no additional trucks taking trash to the dump? Will the [Kapolei] streets be less torn up by the increased traffic?*

According to the DEIS, Section 6.1.1. Traffic Impact Report, the existing and projected "with project" conditions indicated that "The critical traffic movements at the intersection of Farrington Highway with the WGSL (Waimanalo Gulch Sanitary Landfill) access road are expected to continue operating at LOS (level of service) "B" and LOS "C" during the AM and PM peak periods, respectively. The total traffic volumes entering the intersection are expected to increase by less than one percent during both peak hours of traffic with proposed expansion. These increases in the total traffic volumes are in the range of daily volume fluctuations along Farrington Highway and represent a minimal increase in the overall traffic volumes."

The amount of increased vehicles entering the proposed landfill equate to approximately 11 southbound vehicles during the morning peak period (between 6:15 AM and 7:15 AM) and 31 southbound vehicles during the afternoon peak period (between 3:45 PM and 4:45 PM). This increase in traffic, while minimal, represents the provision of an important public service for Kapolei and all the island communities of Oahu, by making possible the collection and disposal of municipal refuse.

2. *I realize the City & County has made up its mind to expand the dump, but at least be honest--"no adverse environmental impact" is definitely not true or honest.*

The project DEIS represents major effort by the City and Waste Management of Hawaii to identify potential adverse environmental impacts and appropriate mitigation measures to reduce or otherwise minimize the effects of the proposed project. No less than eight independent special studies and several engineering studies have been commissioned and are referenced in the subject DEIS. We urge you to review these documents and the mitigation measures that have been proposed to address the potential for environmental impacts.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 523-4567
Web site: www.honolulu.gov

MUFI HANNEMANN
MAYOR

EUGENE C. LEE, P.E.
DIRECTOR

RUSSELL H. TAKARA, P.E.
DEPUTY DIRECTOR

#03

June 9, 2008

'08 JUN 10 P2:22
DEPARTMENT OF ENVIRONMENTAL SVCS

MEMORANDUM

TO: Dr. ERIC S. TAKAMURA, Ph.D., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: FOR EUGENE C. LEE, P.E., DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL LATERAL EXPANSION

Thank you for giving us the opportunity to comment on the above Draft Environmental Impact Statement.

The Department of Design and Construction has no comments to offer at this time.

ECL:lt (263037)

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-102

MEMORANDUM

TO: EUGENE C. LEE, P.E., DIRECTOR
DEPARTMENT OF DESIGN AND CONSTRUCTION

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated June 9, 2008, concerning the subject project. We acknowledge that you have no comments concerning the subject project.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

PAUL D. PUTZULU
KARL A. GODSEY
DEPUTY CHIEFS

#04

OUR REFERENCE BS-KP

June 10, 2008

TO: ERIC S. TAKAMURA, PH. D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: BOISSE P. CORREA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR WAIMANALO GULCH SANITARY LANDFILL LATERAL EXPANSION, EWA, TAX MAP KEY: 9-2-3: PORTION 72 AND PORTION 73

Thank you for the opportunity to review and comment on the subject project.

This project should have no significant impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Michael Moses of District 8 at 692-4253 or Mr. Brandon Stone of the Executive Office at 529-3644.

BOISSE P. CORREA
Chief of Police

By
DEBORA A. TANDAL
Assistant Chief of Police
Support Services Bureau

cc: Ms. Katherine Kealoha, OEQC
Mr. Henry Eng, DPP
Mr. Brian Takeda,
R.M. Towill Corporation

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-101

MEMORANDUM

TO: BOISSE P. CORREA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

Eric S Takamura

FROM: ERIC S. TAKAMURA, PH.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated June 10, 2008, concerning the subject project. We acknowledge that the proposed project should have no significant impact on the facilities or operations of the Honolulu Police Department.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

CRAIG I. NISHIMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

#05

IN REPLY REFER TO:

June 13, 2008

MEMORANDUM

TO: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: CRAIG I. NISHIMURA, P. E.
DIRECTOR AND CHIEF ENGINEER

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
(EISPN) WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for the opportunity to review the draft Environmental Impact Statement.

We have no comments to offer as the facility does not impact us.

CIN:cr

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-099

MEMORANDUM

TO: CRAIG I. NISHIMURA, P.E., DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF FACILITY MAINTENANCE

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated June 13, 2008, concerning the subject project. We acknowledge that you have no comments to offer and that the proposed project will not impact your Department.

Should you have any further written comments, they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

#06

City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street. Suite 308
Kapolei, Hawaii 96707

Gentlepersons;

I am submitting this letter to express my opposition to expansion of the Waimanalo Gulch Landfill.

As a resident of Kapolei, I live in close proximity to Honolulu's only landfill. I am deeply concerned over the lack of effort on the part of the city to find alternate ways of reducing the volume of ash, treated human sewage waste and debris that is currently being disposed of at Waimanalo Gulch Landfill.

The proposed expansion of 92.5 acres almost doubles the size of the existing landfill, and will allow another 15 years of waste disposal. This is unacceptable.

The company that runs the Waimanalo Gulch Landfill has had serious, repeated violations and fines in the past. There is no reason to believe that these violations or more troubling violations won't occur in the future.

It is unfair and unjust to approve the expansion of Waimanalo Gulch Landfill without first implementing curbside recycling inclusive of, but not limited to, green compostable waste, glass, paper, newspaper, aluminum and cardboard. Diversion and waste to energy programs must occur prior to, or in conjunction with any expansion.

Please do not allow your family members, friends and neighbors on the Leeward side of Oahu to continue to be subjected to possible exposure of hazardous waste and contaminates.

Again, I strongly oppose the approval of the expansion of Waimanalo Gulch Landfill and urge you to explore additional options regarding waste disposal and recycling.

Respectfully,

Signed ______ Date 6/28/08

Name: Yoshinori Imagawa

(Optional) Address / Phone / Email

Yoshi & Yumi Imagawa
92-121 Waiko Pl.
Kapolei, HI 96707

Cc:
Director, Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, HI 96813

R.M. Towill Corp.
2024 N. King Street, Suite 200
Honolulu, HI 96819

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-128

October 23, 2008

Mr. Yoshinori Imagawa
92-121 Waiko Place
Kapolei, Hawaii 96707

Dear Mr. Imagawa:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated June 28, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *"The company that runs the Waimanalo Gulch Landfill has had serious, repeated violations and fines in the past. There is no reason to believe that these violations or more troubling violations won't occur in the future."*

It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimanalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaii are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality).

It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk and we anticipate that based on these procedures that sufficient safeguards will continue to maintain public health and safety.

2. *"It is unfair and unjust to approve the expansion of Waimanalo Gulch Landfill without first implementing curbside recycling inclusive of, but not limited to, green compostable waste, glass, paper, newspaper, aluminum and cardboard. Diversion and waste to energy programs must occur prior to, or in conjunction with any expansion."*

The City believes that curbside recycling, waste diversion, and refuse to energy are all important programs that will contribute to reducing our islandwide dependency on landfilling. However, these programs, including a number of other alternatives cited in the project DEIS, will not by themselves completely eliminate the need for a municipal sanitary landfill. For refuse that cannot be further recycled or otherwise reused, a landfill must continue to remain a key element of the City's refuse management system even as it continues to explore, examine, and implement the waste diversion and refuse to energy systems that you identify.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

#07

LINDA LINGLE
Governor

JAMES R. AIONA, JR.
Lieutenant Governor

THEODORE E. LIU
Director

MARK K. ANDERSON
Deputy Director

LAND USE COMMISSION
Department of Business, Economic Development & Tourism
State of Hawai'i

ORLANDO "DAN" DAVIDSON
Executive Officer

SANDRA M. MATSUSHIMA
Chief Clerk

BERT K. SARUWATARI
Senior Planner

MICHAEL A. MURPHY
Planner

FRED A. TALON
Drafting Technician

July 3, 2008

Eric S. Takamura, Ph.D., P.E., Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Dr. Takamura:

Subject: Draft Environmental Impact Statement for the Waimanalo Gulch Sanitary Landfill Lateral Expansion
Waimanalo Gulch, Oahu, Hawaii
Tax Map Key: 9-2-03: 72 and 73

We have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed lateral expansion of the Waimanalo Gulch Sanitary Landfill (WGSL) and have the following comments to offer:

1) We confirm that the site of the lateral expansion of the WGSL is designated within the State Land Use Agricultural District.

2) In accordance with section 11-200-17(e), Hawaii Administrative Rules (HAR), a project description, including, among other things, a historic perspective, should be provided. We acknowledge the background of the WGSL provided in Section 2 of the DEIS, including reference to the recent action of the Land Use Commission (LUC) that extended the deadline to accept solid waste at the WGSL from May 1, 2008, to November 1, 2009. In the interest of full disclosure, please also include the appeals filed by the Ko Olina Community Association (KOCA) and Colleen Hanabusa to the decisions of the City and County of Honolulu Planning Commission (Planning Commission) and the LUC in regard to the deadline extension.

We understand that with the lateral expansion of the WGSL on the unused 92.5-acre portion of the 200-acre site, a minimum life of approximately 15 years for the landfill is projected. We further understand that prior to the closure of the expansion area, the City and County will initiate the search for the next landfill. We request that greater specification be provided regarding the municipal solid waste plans and policies of the City and County, including alternative technology and waste reduction strategies and programs, beyond the projected life of the WGSL.

235 SOUTH BERETANIA STREET ✽ SUITE 406 ✽ HONOLULU, HAWAI'I 96813 ✽ TEL (808) 587-3822 ✽ FAX (808) 587-3827✽ EMAIL: luc@dbedt.hawaii.gov
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

3) In accordance with section 11-200-17(f), HAR, a separate and distinct section on alternatives which could attain the objectives of the action, including alternatives requiring actions of a significantly different nature, should be provided. At the LUC's March 6 and 7, 2008, meeting on the deadline extension to accept solid waste at the WGSL, several commissioners noted that a district boundary amendment may be a more appropriate mechanism by which to seek the expansion of the WGSL rather than by an amendment to the existing special use permit (SUP). Accordingly, we request that the alternative of reclassifying the WGSL site from the Agricultural District to the Urban District be thoroughly addressed.

4) In accordance with section 11-200-17(h), HAR, the status of each identified approval should be described. Therefore, we request that to the extent possible the *projected* submittal dates (i.e., by month/year) of the various permit applications be provided.

5) In accordance with section 11-200-17(i), HAR, the probable impact of the proposed action on the environment should be included. Review of the DEIS indicates that no inventory and assessment of arthropods on the 92.5-acre expansion area was conducted. Although the location of the subject property may not require that a comprehensive arthropod study be conducted, we request that this matter be addressed in the interest of full environmental disclosure.

Additionally, a discussion on the existing civil defense conditions and potential impacts and proposed mitigation measures should be included.

6) In accordance with section 11-200-17(n), HAR, a separate and distinct section that summarizes unresolved issues should be included. To the extent that no decision has been rendered on the appeals filed by KOCA and Colleen Hanabusa to the decisions of the Planning Commission and the LUC in regard to the deadline extension, we request that they be identified as unresolved issues at this time.

7) As you know, by Findings of Fact, Conclusions of Law, and Decision and Order Adopting with Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit issued on March 14, 2008, the LUC extended the deadline to accept solid waste at the landfill from May 1, 2008, to November 1, 2009, subject to, among other things, the requirement that the Applicant report to the LUC every six months on the actions taken to alleviate the further use of the WGSL. We acknowledge that the DEIS (p. 9-36) references the expansion of the H-POWER garbage-to-energy plant that was approved by the Mayor on January 18, 2008. However, we request that this discussion provide greater specificity to include, but

not be limited to, the nature of the expansion, the capacity of the expansion, the life of the expansion, and its role in alleviating the further use of the WGSL.

We also request that the discussion on the transshipment of waste and curbside recycling be updated with the latest efforts of the City and County to implement such alternatives to refuse disposal at the WGSL.

8) Condition No. 5 of the LUC's Decision and Order Approving Amendment to Special Use Permit (D&O Approving Amendment) issued on June 9, 2003, specified that the WGSL would be operational only between the hours of 7:00 a.m. and 4:30 p.m. daily. Clarification should be provided as to whether the current operational hours of the WGSL are proposed to be changed with its expansion.

9) Condition No. 19 of the LUC's D&O Approving Amendment also specified that the City and County shall implement by executive order or ordinance measures for, among other things, wood recovery, metal recovery, gypsum recovery, and enhanced enforcement of landfill bans. Clarification should be provided as to the efforts of the City and County to comply with this condition.

10) In the DEIS, there are several references to the term *potable water*. We request that it be replaced by the term *drinking water*. We have been advised that although potable water has generally been used to mean drinking water, the Department of Health (DOH) uses the latter term specifically to indicate water for human consumption that is derived from surface water and/or groundwater and is regulated by the DOH pursuant to chapter 11-20, HAR.

11) We request that the EIS explicitly reference the applicable category of action within chapter 343, Hawaii Revised Statutes, and chapter 11-200, HAR, that triggered its preparation.

12) On page 8-12, the DEIS states that an SUP for the expansion of the WGSL must be obtained through the City and County of Honolulu. Notwithstanding the LUC's concerns about the appropriateness of an SUP in this matter, clarification should be provided as to whether the Department of Environmental Services intends to seek an amendment to the existing SUP or an entirely new SUP. Please be advised that in either case the LUC will have jurisdiction over the application in the event the Planning Commission recommends its approval. As such, Section 12 and other applicable sections within the DEIS should be revised accordingly.

Finally, as part of the SUP process, the WGSL expansion is required to meet the SUP guidelines in determining an "unusual and reasonable" use in the Agricultural District pursuant to section 15-15-95, HAR. We believe that given the purpose of the EIS, it would be appropriate to specifically address said guidelines in the document.

We have no further comments to offer at this time. Thank you for the opportunity to comment on the subject DEIS.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

ORLANDO DAVIDSON
Executive Officer

c: Office of Environmental Quality Control
City and County of Honolulu Department of Planning and Permitting
✓R.M. Towill Corporation

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-123

October 23, 2008

Mr. Orlando "Dan" Davidson
Executive Officer
Land Use Commission
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Davidson:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 3, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

1. *We confirm that the site of the lateral expansion of the WGSL is designated within the State Land Use Agricultural District.*

This comment is acknowledged.

2. *"In accordance with Section 1 1-200-1 7(e), Hawaii Administrative Rules (HAR), a project description, including, among other things, a historic perspective, should be provided. We acknowledge the background of the WGSL provided in Section 2 of the DEIS, including reference to the recent action of the Land Use Commission (LUC) that extended the deadline to accept solid waste at the WGSL from May 1,2008, to November 1,2009. In the interest of full disclosure, please also include the appeals filed by the KO Olina Community Association (KOCA) and Colleen Hanabusa to the decisions of the City and County of Honolulu Planning Commission (Planning Commission) and the LUC in regard to the deadline extension."*

   "We understand that with the lateral expansion of the WGSL on the unused 92.5-acre portion of the 200-acre site, a minimum life of approximately 15 years for the landfill is projected. We further understand that prior to the closure of the expansion area, the City and County will initiate the search for the next landfill. We request that greater specification be provided regarding the municipal solid waste plans and policies of the City and County, including alternative technology and waste reduction strategies and programs, beyond the projected life of the WGSL"

This comment is acknowledged regarding the inclusion of the appeals filed. See Section 2.5. Historical Background of the State Special Use Permit, of the Final EIS (FEIS) for this project.

The City's <u>Draft Integrated Solid Waste Management Plan</u> was completed in June 2008 after the publication of the subject DEIS. We will provide further information concerning the municipal solid waste plans and policies contained in the draft document in the forthcoming FEIS for this project. See Section 2.6. <u>City Plans Involving the Future Handling of Solid Waste</u>.

3. *"In accordance with section 1 1-200-17(f), HAR, a separate and distinct section on alternatives which could attain the objectives of the action, including alternatives requiring actions of a significantly different nature, should be provided. At the LUC's March 6 and 7,2008, meeting on the deadline extension to accept solid waste at the WGSL, several commissioners noted that a district boundary amendment may be a more appropriate mechanism by which to seek the expansion of the WGSL rather than by an amendment to the existing special use permit (SUP). Accordingly, we request that the alternative of reclassifying the WGSL site from the Agricultural District to the Urban District be thoroughly addressed.*

This comment is acknowledged and will be addressed in the FEIS by indicating that both the filing of a new SUP application and/or a Land Use District Boundary Amendment (LUDBA) application will constitute a viable means of addressing the use of the site for a municipal landfill. We add that the use of the site for landfilling purposes has been adequately and sufficiently addressed through the SUP filed for this project since 1989, when the site was opened for use.

See Section 8.3. State Land Use Law, and Section 12. Permits and Regulatory Approvals That May Be Required, in the FEIS.

4. *"In accordance with section 1 1-200- 17(h), HAR, the status of each identified approval should be described. Therefore, we request that to the extent possible the projected submittal dates (i.e., by monthlyear) of the various permit applications be provided."*

The projected submittal dates for the land use entitlements and other pending permissions for the proposed project are not known at this time due to the pending EIS process that is currently underway. We can report, however, that as soon as practicable that these applications will be prepared and filed with the appropriate governmental agencies upon the conclusion of the current EIS process.

5. *"In accordance with section 1 1-200-1 7(i), HAR, the probable impact of the proposed action on the environment should be included. Review of the DEIS indicates that no inventory and assessment of arthropods on the 92.5-acre expansion area was conducted. Although the location of the subject property may not require that a comprehensive arthropod study be conducted, we request that this matter be addressed in the interest of full environmental disclosure."*

> *"Additionally, a discussion on the existing civil defense conditions and potential impacts and proposed mitigation measures should be included."*

This comment regarding arthropods is being investigated and will be addressed in the forthcoming project's FEIS in Section 5.9.4. Invertebrates, and Section 5.9.5. Potential Impacts and Mitigation Measures.

The City Department of Emergency Management has been consulted concerning any civil defense related coordination that may be required. At this time the Department of Emergency Management has indicated no additional concerns or issues relating to the WGSL other than to note that the nearby location of the Battery Arizona site will not be used for public shelter given the condition of the facility. See attached Memorandum dated September 29, 2008.

6. *"In accordance with Section 1 1-200-1 7(n), HAR, a separate and distinct section that summarizes unresolved issues should be included. To the extent that no decision has been rendered on the appeals filed by KOCA and Colleen Hanabusa to the decisions of the Planning Commission and the LUC in regard to the deadline extension, we request that they be identified as unresolved issues at this time."*

This request is acknowledged. See Section 11. Unresolved Issues, of the FEIS which provides further information regarding this issue.

7. *"As you know, by Findings of Fact, Conclusions of Law, and Decision and Order Adopting with Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit issued on March 14, 2008, the LUC extended the deadline to accept solid waste at the landfill from May 1, 2008, to November 1,2009, subject to, among other things, the requirement that the Applicant report to the LUC every six months on the actions taken to alleviate the further use of the WGSL. We acknowledge that the DEIS (p. 9-36) references the expansion of the H-POWER garbage-to-energy plant that was approved by the Mayor on January 18, 2008. However, we request that this discussion provide greater specificity to include, but not be limited to, the nature of the expansion, the capacity of the expansion, the life of the expansion, and its role in alleviating the further use of the WGSL."*

   We also request that the discussion on the transshipment of waste and curbside recycling be updated with the latest efforts of the City and County to implement such alternatives to refuse disposal at the WGSL.

While the specific operational details of the planned H-POWER expansion project will be provided in the EIS documentation prepared for that project, we can provide information concerning the City's consideration of Waste to Energy (WTE) facilities in relation to handling the refuse needs of the Island of Oahu. This information is provided in Section 2.6.2. Waste to Energy (WTE) Capacity, in the FEIS.

Section 2.6.4. Waste Transshipment to the Mainland, in the FEIS, describes current efforts and the relationship between waste transshipment and the City's refuse management system.

The DEIS has provided information on the latest efforts of the City in promoting recycling to reduce dependency on landfilling. See Sections: 9.5.6. Expanded Recycling; 9.5.6.1. Improvements to Recycling Infrastructure; and, 9.5.6.2. Recycling to Energy.

8. *"Condition No. 5 of the LUC's Decision and Order Approving Amendment to Special Use Permit (D&O Approving Amendment) issued on June 9,2003, specified that the WGSL would be operational only between the hours of 7:00 a.m. and 4:30 p.m. daily. Clarification should be provided as to whether the current operational hours of the WGSL are proposed to be changed with its expansion."*

Except for unusual circumstances, the operational hours of 7:00 AM to 4:30 PM are not planned to be changed.

9. *"Condition No. 19 of the LUC's D&O Approving Amendment also specified that the City and County shall implement by executive order or ordinance measures for, among other things, wood recovery, metal recovery, gypsum recovery, and enhanced enforcement of landfill bans. Clarification should be provided as to the efforts of the City and County to comply with this condition."*

In order to sustain a successful material recovery operation, the amount of material available at landfill was reestablished in the 2006 Waste Composition study. The total metals in the landfill waste stream have decreased. Gypsum board has decreased to less than one percent of the total waste or approximately 1,500 tons. In the area of wood, amounts have decreased to a little over ten percent, with treated wood making up over half of the amount of wood available. While it is possible to attempt to recover metals, gypsum board, and wood, the amounts being landfilled are not sufficient to sustain a cost-effective program.

Actions that the City is currently supporting include the State Beverage Deposit law and focusing on enhanced enforcement of landfill bans. City staff are assigned intermittently to the landfill and H-POWER to ensure compliance with bans. If any vehicle is in violation of the bans, they receive a 'first warning.' If the vehicle returns with a banned material the hauling company is warned that if deliveries continue the company will not be allowed to dispose of waste at the landfill. Waste hauling companies that have been issued warnings have complied.

10. *"In the DEIS, there are several references to the term potable water. We request that it be replaced by the term drinking water. The Department of Health (DOH) uses the latter term specifically to indicate water for human consumption that is derived from surface water and/or groundwater and is regulated by the DOH pursuant to chapter 11-20, HAR."*

We acknowledge your request and will augment the use of the term potable water as "potable/drinking water" in the forthcoming FEIS.

11. *"We request that the EIS explicitly reference the applicable category of action within Chapter 343, Hawaii Revised Statutes, and Chapter 11-200, HAR, that triggered its preparation."*

We acknowledge your request. See Section 3.2. Purpose of the Draft Final Environmental Impact Statement, in the FEIS providing this information.

12. *"On page 8-12, the DEIS states that an SUP for the expansion of the WGSL must be obtained through the City and County of Honolulu. Notwithstanding the LUC's concerns about the appropriateness of an SUP in this matter, clarification should be provided as to whether the Department of Environmental Services intends to seek an amendment to the existing SUP or an entirely new SUP. Please be advised that in either case the LUC will have jurisdiction over the application in the event the Planning Commission recommends its approval. As such, Section 12 and other applicable sections within the DEIS should be revised accordingly."*

Finally, as part of the SUP process, the WGSL expansion is required to meet the SUP guidelines in determining an "unusual and reasonable" use in the Agricultural District pursuant to Section 15-15-95, HAR. We believe that given the purpose of the EIS, it would be appropriate to specifically address said guidelines in the document.

At this time the City has not yet determined if it will file a SUP or LUDBA for the proposed project. Section 12, Permits and Regulatory Approvals That May be Required, will be revised accordingly in the FEIS.

As noted, while the preparation of a SUP or LUDBA has not been determined at this time, we acknowledge that the content of an SUP application when it is filed should meet the SUP guidelines and applicable regulations of law, and do not necessarily agree that this determination should be a part of the EIS process under Chapter 343, HRS.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

Attachment

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

DEPARTMENT OF EMERGENCY MANAGEMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

Mufi Hannemann
MAYOR

Melvin N Kaku
DIRECTOR

September 29, 2008

MEMO TO: WILMA NAMUMNART, ASSISTANT CHIEF
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: MELVIN N. KAKU, DIRECTOR Melvin N. Kaku 9/29/08
DEPARTMENT OF EMERGENCY MANAGEMENT

SUBJECT: EIS REQUEST – BATTERY ARIZONA

In reference to Battery Arizona, located within the Waimanalo Gulch Sanitary Landfill proposed lateral expansion zone, the Department of Emergency Management (DEM has determined that the facility will not be used as a public shelter. Since the battery is in poor physical condition and would require extensive repairs before it could be utilized for any type of training, DEM is not able to commit to retaining this facility.

#08

City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street. Suite 308
Kapolei, Hawaii 96707

Gentlepersons;

I am submitting this letter to express my opposition to expansion of the Waimanalo Gulch Landfill.

As a resident of Kapolei, I live in close proximity to Honolulu's only landfill. I am deeply concerned over the lack of effort on the part of the city to find alternate ways of reducing the volume of ash, treated human sewage waste and debris that is currently being disposed of at Waimanalo Gulch Landfill.

The proposed expansion of 92.5 acres almost doubles the size of the existing landfill, and will allow another 15 years of waste disposal. This is unacceptable.

The company that runs the Waimanalo Gulch Landfill has had serious, repeated violations and fines in the past. There is no reason to believe that these violations or more troubling violations won't occur in the future.

It is unfair and unjust to approve the expansion of Waimanalo Gulch Landfill without first implementing curbside recycling inclusive of, but not limited to, green compostable waste, glass, paper, newspaper, aluminum and cardboard. Diversion and waste to energy programs must occur prior to, or in conjunction with any expansion.

Please do not allow your family members, friends and neighbors on the Leeward side of Oahu to continue to be subjected to possible exposure of hazardous waste and contaminates.

Again, I strongly oppose the approval of the expansion of Waimanalo Gulch Landfill and urge you to explore additional options regarding waste disposal and recycling.

Respectfully,

Maribel M. Saelid
Signed

4 July '08
Date

Name: MARIBEL M. SAELID

(Optional) Address / Phone / Email
92-6022 Puapake Street
Kapolei HI, 96707

Cc:
Director, Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, HI 96813

R.M. Towill Corp.
2024 N. King Street, Suite 200
Honolulu, HI 96819

Just A Note

As a member of Hawaii's youth, I must object to the Expansion of the Waimanalo Gulch landfill. Expanding the landfill is tantamount to handing the problem of waste disposal to the upcoming generation. Please think of how expanding the landfill will affect the future generations of Hawaii before making your final decision.

Just A Note

If the landfill must be enlarged, please provide other options for waste disposal, such as curbside recycling.

Thank you for your time,
Rachel Saelid

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 • FAX: (808) 768-3487 • WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-129

October 23, 2008

Ms. Maribel M. Saelid
Ms. Rachael Saelid
92-6022 Puapake Street
Kapolei, Hawaii 96707

Dear Ms. Saelid:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letters dated July 4, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *The company that runs the Waimanalo Gulch Landfill has had serious, repeated violations and fines in the past. There is no reason to believe that these violations or more troubling violations won't occur in the future.*

It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimanalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaii are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality).

It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk and we anticipate that based on these procedures that sufficient safeguards will continue to maintain public health and safety.

2. *It is unfair and unjust to approve the expansion of Waimanalo Gulch Landfill without first implementing curbside recycling inclusive of, but not limited to, green compostable waste, glass, paper, newspaper, aluminum and cardboard. Diversion and waste to energy programs must occur prior to, or in conjunction with any expansion.*

The City believes that curbside recycling, waste diversion, and refuse to energy are all important programs that will contribute to reducing our islandwide dependency on landfilling. However, these programs, including a number of other alternatives cited in the project DEIS, will not by themselves completely eliminate the need for a municipal sanitary landfill. For refuse that cannot be further recycled or otherwise reused, a landfill must continue to remain a key element of the City's refuse management system even as it continues to explore, examine, and implement the waste diversion and refuse to energy systems that you identify.

3. *(Note from Rachael Saelid). As a member of Hawai'i's youth, I must object to the expansion of the Waimanalo Gulch Landfill. Expanding the landfill is tantamount to handling the problem of waste disposal to the upcoming generation. Please think of how expanding the landfill will affect the future generations of Hawai'i before making your final decision. If the landfill must be enlarged, please provide other options for waste disposal, such as curbside recycling.*

We appreciate your comment and acknowledge your objection to the proposed project. The planned lateral expansion of the Waimanalo Gulch Sanitary Landfill is designed to address Oahu's refuse disposal needs for the present as well as future generations. In addition to this project the City has also considered and intends to implement other refuse disposal strategies that include the expansion of H-POWER, waste transshipment, and the continued use of recycling (including curbside collection). While there is no single solution that fully addresses our waste disposal requirements, we are hopeful that a combination of options will reduce our long term dependency on landfilling.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

#09

In reply, please refer to:
EPO-08-078

July 6, 2008

Eric S. Takamura, Ph. D., Director
City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96813

Dear Dr. Takamura:

SUBJECT: Draft Environmental Impact Statement for Waimanalo Gulch Sanitary Landfill
Lateral Expansion
Waimanalo Gulch, Oahu, Hawaii
TMK: (1) 9-2-003: 072 and 073

Thank you for allowing us to review and comment on the subject application. The document was routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Wastewater Branch, Clean Water Branch, Clean Air Branch, and General comments. In addition, our Solid and Hazardous Waste Branch will send you their comments separately.

Wastewater Branch

The document proposes the expansion of the area of landfill, the development of landfill associated support infrastructure (e.g. drainage, access roadways, landfill gas and leachate collection and monitoring systems, stockpile sites and other related features), a public drop off center and a landfill gas to energy (LFGTE) system.

The existing landfill facility is served by an existing on-site wastewater system which accommodates domestic flows from the administrative and service buildings of the site. As long as the existing wastewater system is adequate for the proposed project, we have no objections and offer our recommendation for approval of the landfill lateral expansion.

All wastewater plans must meet Department's Rules, HAR Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. If you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

Clean Water Branch

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at
http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

    a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

    b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

    c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

    a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

    b. Discharge of Hydrotesting water.

    c. Discharge of dewatering effluent.

    You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

4. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. At least 30 calendar days prior to the completion of the expansion, you must modify your NOI for storm water associated with industrial activity and Storm Water Pollution Control Plan to include the area of expansion and submit these documents to the CWB along with a $500 filing fee.

6. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html, or contact the Engineering Section, CWB, at 586-4309.

Clean Air Branch

Pursuant to current permit requirements, Waimanalo Gulch landfill must operate the collection and control system so that gas is collected from each area, cell, or group of cells in the Municipal Solid Waste Landfill (MSWLF) on which solid waste has been in place for five years or more if active, and two years or more if closed or at final grade. Therefore, expansion of the landfill does not require any revisions to the current Title V permit.

The draft EIS states that a landfill gas to energy system may be installed. If so, the installation of this system may require a modification to the existing Title V permit.

Control of Fugitive Dust

Fugitive dust emissions occur during all phases of construction and operations. Activities close to existing residences, businesses, public areas or thoroughfares can cause dust problems. For cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance problems. We recommend that the contractors operate under a dust control management plan. The plan does not require the Department of Health approval, however it will help with identifying and minimizing the dust problems from the proposed project.

Examples of measures that can be included in the dust control plan are:

a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Providing an adequate water resource at the site prior to start-up of construction activities;
c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimizing dust from shoulders and access roads;
e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling dust from debris being hauled away from the project site.

General

We strongly recommend that you review all of the Standard Comments on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
WWB
CWB
CAB
Henry Eng, City and County of Honolulu Department of Planning and Permitting
Brian Takeda, R.M. Towill Corporation

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-126

October 23, 2008

Mr. Kevin H. Sunada, Manager
Environmental Planning Office
Department of Health
State of Hawaii
P.O. Box 3378
Kapolei, Hawaii 96707

Dear Mr. Sunada:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 6, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

1. *"Any project and its potential impacts to State waters must meet the following criteria:…*
Antidegradation policy (HAR, Section 11-54-1.1),…
Designated uses (HAR, Section 11-54-3),…
Water quality criteria (HAR, Sections 11-54-4 through 11-54-8)."

This comment cites the water quality regulations of Hawaii Administrative Rules, Section 11-54, Water Quality Standards, that apply to all projects in the State of Hawaii.

2. *"You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:*
Storm water associated with construction activities,
Discharge of Hydrotesting water,
Discharge of dewatering effluent.
You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities."

This comment cites Hawaii Administrative Rules, Section 11-55, Water Pollution Control, governing the requirements of the NPDES permit program in the State of Hawaii. The ocean waters off of the proposed project site are designated as Class "A." This designation will require the filing of the NOI Form C, Construction Stormwater permit application which has been identified in Section 12, Permits and Regulatory Approvals That May Be Required.

3. *"For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge."*

Please refer to the comment above.

4. *"You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project."*

We acknowledge the requirement that the SHPD be provided with a copy of the NOI Form C permit application for the proposed project.

5. *"At least 30 calendar days prior to the completion of the expansion, you must modify your NOI for storm water associated with industrial activity and Storm Water Pollution Control Plan to include the area of expansion and submit these documents to the CWB along with a $500 filing fee."*

We acknowledge this requirement for the approved existing NPDES NOI Form B permit for the Waimanalo Gulch Sanitary Landfill.

6. *"Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the State's Water Quality Standards."*

We acknowledge this requirement.

7. *"The draft DEIS states that a landfill gas to energy system may be installed. If so, the installation of this system may require a modification to the existing Title V permit."*

We acknowledge this requirement.

8. *"We recommend that the contractors operate under a dust control management plan. The plan does not require the Department of Health approval, however it will help with identifying and minimizing the dust problems from the proposed project."*

We acknowledge the recommendation and note that the provision for dust control has been provided in the Operations Plan for the Waimanalo Gulch Sanitary Landfill, as submitted to the DOH.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

Water Resources Research Center
Environmental Center

UNIVERSITY *of* HAWAI'I®
MĀNOA

#10

July 07, 2008
RE: 0779

Mr. Eric Takamura
City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, HI 96707

Dear Mr. Takamura:

Draft Environmental Impact Statement
Waimanalo Gulch Sanitary Landfill Lateral Expansion
Waimanalo Gulch, Oahu, Hawaii

The Waimanalo Gulch Sanitary Landfill is a City and County of Honolulu facility that provides municipal and solid waste disposal for communities across Oahu. Refuge that is disposed of at the WGSL includes municipal solid waste, recycling residue, and H-Power ash and residue. Landfill operations have existed at the 200-acre site since 1989. Approximately 92.5 of the property's 200 acres are unused. If utilized, the remaining 92.5 acres are estimated to extend the operational span of the landfill by a minimum of 15 years. In March 2008, the State Land Use Commission approved an extension of the State Special Use Permit from May 1, 2008 to November 1, 2009. In addition to landfill expansion efforts, the proposed project will also include the development of landfill associated support infrastructure, a public drop-off center, and a landfill gas to energy system.

This review was conducted with the assistance of Ryan Riddle, Environmental Center.

General Comments

What is missing from the contents of this draft environmental impact statement (DEIS) is a discussion of the total waste picture on Oahu. It would be useful to know how much waste is generated on Oahu, what the total amount of waste that is handled by the City and County, how much comes into the landfill from the City and County collections and how much comes from private companies. Right now statistics are scattered throughout the document. On page 3-6 for example, we learn that the Waimanalo Gulch landfill receives approximately 1400 tons per day (TPD) of solid waste and ash residual. That equals to approximately 511,000 tons of waste per

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year. Later in the document (p. 9-12) we find that the H-POWER plant processes approximately 600,000 TPD of solid waste, which on page 9-16 we find is equivalent to 40 percent of the municipal solid waste produced on Oahu. If we add up the figures of what goes into the landfill at present and what goes to H-POWER, we see that the fraction going to H-POWER is closer to 55 percent of all the municipal solid waste collected. Also, according to page 9-39, the H-POWER plant incinerates 90 percent of the garbage that comes to that facility. If we take the figure of 600,000 TPY taken to H-POWER of which 90 percent is incinerated that would leave approximately 60,000 TPY of ash or approximately 146 TPD. This is substantially smaller than the 600 TPD listed on page 3-6 as coming to the landfill from H-POWER.

Trying to determine the total picture of solid waste generation and disposal by looking at the various components is confusing. It doesn't seem to add up. Adding a discussion in Section 3 on the total amount of garbage collected, what goes into the landfill, what goes to H-POWER, what goes to green waste, and what is recycled would be helpful in understanding the magnitude of the problems and will aid in weighing the alternative waste strategies. We suggest that such a discussion be included in the final environmental impact statement.

In addition to our general comments, we also have several specific comments.

Environmental Compliance Violations (p. 2-11)

In this section, the DOH and EPA violation notices are listed. While the DEIS adequately discusses the measures that have been taken to address the violations, there is no discussion on why these violations occurred in the first place. Without a mention of this, the discussion of the retroactive measures taken to correct the violations seems incomplete.

Need for the Proposed Project (pp. 3-5 – 3-6)

The first full paragraph on page 3-6 contains the line "As an annual acreage, approximately 800 tons per day …. or delivered." What has acreage to do with tonnage of solid waste? Was this a mistake or is there some formula for equating amount of waste delivered with the amount of land used?

Final Cover (pp. 4-5 – 4-11)

The final line in the section of the DEIS dealing with final covering of the landfill states that the "site may request the DOH permit alternative cover in lieu of the Subtitle D prescriptive cover described above." What are other types of covering contemplated? Does the City and County have anything else in mind? If so, shouldn't they be discussed in the DEIS? Does Subtitle D allow for alternative covers for the landfill?

Materials Acceptance (p. 4-21)

We were wondering how much waste is usually excluded per day under the Unacceptable Waste Exclusion Program?

Management of Unacceptable Waste (pp. 4-25 – 4-26)

In the management of unacceptable waste, hazardous waste is stored in a temporary storage area for 90 days after the accumulation of 220 pounds or more. What happens to the hazardous waste after the 90 day period expires? Why wait 90 days after it reaches 220 pounds, why not just dispose of it then?

Groundwater and Gas Monitoring Data (p. 4-34)

What does the groundwater and gas monitoring consist of? Are they devices that are placed in the ground that detect gas and record the data on graph paper? Are they gauges that are periodically read? How is monitoring carried out?

Drainage Control System (pp. 4-36 - 4-37)

In Section 4.6.1 the DEIS mentions that the landfill stormwater management system is designed and constructed to manage runoff from a 25-year, 24-hour storm. What about a 100-year storm? How did the site fare during the January 2007 rain events?

Potential Impacts and Mitigation Measures (p. 5-53)

In the section on landfill gas temperatures, it is mentioned that WGSL has temperatures exceeding the EPA specified maximum temperature. Other approved mainland landfills with temperatures exceeding EPA limits are then listed. Absent from this discussion is a mention of the actual temperatures found at WGSL.

Potential Impacts and Mitigation Measures (p. 5-84)

The DEIS states that hydromulching has not been very successful on top of the filled areas due to dry conditions at the site. The DEIS continues by stating that landscaping and the further use of irrigation will promote vegetative growth similar to that found on the adjoining hillsides. Can you provide more details on why there has been little success with revegetation, and how new action plans will remedy this?

General Community Concerns and Issues (p. 7-11)

In this section the DEIS states "For several years, Hawai'i residents have responded to polls on the major issues facing the community by pointing to the economy and education as the most important issues for the State (Figure 7-1). Environmental issues . . . do not achieve the same salience." Figure 7-1 illustrates the relative expressed importance of the economy, education, traffic, housing, and drugs, but the issue of the environment does not appear at all. Is this because Hawai'i residents were not given the option of choosing the environment as an issue (a structured poll), or because it was mentioned so infrequently that it would not show up on the graph?

Community Involvement (p. 7-41)

The DEIS states that the value of the community benefits were identified as $2.7 million in 2007 and $2.0 million in 2008. While the specific benefits that will be distributed in the future have not yet been determined, can you provide more detail on the benefit packages provided in previous years?

Alternatives to the Proposed Action (pp. 9-1 - 9-45)

There are a number of technology driven options examined in the first half of the lengthy discussion of alternatives. Each of these is evaluated as an all or nothing choice. There is no reason why several options might be considered in tandem that could address the need for the City and County to address it solid waste situation. Some of these methods taken together could lead to the closure or at least lead to a drastic reduction in the use of the landfill. There is also incomplete information about the cost of each of these options. Could not reasonable estimates of cost be found so that the options could be compared?

Thank you for the opportunity to review this Draft EIS.

Sincerely,

Peter Rappa
Environmental Review Coordinator

cc: OEQC
Henry Eng, DPP
Brian Takeda, R.M. Towill
James Moncur, WRRC
Ryan Riddle

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KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-124

Mr. Peter Rappa
Environmental Review Coordinator
University of Hawaii – Manoa
Environmental Center
2500 Dole Street, Krauss Annex 19
Honolulu, Hawaii 96822

Dear Mr. Rappa:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 7, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

1. *"Trying to determine the total picture of solid waste generation and disposal by looking at the various components is confusing. It doesn't seem to add up. Adding a discussion in Section 3 on the total amount of garbage collected, what goes into the landfill, what goes to H-POWER, what goes to green waste, and what is recycled would be helpful in understanding the magnitude of the problems and will aid in weighing the alternative waste strategies."*

The Final EIS, Section 9.2.2. Composition of Waste Stream, will include tables to provide the information requested. The new tables will identify the amount of waste taken to Waimanalo Gulch and H-POWER, as well as an estimate of the amount of materials recycled. Tables will also be provided identifying the sector from which the waste was collected (residential and commercial), and the amount collected by the City and other waste haulers.

2. *"In [the Environmental Compliance Violations] section, the DOH and EPA violation notices are listed. While the DEIS adequately discusses the measures that have been taken to address the violations, there is no discussion on why these violations occurred in the first place. Without a mention of this, the discussion of the retroactive measures taken to correct the violations seems incomplete."*

Both the City and Waste Management of Hawaii acknowledge that the alleged violations have occurred because of delays in implementing and reporting operational activities at the landfill. All of the allegations that were brought to light based on the operator's self-reporting practices were either corrected or were in the immediate process of being corrected (e.g., addressing the atypical temperatures at the landfill with the EPA) when the notices of violations were issued in early 2006.

The primary corrective step that has been taken since that time has been to improve the timeliness of correcting and then reporting the required information to the DOH and EPA. The DEIS identifies the steps taken to help prevent a future occurrence in Section 2.3. Environmental Compliance Violations and Section 2.4. Summary of Current Status.

3. *"The first full paragraph on page 3-6 contains the line "As an annual acreage, approximately 800 tons per day….or delivered." What has acreage to do with tonnage of solid waste? Was this a mistake or is there some formula for equating amount of waste delivered with the amount of land used?"*

Thank you for pointing out this typographical error. The correct entry that will be provided in the Final EIS will read, "As an annual average, approximately 800 tons per day …."

4. *"The final line in the section of the DEIS dealing with final covering of the landfill states that the 'site may request the DOH permit alternative cover in lieu of the Subtitle D prescriptive cover described above.' What are other types of covering contemplated? Does the City and County have anything else in mind? If so, shouldn't they be discussed in the DEIS? Does Subtitle D allow for alternative covers for the landfill?"*

RCRA, Subtitle D, allows for the use of alternative cover. The alternative cover that is being considered involves a thicker soil cover to handle the root systems of the types of trees being considered at the landfill. The tree types being contemplated will be similar to those found on the surrounding terrain. Native or other trees with a long tap root will not be used. Also, boulders may be added to enhance the appearance of the site.

5. *"How much waste is usually excluded per day under the Unacceptable Waste Exclusion Program?"*

This waste amounts to less than one percent of the refuse disposed of at the landfill.

6. *"In the management of unacceptable waste, hazardous waste is stored in a temporary storage area for 90 days after the accumulation of 220 pounds or more. What happens to the hazardous waste after the 90 day period expires? Why wait 90 days after it reaches 220 pounds, why not just dispose of it then?"*

Waste identified as "hazardous" is collected for temporary holding in a specially designated site that is designed to contain the waste and prevent exposure paths to the environment. A typical hazardous waste item for example, is a car battery. The reason for the safe storage of this type of waste prior to removal to an approved disposal facility is to minimize the number of trips involving the transport of these types of materials.

7. *"What does the groundwater and gas monitoring consist of? Are they devices that are placed in the ground that detect gas and record the data on graph paper? Are they gauges that are periodically read? How is monitoring carried out?"*

The groundwater and gas monitoring systems consist of the use of subsurface wells for the collection of samples. Sampling of these wells are by trained third party personnel who collect the samples according to industry standard practices that involve chain of custody, quality assurance/quality control procedures, and other protocols that govern the length of time and conditions under which a sample is collected prior to analysis. The samples are submitted to a laboratory certified by the State DOH. The results of all analyses, including the supporting documentation establishing that the samples were collected properly are provided in a report that is submitted to the DOH.

8. *"In Section 4.6.1 the DEIS mentions that the landfill stormwater management system is designed and constructed to manage runoff from a 25-year, 24-hour storm. What about a 100-year storm? How did the site fare during the January 2007 rain events?"*

The 25-year storm was used as an industry safety standard that was compliant with the City & County of Honolulu. The handling of stormwater for a 100- year storm event would involve considerable retention and drainage system sizing requirements that are not considered feasible or reasonable for the WGSL. The performance of the WGSL during the January 2007 rain events were satisfactory and provided for the sufficient control and treatment of stormwater runoff.

9. *"In the section on landfill gas temperatures, it is mentioned that WGSL has temperatures exceeding the EPA specified maximum temperature. Other approved mainland landfills with temperatures exceeding EPA limits are then listed. Absent from this discussion is a mention of the actual temperatures found at WGSL."*

The wells with temperatures above the EPA's standard operating temperature of 131° Fahrenheit average approximately 165° F. One well has had an isolated temperature reading of 184° F, which is the highest recorded temperature of any well at the landfill. This information and the specific operational conditions associated with the decomposition of waste generating these temperatures have been submitted to the EPA.

See Section 5.7.3. Potential Impacts and Mitigation Measures, of the FEIS relating to landfill gas emissions, relating to a discussion on the LFG (landfill gas) Collection System, providing this information.

10. "The DEIS states that hydromulching has not been very successful on top of the filled areas due to dry conditions at the site. The DEIS continues by stating that landscaping and the further use of irrigation will promote vegetative growth similar to that found on the adjoining hillsides. Can you provide more details on why there has been little success with revegetation, and how new action plans will remedy this?"

The initial difficulty with vegetative growth involved the dry and low rainfall conditions of the Leeward side of Oahu. The sporadic level of rainfall received at the site was simply not conducive to growth. The new plan will address this constraint by selectively targeting smaller portions of the site with as many target planting spots as can be provided while meeting the water conservation requirements of the Board of Water Supply.

An important feature of the plan is to more efficiently use irrigation while recognizing that the contours of the landfill are subject to change as various portions of the site are filled. Landscaping will therefore follow the filling of the cells. In order to do so, the new system will employ a central trunk water line that will run across the slope of the landfill and use perforated feed lines that run from the central trunk line. We expect that this will constitute an improvement over the prior practice of using rigid perforated water hoses that were prone to breakage whenever it was necessary to move or relocate the water hoses.

11. *"In this section the DEIS states "For several years, Hawai'i residents have responded to polls on the major issues facing the community by pointing to the economy and education as the most important issues for the State (Figure 7-1). Environmental issues . . . do not achieve the same salience. Figure 7-1 illustrates the relative expressed importance of the economy, education, traffic, housing, and drugs, but the issue of then environment does not appear at all. Is this because Hawai'i residents were not given the no option of choosing the environment as an issue (a structured poll), or because it was mentioned so infrequently that it would not show up on the graph?"*

The question that was posed to those interviewed was open-ended allowing them to select the environment if they chose to do so. While SMS Research has noted that the environment is becoming of increasing concern to Hawaii residents it does not come up in numbers that exceed one to five percent of the population.

12. *"The DEIS states that the value of the community benefits were identified as $2.7 million in 2007 and $2.0 million in 2008. While the specific benefits that will be distributed in the future have not yet been determined, can you provide more detail on the benefit packages provided in previous years?"*

The community benefits initiative is a new program that was started by the current City Administration. Prior to 2007, there were no community benefits initiatives associated with the project.

13. *"There are a number of technology driven options examined in the first half of the lengthy discussion of alternatives. Each of these is evaluated as an all or nothing choice. There is no reason why several options might be considered in tandem that could address the need for the City and County to address it solid waste situation. Some of these methods taken together could lead to the closure or at least lead to a drastic reduction in the use of the landfill. There is also incomplete information about the cost of each of these options. Could not reasonable estimates of cost be found so that the options could be compared?"*

The alternative technologies to landfilling provided in the DEIS have been used in sizes smaller than noted. The size used in the DEIS was as specified by the City to define the project types that would be considered in its Invitation for Bid (IFB) for alternative technology. The Final EIS will provide discussion of the use of multiple smaller technologies. See Section 9.6. Alternative Technologies to Refuse Disposal, subsection 9.6.1. Introduction.

Concerning the cost of the technologies, many of the alternatives evaluated have not had a full scale project built. Some have. To compare the cost of these two disparate conditions would result in an inaccurate and unfair evaluation. In addition, site specific factors must be reflected in the cost of a facility and those need to be estimated based on preliminary engineering data that was unavailable for most of the technologies.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

#11

Office of the President
The Senate
State of Hawaii
State Capitol
Honolulu, Hawaii
96813

July 7, 2008

Dr. Eric S. Takamura, P.E., Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, HI 96707

Re: Draft Environmental Impact Statement
Waimanalo Gulch Sanitary Landfill Lateral Expansion (May 2008)

Dear Dr. Takamura:

In accordance with the provisions of Hawai`i Revised Statutes §§ 343-1 *et. seq* ("HRS 343") and Title 11 Chapter 200 of the Department of Health State of Hawai`i Environmental Impact Statement Rules ("EIS Rules" or "HAR"), I hereby respectfully submit my comments to the Draft Environmental Impact Statement for the Waimanalo Gulch Sanitary Landfill ("WGSL") Lateral Expansion (May 2008) ("DEIS").

The comments which address Section 1 Executive Summary are made in the more detailed sections of the DEIS as discussed below.

Section 2 Project Background

This section begins with the incorrect conclusion that WGSL is "essential and necessary" for the City and County of Honolulu ("City"). WGSL is deemed to be essential and necessary only because no action has been taken by the City in truly exploring alternatives to landfilling on this island. An honest discussion is lacking in the DEIS as to why the City delayed in bringing the expansion to the public. News media reports of comments by the Planning Commission of the City and County ("PC") and the

Land Use Commission ("LUC") evidence that these decision makers were also not pleased with what could be construed as a deliberate delay to request the extension. This expansion request will also be construed as leaving decision makers no alternative but to grant an extension.

Blue Ribbon Commission

Much of this DEIS is based upon the Mayor's Advisory Committee on Landfill Site Selection ("Blue Ribbon Commission"). What the DEIS fails to address is that this Blue Ribbon Commission, having been staffed by R.M. Towill provided the members with inadequate information or incorrect information to fulfill their task. Though much is made about violations of the Sunshine law, what is lacking is an honest discussion of the flawed information which was provided to the Blue Ribbon Commission. Response by the City that R.M. Towill is not expected to know what the conditions of the land is absolutely laughable. The entity which has prepared all EISs in recent history and who is well aware of the Contract entered into to extend the management contract with Waste Management Hawaii, Inc. ("WMI") for the landfill operations at WGSL, cannot argue ignorance. It is of significance that the City finally admits that one of the criteria to assess the sites was no excavation. How R.M. Towill or the City could present WGSL expansion for 20 years with no excavation is akin to bad faith. The City and R.M. Towill was definitely on notice and failed to inform the Blue Ribbon Commission of this fact. The Contract between WMI and City should be made a part of the Appendices for the Final Supplement EIS to be accurate and complete.

In addition, the Appendix which is found in Volume 3 of 3 fails to include those pages which address the criteria as well as how the alternative sites were evaluated by R.M. Towill. This should definitely be included for all to review. Under Section 4 of this letter, there will be a discussion of the costs. Cost which was a criteria for the Blue Ribbon Commission had very minimal expenses for WGSL because of the lack of excavation. This is again shown to be an incorrect statement.

DOH Violations

The so called alleged efforts of the City to address the Department of Health's Notice of Violations ("NOV") and how to prevent them in the future need more details. This is especially true in light of the subsequent allegations of mismanagement and the recent lawsuit regarding the City's rebate of tipping fees to Schnitzer steel. What is of significance is the issue of what is the City doing to monitor what is being placed in the landfill. It is also important that irrespective of whether the violations were "settled;" there is still lacking information as to how and where the asbestos was buried. This is hidden in the violations regarding the reporting to the DOH.

The exceedance of grade is a critical issue as to future monitoring and there needs to be a more detailed discussion as to how this will be avoided in the future.

EPA Violations

It is unacceptable to merely address these violations as "resolution pending." In light of this Department and the City's battles with the EPA on the sewer systems, it is important to cover in this DEIS the relationship between the two, if any.

More importantly, what is lacking is a discussion as to what the City has done in terms of contract evaluations and performance evaluations of its operator, WMI. Given the nature of their violations and the magnitude, the DEIS is required to provide this information to the public.

Section 3 Introduction

This introduction is lacking in that it fails to set forth that this is a project which was promised to be closed by the prior administration and this Mayor as well. Moreover, in that the City has chosen to address the requirements of a DEIS in this section of its document, it should be clear as to exactly what is required, such as:

> Department of Health Rules ("HAR") § 11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The "General Provisions" highlight the expectation of the EIS process.
>
> > . . . An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision makers will be enlightened to any environmental consequences of the proposed action.

Clearly, this DEIS is a self serving recitation and a rationalization of what the City wants to do. The Rules require that these statements be prepared at the earliest opportunity and it is evident that the City chose to wait until the last possible moment. The argument which the City will raise is the discovery of stone outcroppings. However, the City chose to file this DEIS without a determination by the EPA on the violations at WGSL. When it has been convenient, the City has chosen to act so that there is no time for any viable alternative.

Figure 3-2 in this section depicts expansion which will exceed the present SUP boundary. This means that the expansion is expected on the lower portion of WGSL nearest Farrington Highway which will make the landfill more visible to the residents. This expansion will take all of the 200 acres at WGSL minus a 100 foot barrier around the perimeter of the property boundary.

<u>Section 4 Project Description</u>

It is interesting that the City refuses to acknowledge that WGSL is located near Ko Olina. Ko Olina has a community and is marked as the Second Resort destination for the Island of Oahu. In these difficult economic times, it would be significance to know that location of the landfill to a major economic engine for the City and the State of Hawai‘i.

Given that there has been a contested case hearing recently completed on the WGSL, it is of interest that the sworn to testimony of the City officials are not included in some form or another. For example:

> Frank Doyle testified that he was Chief of the Division of Refuse when WGSL was initially selected. He confirmed that the original Environmental Impact Statement ("EIS") stated that only 59 or 60 acres was suitable for landfill use. (For ease of reference, the "Tr." refers to the transcript in the Contested Case Hearing held on December 7, 2007, followed by the page numbers Tr. 215 and 217).
>
> You, Mr. Takamura testified that to expand WGSL under the 17 year contract with WMI, 8 million cubic yards of native soil will have to be removed to create 15 million cubic yards of airspace (landfill). (Tr. 67-68).
>
> WGSL is up the side of a mountain. In the present expansion of WGSL by the 14.9 acres, WMI encountered blue rock and has been blasting to expand WGSL. (Tr. 177-178). Paul Burns, former manager of WMI for WGSL, testified that grading has been done at WGSL which is outside the permitted 14.9 acres and is where blue rock has been encountered. (Tr. 149). It is for sloping of rock faces and drainage. (Tr. 150). In the E-3, E-4 area as much as 700,000 cubic yards of blue rock was removed. (Tr. 152-153).

> At the landfill, leachate is created. Leachate is "the decomposition of organic matter . . .produces CO2; if it's anaerobic, it produces methane, and the other end product is water. There's also water in – loose water with the material we grab or dispose of, so when it decomposes and breaks down, water seeps to the bottom . . . where the liner is and it collects there. . ." (Tr. 71).
>
> Count I of the NOV is entitled "Exceedance of Permitted Grades" and is relevant to the representation of the capacity at WGSL. (*Id.* at 2). In Count I and as testified to by Burns, permitted capacity in the ash monofill area was filled and exceeded in 2004 by 100,000 tons. (Tr. 168). In addition, 129,200 cubic yards of Municipal Solid Waste ("MSW") was placed above permitted grades. This computes to about 91,000-100,000 tons. (Tr. 168-169). When the DOH learned of these violations, it had originally told WMI to re-grade the ash monofill area and remove the excess MSW to the back portion of the landfill. (Tr. 248). An alternative provided to WMI was to construct the berms to address the stability issue. (Tr. 250).
>
> A "toe berm" was constructed at the "toe" of the ash monofill when Takamura was Director to address the overall stability of the WGSL. (Tr. 56 and 58).
>
> Takamura testified that stability issues are common when you touch a slope and WGSL is up the slope of the mountainside. (Tr. 60).
>
> Burns conceded the stability concerns and described WGSL as a canyon and once the valley is filled (the gulch) then when the expansion is upward, there is an effect throughout the whole facility. It is similar to stacking on the top and the effect will be there for the lower area. (Tr.159-160).
>
> Due to the topography of WGSL, there are three stability berms. One is for the ash monofill area and called the "toe berm." The others are the E-1 berm and the West berm. (Tr. 151). The E-1 berm was constructed in late 2005 to 2006 and the West berm in 2006-2007. (Tr. 164). All three berms were constructed with blue rock from primarily the E-3 cells. (Tr. 177-178). The West berm was constructed to stabilize the landfill as the east side (E cells) are being filled. As the east side fills the

> forces push the to the west side. (Tr. 254). These berms were stability berms which were a result of WMI overfilling WGSL. (Tr. 267).

There needs to be a description of safety factors. For example the testimony has been:

> Safety factor at WGSL is calculated at 1.5; however anything above it is acceptable. (Tr. 172). The example given is that in the E-1 area the safety factor is less than 1.5; however the addition of the berm brings it up to 1.5. (Tr. 173). The safety factor affects the grades at the landfill. For example if the factor was 2.0, the grades would need to be lowered. (Tr. 185). The stability factor at the ash monofill area before the toe berm was 1.29. (Tr. 248). A related issue is that WMI had used the wrong liner in that the "textured liner" was not used and a "smooth" liner was which called into question the resistance to movement of the landfill. There were at least two cells in the middle of the landfill with smooth liners. (Tr. 134).
>
> There are two types of safety factors, static and seismic. (Tr. 257). Seismic is when movement is anticipated and is calculated into the analysis. (Tr. 258).
>
> In a report by EA Engineering, Science and Technology, Inc., the stability factor of 2 is what is proposed with the explanation that safety factors between 1.5 to 1.9 is acceptable when it does not "pose and imminent threat to human health or the environment." The proximity to Farrington Highway and Kai Lani subdivision suggest imminent threat and supports the increase to 2.0. Exhibit H at 6.

What is clearly relevant to the general public and not set forth in this DEIS is the issue of the stability of the landfill and the requirement for the berms. It is very relevant especially when viewed in light of the first EIS which said only 59-60 acres were suitable for landfill. This is also important when viewed in light of the criteria of the Blue Ribbon Commission which included the statement that they would fill to "natural grade." (Criteria No. 23). The transcript of the Contested Case Hearing should be made a part of the Final Supplemental EIS as well.

Given the concern of the stability of the landfill and the recent earthquake on the Big Island, a discussion must be had as to what can be done if such a natural disaster caused the landfill to slip onto Farrington Highway. This discussion must look to the fact that expansion will be at the steepest part of the footprint of the parcel of land and the stress it will place on the existing landfill. The people of the Waianae Coast have only one way in and one way out.

Stability of the Landfill must be analyzed in light of Figure 3-2 which shows the expansion throughout the 200 acres of land. It will be a total landfill with the exception of a 100 foot buffer.

Though mentioned earlier, the fact that City states in this section that it has a program to control the "Contaminated Materials," this is without basis. It is also without basis that the "all documentation of asbestos disposal" is present on site. In fact, that is one of violations that WMI could not determine where the asbestos was disposed of. The asbestos disposal plan may set forth a plan; however, from the NOV we know that WMI did not follow that plan. It is unacceptable to simply state a plan and have no enforcement as to whether it will be followed.

As well, statements that their storm water or water drainage are managed is incorrect. Again, the NOV is on point and the amount of leachate which had to be pumped and dumped into the Waianae Sewage Treatment plant needs to be addressed.

Figure 4.9 seems contrary to the representations made to the Ko Olina community. Assuming that the color chart sets forth the sequence of the closure, then the area in the back of the landfill will be closed before the areas closest to Farrington Highway. This means that landfill operations will be visible from Farrington throughout the extended life of the landfill.

Cost of the Landfill

Another issue which was a criteria in the Blue Ribbon Commission's consideration was costs. At Section 4.11 a discussion of costs showed $60,800,000 for the cots of the excavation and other costs for a total cost of $99,400,000 in 2008 dollars. How are these costs arrived at? In addition, the costs of the berms should be included in that these structural changes enable the City to now petition for an extension. In addition, the reference in the DEIS is to the figure $86 million as the cost. The discrepancy must be addressed. There also needs to be a discussion as to whether additional berms will be required or are anticipated at the site.

In discussing costs, the City has said it makes a profit of $4 million a year at WGSL. If this is the case, for a 15 year expansion the operational cost will increase by at least $6.63 million a year. Why is this then economical?

Section 5 Environmental Setting

Given the recent decisions by the Hawai`i Supreme Court, it is necessary to discuss the concept of public trust. This is especially true when looking at the waters of this State. What occurred with the operations of WGSL and the leachate is inexcusable and a violation of that public trust. Note that the leachate was disposed of, for most part, in the Waianae Sewage Treatment Plant.

In this light, there is inadequate discussion of the leachate. This is especially troubling given the DOH NVO. This requires a discussion as to the how the build up of the leachate affected or could affect the integrity of liner and the stability of the landfill. It must also be addressed in light of the expansion and the stress it will have upon the liner and the stability of the landfill.

Geology

According to Figure 5.2, the proposed expansion will be primarily in the rRK soil type. This means rock over a large percentage of the surface. In addition, the description of the soil associated with rRK is "sticky and very plastic." This means that there will be a "high shrink-swell potential when moisture laden." The impact of this type of soil must be discussed when stability of the landfill will be an issue as it goes up the slope.

There must be a more detailed discussion as to the slope differential for WGSL in the proposed expansion area. It is admitted to that the upper portion of WGSL where the expansion will take place will be steep with the rRK type soil. How will excavation be safely accomplished in that region must be discussed along with the storage or removal of the excavated "native soil."

The rights to the native soil (rock, etc.) must also be addressed. It is believed that with the present operation, the contractor who does the excavation is permitted to sell the rock and soil and keep the funds. If this is the case, the practice must change and the benefit should be to the taxpayers. If the "sale" of the rock is part of the contract with WMI, these amounts must be calculated.

The DEIS concludes that "adverse impacts are not anticipated" as a result of the lateral expansion. There needs to be a definition of "adverse impacts" and how the DEIS concludes that such impacts are "not anticipated." Clearly the City and its operator have stated these similar conclusions in prior EISs and the NOV has shown to the contrary. For example how else will height violations be noted other than a "fly by." What type of monitoring device will be utilized to establish that the landfill is stable other than mathematical computations performed by WMI's experts? Part of the costs of the operation of the landfill should include a fund which the DOH utilizes to hire its own experts to monitor the landfill activities.

Regional Hydrology

This discussion in the DEIS is of interest in that it is in direct contradiction to the UIC line which is what is relied upon in the siting of the landfill. Discussion is necessary as to how the UIC line has been arrived at when it is clear that WGSL does sit over and is a part of the "Makaiwa Aquifer System." Given the past mismanagement of WGSL by WMI, it is critical that we understand the assumptions which have been made in the past, in particular the UIC line and landfill operations over an aquifer. There is an EPA map on the water systems which differs from that of the DOH. There needs to be a discussion as to difference and how the UIC lines have conveniently been drawn around existing landfill areas throughout the State.

Read in conjunction with the discussion in Section 7 as to the natural springs and water sources in the area, there should be an analysis done as to why the UIC line carves out WGSL; and more importantly the long term impact of the landfill over an aquifer.

Air Quality

There needs to a discussion in Air Quality of the EPA violations against the WGSL. Though the matter has not been resolved, for the DEIS to be accurate, the violations should be set forth as well as the anticipated remedy for the problems. Also, to the extent that the EPA violations overlap with the NOV, that discussion should also be found in the EIS.

Under this section, a passing discussion is made of the impact of the "sludge" and how it is no longer being disposed of at WGSL. The accuracy of the statement is challenged as to when it was "no longer being disposed of at WGSL." How much sludge is or has been disposed of at WGSL must be discussed. In addition, it is unclear as to whether the pellets have been authorized for sale. If not, then are these pellets being disposed of in WGSL? It is believed that the statement is incorrect as to whether the sludge is no longer at WGSL.

Methane Gas

Part of the NOV was a violation as to methane gas. The concern is whether the methane gas is smoldering or burning at WGSL. There needs to be a discussion as to how this is monitored and also that methane gas fires are found in landfill operations and WGSL should be no different. If in fact there is such a fire smoldering, what is the anticipated impact on the community and the stability of the landfill. Though there is an attempt to say that landfill permitted temperatures are higher in other states, the issue is the impact on this landfill which is located so very close to a resort and homes.

Blasting

As expected, due to the soil type in the expansion, excavation must occur with the assistance of blasting of the rocks. It is significant that the blasting is anticipated to be no more than one per day and no more than one to three times per week. If this is the average, then over a 15 year period these are a significant number of blasting activity. The discussions surround the noise and not as to the stability or structural impact on the landfill and the surrounding area. Related is the discussion on the culturally significant outcroppings which the City claims cannot safely remain in place. If the concern is over the impact of the blasting, then the blasting must have impact throughout the existing landfill. There needs to a discussion as to this fact, along with what impact it will have upon the structural berms presently built.

Pueo and Other Birds and/or Animals

It is unfortunate that the DEIS simply dispenses with these animals and birds due to the lack of sighting on a "survey." There needs to be a clear description as to how many surveys were taken and when. I have personally seen the Pueo on many occasions fly from WGSL to the area near Lanikuhonua and Kai Lani. It is questioned as to how thorough this survey is. There is a reference to a survey in 1999 and it must be clarified if the DEIS is relying upon this older study. The area is also designated as a habitat for the Elepaio. It appears that the DEIS is disagreeing with this designation. An explanation is needed as to this conclusion.

Aesthetics

As a person who has lived both at Kai Lani and now the Ko Olina Kai, I have no idea as to how the City can say that the lower portions of the landfill have a "naturalized" look. It is not natural at all and neither is the view of trucks going up and down the landfill.

The visual impact of WGSL has not been adequately addressed especially with the construction of the rock berm wall. How is this area going to be restored to its original state with a rock berm wall.

Section 6 Public Services, Potential Impacts And Mitigation Measures

Traffic

The DEIS is deficient in that it does not present the numbers of vehicles which travel to WGSL clearly in the body of its statement. It concludes by saying it is not anticipated to add more to the existing pattern. However, what is needed is a discussion as to what is the load and the description of the types of vehicles which will be used to dispose of the MSW or Ash at the WGSL. With the anticipated growth in the not only the second city of Kapolei but at Ko Olina, this discussion must address the actual numbers and the anticipated impact with the increase number of vehicles due to the growth in the area.

Wastewater System

There needs to be discussion as how the existing system will be adequate when it clearly was not adequate for the limited expansion as noted in the NOV. The City must honestly discuss the shortcomings of WMI, the operator, who has failed to operate WGSL in a professional manner.

Odors and Windblown Trash

The fact that those who live by WGSL continue to experience the odors is not adequately addressed by the DEIS. Like the "surveys" mentioned above, there needs to be a discussion as to how the odors are being monitored. Testimony has been received by people who are on the golf course and those who live in Ko Olina as to odors and windblown trash of the landfill. It is important to note that Counts in the NOV addressed the windblown trash and odor issues. Given the fact that violations have been found, the City must ensure that these violations do not occur again, given that it continues to have the same operator.

Section 7 Socioeconomic and Related Environment, Potential Impacts and Mitigation Measures

NIMBYism

As expected, the Kailua Neighborhood Board has always been adverse to the closure of the WGSL. This is due to the fact that Ameron Quarry has been viewed as a successor. It is unfortunate that the communities are forced to take positions such as they have. If the City clearly looked at alternatives and did not deal in "fear" and in its delay tactics, there could have been a long term resolution. It is not acceptable that the City's position is, "where do you want to put it?" The City is the governmental agency tasked with this obligation and it cannot simply wait, as it has, with the hopes that other agencies will buy in to its mantra that there will be rubbish on the streets if an extension or expansion is not approved.

Economic Considerations

The role that Ko Olina plays as it relates to the economic growth for West Oahu is significant. While no one would consider placement of a landfill near Waikiki, the City does not hesitate to continue a landfill operations directly across the street from Ko Olina.

Discussion on the Landfill impacts on jobs, etc. would exist wherever the landfill is sited. The discussion is lacking as to what could happen if WGSL is expanded as to the development of the Resort.

Fairness Issues

There is a discussion as to how some residents believe that Waianae is the dumping ground for the City; and the expansion of WGSL continues to dump on and places the burden on the Waianae Coast. There needs to be a discussion of the concept of environmental justice and how this discussion required under NEPA should be better explored in the DEIS.

Community Benefits Package

There needs to be an honest discussion on the benefits package. Remember that the Waianae Coast takes more than the City's rubbish. There is always the issue of "catch up" for the Waianae Coast because it appears that it is last to receive anything. When the concept of a "community benefits package" is discussed, there needs to be an analysis as to what the community would be entitled to as all others would and what is received in addition to that. The benefit must be in "addition to" not merely a replacement of.

Historic and Archaeological Findings

Prior EISs have not acknowledged the cultural significance of the Waimanalo Gulch. The DEIS recognized what is described as "Three upright boulders potentially utilized as trail or boundary markers."

It was agreed to that the stones were significant and likely used by traditional Native Hawaiian practitioners in the past. The consultants believed these stones should be preserved in place; however, the City has deemed this to be "not an option" and will move the structures. Though the cultural practitioners also expressed a concern as to the appearance of the landfill after it was completed and the boulders returned, it remains the position of the City to ignore these concerns and continue with the construction of the landfill. The DEIS must address whether the landfill expansion is at any cost and the cultural significance should be ignored.

The DEIS must address the sentiments of OHA as stated:

> OHA has made a field visit to the project site and we noted three significant cultural features that were still intact in the project area. We are also aware of the probable existence of others yet to be discovered in the project area. OHA is further saddened that the larger setting that this project sits in is one that has been highly developed and degraded. Therefore, what TCPs [Traditional Cultural Properties] that remain must be protected.
>
> The Department of Planning and Permitting, as a county agency, is mandated by Hawai`i Const. Article XII, section 7, "to preserve and protect customary and traditional practices of Native Hawaiians." Ka Pa`akai O Ka`Aina v. Land Use Comm'n, 94 Haw. 31, 45 (2000). . . . OHA urges that nothing more be done with this project until full cultural assessment has been made of the project area.

(OHA letter of September 21, 2007). At the very minimum, to address OHA's concern, there needs to be a clear statement as to how and what has been done for a "full cultural assessment" of the project area. In that much of this land has been degraded, it does not give the City the right to continue in its degradation.

Though he has passed, a respected Kumu Hula of the area, John Kaimikaua, told the story of the role of Palehua and its relationship to WGSL. There is a video of his tale and it should be included in the discussion of the cultural significance of WGSL.

The stories of the strange events in the initial construction of WGSL are rich. Yet, the DEIS continues in its predetermined conclusion that the landfill should be expanded.

Section 8 Relationship to Land Use Plans, Policies and Controls of the Potentially Affected Area

The concepts of the State General Plan have been revisited by the Legislature for the past 3 years. The Legislature has funded the Task Force on Sustainability for the year 2050. The Task Force has adopted it Sustainability Plans for the year 2050. In addition, what is now Act 183, SB 2646 CD1 of the 2008 Session, addresses the concepts of Important Agricultural Lands. The DEIS must engage in the discussion as to what is "important Ag lands" and recognize that it is no longer tied to land classification such as A, B, etc. In this light, does it impact the continued use of WGSL.

The discussion of the Land Use Policies of the area cannot be made without a discussion of the LUC's D&O on the SUP, as amended. The D&O now states that no later than November 1, 2009, the area shall be "restricted from accepting any additional waste material and be closed in accordance with an approved closure plan." This is the controlling LUC Order on the site of the proposed expansion. In addition, the City is to provide the LUC with updated status every 6 months. As someone who participated in the LUC hearing, it is clear that the LUC has sent a clear message to the City that it will not be caught in the untenable position that there is no alternative in the time remaining.

There is also a need to discuss whether the SUP process under HRS 205-6 is the proper mechanism by which to seek this expansion. The DEIS must consider whether a boundary amendment must be sought for this further expansion.

Section 9 Alternatives to the Proposed Action

This discussion in the FSEIS (most recent EIS on the property) and other documents has been inadequate in addressing alternatives. After all these years, the City must have a better response on alternative technologies, transshipment and other sites than what is provided. Again, it appears that it is simply easier to continue to have the existing landfill; and therefore all attempts to address alternatives in good faith will never be a reality.

The City has failed to timely develop its Solid Waste Management Plan. In that this is not a reality, documents such as this DEIS is not being judged by the appropriate measure.

An RFP for transshipment was solicited by the City. It is believed that the company who has been working on transshipping has had its bid challenged. If the City agrees that the bid is too low, then transshipment will not become a reality. The City does not prefer to transship because of the loss of revenue for the City. The DEIS must do a proper analysis of the loss of revenue and recall that cost is not a limiting factor in the discussion of alternatives.

What is also of concern is the discussion on Plasma Arc and how this technology does not meet the City's requirements. The DEIS does not recognize the technology which is successfully operating in Japan and the GeoPlasma facility to be operational in St. Lucie, Florida. What is just as troubling is the absence of recognition that on May 7, 2008 SB 1720 HD2 was enrolled with the Governor and on May 23, 2008 it was signed into law as Act 104 (2008 Session). This Act relates to the Special Purpose Revenue Bond to Assist Jacoby Development, Inc., a Processing Enterprise. Jacoby Development Inc.-Geoplasma LLC is authorized to issue a SPRB to build a similar facility as Florida's in Hawai'i which will not cost the taxpayers anything. Instead of welcoming such a technology, the City, instead, finds that the technology is not adequate.

Discussion of alternative landfill sites are also premised on the Blue Ribbon Commission's findings. As stated earlier, the assumptions upon which the Commission made its recommendations are incorrect and must be re done. The landfill capacities and costs are especially problematic given the obvious misinformation provided by R.M. Towill. Look at Table 9-13 to demonstrate the difference in what is presented and what is the reality. This DEIS is placing the costs of WGSL expansion at $86-99 million.

It will always be the position of the people of the Waianae Coast that there should be no more landfills on our community. We have borne the burden for not only the landfills, MSW and construction, but also the power generation facilities, live fire exercises, the homeless, etc. There is a need to look at these alternatives in terms of what is fair and in the context of environmental justice.

What is evident is that the City is not being honest in its discussion on Maili Quarry. This DEIS fails to note that the LUC denied that SUP permit of Sphere to operate a Construction and Demolition Landfill on the site. It is just as improbable that the LUC will grant a MSW landfill on the site. The proximity of this site to Maili Elementary School and its low water table is problematic. In addition, this site did accept AES's ash without a proper permit and without lining its landfill operations. In addition, traffic and access is a major concern. This landfill site is located off of a private road, Paakea which has been the site of major accidents due to the "dip" in the road. The question is whether the City will compute into its costs for the Quarry, the cost of the road and of access.

Nanakuli B is the site of a proposed private landfill. Nanakuli B will cause major traffic problems for the people of the Waianae Coast. The community will fight Nanakuli B because it is the expansion site of PVT Landfill, the only Construction and Demolition Landfill on this island. It cannot be the intent of the City to place two landfills across the street from each other and cause this community to bear this burden for a measly pay off. This DEIS must look into this inequity. The people of the Coast also want PVT closed.

Ameron Quarry is dispensed with because of costs. When the true costs of the expansion of WGSL is computed, the costs of WGSL exceeds that of Ameron.

What is lacking in this DEIS is the fact that in a few years, the status of H Power will also be an issue. If the City decides to re purchase H Power, then that cost must be made known and its impact on the cost of solid waste disposal. The expansion to a third boiler will have major cost implications.

Underlying all of this is the discussion on "flow control" of the MSW. This DEIS is inadequate in that until the necessary "flow control" is defined, the alternatives as it may be available by other vendors will not become a reality and what will remain is only the expansion alternative.

Notwithstanding, what is truly lacking in the DEIS is a combination of alternatives. To discuss these choices as a "zero sum" game does not make this DEIS a true document upon which the decision makers can rely upon.

Section 10 Irreversible and Irretrievable Commitment

Again, the DEIS is a document with a predetermined outcome. It is simpler for the City to expand WGSL than to truly explore alternatives. Promises of how the landfill will operate better and mitigation will be enforced are empty promises in light of the past performances and present performances. The recent lawsuit against Schnitzer Steel shows how there is no monitoring by the WGSL or the City before millions are given for a rebate which allegedly should not have been given. The DEIS is without basis to make such a representation or conclusory statement to the public.

Section 11 Unresolved Issues

Missing in this section is the EPA violations. In addition, it is disconcerting that the DEIS will have as an unresolved issue; the stone uprights. Given that these issues are "unresolved," this DEIS could have been made public sooner. This is all part of the plan to go before the governmental agencies with no time left and to ask for yet another extension or the expansion.

Section 12 Permits and Regulatory Approvals that May be Required

The DEIS fails to recognize the State Land Use Commission is a State agency not within the City & County of Honolulu's process. In fact, HRS § 205-6 is the State Land Use Commission statute. This DEIS should address whether a boundary amendment will be required and not a SUP.

Section 13 Organizations, Agencies and Public Parties Consulted In the Preparation of the Environmental Impact Statement Preparation Notice

No Comment.

Section 14 Significance Criteria

The DEIS provides its analysis of the significance criteria as set forth in §11-200-12 of the EIS Rules. The Rules provide:

A. In considering the significance of potential environmental effects, agencies shall consider the sum of effects on the quality of the environment, and shall evaluate the overall and cumulative effects of an action.

B. In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;
2. Curtails the range of beneficial uses of the environment;
3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;
4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;
5. Substantially affects public health;
6. Involves substantial secondary impacts, such as population changes or effects on public facilities;
7. Involves a substantial degradation of environmental quality;
8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;
9. Substantially affects a rare, threatened, or endangered species, or its habitat;
10. Detrimentally affects air or water quality or ambient noise levels;
11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,
13. Requires substantial energy consumption.

The DEIS answers each and every criteria in the negative. This provision of the EIS Rules is not applicable in that this section is relevant if there is to be a determination of no impact and therefore an EIS or an Environmental Assessment ("EA") will not be required. Specifically:

> §11-200-9 Assessment of Agency Actions and Applicant Actions
>
> A. For agency actions, except those actions exempt from the preparation of an environmental assessment pursuant to section 343-5, HRS, or section 11-200-8, the proposing agency shall:
>
> . . .
>
> 4. Determine, after reviewing the environmental assessment described in paragraph (3), and considering the significance criteria in section 11-200-12, whether the proposed action warrants an anticipated negative declaration or an environmental impact statement preparation notice, provided that for an environmental impact statement preparation notice, the proposing agency shall inform the accepting authority of the proposed action;

However, what is missing is paragraph I of the Contents of a Draft EIS:

> § 11-200-17 provides at:
>
> I. The draft EIS shall include a statement of the probable impact of the proposed act on the environment, and impacts of the natural or human environment on the project, which shall include consideration of all phases of the action and consideration of all consequences on the environment; direct and indirect effects shall be included. The interrelationships and cumulative environmental impacts of the proposed action and other related projects shall be discussed in the draft EIS. <u>It should be realized that several actions, in particular those that involve the construction of public facilities or structures</u> (e.g., highways, airports, sewer systems, water resource projects, etc.) <u>may well stimulate or induce secondary effects.</u> These secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment. The population and growth impacts of an action shall be estimated if expected to be significant, and an evaluation made of the effects of any possible change in population patterns or growth upon the resource base, including but not limited to land use, water, and public services, of the area in question. Also, if the proposed action constitutes a direct or indirect source of pollution as determined by any governmental agency, necessary data shall be incorporated into the EIS. The significance of the impacts shall be discussed in terms of subsections (j), (k), (l), and (m). [Emphasis added.]

The section of the EIS rules which applies to the DEIS, has it own definition of "significant impact" as defined above. What the DEIS is clearly lacking is the discussion of secondary impacts. The recent Supreme Court decision in ***Sierra Club v. DOT,*** *105 Haw. 299, 167 P.3d 292 (2007)* is on point. This case is also known as the **"Superferry Case"** and it clearly has redefined the concept of secondary impacts. It is presumed under the EIS Rules that there is a secondary impact. This DEIS is void of any such discussion.

The DEIS has incorrectly concluded there is no significant impact under the EIS Rules. Clearly the DEIS has not met its burden to overcome the assumption of significant impacts for a public works project such as this.

<u>*Hawai'i Law*</u>

There will be finding of significant impacts because in order for an EIS to stand the test under Hawai'i law, it must be, 1) compiled in good faith; 2) met statutory requirements; and 3) provided sufficient information for the decision maker to make an "environmentally-informed choice."

1. <u>The EIS Was Not Compiled In Good Faith.</u>

The supplemental EIS's contents must comply with the requirements of an EIS. HAR § 11-200-14. An EIS is "meaningless" if it is self serving and rationalizes an outcome.

The Ninth Circuit has identified this concern as "timing." ***Idaho Sporting Congress, Inc. v. Alexander,*** 222 F.3d 562, 568 (9th Cir. 2000). In ***Idaho***, the ninth Circuit reversed the district court's denial of an injunction and discussed the timing of the agency's action and the fact that the process shall not be used to rationalize or justify decisions already made. In ***Metcalf v. Daley***, 214 F.3dc 1135, 1143 (9th Cir. 2000), the Ninth Circuit found another violation of the timing requirement and looked to the fact that the EIS process had begun after the agency had signed an agreement making the process one that rationalized the decision. This is exactly what has occurred here.

There are three specific examples of the bad faith. One is the contract of 1999 which has been entered into by WMI and the City. The DEIS should have included this document in that it is critical in understanding how this outcome has been manipulated. The contract is incorporated by reference herein. The second example is the reliance on the Blue Ribbon Commission and the flawed assumptions. This is especially true when R.M. Towill has been the consultant on almost all of the EISs and the consultant for the Blue Ribbon Commission. An excuse that they are unaware of the topography is absurd. The third is the contents of the NOV.

2. <u>The Statutory Procedural Requirements Were Not Met.</u>

The EIS process is governed by HRS § 343. An EIS is:

> § 343-2 Definitions. As used in this chapter unless the context otherwise requires: . . .
>
> "Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The statute also sets forth what the Rules must contain, at minimum. HRS § 343-6. The legal effects of administrative rules are well settled in this jurisdiction. Administrative Rules are to be followed and given the full effect of law. ***Williams v. Hawaii Medical Service Association,*** 71 Haw. 545, 549, 7984 P.2d 442, 444 (1990). The Supreme Court has clearly stated that arbitrary and capricious application of the Rules will not be tolerated. ***Windward Marine Resorts v. Sullivan,*** 86 Haw. 171, 948 P.2d 592 (ICA 1997).

HAR § 11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The "General Provisions" highlight the expectation of the EIS process.

> . . . An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest

> opportunity in the planning and decision making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision makers will be enlightened to any environmental consequences of the proposed action.

HAR § 11-200-14.

Title 11, Chapter 200, contain the "Environmental Impact Statement Rules" and the following are examples of Rules which were not met.

a. Full consultation did not occur with the DEIS.

HAR § 11-200-15 A sets forth the following requirements to satisfy the consultation process.

> In the preparation of a draft EIS, proposing agencies and applicants shall consult all appropriate agencies noted in section 11-200-10 (10) and other citizen groups, and concerned individuals as noted in sections 11-200-9 and 11-200-9.1. To this end, agencies and applicants shall endeavor to develop a fully acceptable EIS prior to the time the EIS is filed with the office, through a full and complete consultation process, and shall not rely solely upon the review process to expose environmental concerns.

This provision is to be read with the foregoing General Provisions and the requirements of HAR § 11-200-22 A, which further emphasize meaningful public participation as follows:

> Public review shall not substitute for early and open discussion with interested persons and agencies, concerning the environmental impacts of a proposed action. Review of the EIS shall serve to provide the public and other agencies an opportunity to discover the extent to which a proposing agency or applicant has examined environmental concerns and available alternatives. . .

These requirements are clear and unambiguous. Hawai`i case law has consistently held that when statutes or rules are clear and unambiguous, they are to be given effect in accordance with their plain and ordinary meaning. ***IBEW v. Hawaiian Tel.,*** 68 Haw. 316, 323, 713 P.2d 943, 950 (1986); ***RGIS Inventory v. Hawai`i Civil Rights Comm.,*** 104 Haw. 158, 160, 86 P.2d 449, 451 (2004). Under the Rules, the consultation process should have been implemented as soon as possible to engage the appropriate agencies and the public and not rely solely upon the review process.

When the issue of the expansion was brought to the communities, the Mayor prohibited the participation of the elected officials in his meeting. This can hardly be deemed as compliance with the consultation process. In addition, there was no sense that the decision to expand was open for discussion. The discussion was simply, if you don't expand WGSL, then the landfill will go to Nanakuli. This is not a consultation process which is open to the public.

Moreover, the concerns of the NOV and the acts complained of therein should give rise to major environmental concerns and require thorough discussions. The DEIS merely dismisses it with the fact that a settlement has been reached. The violation and the fines were the largest in the Nation at that time.

b. The FEIS failed to comply with the requirement to address alternatives.

HRS § 343-2 defines an EIS as one that discloses, among other items, the "alternatives to the action and their environmental effects."

HAR §11-200-17, which sets forth the Contents requirement of a Draft EIS, addresses the requirement as to alternatives as follows:

> F. The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. Examples of alternatives include: . . (Emphasis added.)

HAR § 11-200-17 F. 5 states that "For any agency actions, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency." In ***Westlands Water District v. U.S. Dept. of Interior,*** 376 F.3d 853, 866 (9th Cir. 2004), the Ninth Circuit reaffirmed that alternatives must be rigorously explored and that "reasonable alternatives" include those not within the jurisdiction of the lead agency. ***Westlands, supra,*** at 868. The Ninth Circuit went on to say that "[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate." ***Id.***. citing to ***Morongo Band of Mission Indians v. FAA,*** 161 F.3d 569, 575 (9th Cir. 1998).

The alternatives discussed by the City assumed the City would operate the landfill and therefore required the purchase of each site. No consideration was given to private landfills and its ability to operate as an alternative landfill location, or alternatively, a private/public partnership. The DEIS fails to address the how much money the City makes on landfill operations and the need to control "flow" of MSW.

The DEIS also fails to adequately address the delay in the Solid Waste Management Plan and the City Ordinance which states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill.

Moreover as discussed above, there is no discussion of secondary impacts which is necessary in order for an DEIS to be adequate.

c. The purpose and need section limits discussion.

HAR § 11-200-17 D requires the Draft EIS to "contain a separate and distinct section that includes a statement of purpose and need for a proposed action." It is a similar provision under NEPA, which is looked upon to guide the discussion on alternatives. ***Westlands, supra,*** at 866. In ***Westlands,*** the Ninth Circuit looked to whether the preparers had "arbitrarily and capriciously" narrowed the scope of the statement, thereby affecting the discussion on the alternative.

Section 15 Comments and Responses to the EISPN

No Comment.

In the preparation of the Draft Supplemental EIS for this proposed expansion, it is critical that the decision maker and the general pubic are made to understand why the promises of government need not be kept. There should also be an explanation as to why the City prepares this DEIS and the Final EIS will be accepted by another City agency. This is especially true when the accepting agency has attached to it, the Planning Commission which is expected to be called upon the make the decision as to whether an SUP should be recommended to the LUC or whether the process requires a boundary amendment.

I trust that these comments and concerns will be addressed fairly and completely in the Final Supplemental EIS.

If you have any questions or comments, please do not hesitate to contact me.

Respectfully submitted,

Colleen Hanabusa
Senator, 21st District

cc: ✓R.M. Towill Corporation
Department of Planning & Permitting
City and County of Honolulu
Office of Environmental Quality
State of Hawai'i

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October 23, 2008

IN REPLY REFER TO:
RA 08-125

The Honorable Colleen Hanabusa
President of the Senate
21st District
State of Hawaii
State Capitol, Room 409
415 South Beretania Street
Honolulu, Hawaii 96813

Dear Senator Hanabusa:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 7, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *"Section 2 Project Background–This section begins with the incorrect conclusion that WGSL is 'essential and necessary' for the City and County of Honolulu ('City'). WGSL is deemed to be essential and necessary only because no action has been taken by the City in truly exploring alternatives to landfilling on this island."*

The City is responsible for providing for the disposal of waste materials. Currently the primary disposal methods in use are recycling, landfilling and incineration. As explained in the DEIS, WGSL is the only currently permitted municipal solid waste ("MSW") landfill on Oahu. Any alternative landfill location other than Waimanalo Gulch will take time to select, acquire and permit. H–POWER handles the majority of the MSW that is disposed on the island. Waimanalo Gulch provides disposal capacity for the ash and residue from H–POWER and is a permitting requirement for H–POWER to operate. Since the Waimanalo Gulch is the only currently permitted MSW landfill and since H–POWER is required to take ash and residue to a permitted landfill, the Waimanalo Gulch Sanitary Landfill ("WGSL") is "essential and necessary."

2. *"An honest discussion is lacking in the DEIS as to why the City delayed in bringing the expansion to the public. News media reports of comments by the Planning Commission of the City and County ('PC') and the Land Use Commission ('LUC') evidence that these decision makers were also not pleased with what could be construed as a deliberate delay to request the extension. This expansion request will also be construed as leaving decision makers no alternative but to grant an extension."*

On June 9, 2003, the LUC issued its Decision and Order Approving Amendment to Special Use Permit ("2003 LUC Decision"). The City was ordered by the LUC to select a new site by June 1, 2004. The Mayor's Advisory Committee on Landfill Siting ("Mayor's Advisory Committee") was formed in June 2003 by Mayor Harris to make a recommendation to the City Council as to a new site for the landfill. The Committee issued a list of four sites for City Council consideration on December 1, 2003, in accordance with Condition No. 1 of the 2003 LUC Decision.

The City Council conducted an independent evaluation of the selection process used by the Committee, and determined that it was unable to make a decision by the LUC's June 1, 2004 deadline. The City was granted a 6-month extension, to December 1, 2004, to make a decision on a new landfill site.

The City also sought the LUC's clarification as to whether Waimanalo Gulch could be considered by the City Council as the future landfill site. The LUC stated that such a decision was not within its jurisdiction. Accordingly, Waimanalo Gulch was then considered as a potential landfill site by the City Council. The City Council selected Waimanalo Gulch as the future landfill site on December 1, 2004.

The current City administration took office in January 2005 and immediately began a review of the options for MSW disposal. This process took about a year to conclude. By early 2006, the City decided to proceed with the environmental review process for the future use of Waimanalo Gulch. In February 2006, the City Council passed Council Bill 37 (2005), CD2, which would have closed WGSL by May 1, 2008. Bill 37 was vetoed and the environmental review process for expansion of WGSL began in 2006. The EIS Preparation Notice was published in The Environmental Notice in November 2006.

Stone uprights were identified in the proposed expansion area in the Spring of 2007. Due to a staff shortage at SHPD, the evaluation of the cultural significance of the stones was delayed. Because a cultural impact assessment is required in an EIS, completion of the EIS was delayed. Additionally, the City has been in the process of seeking to increase waste-to-energy capacity as an alternative to landfilling and to transship refuse to be landfilled on the mainland. In both cases, the results to date have been reflected in the DEIS.

Because it was clear that given the delays related to evaluation of the stone uprights the City would be unable to complete the EIS and receive the proper permits before the May 1, 2008 deadline for cessation of waste acceptance at WGSL, the City sought a 2-year extension based on the fact that there was additional unused capacity. Ultimately, an 18-month extension was granted.

3. *"Blue Ribbon Commission - Much of this DEIS is based upon the Mayor's Advisory Committee on Landfill Site Selection ('Blue Ribbon Commission'). What the DEIS fails to address is that this Blue Ribbon Commission, having been staffed by R.M. Towill provided the members with inadequate information or incorrect information to fulfill their task."*

The process followed by the Mayor's Advisory Committee is detailed in the EIS. The Mayor's Advisory Committee's recommendations were made based on its own selection of criteria it considered important to the selection of an alternative landfill site. R. M. Towill supported by Pacific Waste Consulting Group, SMS Research, Cultural Surveys Hawaii, and the City gathered the information requested of it by the Committee. Site specific information was sought in a number of instances, but access to some of the potential sites was either denied or delayed (until late in the LUC timetable) by the landowners of four of the five sites. As a result assumptions that were shared with the Committee were made to enable a reasonable comparative analysis. Although there was significant technical data about WGSL available, in order to put all of the sites on an equal level for comparison, the "no excavation" assumption and other assumptions were used for the evaluation. These assumptions were documented in the data sheets that were provided to the Committee.

4. *"Though much is made about violations of the Sunshine law, what is lacking is an honest discussion of the flawed information which was provided to the Blue Ribbon Commission. Response by the City that R.M. Towill is not expected to know what the conditions of the land* [sic] *is absolutely laughable. The entity which has prepared all EISs in recent history and who is well aware of the Contract entered into to extend the management contract with Waste Management Hawaii, Inc. ('WMI') for the landfill operations at WGSL, cannot argue ignorance. It is of significance that the City finally admits that one of the criteria to assess the sites was no excavation. How R.M. Towill or the City could present WGSL expansion for 20 years with no excavation is akin to bad faith. The City and R.M. Towill was definitely on notice and failed to inform the Blue Ribbon Commission of this fact."*

This comment regarding the City's contract with Waste Management of Hawaii, Inc. ("Waste Management"), and the comment regarding "no excavation," are similar to comments made in earlier letters from you dated August 30, 2006 and December 26, 2006. We offer the following response, which is consistent with earlier responses:

> The contract amendment dated May 1, 1999, provided for the expansion of the Waimanalo Gulch site. Subsequently, the prior administration decided on a five-year limit for the use of the site. The contract was not amended to a shorter term because the exact date of termination could not have been determined. Although the contract was not amended, the City retains control of the contract and can terminate it at any time when it is in the best interest of the City. As provided in Contract Special Provision 29, the contract can be terminated,"… in whole or in part, whenever the Director shall determine that termination of the contract, in whole or in part, is in the best interest of the City." (Letter to Colleen Hanabusa from ENV, May 12, 2008)

Waste Management, consultants, and the City all understand this provision. The contract is a publicly available document.

Regarding "no excavation":

The no excavation remark that you cite comes from the Waimanalo Gulch Expansion, Potential Landfill Site Data Sheets, prepared for the Mayor's Advisory Committee on Landfill Siting, October 2003. The specific reference is to information provided for Criteria No. 23, Landfill Capacity or Site Life. According to the data sheet, "The volume was calculated assuming a 100 foot buffer around the site boundary, 30 acres for infrastructure facilities, no excavation, and filling to the natural grade." The rationale for not incorporating excavation as a factor involved the following:

A. It was not in the consultant's scope of work to do field studies including drilling borings to obtain subsurface information. This is typically the case when doing preliminary siting studies due to difficulty in gaining access to the property, the extensive time required for such studies, and the high cost of doing field studies. Without these studies, it is not possible to determine excavation depths or difficulty with any degree of certainty. Therefore, it is typical to assume minimal or no excavation in order to compare site capacities;

B. Criteria No. 23, therefore, was established to provide an estimate of capacity only based on: an area adjusted with an approximately 100 foot buffer around the perimeter of the site; the use of 30 acres for infrastructure to operate the facility; no detailed engineering calculations incorporating soils conditions to produce information on excavation; and filling of the site to the natural grade of the terrain of the finished site. It is incorrect to conclude or imply on the basis of information from the data sheet alone that in the course of developing a landfill site that no excavation would be required.

<u>See</u> Letter to Colleen Hanabusa from ENV, May 12, 2008.

5. *"The Contract between WMI and City should be made a part of the Appendices for the Final Supplement EIS to be accurate and complete."*

The contract between the City and Waste Management is a matter of public record and is publicly available for those who may wish to view it. The absence of the contract in the Appendices will not affect the accuracy, nor completeness, of the EIS.

6. *"In addition, the Appendix which is found in Volume 3 of 3 fails to include those pages which address the criteria as well as how the alternative sites were evaluated by R.M. Towill. This should definitely be included for all to review."*

The full Report of the Mayor's Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection dated December 1, 2003, which addressed the 31 criteria used by the Mayor's Advisory Committee as well as how alternative sites were evaluated, is attached as an exhibit to Appendix K of the DEIS, and located on the City's website at <u>http://www.opala.org/solid_waste/archive/Mayor%27s_Advisory_Committee_on_Landfill_Siting.html</u>. Additionally, a description of the criteria and evaluation process is located on pages 9-51 to 9-73 of the DEIS.

7. *"Under Section 4 of this letter, there will be a discussion of the costs. Cost which was a criteria for the Blue Ribbon Commission had very minimal expenses for WGSL because of the lack of excavation. This is again shown to be an incorrect statement."*

Costs are addressed below in responses to comments 35 and 36.

8. *"DOH Violations - The so called alleged efforts of the City to address the Department of Health's Notice of Violations ('NOV') and how to prevent them in the future need more details. This is especially true in light of the subsequent allegations of mismanagement and the recent lawsuit regarding the City's rebate of tipping fees to Schnitzer steel. What is of significance is the issue of what is the City doing to monitor what is being placed in the landfill. It is also important that irrespective of whether the violations were 'settled;' there is still lacking information as to how and where the asbestos was buried. This is hidden in the violations regarding the reporting to the DOH."*

As a result of the NOV, and new regulations and requirements, additional provisions were included in the revised landfill operating permit. Furthermore, the Department of Health, State of Hawaii ("DOH"), has greatly increased the frequency of its site inspections and review of the required operating documents. Finally, City staff is in constant contact with Waste Management and addresses issues that may arise on a daily basis. City staff does an initial screening of what is being placed in the landfill when the delivery vehicle is at the scale house. Waste Management does further screening as the waste is disposed of at the working face of the landfill. The City co-authors or receives copies of all reports submitted to DOH.

The allegations in the Schnitzer Steel lawsuit – to which the City is not a party – have yet to be proven, and in any event, Schnitzer Steel provides annual certification that the recycling residue in question meets all legal requirements for landfill disposal.

Asbestos is handled in accordance with Part II, Section C, of the operating permit dated February 20, 2008, which is publicly available.

9. *"The exceedance of grade is a critical issue as to future monitoring and there needs to be a more detailed discussion as to how this will be avoided in the future."*

After extensive review and a stability analysis, DOH approved the grade modification to WGSL. A ground survey is performed on a bi-monthly basis to compare existing grades with approved grades. DOH is responsible for enforcement at the site and determines the frequency of its inspections.

See also Section 2.3.1, State Department of Health of the FEIS, for further discussion.

10. *"EPA Violations - It is unacceptable to merely address these violations as "resolution pending. "In light of this Department and the City's battles with the EPA on the sewer systems, it is important to cover in this DEIS the relationship between the two, if any."*

The primary violation in the EPA Finding and Notice of Violation ("EPA NOV") was the late installation of the gas collection system, which was self-reported. It was installed and operational by November 2005. Subsequently, the EPA issued its NOV in April 2006. Thus, what led to the initial violation was corrected.

In addition, EPA alleged that the WGSL continues to operate in violation of EPA regulations because the WGSL's wellhead gas temperatures exceed 131°F in some of the landfill gas wells. Waste Management continues to monitor and evaluate the potential causes of the elevated gas temperatures and has provided documentation to EPA and DOH to demonstrate that the Landfill can be safely operated at these higher temperatures. Waste Management will continue to coordinate appropriate measures to maintain compliance with all regulations as required by law.

There is no relationship between this EPA NOV and the City's sewer systems.

See also Section 2.3.2. U.S. Environmental Protection Agency, of the FEIS.

11. *"More importantly, what is lacking is a discussion as to what the City has done in terms of contract evaluations and performance evaluations of its operator, WMI. Given the nature of their violations and the magnitude, the DEIS is required to provide this information to the public."*

To evaluate operations performance, the City hired a third-party engineering consultant to evaluate landfill operations. They concluded that Waste Management was performing at a satisfactory level. Waste Management also contracted with another third-party engineering consultant to evaluate the effect landfill operations may have on neighboring areas and has shared data with the City. The City's staff meets weekly with Waste Management's staff to discuss landfill operations. In addition, the City's Refuse Disposal Engineer is in daily contact with Waste Management's General Manager regarding operations at WGSL.

See also Section 2.4. Summary of Current Status, of the FEIS.

12. *"Section 3 Introduction - This introduction is lacking in that it fails to set forth that this is a project which was promised to be closed by the prior administration and this Mayor as well."*

The City acknowledges that prior commitments were made by previous administration officials to close WGSL by 2008. See also pages 2-2 and 2-3 of the DEIS. This position was overridden by the subsequent City Council selection of WGSL as the location of the City's future landfill as described in section 2 of the DEIS. The City is unaware of any commitment by the current administration to close WGSL.

13. *"Moreover, in that the City has chosen to address the requirements of a DEIS in this section of its document, it should be clear as to exactly what is required, such as:*

> *Department of Health Rules ('HAR') § 11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The 'General Provisions' highlight the expectation of the EIS process.*
>
> > *. . . An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision makers will be enlightened to any environmental consequences of the proposed action."*

The DEIS was prepared in accordance with Hawaii Revised Statutes ("HRS") Chapter 343 and Title 11, Chapter 200, of the Hawaii Administrative Rules ("HAR"). The environmental review process allows for public input, such as your letter, which benefits the integrity of the review.

14. *"Clearly, this DEIS is a self serving recitation and a rationalization of what the City wants to do. The Rules require that these statements be prepared at the earliest opportunity and it is evident that the City chose to wait until the last possible moment. The argument which the City will raise is the discovery of stone outcroppings. However, the City chose to file this DEIS without a determination by the EPA on the violations at WGSL. When it has been convenient, the City has chosen to act so that there is no time for any viable alternative."*

See the response at pages 1-2 of this letter regarding the EIS process and timeline. A cultural impact assessment is a necessary component of an EIS in accordance with Hawaii law. This assessment could not be completed until the cultural stone uprights were evaluated. This evaluation and the cultural impact assessment have been completed, however, the final preservation plan for the stone uprights is currently being developed, and has therefore, been identified as an unresolved issue in Section 11 of the DEIS. The City, Waste Management and SHPD will work to ensure that an appropriate preservation plan is put into place.

Resolution of the EPA NOV is not required to complete this DEIS. The EIS is an informational document and provides the current status of the EPA NOV. It cannot predict the resolution of the EPA NOV. The City did not wait for completion of the negotiations with EPA to complete the EIS as doing so would have further compressed the schedule. The EPA operates on its own schedule.

15. *"Figure 3-2 in this section depicts expansion which will exceed the present SUP boundary. This means that the expansion is expected on the lower portion of WGSL nearest Farrington Highway which will make the landfill more visible to the residents. This expansion will take all of the 200 acres at WGSL minus a 100 foot barrier around the perimeter of the property boundary."*

The extent of proposed landfill expansion area is shown in Figure 3-2, Figure 4-6, Figure 5-1 and Figure 5-3 of the DEIS, and these figures show that expansion will occur mauka and northeast of the currently permitted area. The area south of Ash Cells 1 and 8, which you referred to as the "lower portion of WGSL nearest Farrington Highway," is currently permitted for facilities, but not for landfilling. That area is already a part of the permitted footprint and is expected to continue to be used for facilities.

The lower portions of the expansion area, as depicted on Figure 3-2 will be used for accessory uses, not landfilling. <u>See also</u> Figure 4-6 (Approximate Final Grading Plan and Proposed Stockpile Location). Surface treatments including landscaping will be done to improve the appearance of the site.

16. *"Section 4 Project Description - It is interesting that the City refuses to acknowledge that WGSL is located near Ko Olina. Ko Olina has a community and is marked as the Second Resort destination for the Island of Oahu. In these difficult economic times, it would be significance [sic] to know that location of the landfill to a major economic engine for the City and the State of Hawai`i."*

The DEIS clearly shows the location of Ko Olina and its proximity to WGSL in Figures 7-3, 7-4, and 7-5. Section 7.2., <u>Land Use and Ownership</u>, clearly acknowledges the presence and importance of Ko Olina as one of several regional land uses in proximity to WGSL.

17. *"Given that there has been a contested case hearing recently completed on the WGSL, it is of interest that the sworn to testimony of the City officials are not included in some form or another."*

The transcript of the Contested Case Hearing is a publicly available document. It is not necessary to recite or attach the transcript to the EIS. However, where your comment misstates testimony, the corrections are noted below.

18. *"For example: Frank Doyle testified that he was Chief of the Division of Refuse when WGSL was initially selected. He confirmed that the original Environmental Impact Statement ('EIS') stated that only 59 or 60 acres was suitable for landfill use. (For ease of reference, the "Tr." refers to the transcript in the Contested Case Hearing held on December 7, 2007, followed by the page numbers Tr. 215 and 217)."*

Mr. Doyle testified that the first EIS contained a reference that WGSL contained "59, 60 [acres], somewhere in that area" of land good for landfilling. <u>See</u> Transcript at 217. Please also refer to comment 29 below.

19. *"You, [sic] Mr. Takamura testified that to expand WGSL under the 17 year contract with WMI, eight million cubic yards of native soil will have to be removed to create 15 million cubic yards of airspace (landfill). (Tr. 67-68)."*

Dr. Takamura testified that it sounded familiar that eight million cubic yards of native soil will have to be removed to create 15 million cubic yards of airspace. <u>See</u> Transcript at 68.

20. *"WGSL is up the side of a mountain. In the present expansion of WGSL by the 14.9 acres, WMI encountered blue rock and has been blasting to expand WGSL. (Tr. 177-178). Paul Burns, former manager of WMI for WGSL, testified that grading has been done at WGSL which is outside the permitted 14.9 acres and is where blue rock has been encountered. (Tr. 149). It is for sloping of rock faces and drainage. (Tr. 150). In the E-3, E-4 area as much as 700,000 cubic yards of blue rock was removed. (Tr. 152-153)."*

Mr. Burns testified that drainage, grading and sloping of rock faces for safety reasons has occurred outside of the 14.9 acre expansion area designated for landfilling. <u>See</u> Transcript at 150. Mr. Burns also testified that rock "probably in the 700,000 cubic yard range" was removed from Cells E-3 and E-4. <u>See</u> <u>id.</u> at 152-53.

21. *"At the landfill, leachate is created. Leachate is 'the decomposition of organic matter . . .produces CO2; if it's anaerobic, it produces methane, and the other end product is water. There's also water in--loose water with the material we grab or dispose of, so when it decomposes and breaks down, water seeps to the bottom . . . where the liner is and it collects there. . .' (Tr. 71)."*

Dr. Takamura testified as follows:

> In the decomposition of organic matter, I guess the biological activity produces CO2; if it's anaerobic it produces methane; and the other end product is water. There's also water in--loose water with the material we grab or dispose of, so when it decomposes and breaks down, water seeps to the bottom of the--where the liner is and it collects there and it goes to the low point, and that's what we term "leachate."

<u>See</u> Transcript at 70-71.

22. *"Count I of the NOV is entitled 'Exceedance of Permitted Grades' and is relevant to the representation of the capacity at WGSL. (Id. at 2). In Count I and as testified to by Burns, permitted capacity in the ash monofill area was filled and exceeded in 2004 by 100,000 tons. (Tr. 168). In addition, 129,200 cubic yards of Municipal Solid Waste ('MSW') was placed above permitted grades. This computes to about 91,000-100,000 tons. (Tr. 168-169). When the DOH learned of these violations, it had originally told WMI to re-grade the ash monofill area and remove the excess MSW to the back portion of the landfill. (Tr. 248). An alternative provided to WMI was to construct the berms to address the stability issue. (Tr. 250)."*

Paragraph 9 of Count I of the DOH Notice and Finding of Violation (NOV) provides, "In a letter dated February 3, 2005, Waste Management states 'approximately 100,000 tons of ash delivered from the H-POWER facility has been placed above the current permitted grades of the ash monofill'. The February 3, 2005, letter further states that the placement of ash occurred during 2004."

Mr. Burns testified that he was unable to answer whether 100,000 tons of ash had been placed above current permitted grades in the ash monofill because that was before he arrived in Hawaii. See Transcript at 167-68.

Paragraph 11 of Count I of the DOH NOV provides, "With a submission dated February 22, 2005, showing 2005 topography and master plan final grades, Waste Management noted that 139,485 cubic yards of ash and 129,240 cubic yards of MSW were placed beyond the permitted grades."

As to paragraph 11 of Count I of the DOH NOV, Mr. Burns testified that 130,000 cubic yards was "about 91,000 tons, about there, 90-something thousand?". See Transcript at 168-169.

Gary Siu of DOH testified that DOH asked Waste Management and/or the City to regrade the ash on the Waianae side, and to remove the overfilled area in the MSW area and take it to areas with capacity. See Transcript at 248. Regarding the berm, Gary Siu testified, "The construction of the ash--the berm to stabilize the ash was done--because when they told us that they overfilled it, I believe there's a letter signed by Larry Lau putting some options in front of them, and the option they chose was to build a stability berm." See Transcript at 250.

> 23. *"A 'toe berm' was constructed at the 'toe' of the ash monofill when Takamura was Director to address the overall stability of the WGSL. (Tr. 56 and 58)."*

Dr. Takamura stated that Colleen Hanabusa should ask the engineers about the purpose of the toe berm. See Transcript at 56. He testified that he understood that his approval was needed for the construction of the toe berm because "[i]t's part of the operations of the Waimanalo Gulch landfill." See id. at 57. Dr. Takamura further testified that the toe berm was already being constructed prior to a meeting with DOH regarding the NOV. See id. at 58. He believed that there had been discussions about stability prior to his meeting with DOH. See id.

> 24. *"Takamura testified that stability issues are common when you touch a slope and WGSL is up the slope of the mountainside. (Tr. 60).*
>
> *Burns conceded the stability concerns and described WGSL as a canyon and once the valley is filled (the gulch) then when the expansion is upward, there is an effect throughout the whole facility. It is similar to stacking on the top and the effect will be there for the lower area. (Tr.159- 160)."*

It is unclear what "Burns conceded the stability concerns" means. Specifically, Mr. Burns testified, "As you mentioned earlier, we've got a canyon fill or a valley fill, and that valley, it's a 'V' shape, in very simplistic terms a 'V'-shaped gulch and it's not flat, it kind of points uphill; so, whatever you do on the upper reaches has an effect, pretty much through the whole facility..." See Transcript at 158-59.

In response to the question "[B]ecause of what I consider the stacking--just a layman person's perspective--stacking of the MSW and the landfill that you--that the decision was made that at the ash monofill, the bottom area, that the height should be reduced for stability?," Mr. Burns testified, "They all kind of go together." See id. at 159.

> 25. *"Due to the topography of WGSL, there are three stability berms. One is for the ash monofill area and called the 'toe berm.' The others are the E-1 berm and the West berm. (Tr. 151). The E-1 berm was constructed in late 2005 to 2006 and the West berm in 2006-2007. (Tr. 164). All three berms were constructed with blue rock from primarily the E-3 cells. (Tr. 177-178). The West berm was constructed to stabilize the landfill as the east side (E cells) are being filled. As the east side fills the forces push the to [sic] the west side. (Tr. 254). These berms were stability berms which were a result of WMI overfilling WGSL. (Tr. 267)."*

Mr. Burns testified that he believed the E-1 berm was built in late 2005, maybe into 2006. See Transcript at 164. Mr. Burns also testified that the western berm was constructed with blue rock, that the toe berm was constructed with blue rock which primarily came out of Cell E-3, and that he was unsure where the material to construct the E-1 berm came from. See Transcript at 177-78.

Mr. Siu testified, "As you fill the east side, the force is pushing on the west side." See id. at 254. In response to the question, "So, the stability berm is the ones that came in 2005?," Mr. Siu stated, "That's correct. And they're not a part of a permit application; they're part of a response to overfilling the landfill and potentially making a site unstable, which is what their analysis showed." See id. at 267.

Regarding Mr. Siu's comment, the City clarifies that only the ash toe berm was added to address an isolated low factor of safety in some portions of the ash monofill caused by overfill. The E-1 berm and West berm were a part of the initial design for the 14.9-acre expansion of WGSL, and were not added at a later date to address an unanticipated low factor of safety.

It should also be noted that Mr. Siu testified that he was not an expert on stability analysis and did not conduct his own stability analysis of WGSL. See id. at 260-261.

26. *"There needs to be a description of safety factors. For example the testimony has been: Safety factor at WGSL is calculated at 1.5; however anything above it is acceptable. (Tr. 172). The example given is that in the E-1 area the safety factor is less than 1.5; however the addition of the berm brings it up to 1.5. (Tr. 173). The safety factor affects the grades at the landfill. For example if the factor was 2.0, the grades would need to be lowered. (Tr. 185). The stability factor at the ash monofill area before the toe berm was 1.29. (Tr. 248). A related issue is that WMI had used the wrong liner in that the 'textured liner' was not used and a 'smooth' liner was which called into question the resistance to movement of the landfill. There were at least two cells in the middle of the landfill with smooth liners. (Tr. 134)."*

Mr. Burns testified that Hawaii has a minimum safety factor of 1.5, and that anything above 1.5 is acceptable. See Transcript at 171-77. Mr. Burns provided a hypothetical example, "So, if we do a design without, say--for example, without a stability berm, in the E-1 area we may have a factor of safety below 1.5; it could be 1.4. You add that stability berm in place, it--you know, it boosts your factor of safety to the 1.5. It just gives you that extra level of insurance." Id. at 173.

Mr. Burns testified that if 2.0 was the factor of safety, it may affect WGSL's final grades or future designs. Id. at 185. He testified, "They would need to be lower, probably," and "There's some areas it would have no effect on; other areas it may have some effect." Id. at 185-86.

Mr. Siu testified that he thought the factor of safety was 1.29 with the overfill in the ash area. Id. at 247-48.

As to the liner issue, Mr. Burns testified as follows:

> So, during--in 2001, while we were doing the design of the 14.9 acre expansion, we realized there were some cells constructed in the middle that were done with a different lining system. They were specified to be a--what we call a "textured liner"; it's a real course, rough thing with a high-friction surface on it. There were a couple of cells that were built with smooth. Why? I can't answer; I wasn't there at the time. But the due diligence of that analysis brought that to light. So, what that means is, instead of having a real course friction angle in some of these cells, it's smooth, so it's not quite as resistant to movement. However, looking at it in the light of the whole project, I want to make sure that everybody knows the landfill was stable, there was no--ever any sense or--that the facility was going to slide. So, I want to make sure everybody is clear. Even though that friction value was lower in some areas, the whole site was stable and there was never any problems from that perspective.

Id. at 134.

27. *"There are two types of safety factors, static and seismic. (Tr. 257). Seismic is when movement is anticipated and is calculated into the analysis. (Tr. 258)."*

Mr. Siu testified that the seismic safety factor is different from the static safety factor. See Transcript at 257. As to the seismic safety factor, Mr. Siu testified, "There's a number of ways to do seismic. You can do it by using what they call a pseudostatic; and that is, you try to analyze in such a way that there would be no movement, and then you would, again, have a factor of safety. The other way, which this facility is using is, they're using a deformation type of analysis, and there's a determination made as to how much deformation you will--is appropriate to accept." Id. at 257-58.

28. *"In a report by EA Engineering, Science and Technology, Inc., the stability factor of 2 is what is proposed with the explanation that safety factors between 1.5 to 1.9 is acceptable when it does not 'pose and [sic] imminent threat to human health or the environment.' The proximity to Farrington Highway and Kai Lani subdivision suggest imminent threat and supports the increase to 2.0. Exhibit H at 6."*

The EA Engineering Science and Technology, Inc. ("EA") Report introduced at the Contested Case Hearing was never authenticated by EA and was not signed by a licensed professional.

Licensed and qualified professionals at DOH and experts retained to assist it will evaluate details of the landfill design. The safety factors, and other analytical approaches used by Waste Management to design the expansion, will be subject to extensive scrutiny to ensure the analysis is appropriate considering all conditions at this site.

29. *"What is clearly relevant to the general public and not set forth in this DEIS is the issue of the stability of the landfill and the requirement for the berms. It is very relevant especially when viewed in light of the first EIS which said only 59-60 acres were suitable for landfill. This is also important when viewed in light of the criteria of the Blue Ribbon Commission which included the statement that they would fill to "natural grade." (Criteria No. 23). The transcript of the Contested Case Hearing should be made a part of the Final Supplemental EIS as well."*

The Revised Environmental Impact Statement accepted by the Director of Land Utilization on October 17, 1985 (the "first" EIS), stated that WGSL contained about 80± acres of usable land. See Revised Environmental Impact Statement dated May 7, 1984, at S-5, S-7. The usable area was estimated based on the engineering knowledge, operational processes and regulatory environment at that time, all of which have changed since 1984. The usable area for a landfill is subject to continuing evaluation and change over time, as the science and engineering of landfills evolve. WGSL is an example. The preliminary design of the usable footprint is disclosed in Section 4 of the DEIS.

The first EIS also mentioned that 57± acres will be used for the landfill. See id. at 2-1.

One part of one of the 31 criteria used by the Mayor's Advisory Committee to provide a basis for comparative analysis of the sites was filling to natural grade. The Committee never assumed that any of the four sites, or an expansion at WGSL, would be designed as a landfill to the "natural grade." The final design of the selected site would consider the site specific conditions and would have to be approved by DOH.

Regarding your suggestion that the transcript of the Contested Case Hearing should be made a part of the Final EIS ("FEIS"), please refer to the response to comment 17 above.

> 30. *"Given the concern of the stability of the landfill and the recent earthquake on the Big Island, a discussion must be had as to what can be done if such a natural disaster caused the landfill to slip onto Farrington Highway. This discussion must look to the fact that expansion will be at the steepest part of the footprint of the parcel of land and the stress it will place on the existing landfill. The people of the Waianae Coast have only one way in and one way out."*

The design of the Waimanalo Gulch expansion considers the seismic and other factors appropriate to the island and to the area of the site. Detailed stability analyses were completed during the project design. The design of the current SUP area and the proposed area of expansion will meet the EPA Subtitle D (40 CFR Part 258) standard for stability. The design of the expansion will be subject to review by appropriate City and State agencies when they evaluate the permit documents.

See also Section 5.6.5., Potential Impacts and Mitigation Measures, pertaining to Seismic Activity (Earthquakes), of the FEIS.

> 31. *"Stability of the Landfill must be analyzed in light of Figure 3-2 which shows the expansion throughout the 200 acres of land. It will be a total landfill with the exception of a 100 foot buffer."*

As noted in the DEIS, the areas that will be used for MSW and ash cells do not encompass the entire 200 acres. Comments related to stability were responded to earlier in this letter.

> 32. *"Though mentioned earlier, the fact that City states in this section that it has a program to control the 'Contaminated Materials,' this is without basis. It is also without basis that the 'all documentation of asbestos disposal' is present on site. In fact, that is one of violations that WMI could not determine where the asbestos was disposed of. The asbestos disposal plan may set forth a plan; however, from the NOV we know that WMI did not follow that plan. It is unacceptable to simply state a plan and have no enforcement as to whether it will be followed."*

Any waste that is not MSW is considered "special waste," subject to profiling as described in the Operations Plan, which is publicly available at WGSL. The description of the Operations Plan in the EIS, including the Asbestos Acceptance Plan, was developed to address proper waste practices and procedures. The Operations Plan addresses all safety regulations including those in the NOV. Accordingly, the policies and practices outlined in the EIS and detailed in the Operations Plans are more than adequate because they address the issues identified in the NOV. Moreover, the Operations Plan was reviewed by DOH during its evaluation of the grade modification permit application. This permit was approved on February 20, 2008. DOH has been actively reviewing and inspecting landfill operations. Questions now and in the future about the documentation of asbestos disposal will be handled as outlined in the Operations Plan.

> 33. *"As well, statements that their storm water or water drainage are managed is incorrect. Again, the NOV is on point and the amount of leachate which had to be pumped and dumped into the Waianae Sewage Treatment plant needs to be addressed."*

Leachate is not allowed to co-mingle with stormwater runoff. Stormwater runoff is managed pursuant to the Surface Water Plan, and is unrelated to leachate management. While Count XV of the NOV related to a failure to submit the annual surface water (stormwater) plan, the leachate management issues are wholly separate from surface water and stormwater management issues. Again, the Operations Plan was developed to address proper waste handling practices and procedures, and includes extensive stormwater monitoring and surface water management. Leachate level issues related to pump and equipment failures were corrected as part of the NOV resolution.

The leachate that is accepted by the operator of the Waianae Wastewater Treatment Plant was, and continues to be, handled in accordance with regulatory requirements to ensure public health and safety. Leachate is collected at the site, analyzed regularly through independent laboratory tests, and taken to the Waianae Sewage Treatment Plan where it is properly treated. The amount of leachate varies and the need to pump and dispose of it is monitored regularly. The monitoring reports are part of the documentation reviewed by the DOH inspectors and are publicly available. Pumping the leachate from the site and disposing of it at the Waianae Wastewater Treatment Plant are DOH-approved waste disposal practices.

As noted in a memorandum to ENV from the operators of the Waianae Wastewater Treatment Plant, the leachate accepted by the plant for processing has had very little or no impact on the wastewater effluent quality that is being discharged to the ocean outfall. See October 2, 2007 memorandum from the Division of Environmental Quality to Frank Doyle, which was included as a part of section 15 of the DEIS. Leachate management and monitoring will be a part of the Solid Waste Operating Permit application.

> 34. *"Figure 4.9 seems contrary to the representations made to the Ko Olina community. Assuming that the color chart sets forth the sequence of the closure, then the area in the back of the landfill will be closed before the areas closest to Farrington Highway. This means that landfill operations will be visible from Farrington throughout the extended life of the landfill."*

It is unclear what representations are being referred to regarding visibility of the landfill. The closure sequence depicted in Figure 4.9 does not reflect the cessation of actual landfilling operations, but rather the anticipated final cover of those areas. Final cover or closure cannot be installed until the landfill operations associated with the expansion area in the back of WGSL have been completed.

The present plan is to continue filling along the west side of the landfill as the final phase of filling. These operations will start at the west stability berm and continue to the area of the ash monofill. It is important to recognize that the face of the ash disposal area has largely been covered with an interim soil cover, and portions have been planted with natural vegetation. As that vegetation matures and becomes fully established, and as the operator places rocks on the face to emulate the nearby undisturbed ground, even the ash monofill will be much less distinguishable from the surrounding land. Additional landscaping to the front area of WGSL is planned.

See also Section 4.10. Closure of Lateral Expansion Area, of the FEIS.

35. *"Cost of the Landfill - Another issue which was a criteria in the Blue Ribbon Commission's consideration was costs. At Section 4.11 a discussion of costs showed $60,800,000 for the cots* [sic] *of the excavation and other costs for a total cost of $99,400,000 in 2008 dollars. How are these costs arrived at?"*

Engineers did a design cost analysis for the WGSL and calculated costs for anticipated excavation, grading, landfill liners, access roads, a leachate collection system, a drainage system, and other accessory requirements.

36. *"In addition, the costs of the berms should be included in that these structural changes enable the City to now petition for an extension."*

The cost of the existing toe berm is not a part of the anticipated future costs of the expansion project, which are described in Section 4.11. As noted above in response to comment 25, the existing E-1 berm and West berm were a part of the initial design of WGSL and were not included in the estimated costs of future improvements. However, as noted in the response to No. 38, below, the cost of extending a portion of the west berm up the canyon is included in the proposed expansion project.

37. *"In addition, the reference in the DEIS is to the figure $86 million as the cost. The discrepancy must be addressed."*

The estimated figure of $86 million dollars was identified on Page 7-30 of the DEIS by SMS Research through consultation with Waste Management, as costs associated with the construction of the site over a 10-year period. The estimated figure of $99.4 million dollars, also prepared by Waste Management, is provided in the DEIS in Section 4.11, <u>Project Schedule and Cost</u>, and represents operating and construction costs that would be incurred over a 15-year period. Thus, the two figures represent two different periods of time and different activities, and are not comparable.

38. *"There also needs to be a discussion as to whether additional berms will be required or are anticipated at the site."*

At this time, while additional berms are not anticipated, the proposed expansion design includes extending the west berm up the canyon. The final design, however, will be determined during permitting after completion of the EIS process.

See also Section 11.2. Final Engineering and Construction Details, of the DEIS.

39. *"In discussing costs, the City has said it makes a profit of $4 million a year at WGSL. If this is the case, for a 15 year expansion the operational cost will increase by at least $6.63 million a year. Why is this then economical?"*

The EIS does not address the City's profit at the landfill. It is unclear what representations are being referred to regarding $4 million annual profit. The City is responsible for providing safe and adequate waste disposal, and these costs will exist at any landfill site, regardless of the amount of income it receives because of landfill operations.

40. *"Section 5 Environmental Setting - Given the recent decisions by the Hawaii Supreme Court, it is necessary to discuss the concept of public trust. This is especially true when looking at the waters of this State. What occurred with the operations of WGSL and the leachate is inexcusable and a violation of that public trust. Note that the leachate was disposed of, for most part, in the Waianae Sewage Treatment Plant."*

There has been no violation of the public trust. Pursuant to the public trust doctrine, the state holds certain resources in trust for the benefit of its citizens, establishing the right of the public to fully enjoy them for commerce, navigation, fishing, bathing, and related activities. It is unclear, however, how the principles of the public trust doctrine are applicable to operations of WGSL and the disposal of leachate at the Waianae Wastewater Treatment Plant. Leachate from the landfill is disposed of and processed through secondary treatment at the Waianae Wastewater Treatment Plant, consistent with all regulatory requirements. The content of the leachate is sampled and analyzed regularly through independent laboratory tests. Monitoring data show that the leachate has not changed the water quality near the outfall. <u>See</u> October 2, 2007 memorandum from the Division of Environmental Quality to Frank Doyle, which was included as a part of section 15 of the DEIS. Any suggestion that the disposal of leachate at the Waianae Wastewater Treatment Plant is harming the waters of the State is without basis.

41. *"In this light, there is inadequate discussion of the leachate. This is especially troubling given the DOH NVO. This requires a discussion as to the how the build up of the leachate affected or could affect the integrity of liner and the stability of the landfill. It must also be addressed in light of the expansion and the stress it will have upon the liner and the stability of the landfill."*

The amount of leachate the landfill is expected to produce is based on rainfall and operating experience. The methods used to collect and transport it to the points from which it is extracted and the ultimate disposal of the material are all part of the landfill design and the Operations Plan approved by DOH. The impact of the leachate on liner integrity and landfill stability are design considerations. As noted earlier, the design of the landfill will be subjected to DOH scrutiny to ensure they are consistent with conditions at this site, and with current practice and applicable regulations. The amount of detail in the EIS is adequate as the details of the leachate and site operations will be evaluated with the permit documents by DOH.

The depth of leachate is not necessarily related to the integrity of the liner. The impact of various leachate levels on stability was evaluated and reported to DOH. The design and overall factor of safety includes all anticipated operating conditions, including level of leachate.

> 42. *"Geology - According to Figure 5.2, the proposed expansion will be primarily in the rRK soil type. This means rock over a large percentage of the surface. In addition, the description of the soil associated with rRK is 'sticky and very plastic.' This means that there will be a 'high shrink-swell potential when moisture laden.' The impact of this type of soil must be discussed when stability of the landfill will be an issue as it goes up the slope."*

Soils and geotechnical analyses were performed to meet safety and regulatory requirements. The various factors affecting stability have been and will be taken into account as stability issues are reviewed and analyzed. In addition, DOH and any retained experts will review the analysis.

See also Section 5.3.3. Potential Impacts and Mitigation Measures, of the FEIS, relating to soils, which addresses this issue.

> 43. *"There must be a more detailed discussion as to the slope differential for WGSL in the proposed expansion area. It is admitted to that the upper portion of WGSL where the expansion will take place will be steep with the rRK type soil. How will excavation be safely accomplished in that region must be discussed along with the storage or removal of the excavated 'native soil.'"*

The stability of all cut slopes has been analyzed and will be reviewed by registered professionals during construction. All slopes will be excavated to meet required factors of safety and work will be done in accordance with all OSHA requirements. The DOH engineers and staff are expected to review all aspects of the construction during the permit review and while construction is in progress.

See also Section 5.3.3. Potential Impacts and Mitigation Measures, of the FEIS, relating to soils which addresses this issue.

> 44. *"The rights to the native soil (rock, etc.) must also be addressed. It is believed that with the present operation, the contractor who does the excavation is permitted to sell the rock and soil and keep the funds. If this is the case, the practice must change and the benefit should be to the taxpayers. If the 'sale' of the rock is part of the contract with WMI, these amounts must be calculated."*

The City retains the ownership rights to the excavated materials. On May 30, 1991, the City received bids for the material excavated, processed, and removed from Waimanalo Gulch Sanitary Landfill. Since August 1, 1991, the City has received royalties for any excavated and processed material removed from WGSL. Until the final design has been approved, it is difficult to determine the volume of excess materials that could be removed from the site.

> 45. *"The DEIS concludes that 'adverse impacts are not anticipated' as a result of the lateral expansion. There needs to be a definition of 'adverse impacts' and how the DEIS concludes that such impacts are 'not anticipated.' Clearly the City and its operator have stated these similar conclusions in prior EISs and the NOV has shown to the contrary. For example how else will height violations be noted other than a 'fly by.' What type of monitoring device will be utilized to establish that the landfill is stable other than mathematical computations performed by WMI's experts? Part of the costs of the operation of the landfill should include a fund which the DOH utilizes to hire its own experts to monitor the landfill activities."*

Adverse impacts to topography, geology, or soils are not anticipated with appropriate mitigation measures. Adverse impacts are detrimental impacts, and include adverse ecological effects, aesthetic effects, historic effects, cultural effects, economic effects, social effects, health effects, whether primary, secondary or cumulative. See HAR § 11-200-2. The height violation, while it exceeded the DOH permit, did not result in an adverse impact to stability. The landfill was stable at all times even when the grade exceedance occurred. The earlier permitted grades were lowered causing in part the grade exceedance. The issue was more complicated than just exceeding a permitted grade height, as the comment portrays. The exceedance was self-reported, since it was known at the time that the grade height was lowered as a precaution.

A ground survey is performed by a licensed professional surveyor on a bi-monthly basis to compare existing grades with approved grades.

The current operating permit requires seismic monitoring. Inclinometers are being considered for WGSL to aid in identifying movement should it occur. While there is no device that would determine whether a landfill is stable or not, the stability analyses are based on "state of practice," and they, along with the selected factor of safety, are based on experience with similar slopes and extensive analysis of both stable and unstable slopes by the U.S. Army Corps of Engineers and the U.S. Bureau of Land Reclamation. In the case of WGSL, Waste Management has undertaken steps beyond standard practice, and outside experts have reviewed the work performed by its consultants. Additionally, DOH has reviewed the stability analyses and consulted with outside experts.

Every ton that goes into the landfill is assessed a fee which is paid to the State to assist with funding their administrative and enforcement activities. DOH already employs inspectors who visit the landfill at frequent intervals.

> 46. *"Regional Hydrology - This discussion in the DEIS is of interest in that it is in direct contradiction to the UIC line which is what is relied upon in the siting of the landfill. Discussion is necessary as to how the UIC line has been arrived at when it is clear that WGSL does sit over and is a part of the 'Makaiwa Aquifer System.' Given the past mismanagement of WGSL by WMI, it is critical that we understand the assumptions which have been made in the past, in particular the UIC line and landfill operations over an aquifer. There is an EPA map on the water systems which differs from that of the DOH. There needs to be a discussion as to difference and how the UIC lines have conveniently been drawn around existing landfill areas throughout the State.*

> *Read in conjunction with the discussion in Section 7 as to the natural springs and water sources in the area, there should be an analysis done as to why the UIC line carves out WGSL; and more importantly the long term impact of the landfill over an aquifer."*

The UIC line designations are handled by DOH and other state agencies. Neither ENV nor Waste Management were involved in the determination of the UIC line at WGSL. If location or validity of such lines are in question, it is an issue that must be addressed pursuant to applicable federal or state law and procedure. The UIC line was determined pursuant to state and local law and jurisdiction. The City accepts current laws and regulations as validly enacted and promulgated. The location of the UIC line is one example.

We are not aware of the EPA map to which you refer, and cannot prepare a response to a vague reference to an EPA map.

47. *"Air Quality - There needs to a discussion in Air Quality of the EPA violations against the WGSL. Though the matter has not been resolved, for the DEIS to be accurate, the violations should be set forth as well as the anticipated remedy for the problems. Also, to the extent that the EPA violations overlap with the NOV, that discussion should also be found in the EIS."*

The matter involving the installation of the gas collection system has been addressed. A gas monitoring and collection system was installed in 2005, and has been operating successfully. It is regulated through the terms of WGSL's air permit.

The DOH NOV does not overlap with the EPA violations.

48. *"Under this section, a passing discussion is made of the impact of the 'sludge' and how it is no longer being disposed of at WGSL. The accuracy of the statement is challenged as to when it was 'no longer being disposed of at WGSL.' How much sludge is or has been disposed of at WGSL must be discussed. In addition, it is unclear as to whether the pellets have been authorized for sale. If not, then are these pellets being disposed of in WGSL? It is believed that the statement is incorrect as to whether the sludge is no longer at WGSL."*

The DEIS does not state that sludge is no longer being disposed of at WGSL. The DEIS emphasizes a change in processing sludge from the Sand Island Wastewater Treatment Plant ("SIWWTP") and the reduction of sludge disposed of at WGSL from the SIWWTP due to this change in processing. The sludge from the SIWWTP previously disposed of at WGSL is currently undergoing treatment in a waste digester at the SIWWTP where the sludge is turned into fertilizer pellets. The process of drying sludge into fertilizer pellets began in March 2007.

In June 2007, due to a fire, operations at SIWWTP pelletizing facility ceased until September 2007. During that time 763 tons of de-watered sludge from SIWWTP were landfilled at WGSL. For the entire 2007 year, approximately 3,122 tons of stabilized, de-watered sludge (pelletized and nonpelletized) from the SIWWTP were disposed of at WGSL. At present, all of the de-watered sludge from SIWWTP is turned into fertilizer pellets, and on average, 85% of the pellets is being used for golf course construction and soil manufacturing. The remaining amount of pellets, approximately 15% on average, is disposed at WGSL. All regulatory requirements have been met to allow beneficial use of the pellets. As the process matures and marketability increases, we anticipate a decrease in the amount of pellets that are landfilled at WGSL. Due to unforeseen circumstances, however, such as the June 2007 fire at the pelletizing facility at SIWWTP, there may times when stabilized, de-watered sludge from SIWWTP will need to be landfilled at WGSL.

Besides some of the fertilizer pellets from the SIWWTP, stabilized, de-watered sludge from the Honouliuli, Waianae, Kailua Regional, and Kahuku Wastewater Treatment Plants, as well as sludge from private (non-City) sources is still being landfilled at WGSL. For the entire 2007 year, the following approximate amounts of stabilized, de-watered sludge were disposed of at WGSL from the following City waste water treatment plants ("WWTP"): Honouliuli WWTP - 4,192 tons; Kailua Regional - 766 tons; Waianae WWTP - 277 tons; and Kahuku WWTP - 1 ton. Besides the significant reduction of sludge from the SIWWTP being landfilled, the City is in the process of seeking beneficial uses for the stabilized, de-watered sludge from the Honouliuli Wastewater Treatment Plant.

See also Section 4.2. Facility Operations, 4.2.1. Waste Accepted at Landfill, of the FEIS.

49. *"Methane Gas - Part of the NOV was a violation as to methane gas. The concern is whether the methane gas is smoldering or burning at WGSL. There needs to be a discussion as to how this is monitored and also that methane gas fires are found in landfill operations and WGSL should be no different. If in fact there is such a fire smoldering, what is the anticipated impact on the community and the stability of the landfill. Though there is an attempt to say that landfill permitted temperatures are higher in other states, the issue is the impact on this landfill which is located so very close to a resort and homes."*

Extensive studies at WGSL have shown that there is no subsurface fire occurring now or in the past at the landfill. Information demonstrating that there is no fire has been sent to the EPA and DOH.

See also the following sections already provided as a part of the DEIS: Section 4.6.1. Explosive Gas, for monitoring requirements related to explosive gases such as methane; and Section 5.7.3. Potential Impacts and Mitigation Measures, relating to air quality addressing the monitoring practices, procedures, and regulations that are in place to mitigate against any potential for impacts associated with the atypical elevated temperatures at WGSL.

> 50. *"Blasting - As expected, due to the soil type in the expansion, excavation must occur with the assistance of blasting of the rocks. It is significant that the blasting is anticipated to be no more than one per day and no more than one to three times per week. If this is the average, then over a 15 year period these are a significant number of blasting activity. The discussions surround the noise and not as to the stability or structural impact on the landfill and the surrounding area. Related is the discussion on the culturally significant outcroppings which the City claims cannot safely remain in place. If the concern is over the impact of the blasting, then the blasting must have impact throughout the existing landfill. There needs to a discussion as to this fact, along with what impact it will have upon the structural berms presently built."*

Controlled blasting will not be required for the entire anticipated life of the landfill, and is required only until the construction of the final cell. Controlled blasting does not impact the stability of the WGSL or any of its berms as it will be used only for loosening the rock from the slope. The energy output from controlled blasting is designed to be well below that produced by the design earthquake considered in the stability analysis performed to evaluate the safety of the landfill.

See also Section 5.8.2. Potential Impacts and Mitigation Measures, of the FEIS, relating to acoustic characteristics.

With respect to the cultural stone uprights, the City has proposed relocation prior to any excavation or controlled blasting at the proposed new expansion area for landfill cells as described on pages 7-81 through 7-87 of the DEIS (Section 7.3.8. Potential Impacts and Mitigation Measures, relating to historic and archaeological resources). The City, Waste Management and SHPD will work to ensure that an appropriate preservation plan is put in place.

> 51. *"Pueo and Other Birds and/or Animals - It is unfortunate that the DEIS simply dispenses with these animals and birds due to the lack of sighting on a 'survey.' There needs to be a clear description as to how many surveys were taken and when. I have personally seen the Pueo on many occasions fly from WGSL to the area near Lanikuhonua and Kai Lani. It is questioned as to how thorough this survey is. There is a reference to a survey in 1999 and it must be clarified if the DEIS is relying upon this older study. The area is also designated as a habitat for the Elepaio. It appears that the DEIS is disagreeing with this designation. An explanation is needed as to this conclusion."*

The DEIS, Section 5.9.3., <u>Fauna</u>, clearly indicated that two separate surveys were performed:

> In 2006, Phil Bruner, Ph.D., prepared the report, Survey of the Avifauna and Feral Mammals for the Proposed Waimanalo Gulch Landfill Expansion Project, Oahu (Appendix F). The purpose was to provide the findings of a bird and mammal field survey. The same area of the site was previously surveyed in 1999 (Bruner, 1999) and data from this earlier survey is provided in the current study for comparison purposes. References to literature and unpublished reports since 1999 are included.

According to the 2006 Report, the Pueo or Hawaiian Owl may forage in the area which is consistent with your observation. The area designated as critical habitat for the Elepaio by the U.S. Fish and Wildlife Services is located approximately 2 miles from the WGSL. No impacts to the habitat of the Elepaio are anticipated.

> 52. *"Aesthetics - As a person who has lived both at Kai Lani and now the Ko Olina Kai, I have no idea as to how the City can say that the lower portions of the landfill have a 'naturalized' look. It is not natural at all and neither is the view of trucks going up and down the landfill."*

As parts of the landfill are closed, surface treatments including landscaping will be done to change the appearance of the site so that it blends in with the surrounding terrain. The excavation plan includes stockpiling of rocks with a "natural" look. The rocks will be placed on the surface after closing of the landfill. The trucks are a part of the operation and the view of trucks cannot be completely mitigated. We have included additional landscaping along the Kahe Point side of the landfill in order to mitigate views from the Waianae side of the landfill. Just as the view of a natural coastline cannot be mitigated or naturalized once hotel or resort development has occurred, the view of a natural gulch or ravine will be impacted by the presence of a landfill. Nevertheless, efforts to mitigate the impact will be ongoing.

> 53. *"The visual impact of WGSL has not been adequately addressed especially with the construction of the rock berm wall. How is this area going to be restored to its original state with a rock berm wall."*

The view of the rock berms will be mitigated by the planting of trees. As they mature, the appearance of the berms will be mitigated by the vegetation. However, given the nature of the use of the site involving landfilling, it will not be possible to return the site to its original condition. The landscaping plans are included in the DEIS as Figures 5-19 through 5-21.

> 54. *"Section 6 Public Services, Potential Impacts And Mitigation Measures - Traffic - The DEIS is deficient in that it does not present the numbers of vehicles which travel to WGSL clearly in the body of its statement. It concludes by saying it is not anticipated to add more to the existing pattern. However, what is needed is a discussion as to what is the load and the description of the types of vehicles which will be used to dispose of the MSW or Ash at the WGSL. With the anticipated growth in the not only the second city of Kapolei but at Ko Olina, this discussion must address the actual numbers and the anticipated impact with the increase number of vehicles due to the growth in the area."*

A traffic study, which includes vehicle counts, is directly cited in the body of the DEIS. As indicated in Section 6.1.1. Traffic Impact Report,

"At the intersection with the existing landfill access road, Farrington Highway carries 2,046 vehicles eastbound and 859 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 1,131 vehicles traveling eastbound and 2,079 vehicles traveling westbound. The critical movement on the Farrington Highway approaches of the intersection is the eastbound left-turn traffic movement which operates at LOS "B" during both peak periods."

"The WGSL access road approach of the intersection carries 11 vehicles southbound during the AM peak hour of traffic. During the PM peak hour of traffic, the traffic volume is slightly higher with 31 vehicles traveling southbound. The access road approach of the intersection operates at LOS "C" during both peak periods. Traffic queues occasionally formed on this approach of the intersection with average queue lengths of 2-3 vehicles observed during both peak periods."

The entirety of the report is attached as Appendix I to the DEIS. In general, with the construction of the third boiler at H-POWER, the number of vehicles delivering MSW to WGSL is expected to decrease, and the number of vehicles delivering ash and residue from H-POWER will increase. The overall result will be fewer vehicles arriving and departing from WGSL.

> *55. "Wastewater System - There needs to be discussion as how the existing system will be adequate when it clearly was not adequate for the limited expansion as noted in the NOV. The City must honestly discuss the shortcomings of WMI, the operator, who has failed to operate WGSL in a professional manner."*

Wastewater facilities on page 6-10 of the DEIS refers to the toilets and other facilities for the workers at the landfill. Those facilities are currently in place and adequate. The need will not change with the expansion. No violations regarding the wastewater facilities were included in the NOV.

> *56. "Odors and Windblown Trash - The fact that those who live by WGSL continue to experience the odors is not adequately addressed by the DEIS. Like the 'surveys' mentioned above, there needs to be a discussion as to how the odors are being monitored. Testimony has been received by people who are on the golf course and those who live in Ko Olina as to odors and windblown trash of the landfill. It is important to note that Counts in the NOV addressed the windblown trash and odor issues. Given the fact that violations have been found, the City must ensure that these violations do not occur again, given that it continues to have the same operator."*

Odor was not a part of the NOV. Waste Management responds to odor complaints and maintains an odor complaint log. Air quality and odor, as well as mitigative measures, are discussed on pages 5-37 though 5-59 of the DEIS.

The wind-blown litter issue has been addressed through litter fences and permanent litter patrol. Litter, as well as mitigative measures, are discussed on page 4-18 of the DEIS.

According to Waste Management, less than 5 complaints were received about odor and/or litter within the last 12 months. Not all of those complaints were verified.

> *57. "Section 7 Socioeconomic and Related Environment, Potential Impacts and Mitigation Measures - NIMBYism - As expected, the Kailua Neighborhood Board has always been adverse to the closure of the WGSL. This is due to the fact that Ameron Quarry has been viewed as a successor. It is unfortunate that the communities are forced to take positions such as they have. If the City clearly looked at alternatives and did not deal in 'fear' and in its delay tactics, there could have been a long term resolution. It is not acceptable that the City's position is, 'where do you want to put it?' The City is the governmental agency tasked with this obligation and it cannot simply wait, as it has, with the hopes that other agencies will buy in to its mantra that there will be rubbish on the streets if an extension or expansion is not approved."*

The City is tasked with the obligation to provide environmentally sound disposal services for solid waste. There is a need for a landfill on Oahu. The City must select the location of its landfill based on objectively established criteria. In accordance with this obligation, and as stated in the DEIS, the City selected WGSL.

Other areas of the island have had landfills including, but not limited to, Ala Moana, Kakaako, Kailua, Kalihi, Laie, Kaneohe, Pearl City, Wahiawa and Waipahu. See also http://www.opala.org/solid_waste/archive/History%20_Garbage_in_paradise.html. Landfills, freeways, prisons and wastewater treatment plants are an unfortunate necessity of modern civilization. The suggestion that politics, policy and fear play a role in landfill selection is undocumented. Politics and policy, however, have a role in timing of decisions. It is always important that decision makers provide the public with opportunities for input, even if such opportunities for input cause decisions to be delayed. However, it is a part of the process expected by the public. WGSL has been selected as the landfill for the benefit of the entire island and was approved by the City Council.

> *58. "Economic Considerations - The role that Ko Olina plays as it relates to the economic growth for West Oahu is significant. While no one would consider placement of a landfill near Waikiki, the City does not hesitate to continue a landfill operations directly across the street from Ko Olina."*

The City does not discount the importance of economic growth wherever it is occurring on the island of Oahu. While there are no viable landfill sites near Waikiki, places such as Ala Moana Park and the Kakaako Waterfront Park once served as landfills. Various parts of Windward Oahu also supported landfills.

As represented in the DEIS, the City remains committed to the proper operation of the WGSL and to appropriate mitigation of potential adverse impacts.

> *59. "Discussion on the Landfill impacts on jobs, etc. would exist wherever the landfill is sited. The discussion is lacking as to what could happen if WGSL is expanded as to the development of the Resort."*

The DEIS provided a discussion of the economic conditions of the proposed landfill. Further information concerning the potential for adverse effects to surrounding land uses such as the Ko Olina Resort, will be addressed in the FEIS.

See also Section 7.1.5. Addendum to Socioeconomic Impacts, of the FEIS, which provides additional information on the potential for effects on property values in the surrounding region.

60. "Fairness Issues - There is a discussion as to how some residents believe that Waianae is the dumping ground for the City; and the expansion of WGSL continues to dump on and places the burden on the Waianae Coast. There needs to be a discussion of the concept of environmental justice and how this discussion required under NEPA should be better explored in the DEIS."

Environmental injustice is addressed on pages 7-28 and 7-29 of the DEIS. In summary, the median household income in the immediate areas near WGSL exceeds the island average. The City is required to complete the EIS process pursuant to HRS Chapter 343, which does not require an analysis under NEPA.

61. "Community Benefits Package - There needs to be an honest discussion on the benefits package. Remember that the Waianae Coast takes more than the City's rubbish. There is always the issue of 'catch up' for the Waianae Coast because it appears that it is last to receive anything. When the concept of a 'community benefits package' is discussed, there needs to be an analysis as to what the community would be entitled to as all others would and what is received in addition to that. The benefit must be in 'addition to' not merely a replacement of."

Basic City services are provided to all areas of the island as funded by the City Council, which must approve the City budget each fiscal year. The suggestion that programs and projects for the Leeward Coast communities are not as well funded as those for other parts of the island is undocumented. The current City administration has recognized that WGSL has a potential impact on the neighboring communities and implemented the community benefits program to provide those communities with funding for programs beyond those provided in the regular operating and capital budgets. This administration was the first to recognize the need for such a benefits program.

A Committee comprised of representatives of Leeward Coast communities was established by the Mayor to review funding applications from nonprofit community groups and identify capital projects in their communities, and determine how funds will be utilized. The Committee is diligent is assuring that any program or project they fund will provide services and benefits that are in addition to, and not in lieu of, any provided through the normal City budget process.

See also Section 7.1.3.2. Community Issues and Concerns Regarding WGSL, On The Community Benefits Package, in the FEIS.

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62. "Historic and Archaeological Findings - Prior EISs have not acknowledged the cultural significance of the Waimanalo Gulch. The DEIS recognized what is described as 'Three upright boulders potentially utilized as trail or boundary markers.'

It was agreed to that the stones were significant and likely used by traditional Native Hawaiian practitioners in the past. The consultants believed these stones should be preserved in place; however, the City has deemed this to be "not an option" and will move the structures. Though the cultural practitioners also expressed a concern as to the appearance of the landfill after it was completed and the boulders returned, it remains the position of the City to ignore these concerns and continue with the construction of the landfill. The DEIS must address whether the landfill expansion is at any cost and the cultural significance should be ignored."

The City has an obligation to protect public safety and health by providing waste management services. While City has proposed to preserve the stones by relocating them, the final preservation plan has not yet been determined. Relocation and preservation of the stones are currently options under consideration. The plan would be determined based on further consultation with cultural consultants, SHPD, ENV and Waste Management. The option of relocating the stones back to near their original resting places will be considered.

63. "The DEIS must address the sentiments of OHA as stated:

OHA has made a field visit to the project site and we noted three significant cultural features that were still intact in the project area. We are also aware of the probable existence of others yet to be discovered in the project area. OHA is further saddened that the larger setting that this project sits in is one that has been highly developed and degraded. Therefore, what TCPs [Traditional Cultural Properties] that remain must be protected.

The Department of Planning and Permitting, as a county agency, is mandated by Hawai'i Const. Article XII, section 7, "to preserve and protect customary and traditional practices of Native Hawaiians." Ka Pa'akai O Ka'Aina v. Land Use Comm'n, 94 Haw. 31, 45 (2000). . . . OHA urges that nothing more be done with this project until full cultural assessment has been made of the project area.

(OHA letter of September 21, 2007). At the very minimum, to address OHA's concern, there needs to be a clear statement as to how and what has been done for a 'full cultural assessment' of the project area. In that much of this land has been degraded, it does not give the City the right to continue in its degradation."

A full cultural impact assessment of the area and archaeological inventory survey were performed, attached to the DEIS as Appendices G and H and summarized in section 7 of the DEIS. A discussion of traditional cultural practices is included in the cultural impact assessment.

No action will be taken at the site until concurrence with SHPD is obtained.

64. *"Though he has passed, a respected Kumu Hula of the area, John Kaimikaua, told the story of the role of Palehua and its relationship to WGSL. There is a video of his tale and it should be included in the discussion of the cultural significance of WGSL."*

We have instructed our cultural and archaeological consultant to further investigate this item. If it is applicable, further information on the cultural significance of the content of the video will be referenced in the FEIS.

65. *"The stories of the strange events in the initial construction of WGSL are rich. Yet, the DEIS continues in its predeteimined* [sic] *conclusion that the landfill should be expanded."*

The stories are documented in the cultural impact assessment. At the same time, the City is pursuing development of the site because there is a need for a landfill to benefit all areas of Oahu.

66. *"Section 8 Relationship to Land Use Plans, Policies and Controls of the Potentially Affected Area - The concepts of the State General Plan have been revisited by the Legislature for the past 3 years. The Legislature has funded the Task Force on Sustainability for the year 2050. The Task Force has adopted it* [sic] *Sustainability Plans for the year 2050. In addition, what is now Act 183, SB 2646 CD1 of the 2008* [sic] *Session, addresses the concepts of Important Agricultural Lands. The DEIS must engage in the discussion as to what is "important Ag lands" and recognize that it is no longer tied to land classification such as A, B, etc. In this light, does it impact the continued use of WGSL."*

The sustainability of our island State is important. The use of WGSL promotes sustainability through the use of an on-island facility that has remaining but unused capacity. Without Waimanalo Gulch, new land, a precious resource, would need to be prematurely used when there is remaining capacity at this existing public facility.

The DEIS addresses the proposed project's impacts on Important Agricultural Lands in Section 8.3. The DEIS notes that the proposed project is located within the State Agricultural District, however, the subject site is not classified as one of the three types of agricultural land (i.e., prime, unique, or other important agricultural lands) according to the Agricultural Lands of Importance to the State of Hawaii ("ALISH") system. The subject site is not currently used for agricultural production; is not associated with traditional native Hawaiian agricultural uses; has mostly rocky soil, has a relatively dry climate; and is not near support infrastructure conducive to agricultural productivity.

67. *"The discussion of the Land Use Policies of the area cannot be made without a discussion of the LUC's D&O on the SUP, as amended. The D&O now states that no later than November 1, 2009, the area shall be 'restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.' This is the controlling LUC Order on the site of the proposed expansion. In addition, the City is to provide the LUC with updated status every 6 months. As someone who participated in the LUC hearing, it is clear that the LUC has sent a clear message to the City that it will not be caught in the untenable position that there is no alternative in the time remaining."*

The EIS process will continue to fairly and accurately describe the events leading to the decision to select WGSL as the City's preferred alternative. Further information regarding this past history of events, including the current order of the LUC, will be provided in the FEIS in Section 2, <u>Project Background</u>.

68. *"There is also a need to discuss whether the SUP process under HRS 205-6 is the proper mechanism by which to seek this expansion. The DEIS must consider whether a boundary amendment must be sought for this further expansion."*

Because the subject property is located within the State Agricultural District, a State Special Use Permit ("SUP") must be obtained. HRS § 205-6 provides that the county Planning Commission "may permit certain unusual and reasonable uses within agricultural and rural districts other than those for which the district is classified." Because the SUP will be for land greater than 15 acres, the approval by the LUC is necessary. In the past, the LUC has granted SUP approvals for landfills, including WGSL. For purposes of the expansion addressed herein, the City may pursue either an SUP or a boundary amendment. This procedural decision does not impact the analysis contained in the EIS.

69. *"Section 9 Alternatives to the Proposed Action - This discussion in the FSEIS (most recent EIS on the property) and other documents has been inadequate in addressing alternatives. After all these years, the City must have a better response on alternative technologies, transshipment and other sites than what is provided. Again, it appears that it is simply easier to continue to have the existing landfill; and therefore all attempts to address alternatives in good faith will never be a reality."*

The City has in good faith pursued alternative technologies that are reliable, cost efficient and scalable, and issued an RFP for alternative technologies. In response to the RFP, the only qualified proposals were for existing mass burn technologies. The City is currently pursuing mass burn technology through the expansion of H-POWER. As noted in the DEIS, no alternative can completely eliminate the need for a landfill. WGSL is a strategic component of the City's solid waste management system and the final destination for certain solid wastes including MSW, recycling residue, and H-POWER generated ash, residue and unacceptable waste that cannot be further combusted, shipped, recycled or reused.

70. *"The City has failed to timely develop its Solid Waste Management Plan. In that this is not a reality, documents such as this DEIS is not being judged by the appropriate measure."*

The City has an Integrated Solid Waste Management Plan, and an update of that plan was adopted by the City Council in December 1994 through Resolution 94-306, CD1. A new draft update to the City's Integrated Solid Waste Management Plan was sent to DOH on July 1, 2008, for review. The DOH will determine its appropriateness prior to consideration by the City Council.

The words "judged by the appropriate measure," are undefined and unclear. The DEIS as well as the FEIS are prepared according to the standards set forth in HRS Chapter 343, as well as Hawaii Administrative Rules, Title 11, Chapter 200.

See also Section 2.6. City Plans Involving the Future Handling of Solid Waste, of the FEIS, relating to the Integrated Solid Waste Management Plan.

71. *"An RFP for transshipment was solicited by the City. It is believed that the company who has been working on transshipping has had its bid challenged. If the City agrees that the bid is too low, then transshipment will not become a reality. The City does not prefer to transship because of the loss of revenue for the City. The DEIS must do a proper analysis of the loss of revenue and recall that cost is not a limiting factor in the discussion of alternatives."*

A request for bids ("RFB"), not an RFP, was issued by the City for interim transshipment of MSW. The lowest bidder's bid has been challenged by three procurement protests, and the process to rule on the protests is on-going. If the low bid is ultimately determined to be a non-responsive or non-responsible bid, or the bid is otherwise rejected, then next lowest bid will be considered, consistent with applicable public procurement laws. As evidenced by the fact that an RFB for interim shipping was issued, and funds for this program have been appropriated, the City desires to transship; and if a contract can be awarded after the procurement protests are resolved, the City will transship up to the amount of available funds.

72. *"What is also of concern is the discussion on Plasma Arc and how this technology does not meet the City's requirements. The DEIS does not recognize the technology which is successfully operating in Japan and the GeoPlasma facility to be operational in St. Lucie, Florida. What is just as troubling is the absence of recognition that on May 7, 2008 SB 1720 HD2 was enrolled with the Governor and on May 23, 2008 it was signed into law as Act 104 (2008 Session). This Act relates to the Special Purpose Revenue Bond to Assist Jacoby Development, Inc., a Processing Enterprise. Jacoby Development Inc.-Geoplasma LLC is authorized to issue a SPRB to build a similar facility as Florida's in Hawai'i which will not cost the taxpayers anything. Instead of welcoming such a technology, the City, instead, finds that the technology is not adequate."*

A discussion of why the Plasma Arc technology is inadequate at this time is contained in Section 9 of the DEIS. That section identifies the Plasma Arc plant operating in Utanshani Japan and provides a table summarizing the operating results from 2005. It also showed that the plant had not generated power for commercial sale during that time. The plant proposed for St. Lucie, Florida is also identified. Jacoby Development and St. Lucie are still in negotiations and construction of plant has not yet commenced. In addition, the DEIS identifies a plant in Ottawa Canada (owned by Plasco) that began processing MSW on January 26, 2008.

The Plasco plant capacity is 85 tons per day of MSW. The operator of the plant posts reports monthly detailing the operating statistics. The following table shows the average amount of waste processed daily through the plasma system at the plant since start of operations. Power was first generated in the plant in February 2008. The results in this table are for the plant in startup, and should improve with time. The plant capacity will not meet the City's minimum requirements even at full capacity operation.

Time Period	Tons/Day
January 24 to February 29, 2008	2.0
March 2008	1.3
April 2008	8.3
May 2008	5.0
June 2008	19.8

The discussion of plasma technology in the EIS will be revised to reflect these later operating results. The EIS will also be revised to reference Act 104 (SB 1720), which became law on May 23, 2008.

73. *"Discussion of alternative landfill sites are also premised on the Blue Ribbon Commission's findings. As stated earlier, the assumptions upon which the Commission made its recommendations are incorrect and must be re done. The landfill capacities and costs are especially problematic given the obvious misinformation provided by R.M. Towill. Look at Table 9-13 to demonstrate the difference in what is presented and what is the reality. This DEIS is placing the costs of WGSL expansion at $86-99 million."*

The subject DEIS has documented the work of the Mayor's Advisory Committee and where appropriate has updated the basis for the findings of the Committee with new information to ensure that changed conditions were fairly and accurately considered in this current EIS effort. For example, according to the DEIS, Page 9-70, Since the Advisory Committee report was completed, additional information has been provided regarding the cost of acquiring the Ameron Quarry and Makaiwa Gulch sites. In the Advisory Committee report, the cost of acquisition was the assessed value for property [tax] purposes. Parties representing Ameron Quarry and Makaiwa Gulch provided information to correct that information in letters appended to a letter from City Councilmember Tam to the State LUC.

The information from Ameron Hawaii and the Estate of James Campbell was subsequently used to maintain the integrity of the analysis. (DEIS, Page 9-70).

With regard to the contents of Table 9-13, Revised Evaluation of Criterion 18, Cost of Site Acquisition, it is noted that the table identifies the cost of acquiring the various sites evaluated. Because the City already owns WGSL, the cost of acquisition is represented as $0. The site acquisition costs provided in Table 9-13 are completely different and are not to be confused with the construction and operating cost of $99.4 million for a period of 15 years provided in Section 4.11, Project Schedule and Cost, and the $86 million for construction over a period of 10 years provided on Page 7-30. See also the response to letter item no. 37, above.

74. *"It will always be the position of the people of the Waianae Coast that there should be no more landfills on our community. We have borne the burden for not only the landfills, MSW and construction, but also the power generation facilities, live fire exercises, the homeless, etc. There is a need to look at these alternatives in terms of what is fair and in the context of environmental justice."*

The specific term "environmental justice" as defined by the EPA applies to documents prepared under NEPA standards and regulations. The subject DEIS, prepared pursuant to Chapter 343, HRS, however, does provide further discussion of "environmental injustice" in Section 7, Socioeconomic and Related Environment, Potential Impacts and Mitigation Measures.

While the subject EIS has been prepared to specifically address the potential for significant environmental effects associated with the proposed project, the consideration for potential impacts associated with other power generation facilities, live fire exercises, and the homeless, while important issues, are not a part of the environmental disclosure of the subject project. Please also refer to the response to comment 60 above.

75. *"What is evident is that the City is not being honest in its discussion on Maili Quarry. This DEIS fails to note that the LUC denied that SUP permit of Sphere to operate a Construction and Demolition Landfill on the site. It is just as improbable that the LUC will grant a MSW landfill on the site. The proximity of this site to Maili Elementary School and its low water table is problematic. In addition, this site did accept AES's ash without a proper permit and without lining its landfill operations. In addition, traffic and access is a major concern. This landfill site is located off of a private road, Paakea which has been the site of major accidents due to the "dip" in the road. The question is whether the City will compute into its costs for the Quarry, the cost of the road and of access."*

The Sphere Application was dismissed for a purely procedural reason, namely, because of a lack of jurisdiction. The case was not dismissed based on the merits. What the LUC would do if the City were to seek appropriate permits to operate an MSW landfill at Maili is not known.

Maili appears to be a less attractive site for a landfill than Waimanalo Gulch. The Mayor's Advisory Committee also concluded that Maili was the least attractive out of the five sites as shown on table 9-15. The costs of road improvements were reflected in Cost of Development Criterion (number 19) for the Maili Quarry, which was published with the Mayor's Advisory Committee report. It should be noted, that the costs developed for the Mayor's Advisory Committee evaluation were based on the publicly available data and would be recalculated with site specific data if the site were selected by the City Council.

76. *"Nanakuli B is the site of a proposed private landfill. Nanakuli B will cause major traffic problems for the people of the Waianae Coast. The community will fight Nanakuli B because it is the expansion site of PVT Landfill, the only Construction and Demolition Landfill on this island. It cannot be the intent of the City to place two landfills across the street from each other and cause this community to bear this burden for a measly pay off. This DEIS must look into this inequity. The people of the Coast also want PVT closed."*

The purpose of this EIS is to disclose the potential environmental effects of the proposed expansion at WGSL, not to close PVT Landfill. Nanakuli B appears to be a less attractive site for an MSW landfill than Waimanalo Gulch. The Mayor's Advisory Committee also concluded that Nanakuli B was the third least attractive out of the five sites as shown on Table 9-15.

77. *"Ameron Quarry is dispensed with because of costs. When the true costs of the expansion of WGSL is computed, the costs of WGSL exceeds that of Ameron."*

Ameron Quarry was not "dispensed with because of costs." A review of Table 9-15 shows that Ameron Quarry received a lower score than WGSL across the 31 criteria.

Information provided by the operators/owners of both the Ameron Quarry and the Makaiwa Gulch sites was considered. Both had advised the City that the cost of acquisition needed to be increased. Table 9-13 identifies the scoring for all five sites before and after the revision of the cost of acquisition. As can be seen in both Tables 9-13 and 9-14, the relative ranking of the sites with respect to their suitability as a landfill changed, but the clear conclusion that Waimanalo Gulch was the higher ranked site was unchanged.

78. *"What is lacking in this DEIS is the fact that in a few years, the status of H Power will also be an issue. If the City decides to re purchase H Power, then that cost must be made known and its impact on the cost of solid waste disposal. The expansion to a third boiler will have major cost implications."*

Please see Section 9, Alternatives Analysis, of the FEIS regarding the relation of expansion of H-POWER to WGSL. Should H-POWER add a third boiler, a full environmental review will be performed in accordance with applicable laws and regulations of the federal, state, and City and County of Honolulu governments.

79. *"Underlying all of this is the discussion on 'flow control' of the MSW. This DEIS is inadequate in that until the necessary 'flow control' is defined, the alternatives as it may be available by other vendors will not become a reality and what will remain is only the expansion alternative."*

The DEIS adequately addresses the City's responsibility to manage solid waste for the City & County of Honolulu. Flow control is important and has been upheld by the U.S. Supreme Court because in order for local governments to properly manage solid waste and promote alternatives to landfilling, they need the ability to direct flow. The City has flow control pursuant to state law, and consistent with that authority, will continue to exercise such control so that it can be assured that various initiatives that minimize the need for landfill capacity can be managed and financed. The City's efforts to decrease the need for landfill disposal include expanded waste-to-energy capacity, interim transshipment of waste while additional H-POWER capacity is being constructed, expanded curbside recycling programs and illegal dumping control.

80. *"Notwithstanding, what is truly lacking in the DEIS is a combination of alternatives. To discuss these choices as a 'zero sum' game does not make this DEIS a true document upon which the decision makers can rely upon."*

Please see section 9. Alternatives to the Proposed Action of the FEIS for a discussion of a combination of alternatives. Alternatives have been discussed, but Oahu will always need a landfill because there will always be waste that cannot be further combusted, shipped, recycled or reused. Any viable alternative cannot completely eliminate the need for a landfill. Thus, a combination of viable alternatives will not eliminate the need for a landfill.

81. *"Section 10 Irreversible and Irretrievable Commitment - Again, the DEIS is a document with a predetermined outcome. It is simpler for the City to expand WGSL than to truly explore alternatives. Promises of how the landfill will operate better and mitigation will be enforced are empty promises in light of the past performances and present performances. The recent lawsuit against Schnitzer Steel shows how there is no monitoring by the WGSL or the City before millions are given for a rebate which allegedly should not have been given. The DEIS is without basis to make such a representation or conclusory statement to the public."*

The purpose of the DEIS and the HRS Chapter 343 environmental review process is not to select the ideal landfill site. Rather, Waimanalo Gulch was selected by the Honolulu City Council in December 2004. The history of that process and the outcome of that selection process is presented in section 2 of the DEIS.

The DEIS is an informational process prepared in compliance with HRS Chapter 343 and HAR Title 11, Chapter 200, and discloses "the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects." HRS § 343-2. Here the proposed action, consistent with the City Council's decision, is to expand WGSL as Oahu's future landfill site.

Notwithstanding the allegations of any pending lawsuit, there are and have been considerable and substantive monitoring efforts, inspections, record keeping and reports regarding operations at WGSL. These requirements and records are being and have been maintained in accordance with WGSL's operating permit issued by the Solid and Hazardous Waste Branch of DOH. All records and reports are generally available publicly at DOH.

Please refer to the response to comment 8 above regarding the Schnitzer Steel lawsuit.

82. *"Section 11 Unresolved Issues - Missing in this section is the EPA violations. In addition, it is disconcerting that the DEIS will have as an unresolved issue; the stone uprights. Given that these issues are 'unresolved,' this DEIS could have been made public sooner. This is all part of the plan to go before the governmental agencies with no time left and to ask for yet another extension or the expansion."*

The EPA violations have been added to the FEIS at Section 11. Note that the EPA violations were discussed on pages 2-14 through 2-16 of the DEIS.

The EISPN for the proposed project was published in November 2006. The stone uprights were located in the Spring of 2007. Due to a staff shortage at SHPD, evaluation of the cultural significance of the stone uprights was delayed, and the cultural impact assessment could not be completed. Because a cultural impact assessment is required in an EIS, completion of the EIS was delayed. The final preservation plan for the stone uprights has been identified as an unresolved issue in Section 11 of the FEIS. The City and Waste Management will work with SHPD to ensure that an appropriate preservation plan is put in place.

83. *"Section 12 Permits and Regulatory Approvals that May be Required - The DEIS fails to recognize the State Land Use Commission is a State agency not within the City & County of Honolulu's process. In fact, HRS § 205-6 is the State Land Use Commission statute. This DEIS should address whether a boundary amendment will be required and not a SUP."*

This comment will be addressed in a revised Section 12, Permits and Regulatory Approvals That May be Required, in the FEIS. For purposes of the expansion, the City may pursue either an SUP or a boundary amendment, and both will be identified in the FEIS. This procedural decision does not impact the analysis contained in the EIS.

84. *"Section 14 Significance Criteria - The DEIS provides its analysis of the significance criteria as set forth in §11-200-12 of the EIS Rules. The Rules provide:*

> A. *In considering the significance of potential environmental effects, agencies shall consider the sum of effects on the quality of the environment, and shall evaluate the overall and cumulative effects of an action.*
>
> B. *In determining whether an action may have a significant effect on the environment, the agency shall consider every phase of a proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action. In most instances, an action shall be determined to have a significant effect on the environment if it:*
>
> 1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*
> 2. *Curtails the range of beneficial uses of the environment;*
> 3. *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*
> 4. *Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;*
> 5. *Substantially affects public health;*
> 6. *Involves substantial secondary impacts, such as population changes or effects on public facilities;*
> 7. *Involves a substantial degradation of environmental quality;*
> 8. *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*
> 9. *Substantially affects a rare, threatened, or endangered species, or its habitat;*
> 10. *Detrimentally affects air or water quality or ambient noise levels;*
> 11. *Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;*
> 12. *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,*
> 13. *Requires substantial energy consumption.*

The DEIS answers each and every criteria in the negative. This provision of the EIS Rules is not applicable in that this section is relevant if there is to be a determination of no impact and therefore an EIS or an Environmental Assessment ('EA') will not be required. Specifically:

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§ 11-200-9 Assessment of Agency Actions and Applicant Actions

> A. *For agency actions, except those actions exempt from the preparation of an environmental assessment pursuant to section 343-5, HRS, or section 11-200-8, the proposing agency shall:*
>
> 4 *Determine, after reviewing the environmental assessment described in paragraph (3), and considering the significance criteria in section 11-200-12, whether the proposed action warrants an anticipated negative declaration or an environmental impact statement preparation notice, provided that for an environmental impact statement preparation notice, the proposing agency shall inform the accepting authority of the proposed action;*

However, what is missing is paragraph I of the Contents of a Draft EIS: § 11-200-17 provides at:

> I. *The draft EIS shall include a statement of the probable impact of the proposed act on the environment, and impacts of the natural or human environment on the project, which shall include consideration of all phases of the action and consideration of all consequences on the environment; direct and indirect effects shall be included. The interrelationships and cumulative environmental impacts of the proposed action and other related projects shall be discussed in the draft EIS. It should be realized that several actions, in particular those that involve the construction of public facilities or structures (e.g., highways, airports, sewer systems, water resource projects, etc.) may well stimulate or induce secondary effects. These secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment. The population and growth impacts of an action shall be estimated if expected to be significant, and an evaluation made of the effects of any possible change in population patterns or growth upon the resource base, including but not limited to land use, water, and public services, of the area in question. Also, if the proposed action constitutes a direct or indirect source of pollution as determined by any governmental agency, necessary data shall be incorporated into the EIS. The significance of the impacts shall be discussed in terms of subsections (j), (k), (1), and (m). [Emphasis added.]"*

The comment that discussions of secondary and cumulative impacts associated with the project were not provided is incorrect. Secondary and cumulative effects were discussed and addressed in the DEIS in Section 1.4, Secondary and Cumulative Effects. The discussion concerning significance criteria was discussed and addressed in Section 14, Significance Criteria.

85. *"The section of the EIS rules which applies to the DEIS, has it own definition of 'significant impact' as defined above. What the DEIS is clearly lacking is the discussion of secondary impacts. The recent Supreme Court decision in Sierra Club v. DOT, 105 Haw. 299, 167 P.3d 292 (2007) is on point. This case is also known as the 'Superferry Case' and it clearly has redefined the concept of secondary impacts. It is presumed under the EIS Rules that there is a secondary impact. This DEIS is void of any such discussion."*

There are very significant differences between the Superferry case and the City Council's selection of WGSL as the site of Oahu's future landfill. In the Superferry case, there had been no ongoing or existing ferry operations in the State. Here, WGSL has been in operation since 1989, almost 20 years ago. Unlike the Superferry case, secondary impacts of WGSL are and have been known and observable since it began operations in 1989. Thus, the impacts of current operations at WGSL are known and have been observed for years. It is not necessary to predict or assume such impacts. Most of the Ko Olina Resort was planned, developed, marketed and sold while WGSL was in full operation. Most of the town of Kapolei was built and developed while WGSL was in full operation. The land use growth, population growth, and public services in the Kapolei and Ko Olina areas developed while WGSL was in full operation. Thus, secondary impacts on growth, population, and public services are likely related to City policies rather than the presence of a landfill.

Secondary and cumulative impacts are discussed and addressed in Section 1.4 of the DEIS.

86. *"The DEIS has incorrectly concluded there is no significant impact under the EIS Rules. Clearly the DEIS has not met its burden to overcome the assumption of significant impacts for a public works project such as this."*

There is no "assumption" of significant impacts for the proposed expansion of WGSL. Additionally, the DEIS concluded that when appropriate mitigative measures or other actions are undertaken, that potentially significant adverse impacts can be reduced to acceptable levels that would not constitute an adverse effect.

87. *"Hawaii Law - There will be finding of significant impacts because in order for an EIS to stand the test under Hawaii law, it must be, 1) compiled in good faith; 2) met statutory requirements; and 3) provided sufficient information for the decision maker to make an 'environmentally-informed choice.'*

    1. *The EIS Was Not Compiled In Good Faith.*

The supplemental EIS's contents must comply with the requirements of an EIS. HAR § 11-200-14. An EIS is "meaningless" if it is self serving and rationalizes an outcome. The Ninth Circuit has identified this concern as 'timing.' Idaho Sporting Congress, Inc. v. Alexander, 222 F.3d 562, 568 (9th Cir. 2000). In Idaho, the Ninth Circuit reversed the district court's denial of an injunction and discussed the timing of the agency's action and the fact that the process shall not be used to rationalize or justify decisions already made. In Metcalf v. Daley, 214 F.3dc 1135, 1143 (9th Cir. 2000), the Ninth Circuit found another violation of the timing requirement and looked to the fact that the EIS process had begun after the agency had signed an agreement making the process one that rationalized the decision. This is exactly what has occurred here.

There are three specific examples of the bad faith. One is the contract of 1999 which has been entered into by WMI and the City. The DEIS should have included this document in that it is critical in understanding how this outcome has been manipulated. The contract is incorporated by reference herein."

The contract between Waste Management and the City is a publicly available document. Amendment No. 5 to the contract, dated May 1, 1999, provided for the expansion of the Waimanalo Gulch site. Subsequently, the prior City administration decided on a five-year limit for the use of the site. The contract was not amended to a shorter term because the exact date of termination could not have been determined. Furthermore, Amendment No. 5, reads, in relevant part:

> Contractor shall increase the existing Landfill footprint and operate the Landfill for a period of fifteen (15) years from the date of receipt of all permits for the initial operation of the additional landfill area, hereinafter called the Permit Date, or until the landfill is completely filled as determined by mutual agreement of the parties, or closed by regulatory requirement imposed by a state or federal agency, whichever occurs first.

(Emphasis added). Thus, the effective term of the contract could have been shortened if closed by regulatory requirement, such as a failure to extend the SUP.

Additionally, the City retains control of the contract and can terminate it at any time when it is in the best interest of the City. As provided in Contract Special Provision 29, the contract can be terminated "in whole or in part, whenever the Director shall determine that termination of the contract, in whole or in part, is in the best interest of the City."

Please also refer to the response provided to comment no. 4, above.

88. *"The second example is the reliance on the Blue Ribbon Commission and the flawed assumptions. This is especially true when R.M. Towill has been the consultant on almost all of the EISs and the consultant for the Blue Ribbon Commission. An excuse that they are unaware of the topography is absurd."*

This comment is similar to prior comments nos. 3 and 4, contained in your letter. Please refer to the responses provided, above.

89. "The third is the contents of the NOV."

It is unclear how the NOV's contents relate to alleged bad faith in drafting the EIS. The NOV was issued by DOH after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NOV was issued. On December 7, 2007, DOH, the City and Waste Management agreed to a settlement which concluded the NOV process. At that time, there was only a single remaining violation that had not been brought into compliance--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which addressed the grade exceedance issue. Thus all alleged violations have been addressed to the satisfaction of DOH. See section 2.3.

The NOV also gave rise to several operational changes at WGSL. The current operating permit substantially increased oversight, monitoring and reporting requirements.

90. "2. The Statutory Procedural Requirements Were Not Met. The EIS process is governed by HRS § 343. An EIS is:

> *§ 343-2 Definitions. As used in this chapter unless the context otherwise requires: . . .*
>
> *'Environmental Impact statement' or 'statement' means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.*

The statute also sets forth what the Rules must contain, at minimum. HRS § 343-6. The legal effects of administrative rules are well settled in this jurisdiction. Administrative Rules are to be followed and given the full effect of law. Williams v. Hawaii Medical Service Association, 71 Haw. 545, 549, 7984 P.2d 442, 444 (1990). The Supreme Court has clearly stated that arbitrary and capricious application of the Rules will not be tolerated. Windward Marine Resorts v. Sullivan, 86 Haw. 171, 948 P.2d 592 (ICA 1997).

HAR § 11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The "General Provisions" highlight the expectation of the EIS process.

> *. . . An EIS is meaningless without the conscientious application of the EIS process as a whole, and shall not be merely a self serving recitation of benefits and a rationalization of the proposed action. Agencies shall ensure that statements are prepared at the earliest opportunity in the planning and decision making process. This shall assure an early open forum for discussion of adverse effects and available alternatives, and that the decision makers will be enlightened to any environmental consequences of the proposed action.*

HAR § 11-200-14."

Title 11, Chapter 200, contain the 'Environmental Impact Statement Rules' and the following are examples of Rules which were not met.

a. Full consultation did not occur with the DEIS.

HAR § 11-200-15 A sets forth the following requirements to satisfy the consultation process.

> *In the preparation of a draft EIS, proposing agencies and applicants shall consult all appropriate agencies noted in section 11-200-10 (10) and other citizen groups, and concerned individuals as noted in sections 11-200-9 and 11-200-9.1. To this end, agencies and applicants shall endeavor to develop a fully acceptable EIS prior to the time the EIS is filed with the office, through a full and complete consultation process, and shall not rely solely upon the review process to expose environmental concerns.*

This provision is to be read with the foregoing General Provisions and the requirements of HAR § 11-200-22 A, which further emphasize meaningful public participation as follows:

> *Public review shall not substitute for early and open discussion with interested persons and agencies, concerning the environmental impacts of a proposed action. Review of the EIS shall serve to provide the public and other agencies an opportunity to discover the extent to which a proposing agency or applicant has examined environmental concerns and available alternatives. . .*

> *These requirements are clear and unambiguous. Hawai'i case law has consistently held that when statutes or rules are clear and unambiguous, they are to be given effect in accordance with their plain and ordinary meaning. IBEW v. Hawaiian Tel., 68 Haw. 316, 323, 713 P.2d 943, 950 (1986); RGIS Inventory v. Hawai'i Civil Rights Comm., 104 Haw. 158, 160, 86 P.2d 449, 451 (2004). Under the Rules, the consultation process should have been implemented as soon as possible to engage the appropriate agencies and the public and not rely solely upon the review process."*

The consultation process mandated by HRS Chapter 343 and Title 11, Chapter 200, HAR, was followed. The consulted agencies were disclosed in the EISPN and in the DEIS at Section 13. Section 3.4 of the DEIS described the community EIS scoping meetings. Public comments were solicited during these meetings and used to prepare the EISPN and subsequent DEIS. Comment letters regarding the EISPN and responses are included in section 15 of the DEIS.

91. *"When the issue of the expansion was brought to the communities, the Mayor prohibited the participation of the elected officials in his meeting. This can hardly be deemed as compliance with the consultation process. In addition, there was no sense that the decision to expand was open for discussion. The discussion was simply, if you don't expand WGSL, then the landfill will go to Nanakuli. This is not a consultation process which is open to the public."*

The meeting referred to above was not a part of the EIS consultation process.

92. *"Moreover, the concerns of the NOV and the acts complained of therein should give rise to major environmental concerns and require thorough discussions. The DEIS merely dismisses it with the fact that a settlement has been reached. The violation and the fines were the largest in the Nation at that time."*

The NOV was issued by DOH after the alleged violations had been self-reported. The great majority of the alleged violations had been addressed before the NOV was issued. On December 7, 2007, DOH, the City and Waste Management agreed to a settlement which concluded the NOV process. At that time, there was only a single remaining violation that had not been brought into compliance--the exceedance of permitted grades. On February 20, 2008, DOH issued a grade modification approval which addressed the grade exceedance issue. Thus, all alleged violations have been addressed to the satisfaction of DOH, and WGSL is currently in compliance with all laws. See section 2.3. of the DEIS.

The NOV also gave rise to several operational changes at WGSL. The current operating permit substantially increased oversight, monitoring and reporting requirements.

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93. *"b. **The FEIS failed to comply with the requirement to address alternatives.***

> *HRS § 343-2 defines an EIS as one that discloses, among other items, the 'alternatives to the action and their environmental effects.'*
>
> *HAR §11-200-17, which sets forth the Contents requirement of a Draft EIS, addresses the requirement as to alternatives as follows:*
>
> *F. The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. Examples of alternatives include:.. (Emphasis added.)*
>
> *HAR § 11-200-17 F. 5 states that 'For any agency actions, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency.' In Westlands Water District v. U.S. Dept. of Interior, 376 F.3d 853, 866 (9th Cir. 2004), the Ninth Circuit reaffirmed that alternatives must be rigorously explored and that 'reasonable alternatives' include those not within the jurisdiction of the lead agency. Westlands, supra, at 868. The Ninth Circuit went on to say that '[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate.' Id.. [sic] citing to Morongo Band of Mission Indians v. FAA, 161 F.3d 569, 575 (9th Cir. 1998).*
>
> *The alternatives discussed by the City assumed the City would operate the landfill and therefore required the purchase of each site. No consideration was given to private landfills and its ability to operate as an alternative landfill location, or alternatively, a private/public partnership. The DEIS fails to address the how much money the City makes on landfill operations and the need to control 'flow' of MSW."*

The DEIS discussed technical and other alternatives, as well as alternative public and private locations for the proposed action. Numerous sites were eliminated because they did not meet state requirements. An EIS is not required to explore alternatives that "are not significantly distinguishable from alternatives actually considered, or which have substantially similar consequences." Westlands Water District v. U.S. Dept. of Interior, 376 F.3d 853, 868 (9th Cir. 2004) (internal citations omitted). The choice of alternatives is "bounded by some notion of feasibility and need not include "remote and speculative alternatives." Id. (internal citations omitted). "The touchstone [of] inquiry is whether an EIS' selection and discussion of alternatives fosters informed decision-making and informed public participation." Id. (internal citations omitted). The DEIS for the proposed project helps to foster informed decision-making and informed public participation, as evidenced by your letter and similar comment letters.

There was no assumption that the City would operate the landfill. In fact, the City does not currently operate WGSL--Waste Management, a private company, is the operator of WGSL under contract with the City. The City is tasked with the obligation to provide environmentally sound disposal services for solid waste. In that regard, the City currently works closely with various private entities, such as those operating the landfill, the Synagro bioconversion facility at Sand Island, H-POWER, and the processing of curbside recyclables. Private sites and public sites were considered for a municipal landfill. As explained in the DEIS, numerous sites were eliminated because they did not meet state requirements. Further, WGSL is the only permitted MSW landfill on the island.

The City combines tip fee revenue from City transfer stations and the landfill. The revenue for FY06 was $14,051,214 as reported in the City and County of Honolulu Operating Budget, Detailed Statement of Revenues and Surplus, Solid Waste Special Fund (250) Disposal Charges. The revenue for FY07 and FY08 was $10,794,073.00 and $11,332,649.27, respectively. A small portion of the tip fee revenue is attributed to commercial accounts disposal at transfer stations. Most of the tip fee revenue is generated by commercial accounts disposal at the landfill. In accordance with Chapter 9, Section 9-4.2, Revised Ordinances of Honolulu ("ROH"), only businesses, and Federal and State agencies' accounts are charged a landfill tip fee. Homeowners and eleemosynary organizations pay no fees.

Your comment regarding flow control is addressed in the response to Comment 79.

> 94. *"The DEIS also fails to adequately address the delay in the Solid Waste Management Plan and the City Ordinance which states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill."*

The City has an Integrated Solid Waste Management Plan, and an update of that plan was adopted by the City Council in December 1994 through Resolution 94-306, CD1. A new draft update to the City's Plan was sent to DOH on June 30, 2008, for review. DOH will determine its appropriateness prior to consideration by the City Council.

The update to the Plan makes it clear that there will always be a need for a landfill in order to manage waste that cannot be further combusted, shipped, recycled or reused, to manage solid waste during natural disasters, and to provide for other contingencies. Please see section 2.6. City Plans Involving the Future Handling of Solid Waste, of the FEIS.

Your citation to the City Ordinance is incorrect. The City Ordinance to which you refer is Section 9-1.1, which provides in relevant part:

> **Sec. 9-1.1 Findings--Determinations--Goals.**
>
> (b) (1) In addition to the findings and determinations made under this section, the council establishes the following goals:
>
> (A) By the end of 2007, at least 65 percent of the solid waste generated within the City be recycled, reused, composted, used for the generation of power, fuel or electricity through a waste-to-energy or other alternative technology facility, or otherwise diverted from placement in a landfill;
>
> (B) By the end of 2010, at least 75 percent of the solid waste generated within the City be recycled, reused, composted, used for the generation of power, fuel or electricity through a waste-to-energy or other alternative technology facility, or otherwise diverted from placement in a landfill; and
>
> (C) By the end of 2015, at least 90 percent of the solid waste generated within the City be recycled, reused, composted, used for the generation of power, fuel or electricity through a waste-to-energy or other alternative technology facility, or otherwise diverted from placement in a landfill.
>
> (2) The percentage goals in this subsection shall be reviewed annually by the Department of Environmental Services, which shall recommend to the Council any necessary revisions. For the purpose of these goals, "solid waste" includes source separated waste generated in the City, but not introduced into the disposal system.

Please note that these are goals, as opposed to mandates. Additionally, these goals are subject to revision as necessary.

> 95. *"Moreover as discussed above, there is no discussion of secondary impacts which is necessary in order for an [sic] DEIS to be adequate."*

Secondary and cumulative effects associated with the subject project was discussed and addressed in Section 1.4, Secondary and Cumulative Effects, of the DEIS.

96. *"c.* ***The purpose and need section limits discussion.***

> *HAR § 11-200-17 D requires the Draft EIS to 'contain a separate and distinct section that includes a statement of purpose and need for a proposed action.' It is a similar provision under NEPA, which is looked upon to guide the discussion on alternatives. Westlands, supra, at 866. In Westlands, the Ninth Circuit looked to whether the preparers had 'arbitrarily and capriciously' narrowed the scope of the statement, thereby affecting the discussion on the alternative."*

The DEIS was prepared in accordance with HRS Chapter 343 and HAR, Title 11, Chapter 200. The DEIS contains separate and distinct sections regarding the purpose and need for the proposed project, located at Section 3.2 and Section 3.3 respectively. These sections reasonably define the objectives of the project.

97. *"In the preparation of the Draft Supplemental EIS for this proposed expansion, it is critical that the decision maker and the general pubic are made to understand why the promises of government need not be kept. There should also be an explanation as to why the City prepares this DEIS and the Final EIS will be accepted by another City agency. This is especially true when the accepting agency has attached to it, the Planning Commission which is expected to be called upon the make the decision as to whether an SUP should be recommended to the LUC or whether the process requires a boundary amendment."*

Representations of officials may become law and be binding when appropriately enacted into law, or through other acts that have the force and effect of law. Subsequent Mayors and/or City Councils may, however, change prior law through appropriate legislative, regulatory or legal processes.

The Mayor, in accordance with HAR § 11-200-4.A., is the final authority to accept the EIS:

> A. Whenever an agency proposes an action, the final authority to accept a statement shall rest with:
> 1. The governor, or an authorized representative, whenever an action proposes the use of state lands or the use of state funds or, whenever a state agency proposes an action within section 11-200-6(b); or
> 2. **The mayor, or an authorized representative, of the respective county whenever an action proposes only the use of county lands or county funds.**

The Planning Commission will not be called upon to make any decision as to whether the City should seek a boundary amendment or SUP. For purposes of the expansion addressed herein, the City will decide to pursue either an SUP or a boundary amendment. This procedural decision does not impact the analysis contained in the EIS.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

#12

Cynthia K.L. Rezentes
87-149 Maipela Street
Wai`anae, HI 96792-3154
E-mail: rezentesc@aol.com

July 7, 2008

City and County of Honolulu
Department of Environmental Services, Refuse Division
Attn: Mr. Eric Takamura, PhD., P.E., Director
1000 Uluohia Street
Kapolei, HI 96707

Subject: Waimanalo Gulch Sanitary Landfill Lateral Expansion

Dear Director Takamura:

I respectfully oppose any lateral expansion of the current Waimanalo Gulch Sanitary Landfill located at TMK 9-2-3: Portion 72 and Portion 73.

The Special Use Permit allowing a municipal solid waste landfill at this location should be concluded as of November 1, 2009 and this landfill closed as per the intent of the State Land Use Commission which approved an 18-month extension to the current permit for this location. The current landfill should be closed per guidelines established by the State Department of Health and under guidelines recommended by EPA 40 CFR 258.

Any further request for use of this property should be proposed under a completely new and independent application and EIS with the requisite new surface water management plans, stability analysis, groundwater monitoring system, gas collection system, odor management, litter management, etc.

The current landfill has already exceeded the topographical and airspace request per the original EIS at which point said EIS stated that there was a limited amount of the 200 acres of property that was apropos for a landfill. The current landfill has gone beyond that original evaluation and request by not limiting itself to the natural topography but has developed a new topography for the receipt of municipal solid waste. Any further use of the property should be under a new application.

With the development of a new topography with which to establish the airspace to allow a 15+ year usage of the property should come the onus to do so responsibly and without potentially increasing the complexity of the analysis of the current landfill stability with increasing loads placed above and to the rear of the landfill (at the highest level of original topography).

As can be seen in the first attached photograph, the topography of the area that is being proposed to be expanded into is within a steep, narrow area of the gulch with a naturally occurring waterway leading directly towards the base of the current landfill. This configuration places more stresses from a narrower base leading into a broader base and thus should be structured to be able to handle its' own load without impacting the current landfill.

In addition to there being a need to completely separate the current landfill from the proposed expansion, there needs to be an explanation of what activities are or should be allowed to take place upon the landfill once the height limits are reached. As can be seen in the second attached photograph, rock crushing, "daily" cover and other activities besides filling of currently open cells with municipal solid waste occurs. What are the impacts of these activities taking place on supposed "full" cells? This should be projected as there will be less "virgin" land area and more area comprised of municipal solid waste the further into the gulch operations move. Where will these activities take place and how does that affect the analysis of the appropriateness of extending further into the gulch?

The analysis of how the expansion of ~37 acres of land equates to 15+ years of usage needs to be demonstrated. If one takes the 60.5 acres of landfill space that will be utilized by November of 2009 and does a strict ratio of the acreage proposed to be used for the landfill expansion (not taking into consideration the more complex nature of a narrower gulch to operate within) there should only be about 12 years worth of capacity beyond November 2009. The claims that there would be a minimum of 15 years life should be proven.

There continue to be numerous questions with regards to when, if ever, the City proposes to close this area to taking trash from the entire island. Where are the plans for what happens as this area is filled more rapidly than ever due to the expanding development being allowed and built on the island?

Until there is a real faith effort made in addressing the solid waste problems faced by the City and County of Honolulu, I will respectfully disagree with any plans to continue doing "business as usual" and continuing to "dump" on the Leeward Coast.

Sincerely,

Cynthia K.L. Rezentes

Cynthia K.L. Rezentes
Wai`anae Resident

cc: City and County of Honolulu, Department of Planning and Permitting
R.M. Towill Corporation
Office of Environmental Quality Control

06.21.2008 07:37

06.19.2008 07:40

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-117

October 23, 2008

Ms. Cynthia K.L. Rezentes
87-149 Maipela Street
Waianae, Hawaii 96792-3154

Dear Ms. Rezentes:

Subject: Environmental Impact Statement (EIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 7, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *"I respectfully oppose any lateral expansion of the current Waimanalo Gulch Sanitary Landfill located at TMK 9-2-3: Portion 72 and Portion 73."*

This comment is acknowledged.

2. *"The Special Use Permit allowing a municipal solid waste landfill at this location should be concluded as of November 1, 2009 and this landfill closed as per the intent of the State Land Use Commission which approved an 18-month extension to the current permit for this location. The current landfill should be closed per guidelines established by the State Department of Health and under guidelines recommended by EPA 40 CFR 258."*

This comment is acknowledged, however, for the reasons cited in the DEIS this option is not available to the City. We note for clarification that the planned area of use will be within an area of the property that has not yet been permitted for use as a municipal sanitary landfill.

3. *"Any further request for use of this property should be proposed under a completely new and independent application and EIS with the requisite new surface water management plans, stability analysis, groundwater monitoring system, gas collection system, odor management, litter management, etc."*

The subject DEIS proposes the use of an area of the City owned property that has not yet been permitted nor used as a municipal sanitary landfill. The landfill infrastructure that is proposed for the subject project is based on utilization and integration with several of the environmental management systems that are already in place and operational. New management systems will be installed as appropriate to ensure proper environmental management and compliance. A new EIS for this project is not considered appropriate given the status of review for the current EIS process that is underway.

4. *"The current landfill has already exceeded the topographical and airspace request per the original EIS at which point said EIS stated that there was a limited amount of the 200 acres of property that was apropos for a landfill. The current landfill has gone beyond that original evaluation and request by not limiting itself to the natural topography but has developed a new topography for the receipt of municipal solid waste. Any further use of the property should be under a new application."*

In addition to the comment above, it is noted that the City has requested an amendment to the current area of landfilling from the LUC to allow for use of the airspace that has exceeded the original area designated in the Special Use Permit. On March 14, 2008, the LUC amended Condition No. 12 of the permit as follows:

> "The 200-care Property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan by November 1, 2009, or until the approved area reaches its permitted capacity, whichever occurs first."

While it is acknowledged that an appeal to the LUC regarding this decision is presently on-going, a date for the hearing of the appeal will be at a later date. This process, however, will involve the use of the existing area of landfilling. In contrast, the subject EIS is for the evaluation of uses for an area outside of the presently permitted landfill footprint.

5. *"With the development of a new topography with which to establish the airspace to allow a 15+ year usage of the property should come the onus to do so responsibly and without potentially increasing the complexity of the analysis of the current landfill stability with increasing loads placed above and to the rear of the landfill (at the highest level of original topography)."*

   "As can be seen in the first attached photograph, the topography of the area that is being proposed to be expanded into is within a steep, narrow area of the gulch with a naturally occurring waterway leading directly towards the base of the current landfill. This configuration places more stresses from a narrower base leading into a broader base and thus should be structured to be able to handle its' own load without impacting the current landfill."

The design of the proposed Waimanalo Gulch expansion considers geotechnical, seismic and other factors appropriate to the island and to the area of the site. Detailed stability analyses were completed during the project design. The design of the current SUP area and the proposed area of expansion will meet the EPA Subtitle D (40 CFR Part 258) standard for stability. The design of the expansion will be subject to review by appropriate City and State agencies when they evaluate the permit documents.

6. *"In addition to there being a need to completely separate the current landfill from the proposed expansion, there needs to be an explanation of what activities are or should be allowed to take place upon the landfill once the height limits are reached. As can be seen in the second attached photograph, rock crushing, "daily" cover and other activities besides filling of currently open cells with municipal solid waste occurs. What are the impacts of these activities taking place on supposed "full" cells? This should be projected as there will be less "virgin" land area and more area comprised of municipal solid waste the further into the gulch operations move. Where will these activities take place and how does that affect the analysis of the appropriateness of extending further into the gulch?"*

Sufficient space is expected to be available for the proposed project given that only a portion of the approximately 200 acres will be used for landfilling. Space for associated landfill support activities that include the stockpiling of cover material will be in locations approved by the DOH based on the required load bearing capacity and surface stability. Rock crushing is not currently performed at the landfill. Rock crushing that is planned will not be performed on landfill cells that have reached capacity.

7. *"The analysis of how the expansion of -37 acres of land equates to 15+ years of usage needs to be demonstrated. If one takes the 60.5 acres of landfill space that will be utilized by November of 2009 and does a strict ratio of the acreage proposed to be used for the landfill expansion (not taking into consideration the more complex nature of a narrower gulch to operate within) there should only be about 12 years worth of capacity beyond November 2009. The claims that there would be a minimum of 15 years life should be proven."*

The comparison suggested is inappropriate since it does not take into account the factors that should be considered in engineering the lateral expansion of the site. These factors include geotechnical soils studies and reports to establish appropriate slopes to maintain safety and stability of the site, and hydrogeologic factors to establish safe excavation depths. Other industry and governmental regulatory standards will also be considered in the final design of the site. The engineering design for the site will be reviewed by the State DOH as part of the Solid Waste Permit for consistency of design.

8. *"There continue to be numerous questions with regards to when, if ever, the City proposes to close this area to taking trash from the entire island. Where are the plans for what happens as this area is filled more rapidly than ever due to the expanding development being allowed and built on the island?"*

The City's long range plan will continue to involve the on-going adoption and use of waste reduction and recycling technologies and practices to reduce Oahu's dependency on landfilling. However, as noted in the subject DEIS, there are no immediate alternatives including transshipment, that can completely eliminate the need for landfills. Each alternative will result in the generation of some form of waste that cannot be further recycled, reduced, or reused. For these waste by-products landfilling remains the most viable and feasible alternative for disposal.

9. *"Until there is a real faith effort made in addressing the solid waste problems faced by the City and County of Honolulu, I will respectfully disagree with any plans to continue doing "business as usual" and continuing to "dump" on the Leeward Coast."*

This comment is acknowledged. The City has in good faith pursued alternative technologies to waste reduction that are reliable, cost efficient and scalable, and issued an RFP for alternative technologies. In response to the RFP, the only qualified proposals received to date have been for existing mass burn technologies. The City is currently pursuing mass burn technology through the expansion of H-POWER. No alternative can completely eliminate the need for a landfill. WGSL is a strategic component of the City's solid waste management system and the final destination for certain solid wastes including MSW, recycling residue, and H-POWER generated ash, residue and unacceptable waste that cannot further be combusted, recycled or reused.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

#13

2006/GEN-32(RY)

July 7, 2008

MEMORANDUM

TO: DR. ERIC TAKAMURA, DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: HENRY ENG, FAICP, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL LATERAL EXPANSION
TAX MAP KEY: 9-2-3: PORTION 72 AND PORTION 73, WAIMANALO, EWA, OAHU

We have reviewed the subject document and offer the following comments:

1. A rockfall and vibration hazard assessment focusing on potential impacts to existing and proposed residential developments, including those of the proposed Makaiwa Hills community and any others in close proximity to the landfill, should be conducted.

2. The Final EIS should include a view impact assessment that describes impacts of the construction and completion of landfill cells and accessory activities until final closure and landscaping from major public vantage points. The assessment should contain color simulations and proposed mitigation measures in 5-year increments, similar to those provided for the 21-acre expansion. Three dimensional computer generated graphics of the color simulations would help illustrate the anticipated views of the landfill from select vantage points such as roadways in Ko Olina, Farrington Highway near Kahe Power Plant, and nearby public parks/beaches.

   The prior Supplemental Environmental Impact Statement for the 21-acre expansion referred to faux rocks as components of the final landscape plan. The current DEIS did not make reference to this proposal, therefore, the Final EIS should clarify if faux rocks are still being considered for the final landscape plan.

3. Initial construction activities for the expansion of the existing landfill may require grubbing, grading, and stockpiling permits. In addition, a grading permit will be required for the final cover that will be placed prior to landfill closure.

4. The discussion on anticipated impacts should consider dust generated by blasting and any required mitigation measures. Please note that State air quality standards prohibit visible fugitive dust from crossing property lines.

5. Figure 4-7 on page 4-13 should show the height of the HECO transmission lines and the required clearances.

6. Figure 8-1 on page 8-11 should show State Land Use District boundaries with their respective labels. The existing and proposed SUP areas should also be shown.

7. Figure 8-2 on page 8-13 should highlight ALISH categories while de-emphasizing property boundaries. The existing and proposed SUP areas should also be shown.

8. On page 9-80, the section on Makaiwa Hills should be updated to indicate that the project has an accepted EIS and that it is presently undergoing a zone change application process.

9. There should be discussion on whether development of the H-Power third boiler would curtail pursuing alternate technologies in the near future or make it economically unfeasible to close the landfill sooner than later. The discussion could include how alternate technologies can be adopted even before any H-Power boiler needs replacement so that the City can move toward high efficiency disposal technologies which reduces residues to miniscule amounts or which has marketable end products.

10. A more detailed description of accessory activities, such as recycling, grading, rock crushing, stockpiling and their dust and noise impacts on surrounding uses, especially Makaiwa Hills residential development, and their mitigation measures should be provided. Please note that the any activities that manufacture products for off-site uses are not generally considered accessory and may not be allowed unless expressly permitted by SUP.

11. With respect to vendors' proposals in response to "Project to Construct and Operate Alternative Energy Facility and/or H-POWER Facility," January 16, 2007, there should be a table comparing how each vendor's alternate technology meet or do not meet the six (6) minimum requirements.

12. There should be discussion of the City's waste management plans for the years beyond 2024.

Thank you for the opportunity to comment. Should you have any questions, please contact Raymond Young of our staff at 768-8049.

HE:lh
Doc. 629481

cc: State DOH - OEQC
B. Takeda, R. M. Towill, Corporation

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-118

MEMORANDUM

TO: HENRY ENG, FAICP, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

Eric S. Takamura

FROM: ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your letter dated July 7, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *"A rockfall and vibration hazard assessment focusing on potential impacts to existing and proposed residential developments…should be conducted."*

See Section 5.3.3. Potential Impacts and Mitigation Measures of the FEIS, relating to soils, for a description of the testing program that will be undertaken to address rockfall and vibration hazards as a result of the use of controlled blasting.

2. *"The Final EIS should include a view impact assessment that describes impacts of the construction and completion of landfill cells and accessory activities until final closure and landscaping from major public vantage points."*

See Section 5.10.1. Scenic and Aesthetic Environment, of the FEIS, for further information on the assessment of potential viewplane impacts.

3. *"The final EIS should clarify if faux rocks are still being considered for the final landscape plan."*

Once the expansion is approved, the contractor will perform clearing and grubbing activities each time a new landfill cell is constructed. Surface rocks encountered during this process will be collected and stockpiled for use on the final cap during the closure process. During closure the final cap will be installed and vegetated with a combination of grasses and natural vegetation that is native to the area. These stockpiled rocks will be placed on the final cap after the revegetation process is completed in an attempt to make the final appearance of the landfill blend into the surrounding hillsides. No faux rocks will be needed based on the availability of surface rocks as cell construction moves up through the gulch.

4. *"Initial construction activities for the expansion of the existing landfill may require grubbing, grading, and stockpiling permits. In addition, a grading permit will be required for the final cover that will be placed prior to landfill closure."*

This comment is acknowledged and was addressed in the DEIS, Section 12. Permits and Regulatory Approvals That May Be Required.

5. *"The discussion on anticipated impacts should consider dust generated by blasting and any required mitigation measures."*

This comment is acknowledged. Generally, the type of controlled blasting that is performed at the site has resulted in the minimal generation of dust. However, to further address this concern, personnel performing the blasting will inspect the site for any loose sediments or soils that can constitute a dust source following blasting. As required, the area of the blast will be wetted down to suppress dust.

See Section 5.7.3. Potential Impacts and Mitigation Measures of the FEIS, relating to air quality, for a discussion on mitigative measures for dust control from the use of controlled blasting.

6. *"Figure 4-7 on page 4-13 should show the height of HECO transmission lines and the required clearances."*

This figure has been revised to show the approximate heights of the HECO lines and is provided in the FEIS.

7. *"Figure 8-1 on page 8-11 should show State Land Use District boundaries with their respective labels. The existing and proposed SUP areas should also be shown."*

This figure has been revised and is provided in the FEIS.

8. *"Figure 8-2 on page 8-13 should highlight ALISH categories while de-emphasizing property boundaries. The existing and proposed SUP areas should also be shown."*

This figure has been revised and is provided in the FEIS.

---

9. *"On page 9-80, the section on Makaiwa Hills should be updated to indicate that the project has an accepted EIS and that it is presently undergoing a zone change application process."*

We acknowledge this present status of the Makaiwa Gulch project. This comment is addressed in Section 9.7.4.3. Makaiwa Gulch, in the FEIS.

10. *"There should be a discussion on whether development on the H-POWER third boiler would curtail pursuing alternate technologies in the near future or make it economically unfeasible to close the landfill sooner or later."*

The proposed expansion of the H-POWER facility is considered to be independent of the selection of other alternative technologies that may help the City and County of Honolulu with its handling of municipal refuse. This means that the City will continue to evaluate refuse management alternatives whenever feasible and advantageous as part of its overall system for refuse management.

See also Section 2.6. City Plans Involving the Future Handling of Solid Waste, in the FEIS, providing a discussion on H-POWER and other future actions that will be taken by the City.

11. *"A more detailed description of accessory activities, such as recycling, grading, rock crushing, stockpiling and their dust and noise impacts on surrounding uses, especially Makaiwa Hills residential development, and their mitigation measures should be provided."*

General information is provided in the FEIS to describe the community drop-off center to handle residential refuse recycling and disposal in Section 4.1.2. Features of Construction of Lateral Expansion. Adverse effects to the planned Makaiwa Hills project are not anticipated based on the limited scale of this activity that will be restricted to a small area within the interior of the Waimanalo Gulch site.

The potential effects of construction that include grading, rock crushing, and stockpiling, have taken into consideration the Makaiwa Hills development as well as surrounding properties that include Ko Olina and other residences that surround the landfill property. While the detailed operational practices associated with construction will not be determined until such time that the final project plans are prepared following the current EIS effort, Waste Management has already initiated contact with the developer of Makaiwa Hills and fully intends to coordinate its future work activities to minimize and mitigate the potential for adverse effects.

12. *"With respect to vendors' proposals in response to "Project to Construct and Operate Alternative Energy Facility and/or H-POWER Facility," January 16, 2007, there should be a table comparing how each vendor's alternate technology meet or do not meet the six (6) minimum requirements."*

The procurement solicitation referred to, Competitive Sealed Proposal No. 047, was cancelled on January 16, 2008 and is no longer under consideration by the City. Accordingly, a comparative table evaluating the proposals against the six minimum requirements was not prepared. However, a description of the City's requirements as they pertain to various alternative technologies, and a discussion of how each of the alternatives compares with the City's requirements are provided in Section 9. Alternatives to the Proposed Action, in the DEIS and FEIS documents.

13. *"There should be discussion of the City's waste management plans for the years beyond 2024."*

The Integrated Solid Waste Management Plan is presently under preparation and is scheduled for completion in early 2009. Information from a draft of the plan has been provided in the FEIS to describe future activities of the City in managing solid waste for the future. See also Section 2.6. City Plans Involving the Future Handling of Solid Waste.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

#14

Ko Olina
RESORT & MARINA
HONOLULU

July 7, 2008

Dr. Eric Takamura, Director
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Re: Waimanalo Gulch Sanitary Landfill Lateral Expansion – Draft Environmental Impact Statement, May 2008

Dear Dr. Takamura:

Thank you for the opportunity to review the subject Draft EIS for the Waimanalo Gulch Sanitary Landfill Lateral Expansion. We offer the following comments for your consideration and action:

1. The subject Draft EIS is flawed due to an inappropriate statement of need for the proposed project in Section 3.3. Section 2-Project Background discusses, at length, the City's unsuccessful attempts to select and begin operation of a site for a new landfill prior to November 1, 2009. That date is the extended deadline imposed by the State Land Use Commission, after which the amended State Special Use Permit prohibits further acceptance of solid waste at the Waimanalo Gulch Sanitary Landfill (WGSL). Section 2 further elaborates on the numerous violations of State and Federal laws resulting from operation of the WGSL and the City's on-going efforts to address those violations. Therefore, it is inconceivable that Section 3.3 should cite the need for the proposed project as "required to address the municipal waste disposal needs of the island of Oahu." This statement of need is inappropriate due to the following reasons:

    - It attempts to use the EIS process to supersede site selection procedures required by the State Land Use Commission and initiated by the City Council and the previous City administration. While an EIS is a decision-making tool, Section 2 clearly documents the intent of the State Land Use Commission to use a formal site selection process. The EIS process cannot equal the level of detailed evaluation, dialogue, deliberation and community input that a process dedicated to selecting a landfill site can achieve.

92-1480 ALIINUI DRIVE • HONOLULU, HAWAII 96707 • TEL: 808 671-2512 • FAX: 808 671-3640

- It attempts to circumvent the State Land Use Commission's intent of establishing a deadline for the site selection process to determine a long-term landfill site. The proposed lateral expansion of the WGSL could defer closure of the WGSL by as much as 15 years or longer. This is contrary to the intent of the State Land Use Commission. Such a lengthy deferral should not be justified by merely reciting failed efforts to select a long-term site.

Based on the situation described in Section 2-Project Background, the statement of need should be for an <u>interim</u> solution to dispose solid waste in the event that the City cannot meet the November 1, 2009 deadline. In addition, there is a need to determine how future violations of State and federal laws pertaining to landfill operations can be avoided. The proposed interim solution would serve until a long-term site(s) and/or method(s) for solid waste disposal can be implemented. The interim solution would also include a process, schedule and deadline for long-term site/method selection and measures to prevent operating violations of State and federal laws.

If, after a rigorous and objective assessment of alternatives, the expanded use of the WGSL is proposed to serve as part of an interim project, it must be tied to a plan with a schedule, commitments and deadline for terminating acceptance of solid waste at the facility as soon as possible. The current proposal does not include such a plan. Without it, the current proposal violates the spirit of the State Land Use Commission's requirement for a site selection process tied to a deadline. It accomplishes little toward determining a long-term solution by the current City administration.

2. <u>Throughout Section 5, 6 and 7 the existing impacts of the current WGSL operation are not consistently nor systematically described in each category of environmental setting, existing public services and socioeconomic setting.</u> If the expanded use of the WGSL is proposed to serve as part of an interim project, it presents a unique case where there is a baseline of existing impacts resulting from the current operations. These existing impacts need to be systematically described, quantitatively and/or qualitatively, as appropriate. This would establish a baseline against which to describe changes in impacts should solid waste disposal at the WGSL be terminated by November 1, 2009. The impacts of expanding the WGSL would be discussed in comparison to conditions that would exist if solid waste disposal were terminated. While many impacts would be a continuation of existing impacts, they must be described in relation to the relief that the nearby communities have been anticipating.

3. <u>Throughout Section 5, 6 and 7 the cumulative impacts of the existing WGSL operation are not consistently nor systematically described in each category of environmental setting, public services and socioeconomic setting.</u> If the expanded use of the WGSL is proposed to serve as part of an interim project, it presents a unique case where the prior impacts incurred by the existing landfill must be cumulatively assessed with the impacts of the proposed expansion. Examples of anticipated impacts that will be cumulative include those on flora, fauna, cultural resources and visual/aesthetic. The discussion in Section 1.4-Secondary and Cumulative Impacts is wholly inadequate in that it does not provide quantitative and qualitative descriptions of the impacts incurred by the expansive existing operation at WGSL as a baseline against which to discuss the cumulative impacts of the proposed expansion.

4. <u>Section 6-Public Services, Potential Impact and Mitigation Measures fail to quantitatively and/or qualitatively discuss impacts in each category</u>. For example, historic statistics on fire and police responses to the WGSL should be provided as a baseline for demands created by current operations. These should be compared to anticipated demands following termination of operations on November 1, 2009 and anticipated changes in demand should interim operations be continued at WGSL. While some discussion of public service statistics is provided in Section 7, having alternative discussions of the same public service impacts in two sections reflects poor organization of the Draft EIS and is confusing to the reader.

   Another example is the existing impacts of odors and windblown trash on public and resort facilities from the current operation. These need to be documented by records of complaints, anecdotal reports and prevailing wind conditions as a baseline for assessing termination of operations on November 1, 2009 and an interim continuation of operations, including the viability of proposed mitigation measures.

   The demands on the services of the State Department of Health should also be assessed due to the history of violation at the WGSL. Mitigation measures to minimize violations for any proposed interim continuation of operations should be discussed.

5. <u>Section 9-Alternatives to the Proposed Action is flawed due to the inappropriate statement of project need, as discussed in item 1, above</u>. Since an interim alternative is not a commitment to a long-term solution, the range of potential alternative sites and methods, or combinations thereof, available for evaluation is

greatly expanded. For example, alternatives such as the joint use with on-going quarry operations, smaller and/or multiple sites, or landfill combinations with transshipment can be considered. Impacts would be shorter in duration, with a rigid schedule for finding a long-term solution. We believe that a rigorous and objective evaluation of such alternatives can yield a proposed interim solution that would be preferable to expanding the WGSL.

6. Due to the flawed statement of need, the proposed project, assessment of impacts and consideration of alternatives is also flawed. The Draft EIS was crafted around a pre-determined solution to an impasse in selecting a long-term landfill site. As a result, it does not comply with the rigorous decision-making rationale required by Chapter 343, HRS. Therefore, a new DEIS based on a more appropriate statement of need should be prepared.

We appreciate the opportunity to review and comment on the Draft EIS.

Sincerely,

Ko Olina Community Association, Inc.

Ken Williams
Vice President - Resort Operations

Copies to: Henry Eng, FAICP, Director
Dept. of Planning & Permitting

Brian Takeda
R.M. Towill Corporation

Office of Environmental Quality Control

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-119

Mr. Ken Williams
Vice President Resort Operations
Ko Olina Resort & Marina
92-1480 Aliinui Drive
Kapolei, Hawaii 96707

Dear Mr. Williams:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 7, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been italicized for reference):

1. *"The subject Draft EIS is flawed due to an inappropriate statement of need for the proposed project in Section 3.3. This statement of need is inappropriate due to the following reasons:*

   It attempts to use the EIS process to supersede site selection procedures required by the State Land Use Commission and initiated by the City Council and the previous City administration. While an EIS is a decision-making tool, Section 2 clearly documents the intent of the State Land Use Commission to use a formal site selection process. The EIS process cannot equal the level of detailed evaluation, dialogue, deliberation and community input that a process dedicated to selecting a landfill site can achieve.

   It attempts to circumvent the State Land Use Commission's intent of establishing a deadline for the site selection process to determine a long-term landfill site. The proposed lateral expansion of the WGSL could defer closure of the WGSL by as much as 15 years or longer. This is contrary to the intent of the State Land Use Commission. Such a lengthy deferral should not be justified by merely reciting failed efforts to select a long-term site."

The subject DEIS has appropriately stated the need for the project which is consistent with Chapter 343, Hawaii Revised Statutes (HRS), Environmental Impact Statements. According to Section 343-2, Definitions:

> "Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under Section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

Each of these requirements defining the EIS, including its use for the purpose of environmental disclosure, has been documented for the Waimanalo Gulch Sanitary Landfill as the preferred alternative for the disposal of Oahu's municipal solid waste and H-POWER ash and residue.

It is further noted that the subject DEIS provides for the evaluation of alternatives that include potential landfill sites as well as technology based alternatives and other methods, such as waste transshipment, to address the need for the future disposal of Oahu's municipal refuse. The DEIS, therefore, provides an important source of information for the LUC in evaluating the reasons why the City considers Waimanalo Gulch as the most viable and feasible alternative for our island. This effort to evaluate and provide environmental disclosure information that is relevant to the decision making process is clearly in the public interest.

2. *"Based on the situation described in Section 2-Project Background, the statement of need should be for an interim solution to dispose solid waste in the event that the City cannot meet the November 1, 2009 deadline. There is a need to determine how future violations of State and federal laws pertaining to landfill operations can be avoided."*

This comment is noted. However, for reasons stated in the DEIS, the preferred alternative is for the use of the Waimanalo Gulch Sanitary Landfill Lateral Expansion site until the area has reached capacity, which under the present conditions is estimated to be 15 more years.

It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimanalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaii are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality).

It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk and we anticipate that based on these procedures that sufficient safeguards will continue to maintain public health and safety.

3. *"Throughout Section 5. 6 and 7 the cumulative impacts of the existing WGSL operation are not consistently nor systematically described in each category of environmental setting, public services and socioeconomic setting ... Examples of anticipated impacts that will be cumulative include those on flora, fauna, cultural resources and visual/aesthetic."*

The potential for secondary and cumulative impacts have been described separately in both the DEIS and FEIS, in Section 1.4, Secondary and Cumulative Impacts, and in other sections of the document.

4. *"Section 6-Public Services, Potential Impact and Mitigation Measures fail to quantitatively and/or qualitatively discuss impacts in each category. For example, historic statistics on fire and police responses to the WGSL should be provided as a baseline for demands created by current operations. These should be compared to anticipated demands following termination of operations on November 1 2009 and anticipated changes in demand should interim operations be continued at WGSL.*

   Another example is the existing impacts of odors and windblown trash on public and resort facilities from the current operation. These need to be documented by records of complaints, anecdotal reports and prevailing wind conditions as a baseline for assessing termination of operations on November 1 2009, and an interim continuation of operations, including the viability of proposed mitigation measures.

   The demands on the services of the State Department of Health should also be assessed due to the history of violation at the WGSL."

The Waimanalo Gulch Sanitary Landfill maintains appropriate and responsive relationships with the local fire and police departments, as well as the Department of Health and other relevant City and State agencies. See Section 15, Comments and Responses to the EISPN, which lists the fire and police comment letters regarding their belief that expansion of the WGSL will not adversely affect the level of commitment that these important institutions provide in maintaining public health and safety.

The Waimanalo Gulch Sanitary Landfill maintains an active litter and odor control program which is described in the DEIS. See Section 4.2.2. Operational Controls. An odor complaint file is maintained on-site. According to Waste Management, less than five complaints were received about odor and/or litter within the last 12 months. Not all of those complaints were verified.

Comments from the DOH regarding potential issues associated with the proposed project is a part of the EIS process. A copy of the DOH comments and the responses to their comments are provided in Section 16, Comments and Responses to the DEIS, which a part of the FEIS. Based on the comments received no adverse impacts to DOH services are anticipated.

> 5. *"Alternatives to the Proposed Action is flawed due to the inappropriate statement of project need, as discussed in item 1, above. Since an interim alternative is not a commitment to a long-term solution, the range of potential alternative sites and methods, or combinations thereof, available for evaluation is greatly expanded."*

The statement of need for the project has been properly prepared and is consistent with the requirements for the preparation of a Chapter 343, HRS, compliant EIS. The alternatives evaluated for the proposed project, as well as the preferred alternative, do not involve the consideration of an interim solution.

> 6. *"Due to the flawed statement of need, the proposed project, assessment of impacts and consideration of alternatives is also flawed. The Draft EIS was crafted around a pre-determined solution to an impasse in selecting a long-term landfill site. As a result, it does not comply with the rigorous decision-making rationale required by Chapter 343, HRS. Therefore, a new DEIS based on a more appropriate statement of need should be prepared."*

Please refer to the responses to Items 1, 3, and 5, above, concerning the preparation of the subject document in accordance with the requirements of Chapter 343, HRS. The subject DEIS does not have a predetermined outcome based on the nature of the document which serves the purpose of environmental disclosure. A new DEIS is therefore neither planned nor appropriate for preparation.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

#15

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

(P)1195.8

JUL - 9 2008

Mr. Eric S. Takamura, Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Mr. Takamura:

Subject: Waimanalo Gulch Sanitary Landfill Expansion
Draft Environmental Impact Statement

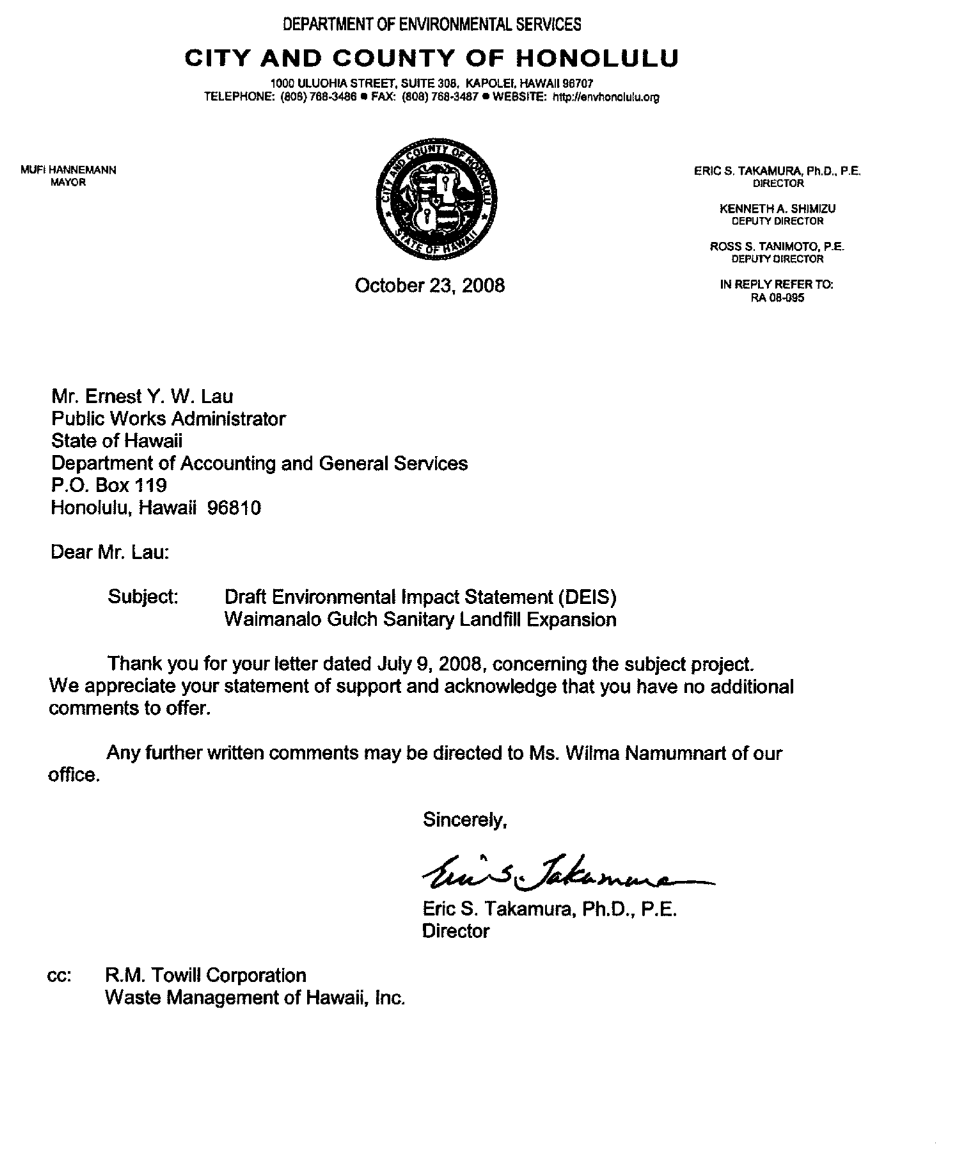
Thank you for the opportunity to review the information regarding the subject project. We support the City and County of Honolulu's efforts in resolving the issues related to the island of Oahu's municipal refuse. We have no additional comments to offer at this time.

If there are any questions regarding the above, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

DD:vca
c: Ms. Katherine Kealoha, OEQC
Mr. Henry Eng, City and County of Honolulu, Dept. of Planning and Permitting
Mr. Brian Takeda, R.M. Towill Corporation



DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 • FAX: (808) 768-3487 • WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-095

October 23, 2008

Mr. Ernest Y. W. Lau
Public Works Administrator
State of Hawaii
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Lau:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 9, 2008, concerning the subject project. We appreciate your statement of support and acknowledge that you have no additional comments to offer.

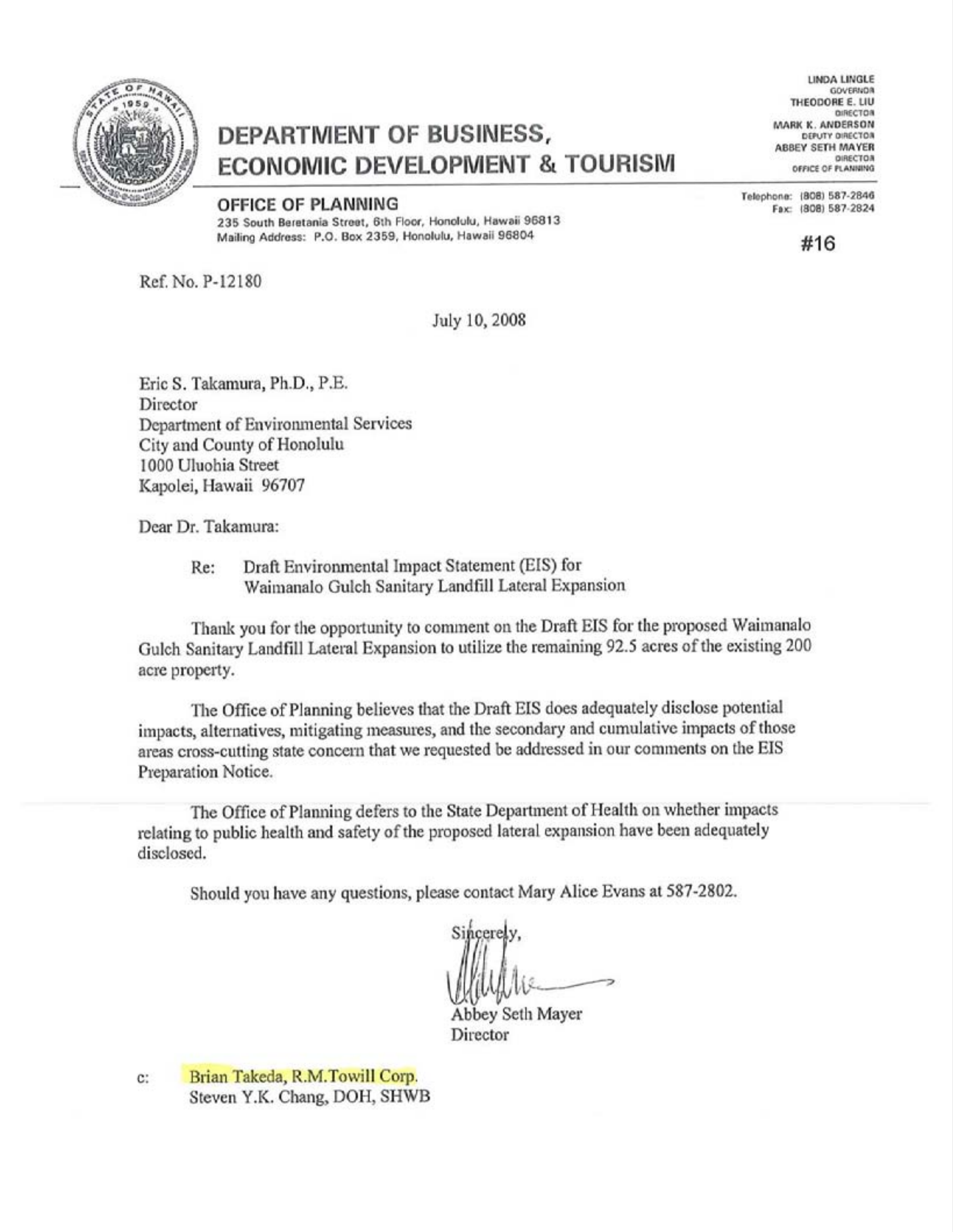
Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
DEPUTY DIRECTOR
ABBEY SETH MAYER
DIRECTOR
OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

#16

Ref. No. P-12180

July 10, 2008

Eric S. Takamura, Ph.D., P.E.
Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street
Kapolei, Hawaii 96707

Dear Dr. Takamura:

Re: Draft Environmental Impact Statement (EIS) for
Waimanalo Gulch Sanitary Landfill Lateral Expansion

Thank you for the opportunity to comment on the Draft EIS for the proposed Waimanalo Gulch Sanitary Landfill Lateral Expansion to utilize the remaining 92.5 acres of the existing 200 acre property.

The Office of Planning believes that the Draft EIS does adequately disclose potential impacts, alternatives, mitigating measures, and the secondary and cumulative impacts of those areas cross-cutting state concern that we requested be addressed in our comments on the EIS Preparation Notice.

The Office of Planning defers to the State Department of Health on whether impacts relating to public health and safety of the proposed lateral expansion have been adequately disclosed.

Should you have any questions, please contact Mary Alice Evans at 587-2802.

Sincerely,

Abbey Seth Mayer
Director

c: Brian Takeda, R.M.Towill Corp.
Steven Y.K. Chang, DOH, SHWB

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-098

October 23, 2008

Mr. Abbey Seth Mayer, Director
Office of Planning
State of Hawaii
Department of Business, Economic Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Mayer:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 10, 2008 concerning the subject project. The following is prepared in response to your comments (your comments have been *italicized* for reference):

> *"The Office of Planning believes that the Draft EIS does adequately disclose potential impacts, alternatives, mitigating measures, and the secondary and cumulative impacts of those areas cross-cutting state concern that we requested be addressed in our comments on the EIS Preparation Notice."*

We appreciate your review of the subject document and acknowledge this statement.

> *"The Office of Planning defers to the State Department of Health on whether impacts relating to public health and safety of the proposed lateral expansion have been adequately disclosed."*

We acknowledge the deferral of potential issues involving public health and safety to the State Department of Health (DOH) and will respond to any concerns identified by the DOH concerning the DEIS in a separate letter.

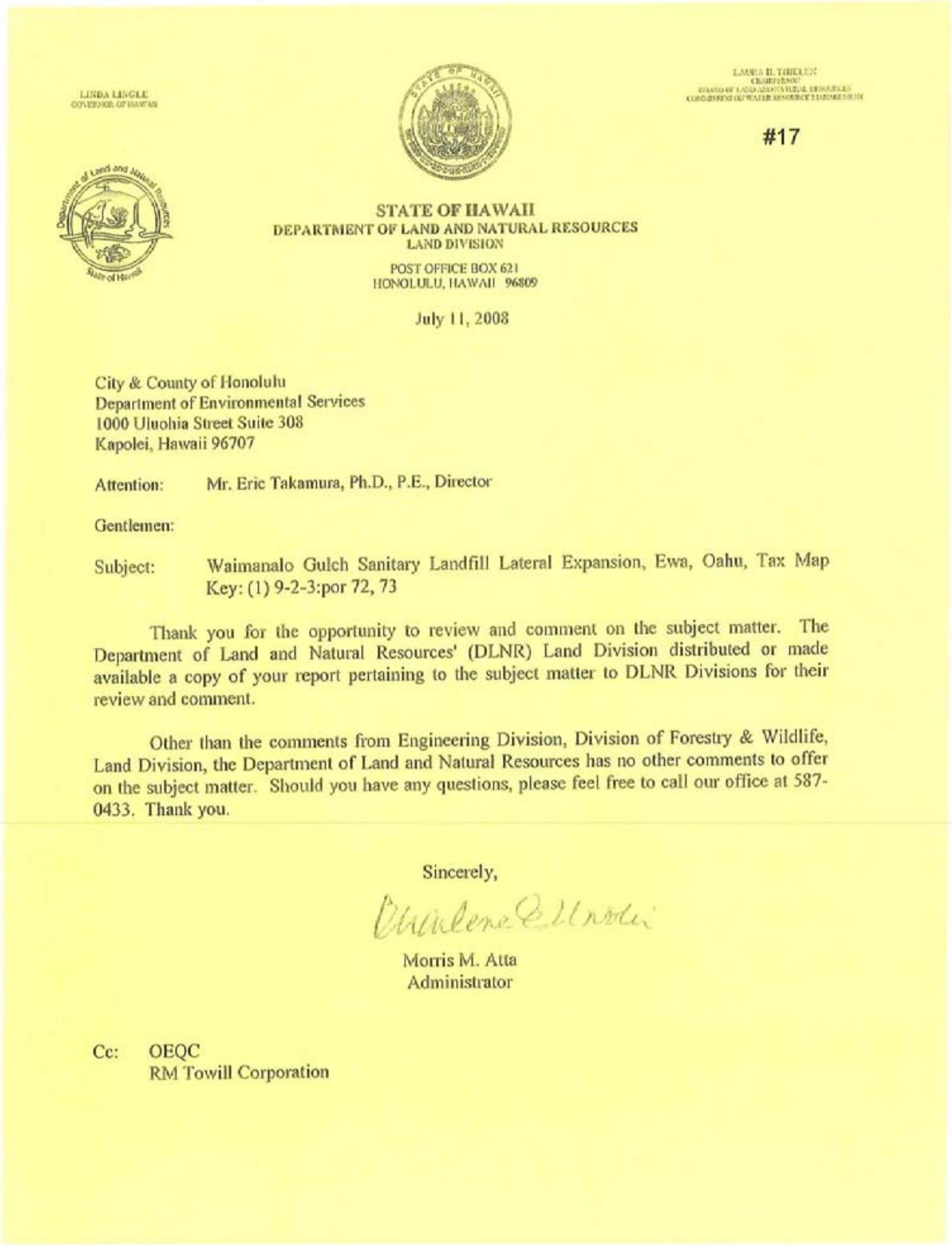
We appreciated the time you have taken to review the subject document. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

#17

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 11, 2008

City & County of Honolulu
Department of Environmental Services
1000 Uluohia Street Suite 308
Kapolei, Hawaii 96707

Attention: Mr. Eric Takamura, Ph.D., P.E., Director

Gentlemen:

Subject: Waimanalo Gulch Sanitary Landfill Lateral Expansion, Ewa, Oahu, Tax Map Key: (1) 9-2-3:por 72, 73

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

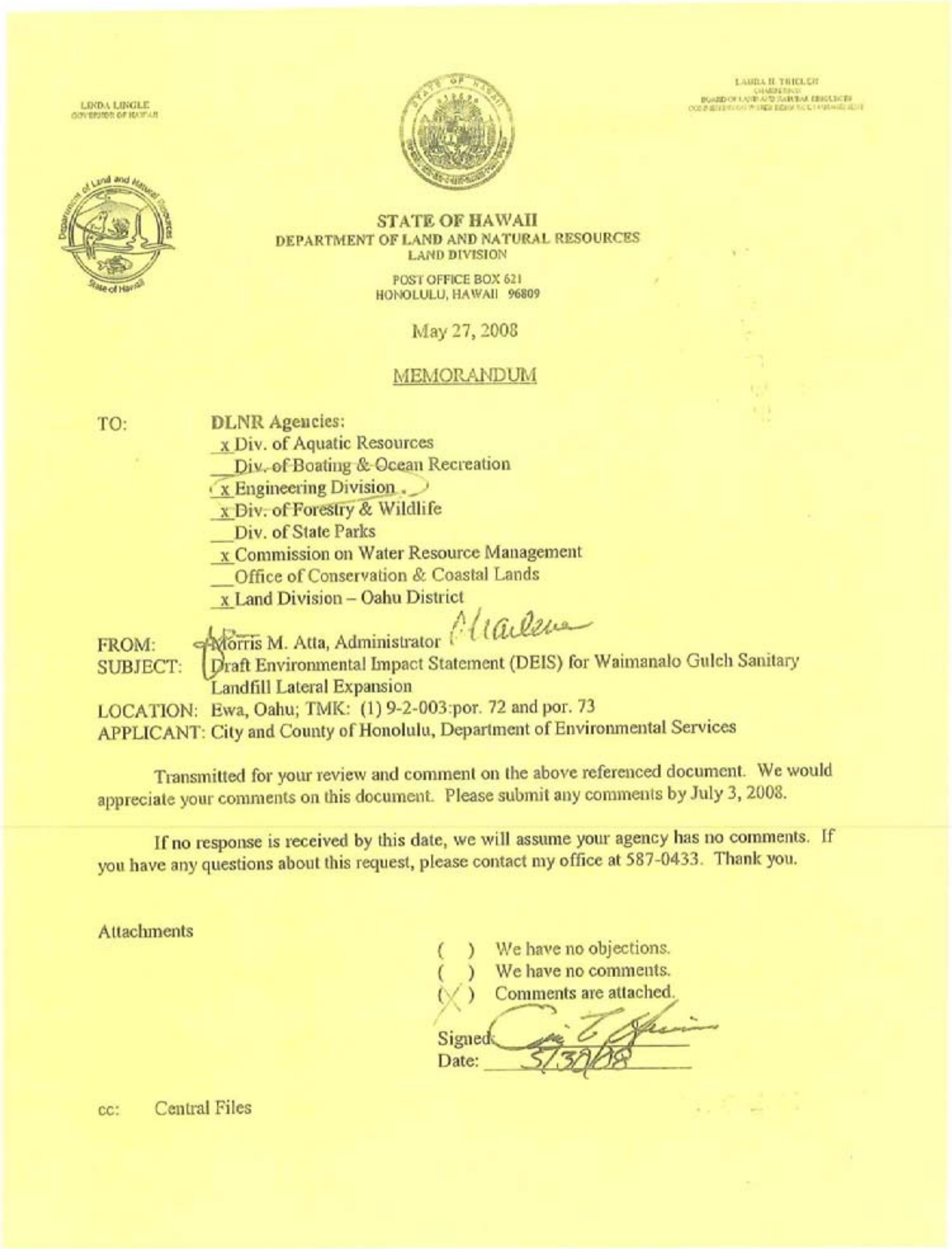
Other than the comments from Engineering Division, Division of Forestry & Wildlife, Land Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Unoki

Morris M. Atta
Administrator

Cc: OEQC
RM Towill Corporation



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 27, 2008

MEMORANDUM

TO: DLNR Agencies:
_x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
_x Engineering Division
_x Div. of Forestry & Wildlife
__Div. of State Parks
_x Commission on Water Resource Management
__Office of Conservation & Coastal Lands
_x Land Division – Oahu District

FROM: Morris M. Atta, Administrator Charlene
SUBJECT: Draft Environmental Impact Statement (DEIS) for Waimanalo Gulch Sanitary Landfill Lateral Expansion
LOCATION: Ewa, Oahu; TMK: (1) 9-2-003:por. 72 and por. 73
APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 3, 2008.

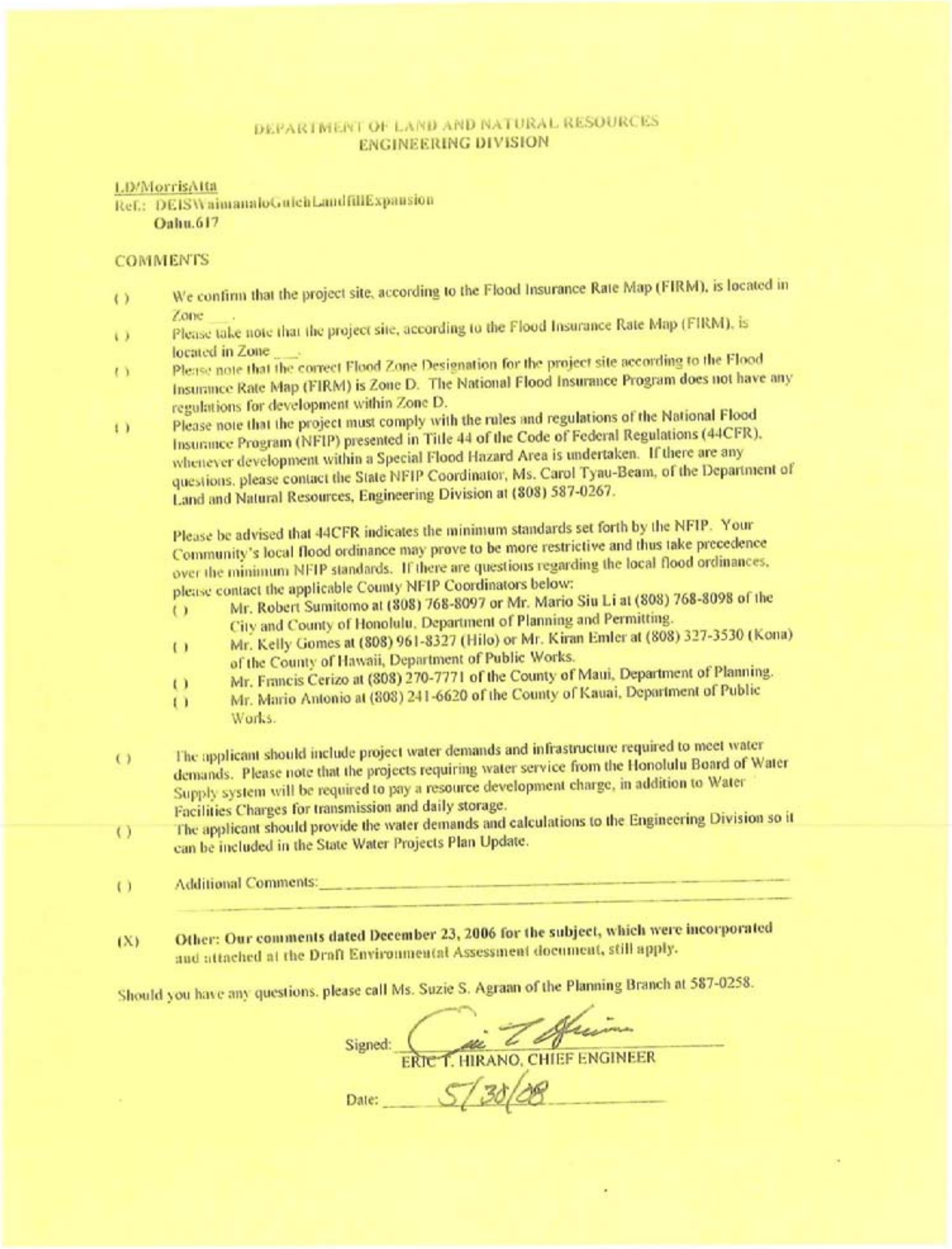
If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: ____________
Date: 5/30/08

cc: Central Files



DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/MorrisAtta
Ref.: DEISWaimanaloGulchLandfillExpansion
Oahu.617

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is Zone D. The National Flood Insurance Program does not have any regulations for development within Zone D.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- ( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
- ( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
- ( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- ( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the projects requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

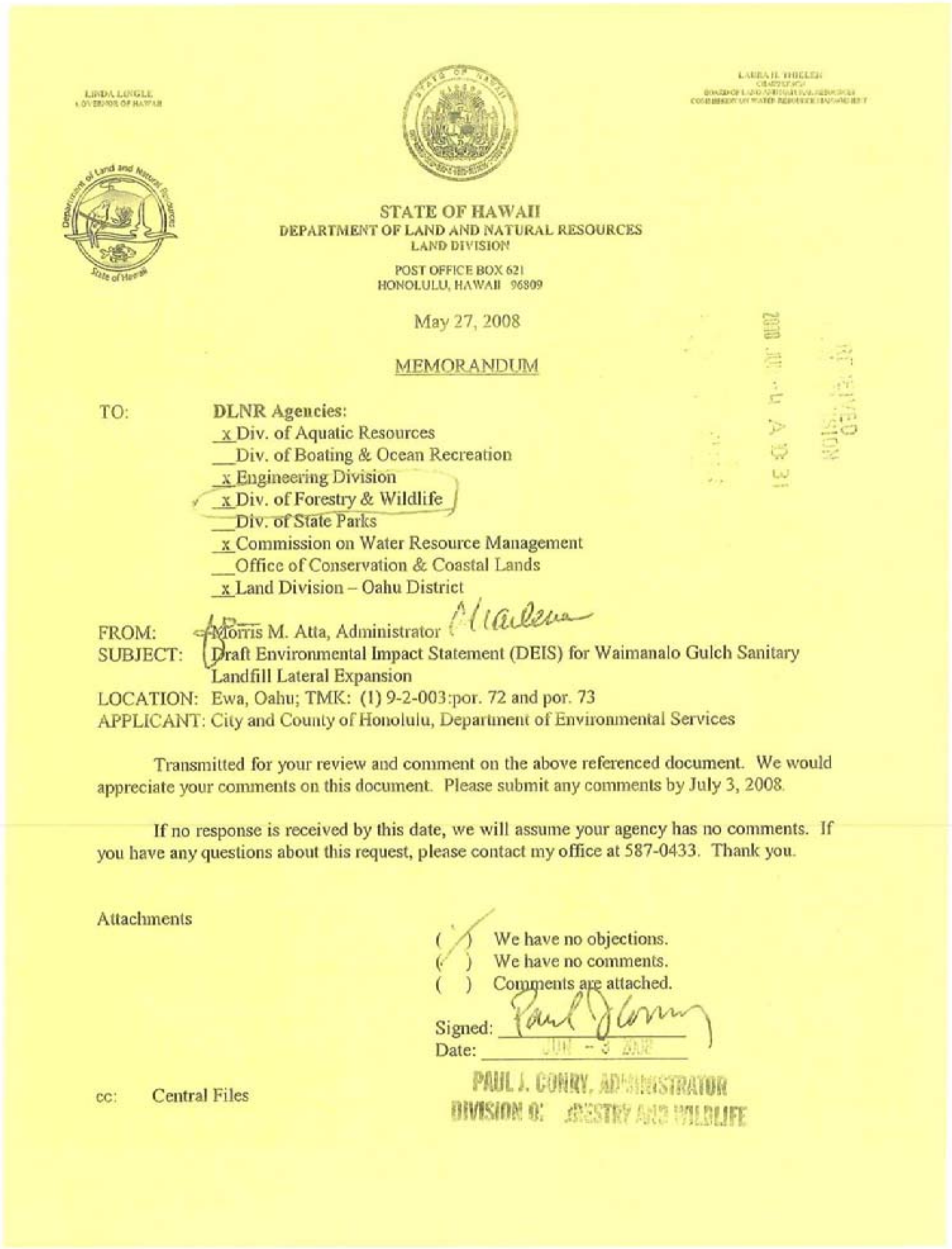
( ) Additional Comments:______________________________

(X) **Other: Our comments dated December 23, 2006 for the subject, which were incorporated and attached at the Draft Environmental Assessment document, still apply.**

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: ______________________
ERIC T. HIRANO, CHIEF ENGINEER

Date: 5/30/08



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 27, 2008

RECEIVED
DIVISION
2008 JUL -4 A 10:31

MEMORANDUM

TO: **DLNR Agencies:**
- x Div. of Aquatic Resources
- __Div. of Boating & Ocean Recreation
- x Engineering Division
- x Div. of Forestry & Wildlife
- __Div. of State Parks
- x Commission on Water Resource Management
- __Office of Conservation & Coastal Lands
- x Land Division – Oahu District

FROM: Morris M. Atta, Administrator
SUBJECT: Draft Environmental Impact Statement (DEIS) for Waimanalo Gulch Sanitary Landfill Lateral Expansion
LOCATION: Ewa, Oahu; TMK: (1) 9-2-003:por. 72 and por. 73
APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 3, 2008.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

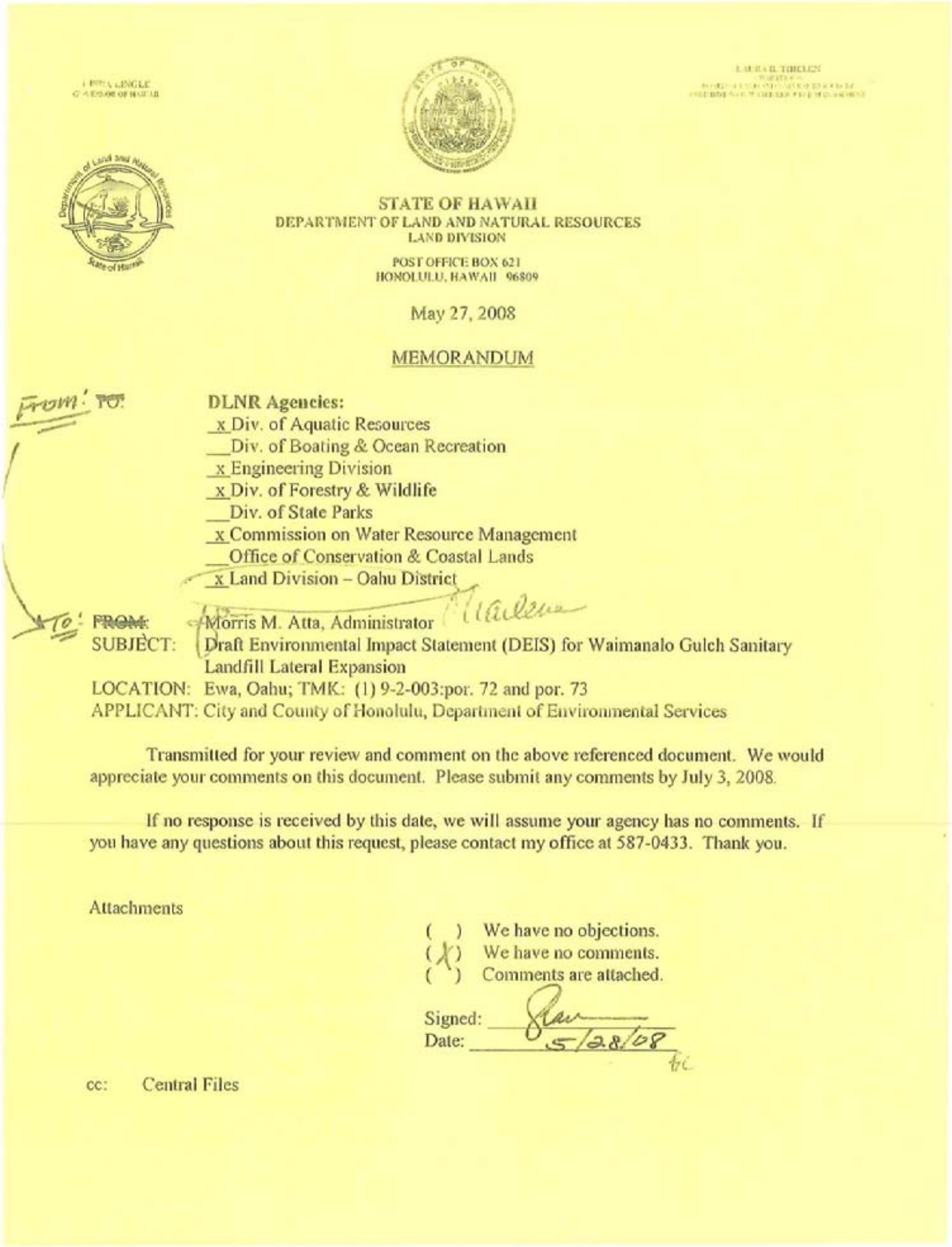
Attachments

(✓) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: Paul J. Conry
Date: JUN - 3 2008

PAUL J. CONRY, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE

cc: Central Files



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 27, 2008

MEMORANDUM

From: ~~TO:~~ **DLNR Agencies:**
_x_Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
_x_Engineering Division
_x_Div. of Forestry & Wildlife
__Div. of State Parks
_x_Commission on Water Resource Management
__Office of Conservation & Coastal Lands
_x_Land Division – Oahu District

To: ~~FROM:~~ Morris M. Atta, Administrator
SUBJECT: Draft Environmental Impact Statement (DEIS) for Waimanalo Gulch Sanitary Landfill Lateral Expansion
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APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 3, 2008.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
(X) We have no comments.
( ) Comments are attached.

Signed: ________
Date: 5/28/08

cc: Central Files

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-096

Mr. Morris M. Atta, Administrator
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Atta:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 11, 2008, concerning the subject project. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

"Engineering Division:
Our comments dated December 23, 2006 for the subject, which were incorporated and attached at the Draft Environmental Assessment document, still apply."

We acknowledge that the comments of the Engineering Division dated December 23, 2006, have been incorporated into the DEIS document.

"Division of Forestry and Wildlife:
We have no comments."

"Land Division:
We have no comments."

We acknowledge that the Division of Forestry and Wildlife and the Land Division have no comments.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

Rec'd 7/22/08

#18

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD08/2765F

July 11, 2008

Eric Takamura
City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawai'i 96707

RE: Draft Environmental Impact Statement (DEIS) Waimānalo Gulch Sanitary Landfill Lateral Expansion, O'ahu, TMK: 9-2-03:72 and 73.

Aloha e Eric Takamura,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated May 20, 2008. OHA has reviewed the project and offers the following comments.

While OHA understands the need and pressures that surround this proposed action, OHA is concerned that this document focuses too narrowly on the isolated issue of expanding a landfill. We wish to see more of a pro-active and far-reaching effort centering on sustainable waste management.[1] This DEIS focuses on the 15 –year window of breathing room that the proposed action buys, and does not offer insight into finite planning for waste in Hawai'i. OHA is disappointed that this proposed project is not coordinated in any way reducing the current waste stream into the landfill.[2] There is a demonstrated need to explore how other communities are efficiently dealing with their waste streams. An active recycling program, incentives, taxes, alternative technologies and regulations are just of the few low-hanging fruit that should be taken advantage of.

---

[1] Both our December, 2006 and September, 2007 comment letters made this specific point.

[2] See page 1-35 of the DEIS.

In November of 2006, OHA commented, "We also recommend that you conceive of the project area as a portion of a larger traditional cultural landscape; and, that the possible presence of one or more Traditional Cultural Properties (TCPs) is considered in your CIA (Cultural Impact Statement)." OHA has made a field visit to the project site and we noted three significant cultural features that were still intact in the project area. We are also aware of the probable existence of others yet to be discovered in the project area. OHA is further saddened that the larger setting that this project sits in is one that has been highly developed and degraded. Therefore, what TCPs that remain must be protected.

We appreciate that a cultural assessment has been made; however, it is important to note that OHA has consistently recommended that the three large upright boulders potentially used as trail markers that constitute State Inventory of Historic Properties (SIHP) site # 50-8012-6903 should be preserved in place. These features would likely be determined to be significant due to information content (criteria D) and traditional cultural significance (criteria E) under the Hawai'i Register of Historic Places.[3]

Not only OHA, but also all the cultural consultants contacted by the applicant recommend the same course of action.[4] If the uprights are removed as the applicant first proposes on page 1-22 of the DEIS, then what they mark will be lost as well. There is little point on making them more accessible, as is also proposed, because they are thought to be boundary markers; it is what the stones delineate, not the stones themselves that is more relevant in this place. Access for cultural practitioners should also be considered as is indicated on page 1-31 of the DEIS.

OHA objects to the determination made on page 7-82 of the DEIS which states "Considering the use of the site as a landfill, preservation in place (of site # 50-8012-6903) is not thought to be an appropriate mitigation treatment for the stones, considering their cultural sensitivity." Using the very significance of the stones to destroy their relevance is callous and unfair. OHA also finds it odd that this DEIS repeatedly calls to remove site # 50-8012-6903 (see also pages 7-123 and 124) yet then on page 11-1 sites the preservation of the stone uprights as an unresolved issue to "develop and define an appropriate course of preservation." Once again, OHA states that due to the admitted cultural significance of site # 50-8012-6903, they should be preserved in place.

The DEIS mentions environmental injustice on page 1-15 and indicates that "Leeward O'ahu is on the receiving end of many of O'ahu's burdens." The Environmental Protection Agency (EPA) defines this concept as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies." Table 7-1 of the DEIS shows that Wai'anae county has a resident population of 42, 259 while 'Ewa has 68,696. OHA notes that the Native

---

[3] See, pages 7-73 and 7-81 of the DEIS.

[4] See page 1-21 of the DEIS.

Hawaiian populations in those two counties are among the highest on O'ahu at 65% and 61% respectively.[5]

We express concern that Native Hawaiian populations are bearing a disproportionate amount of adverse health and environmental effects in this area stemming from what this DEIS on page 1-13 lists as odor, windblown litter, and visual impacts. The DEIS on page 7-21 states that within a 10-mile radius of the project area there are two separate landfills, two existing electrical power plants, a proposed new power generator plant, a deep draft harbor, and an industrial park all of which service the entire island. This is the very definition of environmental injustice. OHA points out there is also a large number of homeless people that have settled there from other areas of the island as well, which this community is now supporting.

The DEIS does little to compensate for these inequalities and even states that "condominium analysis shows a significant correlation of increased value and proximity to the landfill." As such, OHA inquires as to whether or not the applicant actually asserts that living next to the landfill is more beneficial in terms of property value, health, and aesthetics.

The applicant claims on page 1-32 of the DEIS that "The proposed project provides for the safe and effective disposal of municipal refuse for all the communities of O'ahu." However, OHA notes that this landfill has been in violation with both state department of health and federal EPA regulations. Further, the landfill was supposed to have ceased operations in May of this year and not benefited from a 2007 application to amend the Special Use Permit which eventually allowed this landfill to remain in operation. The proposed action will only add further burdens to our beneficiaries in these areas.

There are further impacts as well, such as the potential for run-off from the site to effect water quality in the area, including the velocity of the run-off. The DEIS on page 1-7 directly states that "There is potential for leachate entering brackish groundwater from the landfill." Additional retention basins, leachate and gas systems are needed as well as the accompanying monitoring that they require. After the fact permit modifications should no longer be granted. OHA is also concerned about the effect that the leachate has on the wastewater treatment plant in the area as well as the eventual final outflow that results from it.

Additionally, OHA would also like to suggest that the current project area (and future if permitted) be landscaped with drought tolerant native or indigenous species that are common to the area. Any invasive species should also be removed. Doing so would not only serve as practical water-saving landscaping practices, but also serve to further

---

[5] See the 2001 state census as well as the Native Hawaiian Data Book.

the traditional Hawaiian concept of mālama ʻāina and create a more Hawaiian sense of place. This would also help to reduce the amount of impervious surfaces in the project area, thereby reducing runoff as well. OHA also recommends tree and landscape planting used to shade parking areas and provide shade and cooling to building elements and outdoor use areas. The final plans for this project should include restoration of the native environment.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold at (808) 594-0263 or e-mail him at granta@oha.org.

ʻO wau iho nō me ka ʻoiaʻiʻo,

Clyde W. Nāmuʻo
Administrator

C: Office of Environmental Quality Control
235 S. Beretania St., Suite 702
Honolulu, Hawaiʻi 96813

C: Brian Takeda
R.M. Towill Corporation
2024 N. King Street #200
Honolulu, Hawaiʻi 96819

C: Henry Eng
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaiʻi 96813

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-120

Mr. Clyde W. Nāmuʻo, Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Nāmuʻo:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

We acknowledge your letter dated July 11, 2008, received by our office on July 22, 2008, concerning the subject project. The following is in response to your comments (your comments have been *italicized* for reference):

1. *"While OHA understands the need and pressures that surround this proposed action, OHA is concerned that this document focuses too narrowly on the isolated issue of expanding a landfill. We wish to see more of a pro-active and far-reaching effort centering on sustainable waste management.*[1] *This DEIS focuses on the 15 -year window of breathing room that the proposed action buys, and does not offer insight into finite planning for waste in Hawaiʻi. OHA is disappointed that this proposed project is not coordinated in any way reducing the current waste stream into the landfill.*[2] *There is a demonstrated need to explore how other communities are efficiently dealing with their waste streams. An active recycling program, incentives, taxes, alternative technologies and regulations are just of the few low-hanging fruit that should be taken advantage of."*

Footnotes:
"[1] Both our December, 2006 and September, 2007 comment letters made this specific point."
"[2] See page 1-35 of the DEIS."

The purpose of the DEIS is to address Chapter 343, HRS, requirements relating to the preparation of an Environmental Impact Statement for the planned lateral expansion of the WGSL for 15 or more years. The City's Integrated Solid Waste Management Plan is currently being updated and will provide policy guidance with regard to the overall use and relationship between landfilling and waste reduction strategies such as recycling, alternative waste reduction or elimination technologies, and waste transshipment. Although all options will continue to be pursued by the City, the use of landfilling remains the single most viable option for the disposal of MSW and
H-POWER generated ash and residue. According to the DEIS,

> "There are several alternative technologies and the transshipment of waste that show promise toward reducing the need for landfills. The generation of MSW that exceeds the processing capacity of H-POWER as well as the generation of ash and residue, however, requires that facilities such as a municipal waste landfill be a part of the City's long term waste management system." (Section 9.7. <u>Preferred Alternative</u>).

2. *"In November of 2006, OHA commented, "We also recommend that you conceive of the project area as a portion of a larger traditional cultural landscape; and, that the possible presence of one or more Traditional Cultural Properties (TCPs) is considered in your CIA (Cultural Impact Statement)." OHA has made a field visit to the project site and we noted three significant cultural features that were still intact in the project area. We are also aware of the probable existence of others yet to be discovered in the project area. OHA is further saddened that the larger setting that this project sits in is one that has been highly developed and degraded. Therefore, what TCPs that remain must be protected."*

The evaluation of the stone uprights as a "TCP" will be based on a review of these features in accordance with the requirements of applicable Federal and State law for this designation. This evaluation will be performed by a qualified archaeological and cultural resource consultant and reviewed by the State Historic Preservation Division (SHPD) for applicability. We add that while this evaluation will be performed, it has always been the City's intent that the stone uprights be treated in a manner consistent with its future preservation.

> *"We appreciate that a cultural assessment has been made; however, it is important to note that OHA has consistently recommended that the three large upright boulders potentially used as trail markers that constitute State Inventory of Historic Properties (SIHP) site # 50-8012-6903 should be preserved in place. These features would likely be determined to be significant due to information content (criteria D) and traditional cultural significance (criteria E) under the Hawai'i Register of Historic places.[3]"*
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> *"Not only OHA, but also all the cultural consultants contacted by the applicant recommend the same course of action.[4] If the uprights are removed as the applicant first proposes on page 1-22 of the DEIS, then what they mark will be lost as well. There is little point on making them more accessible, as is also proposed, because they are thought to be boundary markers; it is what the stones delineate, not the stones themselves that is more relevant in this place. Access for cultural practitioners should also be considered as is indicated on page 1-31 of the DEIS."*

> *"OHA objects to the determination made on page 7-82 of the DEIS which states "Considering the use of the site as a landfill, preservation in place (of site # 50-8012-6903) is not thought to be an appropriate mitigation treatment for the stones, considering their cultural sensitivity." Using the very significance of the stones to destroy their relevance is callous and unfair. OHA also finds it odd that this DEIS repeatedly calls to remove site # 50-8012-6903 (see also pages 7-123 and 124) yet then on page 1 1-1 sites the preservation of the stone uprights as an unresolved issue to "develop and define an appropriate course of preservation." Once again, OHA states that due to the admitted cultural significance of site # 50-8012-6903, they should be preserved in place."*
>
> *Footnotes:*
> *"[3] See, pages 7-73 and 7-81 of the DEIS."*
> *"[4] See page 1-21 of the DEIS."*

The restatement of OHA's position that the stones be preserved in place is noted. At this time the City is continuing to work with the SHPD and members of the community that have been identified by SHPD as important parties to the process. The final decision regarding the manner of preservation for the uprights will be determined by the SHPD.

3. *"The DEIS mentions environmental injustice on page 1-15 and indicates that "Leeward O'ahu is on the receiving end of many of O'ahu's burdens." The Environmental Protection Agency (EPA) defines this concept as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies." Table 7-1 of the DEIS shows that Wai'anae county has a resident population of 42, 259 while 'Ewa has 68,696. OHA notes that the Native Hawaiian populations in those two counties are among the highest on O'ahu at 65% and 61% respectively.[5]"*

   "We express concern that Native Hawaiian populations are bearing a disproportionate amount of adverse health and environmental effects in this area stemming from what this DEIS on page 1-13 lists as odor, windblown litter, and visual impacts. The DEIS on page 7-21 states that within a 10-mile radius of the project area there are two separate landfills, two existing electrical power plants, a proposed new power generator plant, a deep draft harbor, and an industrial park all of which service the entire island. This is the very definition of environmental injustice. OHA points out there is also a large number of homeless people that have settled there from other areas of the island as well, which this community is now supporting."

   "The DEIS does little to compensate for these inequalities and even states that "condominium analysis shows a significant correlation of increased value and proximity to the landfill." As such, OHA inquires as to whether or not the applicant actually asserts that living next to the landfill is more beneficial in terms of property value, health, and aesthetics."

Footnote:
"[5] See the 2001 state census as well as the Native Hawaiian Data Book."

According to the DEIS, Section 9, Alternatives to the Proposed Action, a major part of the reason for identifying Waimanalo Gulch as the preferred alternative from the standpoint of its physical location, is based on the assessment of: EPA Exclusionary Criteria involving physical features advantageous to the siting of a landfill; alternative sites that are located in areas which have since been developed or which are closed landfills with no further expansion potential; Board of Water Supply and Department of Health considerations that involve the need to protect our groundwater supply; and other factors involving the life of the site. The selection of Waimanalo Gulch as the preferred alternative due to the presence of residents with selected characteristics was never a part of the evaluation process.

The correct reference to the presence of public and private facilities is on Page 7-28 of the DEIS. The context for citing this information is that, "A number of interviewees point out that Leeward Oahu has been and continues to remain on the receiving end of many of Oahu's burdens." The current Administration recognizes this as a major concern of the community and as noted in the DEIS, has provided $2.7 million in 2007 as part of a community benefits package with a further distribution of $2.0 million in 2008. They expect that participation and the benefits provided will continue to evolve as they gain experience in working with the community. (Page 7-20). Other mitigative measures to further address the potential for impacts to the surrounding community have also been identified in Section 7.1.5., Socioeconomic Mitigation Measures.

4. *"The applicant claims on page 1-32 of the DEIS that "The proposed project provides for the safe and effective disposal of municipal refuse for all the communities of O'ahu." However, OHA notes that this landfill has been in violation with both State Department ofHealth and Federal EPA regulations. Further, the landfill was supposed to have ceased operations in May of this year and not benefited from a 2007 application to amend the Special Use Permit which eventually allowed this landfill to remain in operation. The proposed action will only add further burdens to our beneficiaries in these areas."*

It is acknowledged that prior violations involving the State Department of Health (DOH) and the Environmental Protection Agency (EPA) have occurred in the past at the Waimanalo Gulch Sanitary Landfill. On December 7, 2007, a settlement agreement was reached with the DOH which settled all issues arising from and related to the notice of violation. At the present time the City and Waste Management of Hawaii are fully cooperating and working with the EPA to address elevated underground temperatures at the landfill which are higher than anticipated, but which are not indicative of underground combustion conditions such as a fire. A detailed discussion of this item was provided in the DEIS, in Sections 2.3.2. U.S. Environmental Protection Agency and 5.7.3. Potential Impacts and Mitigation Measures (Air Quality).

It is important to note that throughout the events involving the DOH and EPA that self-reporting procedures have remained in place to notify governmental regulatory agencies of the operating practices and procedures applied at the landfill. At no time was the health and safety of the public at risk and we anticipate that based on these procedures that sufficient safeguards will continue to maintain public health and safety.

The purpose of the recent amendment to the Special Use Permit which allows Waimanalo Gulch Sanitary Landfill to remain in operation is to allow for the necessary disposal of MSW and H-POWER associated ash and residue. Without this capability the City would be left with no viable means of disposing of Oahu's refuse. Please refer to the response to Item 3, above, concerning the City's community benefits package.

5. *"There are further impacts as well, such as the potential for run-off from the site to effect water quality in the area, including the velocity of the run-off. The DEIS on page 1-7 directly states that "There is potential for leachate entering brackish groundwater from the landfill." Additional retention basins, leachate and gas systems are needed as well as the accompanying monitoring that they require. After the fact permit modifications should no longer be granted. OHA is also concerned about the effect that the leachate has on the wastewater treatment plant in the area as well as the eventual final outflow that results from it."*

The potential for leachate entering brackish groundwater is provided in the DEIS, Section 5.5.5. Potential Impacts and Mitigation Measures. This section acknowledges that potential impacts to groundwater resources involve the possible release or entry of leachate entering brackish groundwater. Mitigation to address this concern is provided by use of a Leachate Collection and Removal System. Other measures associated with the protection of groundwater resources are described.

The description and use of retention basins, leachate recovery, and gas control systems that serve to mitigate potential impacts are provided in the DEIS and describe both the existing and proposed future features of the landfill. Further detail can be found in the DEIS sections:

Subject	DEIS Section
Retention Basins	4.6. Stormwater Management
	4.6.1. Drainage Control System
	4.6.2. Erosion Controls
	5.4.1. Drainage Control System
	5.4.1. Potential Impacts and Mitigation Measures
Leachate	4.1.2. Features of Construction of Lateral Expansion
	4.1.5. Liner and Final Cover Systems
	5.4.1. Drainage Control System
	5.4.2. Potential Impacts and Mitigation Measures
Gas Collection	4.1.2. Features of Construction of Lateral Expansion
	4.2.3. Environmental Controls
	4.7. Regulation of Air Quality
	5.7.2. Landfill Associated Gas Emissions
	5.7.3. Potential Impacts and Mitigation Measures

According to the operator of the Waianae Wastewater Treatment Plant, leachate collected for treatment and disposal from the Waimanalo Gulch Sanitary Landfill,"...has not changed the water quality near the outfall and the sampling at the outfall shows all are in compliance with State Department of Health regulation. The plant has continuously met minimum State and Federal water quality requirements." (See DEIS Section 15. Comments and Responses to Environmental Impact Statement Preparation Notice, response letter to Cynthia K.L. Rezentes, Attachment, dated October 2, 2007).

6. *"Additionally, OHA would also like to suggest that the current project area (and future if permitted) be landscaped with drought tolerant native or indigenous species that are common to the area. Any invasive species should also be removed. Doing so would not only serve as practical water-saving landscaping practices, but also serve to further the traditional Hawaiian concept of mālama 'āina and create a more Hawaiian sense of place. This would also help to reduce the amount of impervious surfaces in the project area, thereby reducing runoff as well. OHA also recommends tree and landscape planting used to shade parking areas and provide shade and cooling to building elements and outdoor use areas. The final plans for this project should include restoration of the native environment."*

Existing and future planned landscaping will incorporate the use of drought tolerant species as much as possible as a water conservation measure. As applicable, native species will be used and plantings of trees to provide shade for the parking and building areas of the landfill will be provided. The removal of alien species to completely restore the native environment, however, is not considered feasible. As noted in the DEIS, Appendix E, Botanical Resources Report for Alternative Municipal Refuse Disposal Sites on the Island of O'ahu,

> "The results of all botanical surveys and searches of pertinent sources of information indicate that there are no special concerns or legal constraints related to botanical resources on any of the proposed sites. Non-native or introduced species of plants clearly dominate the natural vegetation in all areas proposed for landfill use, and the remnants of native vegetation extant on or near these sites consists of generally sparse growth of a limited number of species that remain relatively common in all undeveloped lowlands around Oahu."

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

July 14, 2008

#19

TO: DR. ERIC S. TAKAMURA, Ph.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

FROM: for CLIFFORD P. LUM, MANAGER AND CHIEF ENGINEER

SUBJECT: YOUR TRANSMITTAL DATED MAY 20, 2008 OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE WAIMANALO GULCH SANITARY LANDFILL LATERAL EXPANSION, EWA, OAHU, TMK: 9-02-03: PORTIONS 72 AND 73

Thank you for the opportunity to review and comment on the subject document.

We have no objections to the proposed project.

If you have any questions, please contact Scot Muraoka at 748-5942.

cc: Department of Planning and Permitting
Office of Environmental Quality Control
R.M. Towill Corporation

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-100

MEMORANDUM

TO: CLIFFORD P. LUM, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

Eric S. Takamura

FROM: ERIC S. TAKAMURA, PH.D., P.E., DIRECTOR
DEPARTMENT OF ENVIRONMENTAL SERVICES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Thank you for your memorandum dated July 14, 2008, concerning the subject project. We acknowledge that you have no objections to the proposed project.

Should you have any further written comments they may be directed to Ms. Wilma Namumnart of our office at 768-3406.

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

#20

In reply, please refer to:
EMD/SHWB

July 15, 2008

S0730LO

Mr. Eric S. Takamura, P.E., Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia St., Suite 308
Kapolei, HI 96707

Dear Mr. Takamura:

SUBJECT: Waimanalo Gulch Sanitary Landfill Expansion
Final Environmental Impact Statement (EIS)

Thank you for the opportunity to review and provide comments on this document. The Solid Waste Section (SWS) offers the following comments:

1. In our comments on the Waimanalo Gulch Landfill Expansion Preparation Notice, the SWS noted its concern over the designated 100-foot buffer on the boundary with the proposed Makaiwa Hills residential development. In your letter of May 12, 2007 you noted nuisance control measures to be implemented along that border in addition to the 100-foot buffer without actually increasing the size of the buffer zone.

   We maintain our position that the 100-foot buffer is inadequate to sufficiently ameliorate landfill impacts on the proposed residential development and instead recommend a 750 to 1,000-foot buffer. Such a buffer would be more effective in containing the impacts of landfill activities within the facility boundaries.

2. Table 4-1, page 4-1. The DOH recommends amending this table to reflect expansion and soil usage estimates for MSW and ash cells separately.

3. Section 5.4.1, page 5-11. Figure 5-3, Surface Water Plan: Figure 5-3 shows the Western Drainage System with the detention basin above the present landfill. The accompanying discussion indicates that this depiction is applicable for the preferred expansion. This is incorrect and would leave a question as to whether or not a detention basin is still being contemplated. The DOH recommends a

later version of the Western Drainage System be used that reflects the deletion of the detention pond.

If you have any questions regarding this letter, please contact me at (808) 586-4226.

Sincerely,

STEVEN Y.K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

c: Abbey Sethmayer, DBEDT/OP

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-121

October 23, 2008

Mr. Steven Y.K. Chang, P.E., Chief
Solid and Hazardous Waste Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Chang:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 15, 2008, concerning the subject project. The following is prepared in response to your comments (your comments have been *italicized* for reference):

> "1. *In our comments on the Waimanalo Gulch Landfill Expansion Preparation Notice, the SWS noted its concern over the designated 100-foot buffer on the boundary with the proposed Makaiwa Hills residential development. In your letter of May 12, 2007 you noted nuisance control measures to be implemented along that border in addition to the 100-foot buffer without actually increasing the size of the buffer zone.*
>
> *We maintain our position that the 100-foot buffer is inadequate to sufficiently ameliorate landfill impacts on the proposed residential development and instead recommend a 750 to 1,000-foot buffer. Such a buffer would be more effective in containing the impacts of landfill activities within the facility boundaries."*

The 100-foot buffer was initially suggested to us as a minimal buffer to provide for mitigation of potential nuisances. In some instances an increased area of buffer may be warranted to allow for landscaping and other mitigative control measures. This area of buffer however, should not be arbitrarily assigned given that grading and excavation will be required to establish cells and other structural elements of the landfill. In these instances, while some earthwork will be required within proximity to the 100-foot buffer, the completion of this initial work will make possible two important features: (1) the establishment of proper landfill slopes will make possible the implementation of improved mitigative control measures such as landscaping, such that the area of buffer would exceed the minimum 100-feet, e.g., landscaping is expected to be facilitated on newly excavated soils rather than the existing unworked soils; and (2) the area of landfill use will be maximized thereby promoting the efficient use of the site.

"2. *Table 4-1, page 4-1. The DOH recommends amending this table to reflect expansion and soil usage estimates for MSW and ash cells separately."*

The detailed configuration and location of the individual MSW and Ash cells within the expansion area are identified in the DEIS. The soil usage estimates for construction of these cells will be dependant on the final field configuration of the individual MSW and ash disposal cells. While these specific estimates of use are not known at this time, it should be noted that the amount of excavated material produced during the expansion will result in a surplus of available cell construction and daily cover material.

"3. *Section 5.4.1, page 5-11. Figure 5-3, Surface Water Plan: Figure 5-3 shows the Western Drainage System with the detention basin above the present landfill. The accompanying discussion indicates that this depiction is applicable for the preferred expansion. This is incorrect and would leave a question as to whether or not a detention basin is still being contemplated. The DOH recommends a later version of the Western Drainage System be used that reflects the deletion of the detention pond."*

Thank you for noting this error. A correct copy of the surface water control system will be provided in the forthcoming Final EIS for this project. As you have noted the detention basin has been deleted.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

EIS
#21

July 16, 2008

Eric S. Takamura, Ph.D. - Director
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street - Suite 308
Kapolei, HI 96707

Dear Dr. Takamura:

Re: Waimanalo Gulch Sanitary Landfill
Lateral Expansion
Waimanalo Gulch, Oahu
TMK: 9-2-3: Portion 72 & Portion 73

Thank you for the opportunity to comment on the draft EIS of above-referenced project. Hawaiian Electric Company, Inc. (HECO) has no objections at this time. The following comments were received from our Engineering and Construction & Maintenance Departments:

(1) Engineering/Transmission & Distribution Division (Hsun Jou, 543-7527). HECO has existing overhead facilities within the subject property and will require continued access for maintenance purposes.

Should it become necessary to relocate HECO's facilities, please immediately submit a request in writing and we will work with you so that construction of the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule.

We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities, and address any conflicts between the proposed plans and HECO's existing facilities. Please forward the pre-final development plans to HECO for review.

(2) Engineering/Telecommunications Section (Dixson Lau, 543-7543). Section 6.4.1, Power and Communication Facilities (p. 6-12) of the DEIS states, "A separate easement crossing the present landfill access road is also held by HECO for periodic maintenance of the overhead lines." The document is not definitive as to whether this easement is the same easement used by HECO to gain access to its existing telecommunications facility at Kahe Point near Battery Arizona. The easement for this access crosses over Ash Cell 4, Ash Cell 5, MSW Cell 4B and MSW Cell 5. This telecommunications facility provides critical communications interconnectivity for our Kahe Power Plant to the rest of the HECO system. As such, access to the site is required year-round, 24/7. We would appreciate that this concern be addressed in the final EIS.

Please keep us informed in the same manner as requested above by our Transmission & Distribution Division. We request that the development plans reflect and highlight any conflicts that will affect access to our Kahe Point telecommunications facility.

(3) Engineering/Structural Division (Roy Noda, 543-7067). The planned expansion is further mauka of the existing landfill and near the top of the ridgeline, which will impact our Kahe Power Plant as follows: (i) airborne debris from wind gusts will carry over the ridge and come down on HECO's 138kV Switching Station and other plant facilities; and (ii) the bird population may grow and result in increased nesting and littering problems within the plant facilities.

(4) Construction & Maintenance (Paul Nakagawa, 543-7062). We will need continued access to our facilities for maintenance purposes, as covered by our existing easement(s). Should relocation or additional facilities be required, a formal request should be submitted and coordinated through appropriate HECO department(s).

To ensure HECO's continuing input in this project, I suggest dealing directly with the points of contact noted above. Thank you again for the opportunity to comment.

Sincerely,

Kirk S. Tomita
Senior Environmental Scientist

cc: Henry Eng, FAICP (C&C DP&P)
Mr. Brian Takeda (R.M. Towill Corp.)
H. Jou/R. Tamayo/M. Lum
D. Lau/R. Shiroma/C. Emoto/
D. Fukunaga/P. Hauret
R. Noda
P. Nakagawa

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 08-122

October 23, 2008

Mr. Kirk S. Tomita
Senior Environmental Scientist
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Mr. Tomita:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 16, 2008, concerning the subject project and your statement that HECO has no objections to the proposed project at this time. The following has been prepared in response to comments from your Engineering and Construction & Maintenance Departments (the comments have been *italicized* for reference):

(1) "Engineering/Transmission & Distribution Division (Hsun Jou, 543-7527). HECO has existing overhead facilities within the subject property and will require continued access for maintenance purposes.

Should it become necessary to relocate HECO's facilities, please immediately submit a request in writing and we will work with you so that construction of the project may proceed as smoothly as possible. Please note that there may be costs associated with any relocation work, and that such costs may be borne by the requestor. Because any redesign or relocation of HECO's facilities may cause lengthy delays, upon determination that HECO facilities will need to be relocated, HECO should be notified immediately in order to minimize any delays in or impacts on the project schedule.

We appreciate your efforts to keep us apprised of the planning process. As the project progresses, please continue to keep us informed. We will be better able to evaluate any effects on our system facilities further along in the project's development. We request that development plans show all affected HECO facilities, and address any conflicts between the proposed plans and HECO's existing facilities. Please forward the pre-final development plans to HECO for review."

We acknowledge your comments and need for continued access to overhead facilities. Although the relocation of HECO facilities is not anticipated and will not be required at this time, any future requirements will be coordinated with HECO. The prefinal plans for the proposed project will be submitted to you for review.

(2) *"Engineering/Telecommunications Section (Dixson Lau, 543-7543). Section 6.4.1, Power and Communication Facilities (p. 6-12) of the DEIS states, "A separate easement crossing the present landfill access road is also held by HECO for periodic maintenance of the overhead lines." The document is not definitive as to whether this easement is the same easement used by HECO to gain access to its existing telecommunications facility at Kahe Point near Battery Arizona. The easement for this access crosses over Ash Cell 4, Ash Cell 5, MSW Cell 48 and MSW Cell 5. This telecommunications facility provides critical communications interconnectivity for our Kahe Power Plant to the rest of the HECO system. As such, access to the site is required year-round, 24/7. We would appreciate that this concern be addressed in the final EIS.*

Please keep us informed in the same manner as requested above by our Transmission & Distribution Division. We request that the development plans reflect and highlight any conflicts that will affect access to our Kahe Point telecommunications facility."

We appreciate this point of clarification concerning easements near Battery Arizona that also cross the Ash and MSW cells. This will be addressed in Section 6.4.1. Power and Communications Facilities, in the FEIS. Project activities that have the potential to affect the Kahe Power Plant facility will also be coordinated with your Engineering Department.

(3) *"Engineering/Structural Division (Roy Noda, 543-7067). The planned expansion is further mauka of the existing landfill and near the top of the ridgeline, which will impact our Kahe Power Plant as follows: (i) airborne debris from wind gusts will carry over the ridge and come down on HECO's 138kV Switching Station and other plant facilities; and (ii) the bird population may grow and result in increased nesting and littering problems within the plant facilities."*

We acknowledge your comment and will address these concerns in the Final EIS. In general, the control of windblown litter will continue to be addressed as provided in Section 4.2.3. Environmental Controls, subsections on Litter and Cover Soil, in the FEIS. The control of birds will also continue to be provided by promoting the immediate covering of odorous waste with soil cover to discourage foraging. While current efforts have been effective it is recognized that continued diligence will be necessary to maintain the safety of the Kahe Power Plant facility.

(4) *"Construction & Maintenance (Paul Nakagawa, 543-7062). We will need continued access to our facilities for maintenance purposes, as covered by our existing easement(s). Should relocation or additional facilities be required, a formal request should be submitted and coordinated through appropriate HECO department(s)."*

We acknowledge the existing easements and need for access for maintenance purposes. Should any future relocation or additional facilities be required a formal request will be submitted to the appropriate HECO departments by the City or operator.

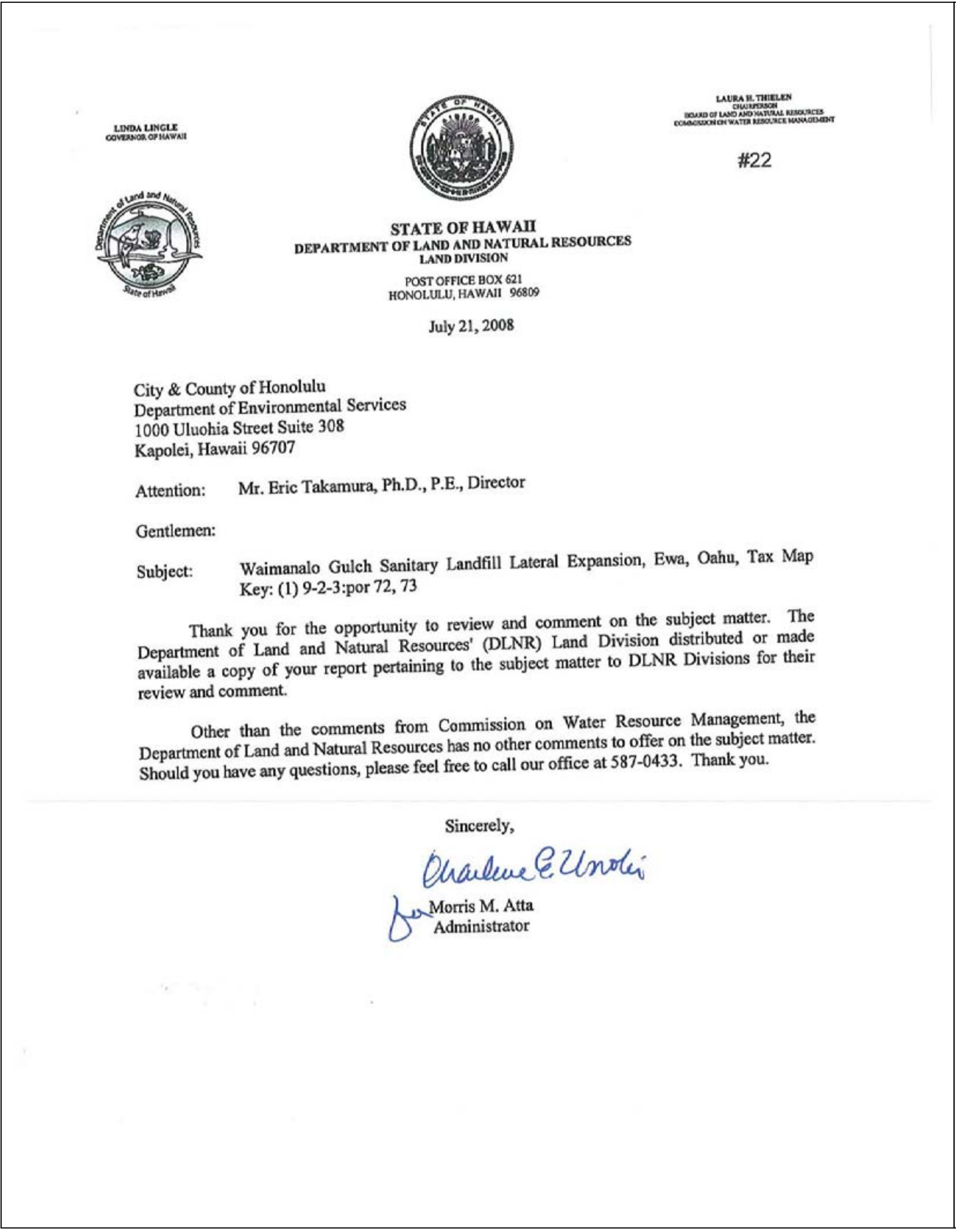
We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office at 768-3406.

Sincerely,

Eric S Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

#22

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 21, 2008

City & County of Honolulu
Department of Environmental Services
1000 Uluohia Street Suite 308
Kapolei, Hawaii 96707

Attention: Mr. Eric Takamura, Ph.D., P.E., Director

Gentlemen:

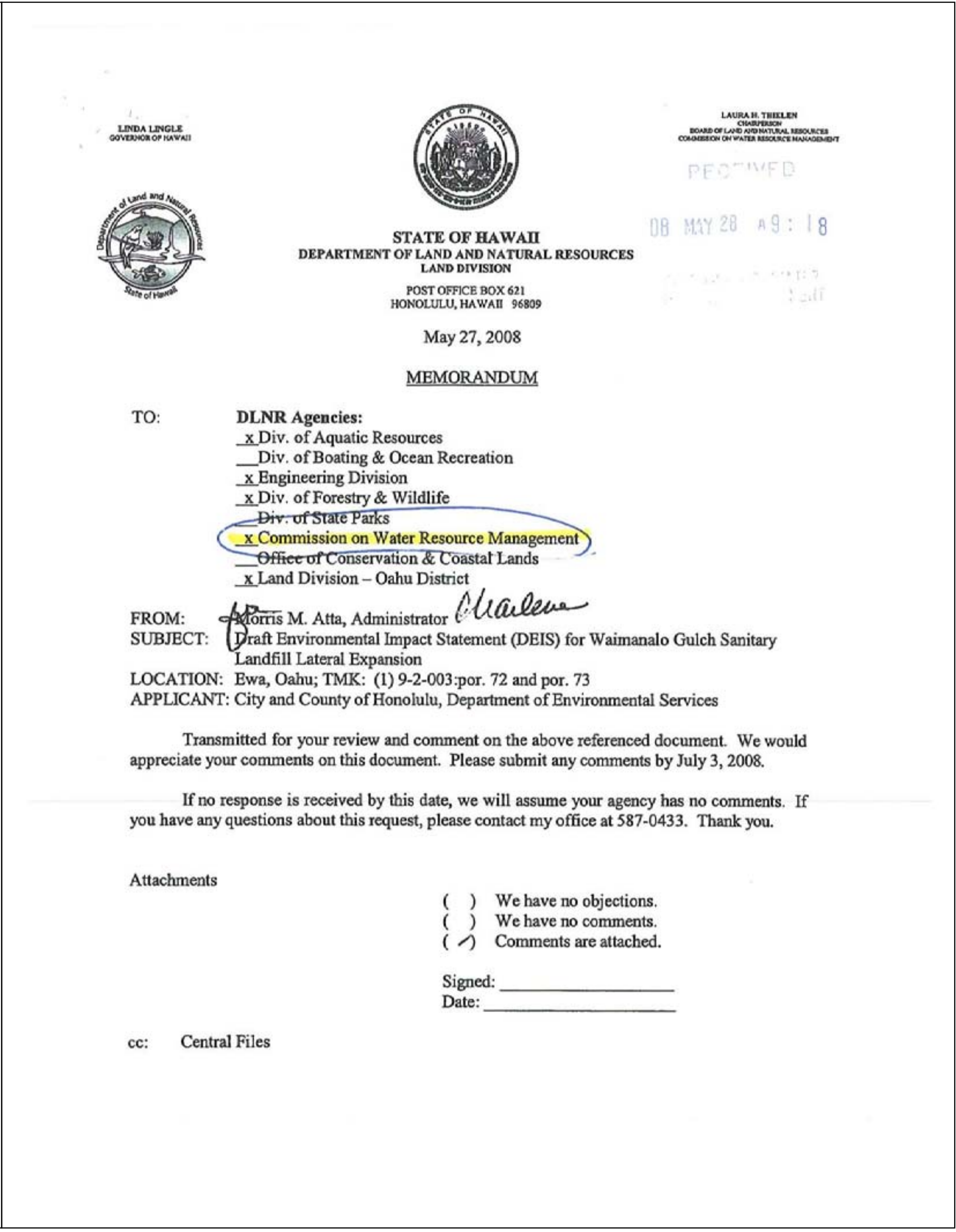
Subject: Waimanalo Gulch Sanitary Landfill Lateral Expansion, Ewa, Oahu, Tax Map Key: (1) 9-2-3:por 72, 73

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Commission on Water Resource Management, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Unoki
for Morris M. Atta
Administrator



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED

08 MAY 28 A9:18

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 27, 2008

MEMORANDUM

TO: **DLNR Agencies:**
- _x_ Div. of Aquatic Resources
- __ Div. of Boating & Ocean Recreation
- _x_ Engineering Division
- _x_ Div. of Forestry & Wildlife
- __ ~~Div. of State Parks~~
- _x_ Commission on Water Resource Management
- __ ~~Office of Conservation & Coastal Lands~~
- _x_ Land Division – Oahu District

FROM: Morris M. Atta, Administrator Charlene
SUBJECT: Draft Environmental Impact Statement (DEIS) for Waimanalo Gulch Sanitary Landfill Lateral Expansion
LOCATION: Ewa, Oahu; TMK: (1) 9-2-003:por. 72 and por. 73
APPLICANT: City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by July 3, 2008.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: ________________
Date: ________________

cc: Central Files

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON

MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
DONNA FAY K. KIYOSAKI, P.E.
LAWRENCE H. MIIKE, M.D., J.D.

KEN C. KAWAHARA, P.E.
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

RECEIVED
LAND DIVISION
2008 JUL 17 P 3:32
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

July 14, 2008

REF: Waimanalo Gulch Exp.DEIS

TO: Morris Atta, Administrator
Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director
Commission on Water Resource Management

Ken C. Kawahara

SUBJECT: Draft Environmental Impact Statement for Waimanalo Gulch Sanitary Landfill Lateral Expansion

FILE NO.: NA

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at *http://www.hawaii.gov/dlnr/cwrm*.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☒ 3. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM: Additional information and forms are available at *www.hawaii.gov/dlnr/cwrm/forms.htm*.

☐ 4. The proposed water supply source for the project is located in a designated ground-water management area, and a Water Use Permit is required prior to use of ground water.

☐ 5. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.

☐ 6. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 7. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 8. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 9. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.

☐ 10. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 11. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

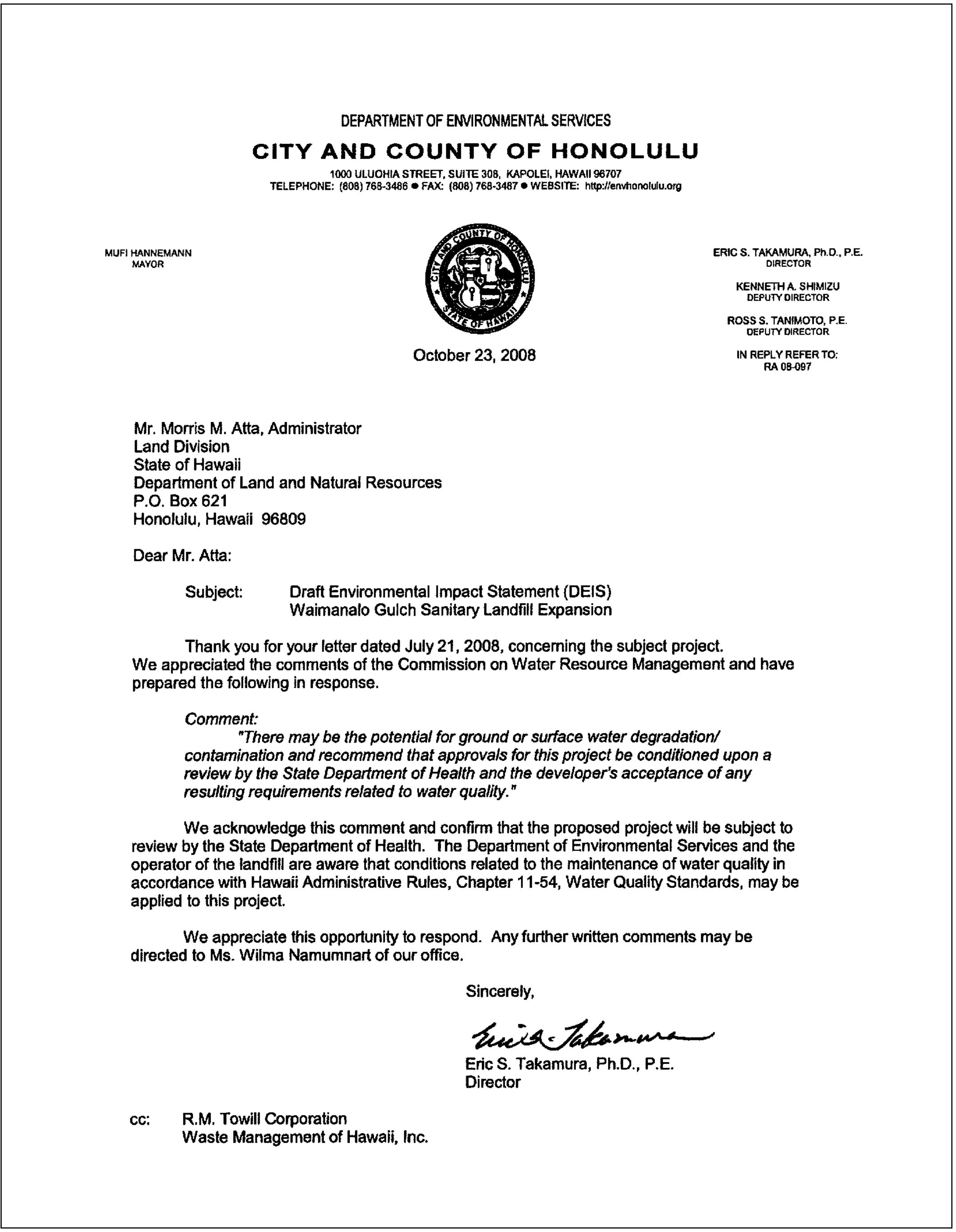
☐ 12. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ 13. We recommend that the report identify feasible alternative non-potable water resources, including reclaimed wastewater.

☐ OTHER:

If there are any questions, please contact Lenore Ohye at 587-0216.

LN:ss



DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

October 23, 2008

IN REPLY REFER TO:
RA 08-097

Mr. Morris M. Atta, Administrator
Land Division
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Atta:

Subject: Draft Environmental Impact Statement (DEIS)
Waimanalo Gulch Sanitary Landfill Expansion

Thank you for your letter dated July 21, 2008, concerning the subject project. We appreciated the comments of the Commission on Water Resource Management and have prepared the following in response.

Comment:

"There may be the potential for ground or surface water degradation/ contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality."

We acknowledge this comment and confirm that the proposed project will be subject to review by the State Department of Health. The Department of Environmental Services and the operator of the landfill are aware that conditions related to the maintenance of water quality in accordance with Hawaii Administrative Rules, Chapter 11-54, Water Quality Standards, may be applied to this project.

We appreciate this opportunity to respond. Any further written comments may be directed to Ms. Wilma Namumnart of our office.

Sincerely,

Eric S. Takamura

Eric S. Takamura, Ph.D., P.E.
Director

cc: R.M. Towill Corporation
Waste Management of Hawaii, Inc.

~~Section 16~~

Section 17

EIS Preparers

This Environmental Impact Statement was prepared for the Department of Environmental Services, City & County of Honolulu, and Waste Management of Hawaiʻi, Inc., by R. M. Towill Corporation. The following list identifies the parties involved in the preparation of this document and their respective contributions.

Department of Environmental Services
Wilma Namumnart, P.E. (Deputy Division Chief, Refuse Division)

Waste Management of Hawaiʻi, Inc.
Rick Von Pien, Director of Engineering, Western Group, Waste Management, Inc.
Joseph Whelan, District Manager, Hawaiʻi

R.M. Towill Corporation
Brian Takeda (EIS Project Manager and Primary Author)
Kevin Polloi (Urban and Regional Planner, EIS Preparation and Graphics)
Dane Sjoblom (Urban and Regional Planner Aide)

Technical Consultants

Consultant	Technical Field of Expertise
Pacific Waste Consulting Grp.	Solid Waste Consulting, Alternatives Analysis
AECOS, Inc.	Biological Resources, Botanical Assessment
Cultural Surveys Hawaiʻi	Archaeological Inventory Survey and Cultural Impact Assessment
GeoSyntec Consultants, Inc.	Geology/Hydrogeologic Engineering
Golder Consultants	Hydrogeologic Engineering

Phillip Bruner, Ph.D.	Biological Resources, Faunal and Avifaunal Assessment
Steven Lee Montgomery, Ph.D.	Invertebrate Resources
Resolutions Hawai‘i	Community Facilitation
SMS Research	Socioeconomic Impact Assessment
Wilson Okamoto Corporation	Traffic Impact Assessment

Legal Consultant
Watanabe Ing LLP

~~Section 17~~

Section 18

References

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Final Environmental Impact Statement
Prepared in Accordance with Chapter 343, Hawaii Revised Statutes and
Title 11, Chapter 200, Hawaii Administrative Rules

Appendices Waimānalo Gulch Sanitary Landfill Lateral Expansion

Waimānalo Gulch, O‘ahu, Hawai‘i
TMKs: (1) 9-2-003: 072 and 073

October 2008

City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, 3rd Floor
Kapolei, Hawai‘i 96707

R. M. TOWILL CORPORATION
SINCE 1930
2024 North King Street, Suite 200
Honolulu, Hawaii 96819-3494
1-21149-00

Volume 2 of 3

Draft Environmental Impact Statement

Appendices
Waimānalo Gulch Sanitary Landfill Lateral Expansion

Waimānalo Gulch, Oʻahu, Hawaiʻi
TMKs: (1) 9-2-003: 072 and 073

October 2008

Prepared Pursuant to
Chapter 343, Hawaiʻi Revised Statutes, and
Title 11, Chapter 200, Hawaiʻi Administrative Rules

Prepared for:
City and County of Honolulu
Department of Environmental Services
Kapolei, Hawaiʻi 96707

Prepared by:
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Honolulu, Hawaiʻi 96819-3494

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Appendix A

Notice of Violation, January 31, 2006, and Settlement Agreement, December 7, 2007, State Department of Health

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD/SHWB

January 31, 2006

S0203JR

CERTIFIED MAIL NO. 7005 1160 0003 8275 9819
RETURN RECEIPT REQUESTED

Mr. Paul Burns, Vice President/General Manager
Waste Management of Hawaii, Inc.
92-460 Farrington Highway
Kapolei, Hawaii 96707

CERTIFIED MAIL NO. 7005 1160 0003 8275 9758
RETURN RECEIPT REQUESTED

Mr. Eric Takamura, Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street
Kapolei, Hawaii 96707

Dear Messrs. Burns and Takamura:

SUBJECT: NOTICE OF VIOLATION/ORDER

Under the authority of section 342H-7 of the Hawaii Revised Statutes, you are hereby notified that we are issuing a Notice of Violation (NOV) and Order for the implementation of corrective actions regarding state solid waste noncompliance issues. The documents are enclosed.

Pursuant to section 342H-7, any order issued shall become final, and the penalty imposed under this chapter shall become due and payable twenty (20) calendar days after the notice of penalty is served, unless the person or persons named therein request a hearing before the Director of Health. The request for a hearing must be made in writing, no later than twenty (20) calendar days after the NOV and Order are served. Furthermore, if the penalty is not paid to the Department of Health within thirty (30) calendar days after it becomes due and payable, the Director may institute a civil action in the name of the State to recover the civil penalty, which shall be a government realization.

Please direct all inquiries concerning this matter to Steven Y.K. Chang, P.E., Chief, Solid and Hazardous Waste Branch, Department of Health, 919 Ala Moana Boulevard, Room 212, Honolulu, Hawaii 96814.

Sincerely,

Linda Rosen

LAURENCE K. LAU
Deputy Director for Environmental Health

Enclosures

c: Kathleen Ho, Deputy Attorney General
Thomas P. Rack, Hearings Officer (NOV, Order)

IN THE DEPARTMENT OF HEALTH

STATE OF HAWAII

DEPARTMENT OF HEALTH,) DOCKET NO. 05-SHW-SWS-004
STATE OF HAWAII,)
)
COMPLAINANT,)
)
vs.)
)
)
WASTE MANAGEMENT OF HAWAII, INC.) NOTICE AND FINDING OF
AND CITY and COUNTY OF HONOLULU;) VIOLATION
)
)
RESPONDENTS.)
)

NOTICE AND FINDING OF VIOLATION

A. INTRODUCTION

1. This is an administrative enforcement action instituted pursuant to §342H-7 of the Hawaii Revised Statutes ("HRS"), and the Department of Health's Solid Waste Management Control Rules, Chapter 11-58.1, Hawaii Administrative Rules ("HAR"). Complainant is the Department of Health ("DOH"), Solid Waste Section ("SWS"). RESPONDENTS are Waste Management of Hawaii, Inc. (WMH) and City and County of Honolulu ("RESPONDENTS").

2. At all times pertinent hereto, RESPONDENTS owned, operated, controlled, or managed a solid waste disposal facility at the Waimanalo Gulch Sanitary Landfill ("facility") located at 92-460 Farrington Highway, Kapolei, Hawaii.

3. On the basis of information obtained during the course of investigation, SWS has determined that RESPONDENTS have violated HRS 342H, HAR 11-58.1, and RESPONDENTS' solid waste management permit.

B. JURISDICTION

4. HRS §342H-7 authorizes DOH to issue orders assessing a penalty for any past or current violation of HRS chapter 342H, the rules adopted thereunder, or any term or condition of a permit issued pursuant to the chapter, and to require compliance

immediately or within a specified time.

5. RESPONDENTS are a "person" as defined in HRS §342H-1.

6. At all relevant times pertinent hereto, RESPONDENTS held a Solid Waste Management Permit ("permit"), Permit Number LF-0054-02, which was issued on May 15, 2003 and expires on April 30, 2008.

C. STATEMENT OF FACTS

COUNT I

(Exceedence of Permitted Grades)

7. Paragraphs 1 through 6 above are incorporated herein by this reference as if they were set forth here in their entirety.

8. On January 26, 2005, during a meeting between WMH and DOH, WMH stated that they overfilled areas in the ash monofill and MSW cells. WMH provided a drawing documenting the overfill areas to DOH. The drawing was based on an aerial survey conducted in January 7, 2005.

9. In a letter dated February 3, 2005, WMH states "approximately 100,000 tons of ash delivered from the H-Power facility has been placed above the current permitted grades of the ash monofill". The February 3, 2005 letter further states that the placement of ash occurred during 2004.

10. In WMH's Annual Operating Report (AOR) for 2004, dated February 20, 2005, WMH states that for the period between July 1, 2003 and June 30, 2004, the landfill received 96,239 tons of H-Power ash. The AOR further states that based on the January 15, 2004 topography, there is no remaining airspace in the ash monofill.

11. With a submission dated February 22, 2005, WMH provided DOH an isopach drawing dated February 2005, showing 2005 topography and master plan final grades. WMH noted that 139,485 cubic yards of ash and 129,240 cubic yards of MSW were placed beyond the permitted grades.

12. In a letter dated March 29, 2005, WMH stated, "Ash placement above the approved 2002 grades in the ash disposal cell was initially noted following the aerial flyover conducted in January 2004. Identification of an overfill condition in the MSW cell areas was noted following the flyover conducted in January 2005."

13. In a letter dated December 17, 2004 and during a meeting between WMH and DOH on January 26, 2005, DOH stated concern over the stability of the landfill for grades greater than the current design, as the factor of safety of the design grades is

1.5. During the January 26, 2005 meeting and in a February 7, 2005 letter, DOH requested that additional stability analysis be conducted to evaluate the overfill areas.

14. In a letter dated February 21, 2005, WMH's engineering consultant, GeoSyntec Consultants (GeoSyntec), states that the static stability analysis of the landfill with the overfill areas identified in their January 2005 survey, resulted in a factor of safety ranging between 1.3 and 1.8.

15. In a letter dated February 16, 2005, Waste Management proposed the construction of a stability berm along the downstream toe of the ash monofill. WMH stated "*This berm would be design to increase the factor of safety along Section 11 to a minimum of 1.5 and,* would *allow waste to be placed to grades approximately the same as those in the original 1989 design.*"

16. Solid Waste Management Permit Number LF-0054-02, Special Conditions III, Item 9 provides:

> *The waste fill height of this landfill shall not exceed 510 feet above mean sea level and shall be in accordance with the document entitled "14.9-Acre Master Plan Fill Grades" dated September 2002 by GeoSyntec Consultants submitted with the Lateral Expansion application dated September 27, 2002, or any other subsequent submission approved by the Department.*

17. Since the issuance of the solid waste permit, the Department did not approve any changes to the landfill grades.

18. Based on the tonnage estimate of placed ash exceeding design grades and WMH's statement that ash placement above the approved 2002 grades was noted after a January 2004 flyover, the RESPONDENTS placed at least one years' worth of ash over the permitted grades and exceeded design grades for over a year.

19. RESPONDENTS placed ash and MSW above grades presented in the 14.9-Acre master Plan Fill Grades, in violation of Solid Waste Management Permit Number LF-0054-02, Special Conditions III, Item 9.

COUNT II

(Failure to Submit Annual Operating Reports in a Timely Manner)

20. Paragraphs 1 through 19 above are incorporated herein by this reference as if they were set forth here in their entirety.

21. Solid Waste Management Permit Number LF-0054-02, Special Conditions III, Item 2 provides:

> *The permittee shall submit an Annual Operating Report (AOR), using July 1 to June 30 as the reporting period. The AOR shall be submitted by July 31 of each year unless otherwise specified under Item 3 of this section….*

22. Solid Waste Management Permit Number LF-0054-02, Special Conditions III, Item 3 provides:

> *The Annual Operating Report shall include the following information…*
>
> a. *Quantities of filled airspace for the present year, past filled airspace and remaining airspace in both cubic yards and years shall be provided…*
> b. *On or before July 31 of each year, the permittee shall submit an annual topographic survey of the site as prepared by a land surveyor registered in the State of Hawaii. This survey shall clearly show the horizontal and vertical dimensions of the landfilled area;*
> c. *A Sequencing Plan, including a drawing, identifying the cell areas to be filled in the coming year including identification of the wet weather areas. The cell areas and wet weather area capacity shall be provided using an appropriate unit of measure; and*
> d. *Final fill areas, intermediate fill areas, and future unused fill areas shall be identified for the projected year.*

23. On July 24, 2003, WMH submitted their 2003 AOR. The AOR did not contain the required information for filled airspace for that year, past filled airspace and remaining airspace in cubic yards and years. The 2003 AOR was also missing the annual topographic survey, a sequencing plan for the coming year and a summary plan identifying filled areas, intermediate fill areas that can still accept waste and future unused fill areas. These items are consistent with the requirements of Special Conditions III, Item 3.

24. On December 22, 2004, WMH requested a 30-day extension for the submission of their 2004 AOR, which was due July 31, 2004.

25. In February 7, 2005, DOH issued a warning letter stating the deficiencies of the 2003 AOR and the non-submission of the 2004 AOR.

26. On February 23, 2005, DOH received the missing documentation required of the 2003 AOR and the 2004 AOR from WMH dated February 22, 2005, which utilized aerial topographies dated March 24, 2003 and January 15, 2004, respectively. In the February 22, 2005 incident report, WMH states:

> *Second, under separate cover, we are providing you with a copy of the 2004 Annual Operating Report (AOR) as required in the permit. Oral notification was provided in July 2004 to Mr. Gary Siu of the DOH that this report would be delayed due to information required from the annual topographic survey.*

> *Additionally written notification of the delay was provided to Mr. Siu in December 2004. These aerial flyovers of the landfill have been scheduled during January of each year for the benefit of reporting to the City and County of Honolulu. Steps will be taken to prevent recurrence by our commitment to reschedule all future aerial flyovers in June of each calendar year to coincide with the timing of the AOR.*
>
> *Third, under separate cover, a completed 2003 AOR is being provided to you with the information that was required in the February 7 letter. This information was incomplete due to our misunderstanding of the new requirements in the permit, which was issued May 15, 2003.*

27. By the late submission of the required information, RESPONDENTS were in violation of Solid Waste Management Permit Number LF-0054-02, Special Conditions III, Items 2 and/or 3.

COUNT III

(Failure to place daily cover on the active face of MSW landfill)

28. Paragraphs 1 through 27 above are incorporated herein by this reference as if they were set forth here in their entirety.

29. HAR 11-58 .1-15(b)(1) provides:

> *Cover Material requirements. The owners or operators of all MSWLF units must cover disposed solid waste with six inches of earthen material at the end of each operating day, or at more frequent intervals if necessary, to control disease vector, fires, odors, blowing litter, and scavenging.*

30. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA, 2 provides:

> ***Daily Cover Material** shall be a minimum of six inches of earthen material or an alternative in accordance to HAR 11-58.1-15(b). Request for the use of an alternative daily cover (ADC) as cover shall be submitted to the Director of the Department of Health at the address listed in Item 2 of Special Conditions III.*
>
> *Request for the use of an alternative daily cover (ADC) shall consist of a written request for the approval of a demonstration period whereby an evaluation and demonstration shall be made that the ADC and its thickness control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the*

> *environment. The use of alternative cover materials is limited to daily cover use only. The written request shall evaluate the potential ADC as to its specific characteristics and its appropriate use at the facility. Demonstration period are to be in increments of six months. The demonstration period or the approved use of an ADC may be rescinded or cancelled by either the Department of Health or the Operator at anytime without cause.*

31. Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 11 provides:

> *A revised written Operating Plan shall be prepared and filed with the Department, no later than 90 days after receipt of this permit. The permittee shall implement the plan upon submission to the Department; however, the Department may require revisions to the written plan as a condition of approval...*

32. The Facility's Operating Plan, dated July 2004, Section 5.8.1, Daily Cover states:

> *The active MSW disposal area is covered at the end of each day with a minimum of 6 inches of daily cover soil. In areas where additional waste will not be placed for a period of 30 days or more, intermediate cover consisting of a minimum of 12 inches of soil is placed over the waste, and graded to promote surface water drainage. When additional waste is to be placed over such areas, the upper part of the intermediate cover soil may be scraped off for subsequent reuse.*

33. On January 28, 2005, the DOH inspectors noticed inadequate soil cover adjacent to the workface area (previous day's workface) in Cell E-1, showing excessive flagging (less than 6 inch of cover with trash protrusion) and without the required six inches of soil cover. The dozers/compactor were working on the current day's workface and away from the area that was showing flagging and no attempt were made to cover the exposed flagging.

34. On February 8, 2005, due to the lack of soil cover, flagging was noticed again in an area away from the workface of Cell E-1. Mr. Cassulo, the facility manager was notified of the noncompliance issue.

35. On February 9, 2005, the DOH inspectors continued to notice flagging on the east side of MSW E-1 due to lack of soil cover.

36. On February 17, 2005, the DOH inspectors observed less than 6-inches of soil cover and exposed trash (flagging) on MSW Cell E-1, on an area of the cell that the facility had completed a week before.

37. On February 17, 2005, a large portion of MSW Cell E-1 top deck was observed with heavy flagging due to lack of soil cover.

38. On February 24, 2005, the DOH-inspectors observed a former cell area previously filled with solid waste from the week before with exposed trash (flagging). The front slope of the MSW Cell E-1 was also observed with heavy flagging again due to inadequate soil cover.

39. On March 11, 2005, a large area of the top deck was observed with heavy flagging and exposed MSW.

40. On March 15, 2005, stockpile of soil cover within the workface area was observed, however, some areas of the top deck of MSW Cell E-1 was observed with exposed MSW and flagging.

41. On March 22, 2005, the inspectors observed some flagging fronting the slope of MSW Cell E-1.

42. On March 30, 2005, the inspectors observed the front slope of MSW Cell E-1 with exposed MSW and heavy flagging due to inadequate soil cover.

43. On April 6, 2005, the east top deck of MSW Cell E-1 was noticed with exposed bags of MSW without soil cover, and the front slope of the cell not covered with soil for days as observed from previous inspections.

44. On April 6, 2005, the inspectors observed exposed MSW and flagging on an area located adjacent to the active workface area.

45. On April 11, 2005, the inspectors observed an entire cell from the day before located at the north area of MSW Cell E-1 not covered with soil. The dozer operator was noticed still trying to cover the large cell of exposed MSW with soil cover. Heavy flagging and plastic bags of MSW were also noted fronting the slopes of MSW Cell E-1.

46. On April 15, 2005, at 9:00 A.M. the DOH inspector observed a portion of MSW from the previous day was not properly covered. Due to gusty wind the litter fences were loaded with litter and some flagging was also noted due to inadequate soil cover.

47. On April 20, 2005, at 6:20 P.M. the facility has stopped accepting waste for the day and a few trucks were observed delivering soil to the workface area for daily cover. At 7:00 P.M. the DOH inspectors observed the operators haul in tarps onto the workface to be used to cover part of the workface due to lack of soil cover. The use of tarps was not approved by DOH to be used as alternative daily cover (ADC) for the facility. At 7:45 P.M. the operators had stopped working and left for the night without covering a major part of the workface area. Mr. David Fuiava of WMH was asked about

completing the cell with daily cover and he said "call it a day, will use another plan tomorrow."

48. On April 21, 2005, at 6:45 P.M. the operators had stopped work for the evening and the DOH inspectors noticed heavy flagging throughout the cell. The DOH inspectors also noted uncovered and partially covered MSW within the cell area. The unauthorized use of the tarp for alternative daily cover was still in place from the previous day.

49. On April 22, 2005, the DOH inspectors continued to observed heavy flagging on the front slopes and the northeast side of MSW Cell E-1. The workface center top deck area of MSW Cell E-1 had exposed MSW and heavy flagging due to inadequate soil cover. The inspectors noticed the ADC tarp was still in placed from previous days.

50. On April 25, 2005, at 4:40 P.M. the DOH inspectors observed the landfill equipment operators working the MSW at workface area. The workface area was observed with large amount of MSW not covered with soil at 6:42 P.M. At 6:49 P.M. the operators parked their equipment and left for the evening without covering the MSW for the day. The Environmental Compliance Officer was asked if the operators were done for the day and he said that he had no control of the operators. The DOH inspectors walked the top deck of MSW Cell E-1 and observed large amount of MSW not covered with soil, including the side slopes of the cell.

51. On April 26, 2005, at 5:20 P.M. the DOH inspectors noted a large MSW area on the northeast corner of MSW Cell E-1 from the night before that had not been covered with soil. Heavy flagging was also noted throughout the top deck of MSW Cell E-1 and along the east banks of the cell. The inspectors observed the operators trying to cover the workface area with soil until 7:30 P.M. and the operators had to stop work due to darkness. Inadequate soil was observed throughout the workface and with some exposed MSW.

52. On April 27, 2005, at 6:30 P.M. heavy flagging and exposed MSW was observed at the center portion of MSW Cell E-1 and the MSW was not covered with adequate soil at the end of the day. The northeast side of MSW Cell E-1 continues to be observed with heavy flagging due to inadequate amount of soil cover for the past two weeks.

53. On April 28, 2005 at 6:55 P.M. the DOH inspectors observed the northeast corner of the workface (an old workface from the previous day) with heavy flagging and exposed MSW. The south slopes of MSW Cell E-1 fronting Koolina Resort continues to be observed with exposed MSW and heavy flagging.

54. On May 1, 2005, the DOH inspectors observed an inactive area of MSW Cell E-1 fronting Koolina Resort with exposed MSW. At the end of the day (5:10 P.M.) the inspectors observed a large MSW drop off area of the active workface in MSW Cell E-1 & E-2 with large amounts of exposed MSW and without the required daily soil cover.

Soil cover was available at the MSW Cell-10 storage area, but the facility had insufficient personnel on Sunday to cover the cell at the end of the day. The northeast corner of MSW Cell E-1 and top deck has exposed MSW and has not been covered with soil for the past week. Heavy flagging and exposed MSW on the front slope fronting Koolina Resort continues to be uncovered with daily soil cover.

55. On May 3, 2005, the DOH inspector continued to observe the sloped area of MSW Cell E-1 fronting Koolina Resort with exposed MSW and heavy flagging. The workface area for MSW Cell E-2 was inadequately covered with soil and heavy flagging was noted. At the end of the day (6:30P.M.) the active workface area was inadequately covered with soil. The northeast corner of MSW Cell E-1 and top deck had exposed MSW and has not been covered with soil for the past few weeks.

56. On May 6, 2005, at 5:00P.M. the DOH inspectors observed facility operator park the equipment and drive away for the day. The inspectors observed heavy flagging and exposed MSW without adequate soil cover at the MSW Cell E-2 workface.

57. On May 9, 2005, at 6:20 P.M., DOH inspectors observed exposed MSW and heavy flagging on a large area of MSW Cell E-2 workface without adequate soil cover.

58. On May 19, 2005, the DOH inspectors continue to notice the bottom slope of MSW Cell E-1 fronting Koolina Resort with exposed MSW and heavy flagging.

59. The issue was reported to the Environmental Compliance Officer and Operation Manager on May 19, 2005; however, no action was taken to correct the problem.

60. On May 25, 2005, the DOH inspectors observed exposed MSW and heavy flagging on the recently completed northeast end of MSW Cell E-1, due to inadequate soil cover. Ms. Gordy, the Environmental Manager, was notified of the issue and was present during the inspection.

61. On June 3, 2005, the south slopes of MSW Cell E-1 fronting Koolina Resort continues to be observed with exposed MSW and heavy flagging. Mr. Cassulo said that WMH is leveling high spots within MSW Cell E-1 and once completed the area will be covered with intermediate soil.

62. On June 9, 2005, the inspectors observed large amounts of exposed MSW on a closed cell fronting MSW Cell E-2.

63. The RESPONDENTS failed to provide six inches of daily soil cover at the end of day on the aforementioned dates.

64. RESPONDENTS did not receive prior written approval from the Director of Health to use alternative daily cover.

65. RESPONDENTS violated HAR 11-58 .1-15(b)(1) and Solid Waste Management Permit Special Permit Condition IIIA, Item 2 on 27 separate occasions.

COUNT IV

(Failure to place intermediate cover material on the ash monofill)

66. Paragraphs 1 through 65 above are incorporated herein by this reference as if they were set forth here in their entirety.

66. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIB, Item 2 provides:

> *Intermediate cover is required for the MSW ash monofill to control fugitive dust, if the ash is exposed for more than seven days. A minimum of 6 inches of earthen material shall be used for cover except where cover cannot be reasonable or safely applied. In those areas an alternative dust control cover shall be used with the approval of the Department.*

67. The Facility's Operating Plan, dated July 2004, Section 5.9.2. Cover provides:

> *Intermediate soil cover is placed over areas that are not being actively worked and are exposed for more than 7 days without receiving additional ash. Intermediate cover consists of soil compacted to a minimum thickness of six inches and graded to promote runoff of surface water.*

68. Aerial photographs of the landfill facility dated 1-3-00, 1-6-01, 3-24-03, 2-13-04, and 1-7-05, as reviewed by a DOH inspector at WMH's office, shows that the percentage of intermediate soil cover on the monofill varies from year to year.

69. On January 28, 2005, the DOH inspectors noticed large inactive cell areas of the ash monofill without intermediate soil cover. DOH inspectors voiced their concern to the facility manager Mr. Joe Hernandez, on the requirement for the ash monofill intermediate cover and were told that the facility plans to regrade the ash monofill sometime soon.

70. On February 9, 2005, DOH inspectors observed a WMH worker operating a grader and leveling/regrading the overfilled ash monofill on Ash Cells 5 & 6. The inspectors observed exposed ash monofill cells 5, 6, 7, & 8 without the required seven-day intermediate cover. Some soil stockpiles were noticed stored on the top deck of the ash monofill, but was not at that time being used as cover material. The re-grading of the ash monofill was observed to create significant fugitive dust without any mitigation controls.

71. On February 9, 2005, DOH inspectors noted the active ash disposal cell 3 area with large stockpiles of ash without the required seven day intermediate cover and DOH

voiced their concerns to Mr. Cassulo for the required intermediate cover. Mr. Cassulo said that they could not cover the ash because the ash is wet and takes a while to dry. He also mentioned that he does not interpret the permit condition requiring the ash to be covered every seven days. Mr. Cassulo also stated that they are cutting the ash piles to reduce the overfilled ash areas (cells 5 & 6) and WMH plans to have it completed by the following week.

72. On February 17, 2005, DOH inspectors observed the grader operator partially covering part of the top deck of ash monofill of cells 4 & 5 with intermediate soil cover.

73. On February 24, 2005, DOH inspectors observed the ash monofill top deck partially covered with intermediate soil cover, however, the side slope of the ash monofill had no intermediate cover. At the time of inspection, no equipment was observed working on the ash monofill area.

74. On February 24, 2005, the DOH inspectors observed two separate ash workface areas without soil cover. The entire side slope areas of the ash monofill landfill area are not covered with intermediate soil cover.

75. On March 11, 2005, a major part of the ash monofill landfill area continues to be without the required soil cover. Most of the side slope is not covered with soil.

76. On March 15, 2005, intermediate soil cover was noted on the top deck the ash monofill area, however, the side slopes have not been covered with soil. The entire ash monofill in Cell 5 has not yet been covered with intermediate soil.

77. On March 22, 2005, DOH inspectors noted that the side slopes of the ash monofill cells 6 & 7 were still not covered with intermediate soil.

78. On March 30, 2005, the DOH inspectors observed the side slopes of the ash monofill area without intermediate soil cover. The active ash monofill area was not being covered with the required soil cover every seven days.

79. On April 6, 2005, a former active ash monofill lift located on the northeast corner of ash cell 4 was observed without the required intermediate soil cover.

80. On April 11, 2005, the DOH inspectors continue to observe the side slopes of the ash monofill area without the required intermediate soil cover.

81. On April 15, 2005 to June 28, 2005, the DOH inspectors continue to observe the ash monofill side slopes and other areas of the ash monofill without the required intermediate soil cover.

82. On May 12, 2005, DOH continues to observe the active workface with stockpiles of ash from H-Power and without the required intermediate cover. H-Power facility was

closed for their annual maintenance on April 13, 2005 for about a month. WMH did not place the required soil cover on the active workface area during this entire period.

83. On June 29, 2005, DOH continued to observe ash monofill cell 3 areas without the required soil cover. The inspectors observed WMH equipment placing intermediate cover and grading the side slope of the ash monofill cells 6 & 7.

84. On July 27, 2005, the inspector observed the top deck and side slopes of the ash monofill landfill completely covered with intermediate soil and meeting regulatory requirements.

85. RESPONDENTS have failed to place intermediate cover on the ash monofill and have violated the facility's permit Special Conditions IIIB, Item 2 and facility's Operations Plan Section 4.9.2 for at least 153 days.

COUNT V

(Exceedance of leachate head on the liner in ash monofill)

86. Paragraphs 1 through 85 above are incorporated herein by this reference as if they were set forth here in their entirety.

87. HAR 11-58.1-14(b) provides:

> *The design shall either:*
> *(1) Ensure that the concentration values listed in Table 1, which is incorporated by reference, or Hawaii Administrative Rules, title 11, chapter 20, whichever is more stringent, will not be exceeded in the uppermost aquifer at the relevant point of compliance, as specified by the director under subsection (e); or*
> *(2) Include a composite liner as described in subsection (c) and a leachate collection system that is designed and constructed to maintain less than a thirty-centimeter depth of leachate over the liner.*

88. **RESPONDENTS** chose to meet HAR 11-58.1-14(b)(1). WMH submitted *Point of Compliance (POC)* documents dated, May 25, 1993 to demonstrate that the proposed `alternative liner and leachate collection system are designed to meet HAR 11-58.1-14(b)(1). The assumptions made in *POC* documents dated, May 25, 1993 was that leachate head on the liner will not exceed 30 centimeters.

89. The facility has three separate leachate collection systems that feed into three separate sumps. The ash monofill leachate sump is located at the south end of the ash monofill. The MSW leachate sump that services the primary section of the MSW landfill is located at the south end of MSW Cell 4B and is referred to Sump 4B. Leachate sump E-1 is located at the southern end of MSW Cell E-1, and services only the lateral

MSW expansion cells.

90. Based on as-built drawings contained in the Ash Cell 8 CQA report prepared by A-Mehr, Inc. and dated October 8, 1998, the depth of the ash monofill sump is approximately 6 feet deep. Therefore the maximum depth of leachate allowed in the sump as to provide no more than 12 inches (30 centimeters) of leachate on the liner system is approximately 7 feet. In a letter dated August 6, 1999, A-Mehr, Inc., further states that they recommend a maximum leachate level of 5 feet be maintained within the sump.

91. On March 11, 2005, the DOH inspectors requested a copy of the leachate log maintained at the facility for the three-leachate sumps that are located within the facility. Mr. Joe Hernandez of WMH provided the log to the inspectors and the log shows that the last time the ash monofill leachate sump was measure was back in October 28, 2003.

92. On March 11, 2005, the DOH inspectors located the ash monofill leachate sump at the south end of Ash Cell 8 and measured the leachate inside the sump. The leachate depth was measured with the facility's pre-marked six-foot solid rod attached to a rope and inserted into the vertical manhole sump. The homemade measuring device was lowered into the bottom of the manhole and next to the PVC pipeline used to pump the leachate out of the sump. Leachate measurements collected from the sump indicated 14 feet 2 inches of leachate inside the sump, or approximately 8.2 feet of leachate on the liner system.

93. On March 15, 2005, the DOH inspectors measured the leachate sump using the same six-foot solid rod and attached rope. Again, the homemade measurement device was lowered inside the sump. The device was removed, placed on the ground and measured with a tape measure. The rope was used because it showed a wet mark with an indication of the amount of liquid inside the sump. The inspectors recorded a measurement of 22 feet 8 inches of leachate inside the sump, or approximately 16 feet 8 inches of head on the liner system.

94. From March 16, 2005 to June 16, 2005 leachate was observed by DOH to be seeping and ponding at the bottom slopes outside of the lined cell areas fronting ash cell 8 and MSW cell E-1.

95. On March 22, 2005, the DOH inspectors visited the site and measured the leachate sump manhole utilizing the same pipe and rope. The inspectors recorded a measurement of 22 feet 3 inches of leachate inside the ash monofill sump, or approximately 16.3 feet of leachate head on the liner system. The water truck was parked near the sump and the fill pipe was connected to the water truck. No leachate was being pumped into the water truck at that time.

96. In a letter dated June 22, 2005, WMH provided leachate logs for the ash sump,

which indicated that leachate level of 22 feet was measured on February 9, 2005.

97. Sometime between July 15, 2005 and July 22, 2005, the leachate head on the liner system was lower to below the maximum head allowance of 30 centimeters.

98. RESPONDENTS have exceeded the maximum leachate head allowance of 12 inches or 30 centimeters on the ash monofill liner for at least 156 days, in conflict with their POC, dated May 25, 1993 and in violation of HAR 11-58.1-14(b)(1).

COUNT VI

(Exceedance of leachate head on liner in MSW Cell E-1 sump)

99. Paragraphs 1 through 98 above are incorporated herein by this reference as if they were set forth here in their entirety.

100. In WMH's letter dated June 22, 2005, they state that MSW Cell E-1 leachate sump was initially installed in November 2003.

101. Based on a design drawing of the E-1 sump, dated August 22, 2003, and provided by WMH, the depth of the sump is 3 feet. Therefore the maximum depth of leachate allowed in the sump as to provide no more than 12 inches (30 centimeters) of leachate on the liner system is 4 feet.

102. On March 11, 2005, the DOH inspectors requested a copy of the leachate log maintained at the facility for the three-leachate sumps that are located within the facility. Mr. Joe Hernandez of WMH could not produce a leachate log for MSW Cell E-1 sump.

103. On March 22, 2005, the DOH inspectors measured the hose attached to the pump leading to the bottom of MSW Cell E-1. The inspectors measured the hose and determine that the hose length is 80 feet long to the bottom of the sump. The inspectors pulled out 30 feet of hose from the lateral leachate line when the pump reached air and stopped pumping leachate. Based on the angle of the leachate riser (2:1) and the measured length of leachate in the pipe, DOH calculated that the vertical depth of the leachate in the sump is approximately 10.4 feet, or 7.4 feet on the liner.

104. On April 11, 2005, the inspectors observed a large puddle of leachate ponding at the bottom slope of MSW Cell 4-B. The leachate was seeping from the bottom slope of MSW Cell E-1.

105. On April 15, 2005, DOH inspector observed test holes at the bottom slope of MSW Cell E-1 filled with leachate. The test holes were about five foot in depth and contained approximately three feet of leachate.

106. In a letter dated June 22, 2005, WMH provided a leachate log for the E-1 Sump,

which lists 74 feet of leachate measured on April 29, 2005 and May 26, 2005.

107. Sometime between July 22, 2005 and August 1, 2005, WMH reported that leachate head no longer exceeds 30 centimeters on the liner system.

108. RESPONDENTS have exceeded the maximum leachate head allowance of 12 inches or 30 centimeters on the MSW E-cell liner for at least 123 days, in conflict with their POC, dated May 23, 1993 and in violation of HAR 11-58.1-14(b)(1).

COUNT VII

(Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in Cell 4B Sump)

109. Paragraphs 1 through 108 above are incorporated herein by this reference as if they were set forth here in their entirety.

110. Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 6 provides:

> *The permittee shall implement the final Groundwater and Leachate Monitoring Plan dated October 7, 1995, and revised in June 1997.*

111. The facility's Groundwater and Leachate Monitoring Plan dated October 7, 1995 and revised in June 1997, states in Section 4.2 *Leachate Monitoring:*

> *For the MSW landfill, the sump which is located in cell 4B, is checked monthly for any traces of liquids. Monitoring is done manually through the use of a steel tape which is lowered down the leachate extraction riser. If liquids are detected at any time during the monthly checks, monitoring frequency is increased to weekly until it is determined that liquid levels have stabilized or evacuation of liquids is required.*

112. Solid Waste Management Permit Number LF-0054-02, General Conditions I, Item 9b and 9c provides:

> a. *The permittee shall retain at the facility or other location designated by this permit, records of all monitoring information...copies of all reports required by this permit, and records of all data use to complete the application for this permit. The time period of retention shall be a minimum five (5) years unless otherwise specified by the Director. The groundwater, leachate, and air monitoring data must be maintained through the closure and post-closure periods.*
> b. *Records of monitoring information shall include:*

- *The dates, exact place, and time of sampling or measurements;*
- *The person responsible for performing the sampling or measurements;*
- *The date(s) analyses were performed;*
- *The person responsible for performing the analyses;*
- *Analytical techniques or methods used; and*
- *Results of such analyses.*

113. On March 11, 2005, the DOH inspectors requested a copy of the leachate log maintained at the facility for the three-leachate sumps that are located within the facility. Mr. Joe Hernandez provided the log to the inspectors and the log shows that the leachate sump in MSW Cell 4-B has not been measured since May 2003.

114. In a letter dated June 22, 2005, WMH provided another copy of the leachate log, which indicated that the leachate level in MSW Cell 4B could not be measured since June 2003, due to "lost measuring unit". The log continues to document the inability to measure until October 2003.

115. In the letter dated June 22, 2005, WMH stated that the 4-B sump has been inaccessible during the 2003-2005 time period due to a blockage of the riser by equipment used to take water level readings. The riser has recently been cleared of the obstruction, however, as of August 15, 2005, no leachate level measurements have been taken since May 2003.

116. RESPONDENTS have violated Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 6 and General Conditions I, Items 9b and 9c, and their Groundwater and Leachate Monitoring Plan, for not measuring leachate levels and/or maintaining records from at least June 2003 to July 2005.

COUNT VIII

(Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in the Ash Monofill Sump)

117. Paragraphs 1 through 116 above are incorporated herein by this reference as if they were set forth here in their entirety.

118. Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 6 provides:

> *The permittee shall implement the final Groundwater and Leachate Monitoring Plan dated October 7, 1995, and revised in June 1997.*

119. The facility's Groundwater and Leachate Monitoring Plan dated October 7, 2005

and revised in June 1997, states in Section 4.2 *Leachate Monitoring:*

> *For the ash landfill, the leachate monitoring and sump evacuation procedures are similar to MSW landfill. In the existing operating area of the ash landfill, a manhole serves as the leachate collection system sump (ash cell 1). This sump is also monitored monthly, as well as following significant rainfall events, by lowering a steel tape to the bottom and checking liquid level.*

120. On March 11, 2005, the DOH inspectors requested a copy of the leachate log maintained at the facility for the three-leachate sumps that are located within the facility. Mr. Joe Hernandez provided the log to the inspectors and the log shows that the leachate sump in the ash monofill has not been measured since October 2003.

121. In a letter dated June 22, 2005, WMH provided another copy of the leachate log, which indicated that the leachate level in the ash monofill was not measured between October 28, 2003 and February 9, 2005.

122. RESPONDENTS have violated Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 6 and General Conditions I, Items 9b and 9c, and their Groundwater and Leachate Monitoring Plan, for not measuring leachate levels and/or maintaining records from at least November 2003 to January 2005.

COUNT IX

(Failure to notify DOH of noncompliance on equipment blockage in MSW Cell 4-B leachate lateral line and inability to measure leachate levels)

123. Paragraphs 1 through 122 above are incorporated herein by this reference as if they were set forth here in their entirety.

124. On March 11, 2005, inspectors were told by Joe Hernandez and based on leachate logs provided that the leachate sump in MSW Cell 4-B has not been measured since May 2003. No written notification was submitted to the department.

125. The facility claims that a "Lizard" (a device with wheels used to lower measuring equipment inside the lateral pipe) was stuck inside the lateral leachate pipe and blocked the line, thus WMH was unable to properly measure or pump the leachate.

126. Solid Waste Management Permit Number LF-0054-02, General Conditions I, Item 5 provide:

> *If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in the permit, the permittee shall notify the Department orally within 24 hours followed by a written incident report within seven days of the oral notification. The written incident report shall contain the*

following information:

a. A description of and the cause of noncompliance;
b. The period of noncompliance, including exact dates and times, or, if not corrected, the anticipated time the noncompliance is expected to continue; and
c. Steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages, which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

The use of an electronic facsimile device (FAX) for use in notifications is acceptable. Any data transmission or detailed explanations transmitted shall be accompanied by regular mail submissions. Failure to notify in accordance to this requirement may initiate enforcement action.

The reporting requirements of General Condition I, Condition 5 does not apply if the following conditions are met:

a. Failure to comply will not create an immediate and significant risk to health, safety, or the environment;
b. The permittee is using its best efforts to comply; and
c. The permittee will be able to comply within 30 days.
d. With the exception that all incidents of fire or releases/spills over 25 gallons shall be reported.

127. In the letter dated June 22, 2005, WMH stated that the 4-B sump has been inaccessible during the 2003-2005 time period due to a blockage of the riser by equipment used to take water level readings. The riser has recently been cleared of the obstruction, however, as of August 15, 2005, no leachate level measurements have been taken since June 2003.

128. On or about May 20, 2005, WMH was able to retrieve the “lizard” from the lateral leachate pipe. As of August 15, the facility has not measured leachate level and has not removed the leachate from the lateral sump.

129. RESPONDENTS have violated Solid Waste Management Permit Number LF-0054-02, *General Conditions I, Item 5 by* not notifying DOH of the problem and failure to provide a written notification.

COUNT X

(Failure to Notify DOH of Noncompliance in a Timely Manner on the Exceedences of Permit Grades and Submission of the AORs)

130. Paragraphs 1 through 129 above are incorporated herein by this reference as if they were set forth here in their entirety.

131. On January 26, 2005, during a meeting between DOH and WMH, WMH notified DOH of the exceedence of waste above permitted grades.

132. On February 7, 2005, DOH issued a warning letter stating oral notification on noncompliance issues (exceedence of permitted grades, and failure to submit AOR information) has not been provided in a timely manner, that an incident report has not been submitted, in violation of General Conditions I, Item 5.

133. Solid waste Management Permit Number LF-0054-02, General Conditions I, Item 5 provide:

> *If for any reasons, the permittee does not comply with or will be unable to comply with any condition or limitation specified in the permit, the permittee shall notify the Department orally within 24 hours followed by a written incident report within seven days of the oral notification. The written incident report shall contain the following information:*
>
> *a. A description of an the cause of noncompliance;*
> *b. The period of noncompliance, including exact dates and times, or, if not corrected, the anticipated time the noncompliance is expected to continue; and*
> *c. Steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.*
>
> *The permittee shall be responsible for any and all damages, which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.*
>
> *The use of an electronic facsimile device (FAX) for use in notification is acceptable. Any data transmission or detailed explanations transmitted shall be accompanied by regular mail submissions. Failure to notify in accordance to this requirement may initiate enforcement action.*
>
> *The reporting requirements of General Condition I, Condition 5 does not apply if the following conditions are met:*
> *a. Failure to comply will not create an immediate and significant risk to health, safety, or the environment;*
> *b. The permittee is using its best efforts to comply; and*
> *c. The permittee will be able to comply within 30 days.*
> *d. With the exception that all incidents of fire or releases/spills over 25 gallons*

shall be reported.

134. On February 3, 2005, WMH submitted a written incident report, notifying the DOH of the exceedences. The incident report did not include all of the requirements specified in General Condition I, Item 5.

135. On February 22, 2005, WMH submitted another incident report, reiterating the written notification on the exceedences on the permitted grades and providing additional information in an attempt to meet the requirements of General Condition I, Item 5.

136. In the February 22, 2005 incident report, WMH states:

> *Second, under separate cover, we are providing you with a copy of the 2004 Annual Operating Report (AOR) as required in the permit. Oral notification was provided in July 2004 to Mr. Gary Siu of the DOH that this report would be delayed due to information required from the annual topographic survey/ Additional written notification of the delay was provided to Mr. Siu in December 2004. These aerial flyovers of the landfill have been scheduled during January of each year for the benefit of reporting to the City and County of Honolulu. Steps will be taken to prevent recurrence by our commitment to reschedule all future aerial flyovers in June of each calendar year to coincide with the timing of the AOR.*
>
> *Third, under separate cover, a completed 2003 AOR is being provided to you with the information that was required in the February 7 letter. This information was incomplete due to our misunderstanding of the new requirements in the permit, which was issued May 15, 2003.*

137. On February 22, 2005, WMH submitted a revised 2003 AOR dated February 20, 2005 and the 2004 AOR dated February 20, 2005. The AORs utilized aerial topographies dated March 24, 2003 and January 15, 2004, respectively.

138. In a letter dated March 29, 2005, WMH states "Ash placement above the approved 2002 grades in the ash disposal cells was noted following the flyover conducted in January 2004."

139. RESPONDENTS were in violation of Solid Waste Management Permit Number LF-0054-02, General Conditions I, Item 5 for notifying the DOH over a year after WMH first noted permitted grade exceedences, and providing written notification on the delay of the 2004 AORs over 4 months after the date the document was due.

COUNT XI

(Unauthorized storage of material on the ash monofill)

140. Paragraphs 1 through 139 above are incorporated herein by this reference as if they were set forth here in their entirety.

141. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIB, Item 5 provides:

> *No storage of material is allowed on the MSW ash landfill area.*

142. The Facility's Operating Plan, dated July 2004, Section 5.9.5. Use of Filled Areas provides:

> *Developed or filled areas of the ash monofill will not be used for other activities. Specifically, they will not be used for storage of green waste, tires, white goods or unacceptable wastes removed from the MSW landfill. The only use that may be made of ash monofill areas is for temporary soil stockpiling, provided the affected ash monofill area has received intermediate soil cover.*

143. On January 28, February 8, 9, 17 and 24, 2005, the inspectors noticed a large stockpile of rocks mixed with dirt located on portions of MSW ash Cell 4/5 and MSW Cell 5 and 4B.

144. From around March 2005, the rock stockpile started to be moved and used in the construction of the stability berm fronting the ash monofill.

145. In a letter dated March 29, 2005, WMH stated that the placement of the rock stockpile from the construction of MSW Cell E-1 occurred in July 2003.

146. RESPONDENTS stockpiled rocks mixed with soil on the MSW ash landfill area in violation of facility's permit Special Conditions IIIB, Item 5 and facility's Operations Plan Section 5.9.5.

COUNT XII

(Failure to manage and ban the acceptance of special waste)

147. Paragraphs 1 through 146 above are incorporated herein by this reference as if they were set forth here in their entirety.

148. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA, states that the items under Special Conditions IIIA, are to be included in the Operating Plan and implemented accordingly as specified in Special Condition III, Item 11.

149. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA,

Item 14 provides:

> ***Adequate Storage Procedures** for green waste, scrap vehicles, tires, and white goods shall be included in a written plan with record keeping to prevent vector and pollution problems. Bulk green waste, scrap vehicles, tires and white goods may not be disposed of at any solid waste facility in accordance with 11-58.1-65(b) and (c).*

150. HAR 11-58.1-65 Special solid waste controls. Subsection (c) provides:

> *Scrap automobiles, white goods, and tires. Scrap automobiles may not be accepted at disposal facilities permitted under these rules. White goods and motor vehicle tires may not be accepted at disposal facilities permitted under these rules after June 30, 1994. A plan must be developed by the operator of solid waste disposal facility and included in the facility operations plan to implement this ban.*

151. The Facility's Operating Plan, dated July 2004, Section 5.7, Storage and Disposition of Non-Disposable Waste states:

> *WGSLF does not accept for disposal the following categories of waste which are prohibited for disposal by Hawaii solid waste regulations:*
>
> •Tires
>
> *<u>Tires</u> are placed in a roll-off bin and stored until a full container is accumulated, at which time they are transported to an approved tire recycler. The bin is covered with a tarp to keep rain out and prevent vectors from using the tires.*

152. The inspectors at no time observed a roll-off bin to store the tires as stated in the facility's Operating Plan. As of July 27, 2005, the inspectors have not observed a roll-off bin for used tire storage on site.

153. During DOH's February 9, 2005 inspection, the inspectors witnessed the operator bury two whole tires at the workface of the facility. At no time did the dozer operator attempt to push the tires on the side for later recovery. The operator instead covered the tires with solid waste and continued to compact the trash at the workface. The observation of the tire burial was observed from the top of MSW Cell 1.

154. On February 17, 2005, DOH inspectors observed four whole tires on the side slopes of MSW Cell E-1. A few of the tires were partially buried with soil. The facility's Environmental Coordinator was notified of the noncompliance issue.

155. On March 11, 2005, the Inspectors noted that the tires observed on the side slope of MSW Cell-1 had not been removed from the February 17, 2005 visit.

156. On May 1, 2005, the inspectors observed the compactor operator at the workface bury a whole tire.

157. On May 1, 2005, an inactive area fronting MSW E-1 was observed by the inspectors with three whole tires partially buried with soil and MSW. The operator was alerted of the buried tires and said that he will remove the tires the next day.

158. On May 1, 2005, after the operators were done for the day, the inspectors walked the workface area and observed a whole tire buried in the soil.

159. On May 19, 2005, the inspectors observed a whole tire on the active workface of MSW Cell E-1 (northeast corner). A short time later, the inspectors observed the dozer operator cover the used tire with MSW.

160. On six separate occasions, the RESPONDENTS have improperly buried whole tires at the facility, in violation of HAR 11-58.1-65(c), Special Condition IIIA, Item 14, and facility's Operating Plan, Section 4.7.

COUNT XIII

(Failure to maintain records and record location of asbestos disposal at the landfill)

161. Paragraphs 1 through 160 above are incorporated herein by this reference as if they were set forth here in their entirety.

162. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA, Item 9 provides:

> *Asbestos Disposal, a written plan with recordkeeping shall be prepared to ensure that the disposal of asbestos waste is in accordance to current NESAHP (National Emission Standards for Hazardous Air Pollutants) regulations, 40 CFR 61.*

163. The Facility's Operating Plan, dated July 2004, Section 5.6.2. Special Waste Procedures states:

> *Asbestos*
> *Special procedures applicable to asbestos waste are detailed in the Asbestos Disposal Plan. This plan contains measures to ensure that the requirements of 40 CFR 61.154 (National Emission Standards) are met at WGLF. After complying with all special waste acceptance procedures, asbestos waste transporters are allowed entry to the site at a pre-schedule time. After inspection of the load to ensure it meets all*

> *packaging requirements, the transporter proceeds to a prepared disposal trench, and discharges the load. All asbestos waste is covered with MSW and 6 inches of daily cover. Documentation of the date, time, names of the waste generator and transporter and location within the site where the waste was disposed are placed in the site's permanent operating records.*

164. Facility's Operating Plan, dated July 2004, Section 8.13 Asbestos Disposal records states:

> *WGSLF is required by permit to maintain a record of each load of asbestos waste disposed at the site. Information to be recorded includes the type of waste, source and location, preferably by GPS or survey coordinates, of its disposal location in the landfill. Asbestos disposal records may be incorporated in the records of the hazardous waste exclusion or special waste screening programs.*

165. In a letter dated May 23, 2005, DOH requested WMH to provide special waste disposal logs, and disposal locations for the asbestos received at the facility for the past two years.

166. In a letter dated June 22, 2005, WMH provided copies of the daily logs on the disposal of accepted asbestos waste for the past two years. WMH claims that they have been unable to locate records on the disposal locations for asbestos waste at the landfill for the last two years.

167. As of July 27, 2005, WMH does not have records to provide to DOH showing disposal locations for the asbestos waste disposed at the landfill.

168. The RESPONDENTS failed to record and maintain records regarding the location of asbestos disposal in violation of Special Conditions III, Item 11 and the facility's operating plan.

COUNT XIV

(Failure to cover a dead animal)

169. Paragraphs 1 through 168 above are incorporated herein by this reference as if they were set forth here in their entirety.

170. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA, Item 10 provides:

> ***Dead Animals and Offal,*** *shall be addressed by a written plan requiring a minimum of two feet of soil, solid waste or other approved cover material*

and be compacted before the end of the workday.

171. The Facility's Operating Plan, dated July 2004, Section 5.6.2, provides:

- *Specialized procedures will be used to manage the categories of special waste described in this section:*

> *<u>Dead Animals and Offal</u>*
> *Dead animals and offal (hides, intestines, and other waste from slaughtered animals) is not subject to special waste acceptance procedures, but will be identified by the transporter at the scale house. Loads known to contain dead animals or offal, and such wastes discovered incidental to other loads after dumping at the active face, will be placed in an area where they can be covered with additional solid waste immediately after being placed. Wherever possible, this will be accomplished by excavating it in the solid waste at the working face, placing the animal waste in it, and filling back in with MSW. Any areas that have received animal waste will be covered with daily cover soil at the end of the working day.*

172. On February 17, 2005, the inspectors noticed along the bottom of MSW Cell E-1, a partially covered dead animal away from the landfill's workface area. The distance from the workface area to the dead animal was over 300 feet away.

173. On February 17, 2005, Mr. Hernandez was advised of the dead animal located at the bottom of MSW Cell E-1.

174. On March 15, 2005, Mr. David Fuiava informed the inspectors that the dead animal was discovered four days after acceptance and subsequently buried.

175. RESPONDENTS failed to properly handle a dead animal at the facility by not covering the dead animal with soil or waste immediately, which has resulted in violations of the facility's permit special conditions and facility's Operating Plan.

COUNT XV

(Failure to Submit Annual Surface Water Management Plan)

176. Paragraphs 1 through 175 above are incorporated herein by this reference as if they were set forth here in their entirety.

177. Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 11h provides:

The Surface Water Management Plan shall be updated annually and filed with

> *the Department by no later than September 1 of each year. It shall contain the following information:*
> *(1) Report of an annual inspection of surface water management features and facilities, together with a description of required maintenance and changes;*
> *(2) Updated drawings showing current topography of the landfill, surface water drainage system modifications planned for the next year in response to waste filling;*
> *(3) Engineering calculations documenting the capability of the surface water management system to comply with the run-on and run-off requirements listed under 3 (a) above; and*
> *(4) Any Storm Water Pollution Prevention Plan or Spill Prevention Control and Countermeasure Plan prepared pursuant to federal requirements under the Clean Water Act.*

178. The Facility's Operating Plan, dated July 2004, Section 6.8.5 Annual Update of Surface water Management Plan, provides:

> *WGSL will prepare and submit to HDOH an annual update to the surface water management plan, by September 1 of each year. The annual surface water report will contain the following information:*
>
> - Results of an inspection of surface water management features and facilities, together with a description of recommended maintenance and changes;
> - Updated drawings of the surface water management system;
> - Engineering calculations confirming the capacity of the system;
> - Any updates to the site's SPCC Plan

179. In a letter dated May 23, 2005, DOH requested the September 2003 and September 2004 annual updates as required by the permit.

180. In a letter dated June 22, 2005, WMH stated that they have not been able to locate the annual updates for 2003 and 2004.

181. To date, the DOH has not received the annual updates for 2003 and 2004. The facility has failed to comply with the facility's permit Special Conditions III, Item h Surface Water Management Plan and facility's Operations Plan Section 6.8.5, Annual Update of Surface Water Management Plan.

COUNT XVI

(Failure to control the generation of dust from vehicular traffic)

182. Paragraphs 1 through 181 above are incorporated herein by this reference as if

they were set forth here in their entirety.

183. Solid Waste Management Permit Number LF-0054-02, Special Condition III, Item 11 and 11m provides:

> *A revised written **Operating Plan** shall be prepared and filed with the Department, no later than 90 days after receipt of this permit. The permittee shall implement the plan upon submission to the Department; however, the Department may require revision to the written plan as a condition of approval. The revised **Operating Plan** shall include the following topics:*
>
> ***Mud and Dust Prevention Program,** a written plan for minimizing the tracking of mud onto public roads, or the generation of dust from vehicular traffic on site. The plan shall contain measures related to on-site road maintenance and cleaning, provision of a wet-weather disposal area, and an area for the wash-down of trucks or truck wheels prior to leaving the site. The possible methods include: rumble strips, drive-through tire wash, trash clean out pad, or wash pad.*

184. The Facility's Operating Plan, dated July 2004, Section 6.3 Mud and Dust states:

> *WGSLF personnel are responsible for preventing the emission of excessive dust from the facility. The site's water trucks are used during dry weather to spray water on access roads and other areas generating wind-blown dust. The volume of water and frequency of spraying is increased as needed during particularly dry and windy conditions.*

185. On February 9, 2005, DOH inspectors noticed the significant generation of dust from vehicular traffic ingress and egress down the road by MSW Cell 1 near the landfill's workface and surrounding area. DOH inspectors did not see a water truck being used to minimize the generation of fugitive dust during the two plus hours spent on site for the inspection. It takes approximately 15 minutes to fill the 5,000-gallon water truck and an additional 15 minutes to empty the truck of its contents. Inspectors outbriefed, Mr. Steve Cassulo, General Manager, of the noncompliance issues and said that the water truck was pumping leachate from manholes at the facility.

186. On February 17, 2005, DOH revisited the site and noticed heavy vehicular dust generation starting from the bottom road to the facility's workface area. The dirt areas near the workface and roads were observed to be very dry. The facility did not have a water truck in use at the site to spray for dust and to control dust problem.

187. On many site visits the DOH inspectors requested WMH to spray the main road leading into the landfill and near the workface area with water due to the heavy dust

generation from vehicular traffic or windy conditions at the site.

188. RESPONDENTS have violated Solid Waste Management Permit Special Condition III, Item 11 and Facility's Operating Plan Section Requirement 5.3 on at least two occasions.

COUNT XVII

(Failure to minimize free litter generation in the landfill)

189. Paragraphs 1 through 188 above are incorporated herein by this reference as if they were set forth here in their entirety.

190. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA, Item 8 provides:

> ***Litter Control**, a written plan with record keeping shall be prepared to provide measures to minimize free litter in the landfill and prevent its occurrence beyond the property line of the facility. The plan shall contain, at a minimum, the following information:*
>
> *a. Design of portable litter screens, the number of screens available on the site, and a description of how they are to be deployed under various operating conditions;*
> *b. Design and location of permanent or semi-permanent litter screen fences;*
> *c. Special procedures to be followed during the period when the H-Power waste-to-energy plant shuts down and the volume of municipal solid waste increases above quantities; and*
> *d. Procedures for litter prevention and cleanup in the event of a major windstorm or other incident in which litter escapes the normal litter containment systems.*

191. The Facility's Operating Plan, dated July 2004, Section 6.4, Litter states:

> *WGSLF uses permanent litter fences, portable screens, and routine site cleanup operations to prevent wind-blown litter from leaving the landfill premises and creating nuisance conditions in the area. These litter control program elements are described below:*
>
> *• Portable litter screens, typically 12 feet and 20 feet wide, are located in downwind locations near the active MSW disposal area as the first line of defense against litter. The screens are relocated frequently as the active area moves across the site.*

> *• Approximately 600 lineal feet of 30-foot tall permanent litter fence is installed between the ash monofill and the MSW fill area, as the second line of defense.*
>
> *• The chain link fence surrounding the lower elevation areas of the WGSLF property provide a final level of physical containment of any litter that leaves the active working area.*
>
> *• Routine site cleanup and litter collection are the final elements of the litter control program. WGSLF personnel remove litter from portable screens and permanent fences on a daily basis, clean haul roads weekly, and pick up litter anywhere on the site at any time. In the event of a major wind storm that creates excessive litter, temporary personnel are brought in on as as-needed basis to collect litter, both on and off the WGSLF property as needed. Additional personnel are also made available as needed during the period when the H-Power plant shuts down and MSW volume increases above normal levels.*
>
> *• Information will be included in the site's daily operating log to document unusual litter problems or control activities, including instances when temporary personnel are used to collect or control litter on or off-site.*
>
> *Daily records are kept of litter control activities, and maintained in the site's operating record.*

192. The Facility's Operating Plan, dated July 2004, Section 8.12, Litter Control Records states:

> *A daily record will be kept of litter control activities, and maintained in the operating record. The log will contain information on the wind conditions each day, the number of litter control personnel on site, and the volume of litter collected.*

193. On February 17, 2005, DOH visited the facility and from the top of MSW Cell 1, a large accumulation of blown litter was observed on the permanent perimeter litter fence and portable screens. At the time of inspection the wind velocity was 15 to 18 MPH from a northeasterly direction.

194. The DOH inspectors also observed other areas of the landfill beyond the litter fences to include the front area of workface, side slopes of MSW Cell E-1 and the road leading to the top of the landfill with litter accumulation and wind blown litter. At no time did the inspectors observe anyone picking up litter at the facility. However, documents provided by the facility, shows that two temporary personnel were on site picking up

litter. One individual worked from 7:30 A.M. to 11:30 A.M. and the other litter picker worked from 7:00 A.M. to 3:30 P.M. The facility does not keep a log indicating the number of personnel utilized on a daily basis and the number of bags collected by the temporary help.

195. On February 24, 2005, DOH visited the site and observed litter downgradient of the workface and on an area by MSW Cell 1. The inspectors did observed a temporary litter picker collecting litter near the mobile fences. On the north side bottom slope of MSW Cell E-1, two temporary litter pickers were observed collecting litter. The amount of litter observed by the inspectors at the facility and the number of temporary litter pickers observed collecting the litter were not sufficient to collect the amount of litter for the day at the facility.

196. On March 15, 2005, the inspectors observed large amount of scattered litter accumulated along the east side of the perimeter property fence adjacent to MSW Cell E-1 and outside of the property boundaries. No litter pickers were observed in the immediate area.

197. The facility failed to deploy or relocate portable litter fences downwind as the active workface area moves on seventeen occasions from January 28 to May 1, 2005.

198. On April 15, 2005, wind conditions were between 18 to 25 mph. The inspectors observed large accumulation of litter on the primary and secondary litter fences down gradient of the workface area. Four litter pickers were observed along the primary litter fences collecting litter, but due to the large open area of the workface (pancake fill) the litter plan was ineffective.

199. On April 20 to 22, 2005, the inspectors observed large amount of litter throughout the landfill. The facility failed to implement the require litter control plan because of the amount of MSW present and uncovered at the landfill workface area.

200. On April 25 to 28, 2005, the inspectors observed the same situation as described above with the same results, lack of daily cover generating litter.

201. On May 1, 3, 6, and 8, 2005, the inspectors continue to observed large amounts of scattered litter throughout the MSW landfill area due to lack of soil cover.

202. On May 9, 12, 15, and 19, 2005, the inspectors continue to observed accumulation of litter throughout the MSW landfill areas due to lack of soil cover.

203. On June 9, 2005, the inspectors observed large accumulation of litter along primary and secondary litter fences at the southwest area of MSW Cell E-1.

204. On June 24, 2005, the inspectors observed the southeast end slope of MSW Cell E-1 with large accumulation of litter due to lack of soil cover. WMH was advised of

the problem and they acknowledge the litter/flagging problem and management plans to dressed-up the area soon.

205. RESPONDENTS failed to implement its litter control program effectively, due to either lack or improper placement of litter fences and documentation of litter control efforts, which has resulted in violations of the facility's permit special conditions.

COUNT XVIII

(Failure to monitor explosive gases and maintains monitoring records)

206. Paragraphs 1 through 205 above are incorporated herein by this reference as if they were set forth here in their entirety.

207. HAR Section 11-58.1-15(d)(1) and (2) provides:

> *(d) Explosive gases control.*
> *(1) Owners and operators of all MSWLF units must ensure that:*
> *(A) The concentration of methane gas generated by the facility does not exceed twenty-five per cent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components); and*
> *(B) The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary.*
> *(2) Owners or operators of all MSWLF units must implement a routine methane monitoring program to ensure that the standards of paragraph (1) are met.*
> *(A) The type and frequency of monitoring must be determined based on the following factors:*
> *(i) Soil conditions;*
> *(ii) The hydrogeologic conditions surrounding the facility;*
> *(iii) The hydraulic conditions surrounding the facility; and*
> *(iv) The location of facility structures and property boundaries.*
> (B) *The minimum frequency of monitoring shall be quarterly.*

208. Solid Waste Management Permit Number LF-0054-02, Special Condition IIIA, Item 7 provides:

> ***Explosive Gases Control****, which shall include a written plan with recordkeeping for a routine methane gas monitoring program in accordance to HAR 11-58.1-15(d). The plan shall include a minimum*

> *monitoring frequency of once per month.*

209. The Facility's Operating Plan, dated July 2004, Section 6.6, Explosives Gas states:

> *Methane gas is produced by anaerobic decomposition of organic components of solid waste. WGSLF implements a Site Specific Gas Monitoring Plan to ensure that methane gas does not cause safety or environmental problems. Specifically, the program must demonstrate with the requirements of HAR 11-58.1-18(d) that concentrations of methane do not exceed 25% of the lower explosive limits in facility structures, or 100% of the lower explosives limits at the property boundary. The lower explosive limit for methane is 5% by volume (50,000 ppm)*
>
> *Methane monitors are installed in the landfill office building and in the maintenance to measure explosive gas levels continuously and provide an alarm if levels reach 10,000 ppm (20% of the lower explosive limit). This program ensures that explosives gas levels in building are below the 25% limits set forth in HAR 11-58.1-18(d).*
>
> *Monitoring is conducted on a monthly basis to ensure compliance with HAR 11-58.1-18(d)(1)(B), which specifies that the concentration of methane gas at the property boundary shall not exceed the lower explosive limit. Under this program, barhole monitoring is conducted along the perimeter of the site, measuring methane concentrations to depths of about 3 feet.*
>
> *A monthly summary of gas monitoring results is placed in the operating record.*
>
> *To date, minimal methane has been detected at WGSLF. Should this change in the future, a landfill gas collection and treatment system will be developed to minimize potential gas migration problems.*

210. In a letter dated May 23, 2005, DOH requested all reports on all explosive gas monitoring data collected in accordance with explosive gas requirements in permit, LF0054-02 and HAR 11-58.1 from 2003.

211. In a letter dated June 22, 2005, WMH provided explosive gas monitoring data for 2005, but could not find data collected for prior years.

212. RESPONDENTS failed to monitor for explosive gases in 2003 and 2004, in violation 11-58.1-15(d), Special Conditions III Item 11 and Special Conditions IIIA Item 7, General Conditions I Item 9, and the facility's Operating Plan.

D. FINDINGS

On the basis of the provisions of Jurisdiction and Statement of Facts cited above, it is hereby found and determined that:

213. RESPONDENTS are therefore subject to the provisions of sections 342H-7 *Enforcement*, 342H-9 *Penalties*, 342H-10 *Administrative Penalties*, and 342H-11 *Injunctive Relief*, HRS, including penalties not to exceed $10,000 for each day of each violation.

DATED: Honolulu, Hawaii JAN 31 2006.

DEPARTMENT OF HEALTH
STATE OF HAWAII

Laurence K. Lau

LAURENCE K. LAU
Deputy Director for Environmental Health

APPROVED AS TO FORM:

KATHLEEN S.Y. HO
Deputy Attorney General

IN THE DEPARTMENT OF HEALTH

STATE OF HAWAII

DEPARTMENT OF HEALTH, STATE OF HAWAII,	)	DOCKET NO.05-SHW-SWS-004 Waimanalo Gulch Sanitary Landfill
	)	(Solid waste management rules and Permit Conditions)
COMPLAINANT,	)	
vs.	)	
	)	ORDER
WASTE MANAGEMENT OF HAWAII, INC. AND CITY AND COUNTY OF HONOLULU	)	
RESPONDENTS	)	

ORDER

Pursuant to chapter 342H, Hawaii Revised Statutes, the Department of Health's Solid Waste Management Control rules, and the attached Notice and Finding of Violation made this day in Docket No. 05-SHW-SWS-004, Waste Management of Hawaii, Inc. and City and County of Honolulu, Department of Environmental Services, hereinafter "RESPONDENTS," are hereby ordered to:

1. Immediately implement a full-time spotter for the hazardous waste and special waste-screening program as defined in the facility permit conditions. The spotter shall stop any unauthorized solid waste disposal

such as, whole tires, white goods, and lead acid batteries. Spotter and equipment operators shall be considered separate positions.

2. Continue to develop, revise and implement a revised groundwater monitoring plan that was developed to expand monitoring coverage for the entire landfill, and seepage areas, as requested in our letter dated July 27, 2005 to Mr. Paul Burns of Waste Management of Hawaii, Inc. The development, revision and implementation of a revised groundwater monitoring plan shall follow the proposed timeline presented with your Tidal Study Results and Groundwater Monitoring Well Network, prepared by EarthTech and dated December 15, 2005.

3. Remove the storage of all materials from the ash monofill and MSW landfill area with the exception of cover material. All stockpiled soil materials, except continuously operated stockpiles of less than one-week capacity, shall have stormwater/erosion controls and shall not exceed permit grades. Stockpiled soil materials shall not impede surface water drainage paths to conveyance channels. Only stockpiled soil materials for use as daily or intermediate cover are allowed on the active portion of the landfill, with a maximum capacity of 3 months and in not more than two stockpiles.

4. Place daily cover on the active MSW workface at the end of each workday. Submit daily-cover-verification photographs of the active MSW work area at noon and at the end of the workday. The photographs shall be identified with date and time of photograph, cell number, and name of responsible person taking the photo. The photographs taken on the same day shall be taken from the same perspective.

5. Operate only one workface in the ash monofill at any given time. In accordance with Solid Waste Management Permit Number LF-0054-02, Special Conditions IIIB, Item 1e, fresh MSW ash material may be used as daily cover material for the ash monofill provided that Special Conditions IIIB, Items 1a, b, c and d are met and such usage is limited to the active area where MSW ash is being placed on a daily basis. If this condition cannot be met, then fresh MSW ash may not be used and daily soil cover shall be place. If fresh MSW ash is used as daily cover, intermediate cover shall be placed over the MSW ash at least every 7 days to control fugitive dust. Submit daily/intermediate cover verification photographs of the active MSW ash workface at noon and at the end of the workday. The photographs shall be identified with the date and time of photograph, cell number and name of responsible person taking the photo. The

photographs taken on each workface and cell shall be taken from the same perspective.

6. Within thirty (30) days of this order becoming final, complete or submit the following items to the department for review and approval:

   a. A plan and time schedule for the construction of the MSW leachate manhole in MSW Cell 4B. The RESPONDENTS shall implement the plan in accordance with the approved time schedule. The leachate manhole shall be constructed to allow for automated and manual measurements of leachate head on the liner system, and automated pumping of leachate. The overflow of leachate generated in the MSW cell into the ash cell is not acceptable.

      Upon the completion of the leachate manhole construction in MSW Cell 4B, revise the "Groundwater and Leachate Monitoring Plan," dated October 7, 1997, to reflect depths and locations of all leachate sumps to include present and all new or future leachate sumps within the site including E cell lateral expansion and ash monofill leachate drain line in the ash buttress. The revised plan should include diagrams (blueprints) for any new or future leachate sumps location and provide validation of all diagrams.

   b. Install and maintain grade survey control markers to delineate the boundaries and elevations of the ash monofill and MSW landfill areas, including the delineation of overfilled areas. Submit updated drawings with grades, and height of the control markers on a quarterly basis.

   c. A plan and time schedule for the correction of the overfill areas of the ash monofill and MSW landfill to meet permit grades. The plan shall address waste capacity needs for the county until the expiration date of the landfill permit.

   d. A plan and time schedule for the management of county waste after the expiration date of the landfill. Should the City and County of Honolulu decide to continue operations at the Waimanalo Gulch Sanitary Landfill or at a different location, a <u>complete</u> solid waste management permit application shall be submitted at least one year prior to the current expiration date of Solid Waste Management Permit (LF-0054-02) for the Waimanalo Gulch Sanitary Landfill.

7. On a daily basis, maintain the following records. The daily records shall be summarized with monthly and annual totals. The records and copies of the records shall be made available to the department upon request.

   a. Tabulate records addressing the use of daily and intermediate soil cover material for the MSW workface, ratio of daily soil cover used to the amount of waste placement, dimensions of daily waste cell, tonnage of waste and volume of soil utilized as daily for the completed MSW cells, and the volume of intermediate soil cover utilized.

   b. Tabulate records addressing the use of daily and intermediate soil cover material for the ash monofill, ratio of daily cover to ash, dimensions of the ash cell on a daily basis, tonnage of ash received, and volume of soil utilized as daily and intermediate cover for completed ash cells.

   c. Tabulate records relating to daily tonnage, personnel/position and equipment utilization records. Identify days in which personnel/position and/or equipment was not available. Identify personnel that will place/manage litter fences, direct surface water, and leachate management.

8. On a quarterly basis complete and submit the following documents to the department:

   a. Reports on landfill operations based on annual operating report requirements. The reports shall include an updated isopach drawing comparing current fill elevations with permitted grades.

   b. Leachate management reports that include, daily to weekly leachate head measurements for all leachate sumps within the facility, monthly manual reading verification, quantity of leachate removed, disposition of leachate, leachate constituent analyses, and name of the individual responsible for the collection and data recording.

   c. Records addressing the use of intermediate soil cover on the active portion of the landfill for addressing erosion, stormwater water management and traffic. The intermediate cover shall be maintained to ensure a twelve-inch cover.

d. Monthly methane gas monitoring data collected from perimeter and enclosed structures. Results that exceed regulatory limits or show increasing trend should be accompanied with an explanation and type of corrective actions to mitigate the problem. The RESPONDENTS shall mitigate the situation to ensure concentrations below regulatory levels.

e. Inspect and maintain the surface water management systems, and maintain records of the inspection and any repairs. The surface water run-on controls shall maintain paths to the surface water basin and eliminate water ponding against landfill edges. The run-off controls shall direct surface water away from active workface, maintain paths including on-site silt control to surface water collection system and siltation basin, and eliminate stormwater ponding within the landfill. These records do not need to automatically be submitted to the department, however, the records and copies of the records shall be made available to the department upon request

9. Within ninety (90) days of the order becoming final, RESPONDENTS shall submit the following plans to the Department of Health for review and approval. The plans shall be implemented in accordance with the approved time schedule.

a. A plan and time schedule to repair the top decks and side slopes of the ash monofill and MSW landfill areas to ensure an appropriate cover thickness (12-inch intermediate cover).

b. A plan and time schedule on how the facility will manage the disposal of asbestos and maintain disposal location information to ensure that present and future asbestos material can be located/avoided in the future. Provide 30-day advance written notification to DOH on any future drilling/excavation through waste, including any future installation of gas collection wells. The notification shall include excavation/drilling plans and locations.

c. A plan and time schedule describing how the facility will keep litter to a minimum by minimizing cell geometry, the placement of primary and secondary litter fences, wind influencing barriers and litter pickers. Records documenting litter collection such as, amount of litter collected, number of litter pickers utilized each day, wind velocity, and speed shall be maintained and made available for department review. In addition, the workface area and litter fences shall be free of litter at the end of the workday.

d. A plan to manage waste in an event of a natural disaster (i.e. seismic event) such that the Waimanalo Gulch Sanitary landfill and ash monofill are not able to accept waste. The alternative shall provide for MSW and ash disposal, with a minimum five-year capacity, to allow for repairs / new site developments. The alternate site must be approved in accordance with Hawaii Administrative Rules Chapter 11-58.1 and meet DOH Solid Waste Management Permit requirements.

10. The duration of the activities specified in this order shall be continued as applicable until the issuance of a modified or renewed solid waste permit that would otherwise supercede Solid Waste Management Permit LF-0054-02.

11. Send to the Director of Health, within ten (10) days after this order becomes final, a certified check payable to the State of Hawaii in the amount of two million seven hundred sixty nine thousand six hundred sixteen dollars ($2,769,616).

Paragraphs 1 to 11 of this Order and the Notice and Finding of Violation shall become final and effective twenty (20) days after receipt, unless the RESPONDENTS submit a written request to the Director for a hearing pursuant to section 342H-7, H.R.S. before the twenty (20) days are up. If a hearing on paragraphs 1 to 10 of this Order and the Notice and Finding of Violation is requested, it will be held in conjunction with the hearing on the penalty imposed by paragraph 11 of this Order.

If a hearing is requested, it will be held on a date, time, and place to be specified later. The hearing will be conducted in accordance with Chapter 91, H.R.S. and the Rules of Practice and Procedure of the Department of Health; the hearing will address the issues raised by the Notice and Finding of Violation and Order in this case. If a hearing is requested, RESPONDENTS must attend a pre-hearing conference scheduled for March 7, 2006, at 10:00am in Room 200, 1250 Punchbowl Street, Honolulu, Hawaii. At the pre-hearing conference, the date(s) of the hearing as well as other pertinent deadlines will be determined.

If you have special needs due to a disability that will aid you in participating in the hearing or pre-hearing conference, please contact the Hearings Officer at (808)

586-4409 (voice) or through the Telecommunications Relay Service (711), at least ten (10) working days before the hearing or pre-hearing conference date.

Parties may present evidence and argument on any issue raised by any paragraph in the Notice and Finding of Violation or Order or otherwise raised by this case. Parties may examine and cross-examine witnesses and present exhibits.

Parties may be represented by legal counsel at their own expense. An individual may appear on his own behalf, or a member of a partnership may represent the partnership, or an officer or authorized employee of a corporation or trust or association may represent the corporation, trust, or association.

After such hearing, this Order shall be affirmed, modified, or rescinded by the Director.

Please direct the written request for a hearing, if any, and all inquiries concerning this case to:

Steven Y.K. Chang, P.E., Chief
Solid and Hazardous Waste Branch
State Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801
Telephone: (808)586-4226

Failure to comply with this Order may subject the RESPONDENTS to additional penalties of $1,000 a day and measures under chapter 342H, H.R.S. and the rules adopted thereunder.

DATED: Honolulu, Hawaii JAN 3 1 2006

DEPARTMENT OF HEALTH
STATE OF HAWAII

Laurence K. Lau

LAURENCE K. LAU
Deputy Director for Environmental Health

APPROVED AS TO FORM:

KATHLEEN S.Y. HO
Deputy Attorney General

IN THE DEPARTMENT OF HEALTH

STATE OF HAWAII

Department of Health, State of Hawaii, Complainant, vs. Waste Management of Hawaii, Inc. And City and County of Honolulu, Respondents.	DOCKET NO. 05-SHW-SWS-004 **SETTLEMENT AGREEMENT**

SETTLEMENT AGREEMENT

This is a Settlement Agreement ("Agreement") between the Solid Waste Section, Department of Health, State of Hawaii ("DOH"), and Waste Management of Hawaii, Inc. ("WMH") and the City and County of Honolulu, hereinafter referred to as "RESPONDENTS", to set forth RESPONDENTS' responsibilities relating to the payment of penalties and injunctive relief.

I. PRELIMINARY STATEMENT

1. On or about January 31, 2006, COMPLAINANT DOH, filed an eighteen count, Notice and Finding of Violation and Order in Docket No. 05-SHS-SWS-004 ("NFV") for certain permit violations concerning the operations and management of the Waimanalo Gulch Sanitary Landfill (the "Landfill") which is owned, operated and/or controlled by RESPONDENTS. The NFV is incorporated by reference and made a part of the settlement of this case.

2. Pursuant to HRS sections 342H-9 and 342H-10, the DOH NFV assessed a total penalty of $ 2,769,616.00 against RESPONDENTS. Shortly thereafter, to correct an error in calculating the penalty amount, DOH reduced the assessed penalty to $2,445,130.00.

3. The DOH and RESPONDENTS have agreed to conclude this enforcement action by entering into this Agreement.

II. WAIVER OF RIGHTS

4. RESPONDENTS hereby agree to waive any rights RESPONDENTS may have to a hearing on any issue relating to the factual allegations or legal conclusions set forth in the NFV.

5. RESPONDENTS admit and agree that the DOH has jurisdiction to enter into this Agreement and to enforce its terms. Further, RESPONDENTS agree that the DOH has jurisdiction and authority to compel compliance with the terms and conditions of this Agreement in an enforcement proceeding and be bound by the laws and rules of the State of Hawai'i.

III. PARTIES BOUND

6. This Agreement shall apply to and be binding upon the DOH and RESPONDENTS. RESPONDENTS agree to carry out all actions required of RESPONDENTS by this Agreement. The signatories to this Agreement certify that they are authorized to execute and legally bind the parties they represent to this Agreement. RESPONDENTS shall give notice of this Agreement to any successors in interest prior to transfer of ownership of the Landfill or of the contractor operating the Landfill. No change in ownership or corporate status of RESPONDENTS or of the Landfill shall alter RESPONDENTS' responsibilities under this Agreement without written consent by the DOH.

IV. CORRECTIVE ACTIONS AND COMPLIANCE REQUIREMENTS

7. RESPONDENTS agree to act in accordance with the Hawaii Revised Statutes, the Hawaii Administrative Rules, the conditions of their solid waste management permit and this Agreement.

7.1. RESPONDENTS shall make every practicable effort to screen waste and prevent disposal of any unacceptable waste, including but not limited to, whole tires, white goods, and lead-acid batteries, from entering and being disposed at the Landfill.

7.2. RESPONDENTS shall implement the Groundwater and Leachate Monitoring Plan dated August 2007, and any approved subsequent submissions. Groundwater and leachate samples from each monitoring well and leachate sump shall be collected and analyzed on a quarterly basis, or as required or otherwise approved by the DOH.

a. Groundwater samples shall be analyzed for constituents listed in 40 CFR 258, Appendix I, major cations and anions (Mg, Na, Ca, K, Cl, CO3, SO4, HCO3), major leachate indicators (TDS, TOC, total alkalinity, nitrogen-ammonia, Cl, and Fe), COD, nitrate-N, bromide, and field measurements (electrical conductance, pH, temperature, turbidity, and groundwater surface elevation), or as required or otherwise approved by the DOH.

b. Groundwater samples from newly installed wells shall also be analyzed for the following constituents in the first quarterly monitoring event: constituents listed in 40 CFR 258, Appendix II, major cations and anions (Mg, Na, Ca, K, Cl, CO3, SO4, HCO3), major leachate indicators (TDS, TOC, total alkalinity, nitrogen-ammonia, Cl, Fe), COD, nitrate-N, bromide, and field measurements (electrical conductance, pH, temperature, turbidity, and groundwater surface elevation), or as required or otherwise approved by the DOH.

c. Leachate samples shall be analyzed for constituents listed in 40 CFR 258, Appendix II, major cations and anions (Mg, Na, Ca, K, Cl, CO3, SO4, HCO3), major leachate indicators (TDS, TOC, total alkalinity, nitrogen-ammonia, Cl, Fe), COD, nitrate-N, bromide, and field measurements (electrical conductance, pH, temperature, and turbidity), or as required or otherwise approved by the DOH.

7.3. RESPONDENTS shall place a minimum of 6-inches of daily cover on the active MSW workface at the end of each workday, and shall leave no exposed waste. RESPONDENTS shall implement a Daily Cover Monitoring Verification Program as follows:

a. RESPONDENTS shall take digital photos of the active workface at the middle and end of each weekday (Monday through Friday), from the same perspective, to document the placement and thickness of daily cover. Digital photo records shall be maintained at the facility and submitted to the DOH via email by 12:00 noon on the next business day, with cell location information. RESPONDENTS and DOH will work cooperatively to determine the best perspective for the photos.

b. RESPONDENTS shall record the following quantitative items on a daily basis:
   i. Volume of waste disposed,
   ii. Cell geometry, and
   iii. Volume and type of daily cover used.

7.4. RESPONDENTS shall apply at least six inches of soil cover over exposed ash (not inclusive of alternative daily cover of fresh ash) every seven (7) days, or more frequently as required by the DOH. RESPONDENTS shall implement a Weekly Cover Monitoring Verification Program as follows:

a. RESPONDENTS shall take digital photos of the active ash workface on a weekly basis, prior to the placement of the weekly cover and after the weekly cover has been placed. Digital photo records shall be maintained at the facility and submitted to the DOH via email by 12:00 noon on the next business day following the day on which weekly cover was placed, with cell location information. RESPONDENTS and DOH will work cooperatively to determine the best perspective for the photos.

b. RESPONDENTS shall record the following quantitative items on a weekly basis:
   i. Volume of waste ash disposed,
   ii. Cell geometry, and
   iii. Volume of soil cover used.

7.5. RESPONDENTS shall cover all inactive ash and MSW areas with intermediate cover. Inactive areas are areas that do not receive waste (ash or MSW) within a 30-day period. RESPONDENTS shall also cover any area receiving vehicular traffic with intermediate cover, regardless of the time period since last receiving waste. Intermediate cover shall be a minimum of 12 inches of earthen material (may include six inches of soil daily cover). Particle size shall be adequate to minimize infiltration and direct stormwater to collection systems.

7.6. RESPONDENTS shall submit an application to the DOH for a permit modification to increase the maximum final grades of the ash monofill.

7.7. RESPONDENTS shall maintain the MSW leachate collection sump (4B-cell sump) leachate discharge riser and associated pumps and instrumentation. The sump leachate discharge riser shall be constructed in accordance with design drawing titled, *Sump 4B Riser* Replacement, by Sanborn, Head and Associates, Inc., dated July 26, 2007, and approved subsequent submissions. RESPONDENTS shall submit a written report, within 30 days of the Effective Date or receipt of a revised solid waste permit, whichever is earlier, documenting installation of the 4-B cell sump leachate discharge riser and associated equipment. The report shall be prepared by or approved by a professional engineer licensed in the State of Hawaii, and at a minimum, shall include the following:

a. Description of procedures for the installation of the 4-B cell sump leachate discharge riser and associated equipment,

b. Identification of any deviations from the written installation instructions, the reason for the deviations, and assessment of any effects on the usability of the sump or human health and the environment.

c. Discussion of observations (visual, meter readings, etc.) noted during installation of the leachate discharge riser system, including the presence of charred waste and observations related to the sump location, gravel depth, and liner system. Photo documentation shall also be provided.

d. Survey and as-built drawings documenting the location and construction details of the newly installed 4B-cell sump leachate discharge system.

e. Description of associated appurtenances associated with the sump leachate discharge riser. A copy of the manufacturer's specifications for any pumps and control and measuring devices shall also be provided.

f. Specify the sump depth, top of riser and compliance levels associated with the sump in feet above mean sea level (msl).

g. Certification that the sump leachate discharge riser, and associated appurtenances, were installed in accordance with the design and shall provide adequate means of complying with the leachate management provisions of HAR 11-58.1, the operations plan, and the revised solid waste permit.

7.8. Leachate Monitoring and Recordkeeping.

a. RESPONDENTS shall use automated monitoring systems to monitor leachate levels in all sumps and storage tanks. The automated systems shall include an alarm system to alert RESPONDENTS to anomalous conditions in the sumps or storage tanks.

b. RESPONDENTS shall maintain a log of the status of the leachate collection systems, and record in the log at least three times per week the date, level of leachate in each sump, volume of leachate in each tank, and associated pump rates.

c. RESPONDENTS shall take manual measurements of leachate levels in the ash sump and 4B sump, at least once per month. RESPONDENTS shall take manual measurements of leachate levels in the E1 sump on an annual basis. If manual measurements are inconsistent with automated readings or other problems are identified with the system, the DOH may increase the frequency of manual measurements.

7.9. RESPONDENTS shall remove leachate from the Landfill via each of the leachate sumps, in a manner that maintains a maximum depth of 30 centimeters (12 inches) of leachate above any part of the liner in the cell, outside the sump area.

7.10. Within thirty (30) days of the Effective Date, RESPONDENTS shall install and maintain grade survey control markers to delineate the boundaries and elevations of the ash monofill and MSW landfill areas in sufficient number to ensure compliance with permitted grades.

7.11. RESPONDENTS shall implement the Asbestos Management and Disposal Plan, as provided in the Site Operations Manual. Compliance with the plan does not preclude compliance with other applicable statutes, regulations, and rules. RESPONDENTS shall document the quantity, type, and location of asbestos disposed of in the MSW landfill. Disposal locations shall be recorded with GPS coordinates. RESPONDENTS shall maintain records on the amount and location of asbestos disposal.

7.12 RESPONDENTS shall implement the Interim Perimeter Gas Monitoring Plan dated December 2006, and approved subsequent submissions, until implementation of the permanent Perimeter Gas Monitoring Plan required by Section 7.13. The gas monitoring program shall also be conducted in accordance with HAR 11-58.1-15(d) and these conditions.

a. RESPONDENTS shall monitor the concentration at depths that will minimize the infiltration of and dilution from atmospheric air.

b. RESPONDENTS shall minimize the amount of time that the probe is open prior to recording the gas concentrations.

c. The interim plan results shall all include the duration of time that the probe was open prior to recording the concentration, length of PVC piping extending above ground surface, and length of tubing inserted at each well.

7.13 RESPONDENTS shall implement the Perimeter Gas Monitoring Plan dated October 2007, and approved subsequent submissions, within six (6) months of the Effective Date or receipt of a revised solid waste permit, whichever is earlier. The gas monitoring program shall also be conducted in accordance with HAR 11-58.1-15(d) and these conditions.

a. The well shall not be vented, or opened prior to measuring the gas concentration.

b. RESPONDENTS shall install permanent gas monitoring probes within four (4) months of the Effective Date, or receipt of a modified solid waste permit, whichever is earlier, and provide documentation of installation within sixty (60) days of completion. Documentation shall include, but is not limited to, geologic logs of each probe location, surveyed locations and elevations of probes, and as-built drawings of each monitoring probe.

7.14 RESPONDENTS shall monitor the concentration of gases, including oxygen, methane, carbon dioxide, and hydrogen. RESPONDENTS shall monitor the concentration of gases in facility structures, including temporary structures, and at the property boundary on a monthly basis, or other frequency as approved by the DOH. If an exceedance is identified, RESPONDENTS may conduct a verification monitoring event, provided that the verification monitoring is conducted within one (1) hour of the initially detected exceedance. If exceedances or other anomalous conditions are identified, the DOH may increase the frequency of monitoring events.

a. The concentration of methane gas shall not exceed 25% of the lower explosive limit (LEL) for methane in facility structures.

b. The concentration of methane gas shall not exceed the LEL for methane at the facility property boundary.

c. The concentration of hydrogen gas shall not exceed 25% of the LEL for hydrogen in facility structures.

d. The concentration of hydrogen gas shall not exceed the LEL for hydrogen at the facility property boundary.

7.15 RESPONDENTS shall submit a report with results within 45 days of each monitoring event. The results shall include the date and time, gas concentrations by volume, barometric pressure, site conditions, name of personnel conducting the monitoring, description of equipment and calibration results, description of monitoring procedure, and identification of any procedures or observations outside of normal conditions.

If verification monitoring performed within one (1) hour of the initial exceedance shows concentrations below the limits in <u>Section 7.14</u>, RESPONDENTS shall place results in the operating record and send written notification of the exceedance and verification monitoring results to the DOH within seven (7) days.

7.16 If combustible gas concentrations exceed the limits in <u>Section 7.14</u>, and verification monitoring is not performed within one (1) hour of the initial exceedance or verification monitoring confirms the initial exceedance, RESPONDENTS shall perform the following.

a. Immediately take all necessary steps to ensure protection of human health;

b. Immediately notify the DOH of the exceedance;

c. Within three (3) days of detection, place in the operating record and submit to the DOH, the type of gas, gas levels detected and a description of the steps taken to protect human health; and

d. Within sixty (60) days of detection, prepare and implement a remediation plan for the combustible gas releases, place a copy of the plan in the operating record, provide a copy of the plan to the DOH, and notify the DOH that the plan has been implemented.

e. Within thirty (30) days after the remediation plan has been completed, submit a report to the DOH documenting the actions taken, additional monitoring results, and plans to prevent future recurrences.

f. The DOH may modify the reporting and implementation schedule, as necessary to protect human health and the environment.

7.17 This Article IV and its compliance requirements shall be effective until issuance of a revised solid waste permit for continued operations, if such a permit is issued, or until closure for the Landfill, if such a permit is not issued. Thereafter, these requirements shall terminate except for the compliance date set forth in Section 7.13(b) and the Landfill shall be subject to the requirements set forth any revised solid waste permit, or in any permits, statutes, rules, or regulations governing closure.

V. PAYMENTS AND CONSIDERATION FOR SETTLEMENT

8. Civil Penalty Amount. RESPONDENTS shall pay a civil penalty in the amount of ONE MILLION FIVE HUNDRED THOUSAND DOLLARS ($1,500,000). RESPONDENTS may, in their discretion, satisfy this civil penalty through either of the following two options:

8.1. Cash Payment. Within THIRTY (30) days after the Effective Date of this Agreement, RESPONDENTS shall deliver payment in the amount of ONE MILLION FIVE HUNDRED THOUSAND DOLLARS ($1,500,000) to the DOH at the following address:

Solid and Hazardous Waste Branch
Environmental Management Division
Hawaii State Department of Health
919 Ala Moana Blvd., Room 212
Honolulu, Hawaii 96814

8.2. Cash Payment and Supplemental Projects. Within THIRTY (30) days after the Effective Date of this Agreement, RESPONDENTS shall notify the DOH of RESPONDENTS' election to satisfy the civil penalty through a combination of a cash payment to the DOH and Supplemental Environmental Projects, as described below. If RESPONDENTS elect this option, RESPONDENTS shall satisfy a, b and c as indicated below:

a. Within THIRTY (30) days after the Effective Date of this Agreement, RESPONDENTS shall deliver payment in the amount of FIVE HUNDRED TWENTY THOUSAND DOLLARS ($520,000) to the DOH at the address set forth in Section 8.1 above;

b. RESPONDENTS shall pay the amount of SIX HUNDRED THIRTY-SEVEN THOUSAND FIVE HUNDRED DOLLARS ($637,500) in the following manner;

(1) to the DOH, for deposit into a fund be established by order of the Hearings Officer in Docket No. 05-SHW-SWS-004 in an account established within the State of Hawaii Department of Accounting and General Services ("DAGS"). This fund shall be known as a Supplemental Environmental Project ("SEP") Fund and the amounts in the SEP Fund shall be used to fund environmentally beneficial projects to benefit Leeward communities located near the

landfill, or other communities or residents of Oahu, as selected by the DOH or any other State agency designated by the DOH after consultation with the Leeward communities located near the Landfill. RESPONDENTS shall deliver the funds to the DOH at the address stated in Section 8.1 above within THIRTY (30) days after receiving notice from the DOH that the SEP Fund has been established by DAGS, and that such funds are to be deposited. RESPONDENTS shall not participate in the selection of projects funded by the SEP Fund. If the DOH elects to hire a Supplemental Environmental Coordinator, the sum of $ 100,000.00, or such lesser amount as DOH may designated, from the SEP fund shall be used by the DOH to hire a Supplemental Environmental Coordinator to oversee the SEPs that will be selected by the DOH; or

(2) to environmentally beneficial projects selected by the DOH within 30 days of notification;

(3) or to a combination of (1) and (2), as determined by DOH.

If any funds paid in accordance with Section 8.2(b), remain unexpended for environmentally beneficial projects, those monies shall be paid to the DOH at the address listed in Section 8.1 at the discretion of DOH;

c. RESPONDENTS shall satisfy the balance of the penalty amount ($342,500) by designing, engineering, permitting, and constructing at an estimated cost of at least FOUR HUNDRED FIFTY THOUSAND DOLLARS ($450,000) a community drop off center (the "Drop-Off Center") to be located at the Landfill for use by local residents to drop-off solid waste and recyclables in the vicinity of the current scalehouse and administrative building. The design of the Drop-Off Center shall be approved by the DOH. The purpose of the Drop-Off Center is to allow members of the public to conveniently and safely deliver solid waste and/or recyclables to the Landfill for disposal and/or recycling without entering areas of the Landfill with active landfilling operations. If the actual cost to design, engineer, permit, and construct the Drop-Off Center does not exceed $450,000, then RESPONDENTS shall pay the difference to the DOH at the address set forth in <u>Section 8.1</u> above.

Notwithstanding any other provision in this Agreement, if RESPONDENTS elect to satisfy the civil penalty amount through this option, RESPONDENTS shall be obligated to design, engineer, permit, and construct the Drop-Off Center <u>only</u> when the Landfill is issued all final permits and approvals required for the expansion of the Landfill and continuation of Landfill disposal operations. If RESPONDENTS are not able to permit or construct the Drop-Off Center consistent with this Agreement and in spite of their reasonable efforts, then in lieu thereof, RESPONDENTS shall pay to the DOH the amount of FOUR HUNDRED THOUSAND DOLLARS ($400,000) at the address set forth in Section 8.1 above.

VI. RELEASES

9. Upon payment of the amounts set forth in Section V (PAYMENTS AND CONSIDERATION FOR SETTLEMENT), any and all violations and claims alleged or which could have been alleged by the DOH in the NFV shall be discharged, dismissed, waived and released as against RESPONDENTS, their respective directors, officers, employees, servants, agents, (former directors, officers, employees, servants and agents), assigns, attorneys, administrators, insurers, subsidiaries, affiliates and/or related entities.

VII. STIPULATED PENALTIES AND ENFORCEMENT

10. Failure by RESPONDENTS to pay the amounts in Section V (PAYMENTS AND CONSIDERATION FOR SETTLEMENT), shall obligate RESPONDENTS to pay a stipulated penalty of $1,000 per day for each day that such failure continues.

11. RESPONDENTS shall pay any stipulated penalties within seven (7) days of demand as set forth in Section VIII (Form of Payment).

12. If RESPONDENTS breach the terms of Section IV (CORRECTIVE ACTION AND COMPLIANCE REQUIREMENTS) prior to the termination of those requirements, RESPONDENTS agree to be subject to the penalties set forth in section 342H-9(a), Hawaii Revised Statutes for such breaches. RESPONDENTS reserve their rights to argue all legal and factual defenses under the law, except for any argument that penalties for such breaches may not be imposed pursuant to that section, any such arguments being contractually waived herein, in consideration of and for this Settlement Agreement. Further RESPONDENTS agree that for the purposes of said section 342H-9(a), any breach of the terms of Section IV (CORRECTIVE ACTION AND COMPLIANCE REQUIREMENTS) shall be considered breaches of a permit and/or variance issued pursuant to Chapter 342H, Hawaii Revised Statutes.

13. The provisions of this section shall not be construed to limit any other remedies, including but not limited to institution of proceedings for civil or criminal liability, available to DOH for violations of this Agreement future violations of the permit, or for violations of any other provision of law.

VIII. FORM OF PAYMENT

14. The amounts payable under Sections V (PAYMENTS AND CONSIDERATION FOR SETTLEMENT and VII (STIPULATED PENALTIES AND ENFORCEMENT) shall

be paid by cashier's check, payable to the State of Hawaii, and shall be delivered to the DOH as set forth in Section XI (NOTIFICATION).

IX. DELAYS OR IMPEDIMENTS TO COMPLIANCE

15. RESPONDENTS shall notify the DOH orally, as soon as feasible, and in writing within ten (10) calendar days of any delay or anticipated delay which does or may affect compliance with this Agreement. The notice shall describe in detail the anticipated length of the delay, the precise cause(s) of the delay, the measures taken and to be taken by RESPONDENTS to prevent or minimize the delay, the timetable by which those measures will be implemented, and the expected effect on the environment of the delay. RESPONDENTS shall take all reasonable measures to avoid or minimize any such delay.

16. The burden of proving that any delay is caused by circumstances entirely beyond the control of RESPONDENTS shall rest with RESPONDENTS.

X. ENTRY AND INSPECTION

17. Any authorized representative of the DOH, upon presentation of credentials, may enter upon the Landfill premises and/or inspect the Landfill records of RESPONDENTS at any time for the purpose of monitoring compliance with the provisions of this Agreement. This provision shall not be deemed to limit any authority the DOH otherwise has to enter and inspect.

XI. NOTIFICATION

18. Whenever, under the terms of this Agreement, a notice, report, or payment is required to be given by one party to another, such notice, report, or payment shall be directed to the individuals specified below, at the addresses given, unless a party gives notice in writing to the other parties that another individual has been designated to receive such communications:

Steven Y.K. Chang, P.E., Chief
Solid and Hazardous Waste Branch
Environmental Management Division
Hawaii State Department of Health
919 Ala Moana Blvd., Room 212
Honolulu, Hawaii 96814
Telephone: (808) 586-4226
Telefax: (808) 586-7509

Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707
Telephone: (808) 768-3486
Telefax: (808) 768-3487

Director of Operations
Waste Management of Hawaii, Inc.
Waimanalo Gulch Landfill
92-460 Farrington Hwy.
Kapolei, HI 96707
Telephone: (808) 668-2985
Telefax: (808) 668-1366

General Counsel, Western Group
Western Group Legal Department
7025 North Scottsdale Road, Suite 200
Scottsdale, AZ 85253
Telephone: (480) 624-8400
Telefax: (480) 951-5280

XII. AUTHORITY OF SIGNATORIES

19. Each undersigned representative or a party to this Agreement certifies that he or she has full authority to enter into the terms of this Agreement and legally to bind the party which he or she represents.

20. Compliance with this Agreement does not relieve RESPONDENTS' responsibility to comply with all other applicable laws and regulations.

XIII. NO ADMISSION OF LIABILITY

21.The parties acknowledge that neither this Agreement, nor the fact of settlement, nor the civil penalty and settlement payments, nor the settlement proceeds are, may be construed as, may be deemed evidence of, or may be used at any time as an admission, concession, presumption, or inference of fault, wrongdoing or liability of any party. The Agreement is to be construed strictly as a compromise and settlement of all the alleged violations in NFV for the purpose of ending past and present controversies, litigation of the contested case, and expenses.

XIV. ENTIRE AGREEMENT

22. This Agreement sets forth the entire agreement between the parties with respect to this matter.

XV. EFFECTIVE DATE

23. This Agreement shall become effective as soon as it has been signed by all the parties (the "Effective Date").

XVI. MODIFICATIONS

24. This Agreement shall not be modified except in writing, signed by all the parties.

XVII. TERMINATION

25. RESPONDENTS must demonstrate to the DOH's satisfaction that RESPONDENTS have made the payment required by Sections 8.1 or 8.2 (as appropriate) of this Agreement, and implemented the corrective actions and compliance requirements of Section IV (until those requirements are governed by a revised solid waste permit, as provided for in Section 7.17 of this Agreement. Within thirty (30) working days after such a showing by RESPONDENTS, the DOH shall issue a letter to RESPONDENTS certifying satisfactory compliance, which shall terminate this Agreement.

XVIII. EFFECT

26. This Agreement constitutes the final agreement between the parties and the settlement of Docket No. 05-SHW-SWS-004; and concludes the contested case proceedings which shall be dismissed with prejudice upon execution of this Agreement.

XIX. FEES AND COSTS

27. Each party shall bear its own costs and attorneys' fees.

XX. GOVERNING LAW

28. This Agreement shall be enforceable under, and interpreted according to the laws of the State of Hawaii.

XXI. SEVERABILITY OF UNLAWFUL PROVISIONS

29. Should any provision of this Agreement be declared or be determined by any court to be illegal or invalid, the validity of the remaining parts, terms, or provisions shall not be affected thereby and said illegal or invalid part, term, or provision shall be deemed not to be a part of this Agreement.

XXII. COUNTERPART/FACSIMILE SIGNATURES

30. This Agreement may be executed in two or more counterparts or by facsimile, and any set of the counterparts or facsimile that are collectively executed by the Parties hereto shall be sufficient proof of this Agreement.

Dated:Honolulu, Hawaii DEC - 7 2007.

DEPARTMENT OF HEALTH
STATE OF HAWAII

Laurence K. Lau
LAURENCE K. LAU
Deputy Director for Environmental Health

APPROVED AS TO FORM:

Kathleen S.Y. Ho
KATHLEEN S.Y. HO
Deputy Attorney General

WASTE MANAGEMENT OF HAWAII, INC,

Andrew M. Kenefick
ANDREW M. KENEFICK
Senior Legal Counsel
per Corporate Resolution (Dec. 6, 2007)

APPROVED AS TO FORM:

Lorraine H. Akiba
LORRAINE H. AKIBA
Attorney for Waste Management of Hawaii, Inc.

CITY AND COUNTY OF HONOLULU

Eric S Takamura

DIRECTOR, DEPARTMENT OF
ENVIRONMENTAL SERVICES

APPROVED AS TO FORM:
AND LEGALITY:

Deputy Corporation Counsel

Department of Health, State of Hawaii vs. Waste Management, Inc. and City and County of Honolulu; Docket No. 05-SHW-SWS-004; Settlement Agreement

Appendix B

Finding and Notice of Violation, Docket No. R6-06-06
Environmental Protection Agency, April 5, 2006

United States
Environmental Protection
Agency

Regional Administrator
75 Hawthorne Street
San Francisco, CA 94105-3901

Region 9, Arizona, California
Hawaii, Nevada, Guam
American Samoa,
Northern Marianas Islands

EPA Environmental News

For Immediate Release: April 5, 2006
Contact: Dean Higuchi, 808-541-2711, higuchi.dean@epa.gov

EPA cites two Hawai'i landfills for clean air violations

Waimanalo Gulch on Oahu and West Hawai'i on the Big Island

HONOLULU – The U.S. Environmental Protection Agency recently announced that Waste Management of Hawaii, Inc., and island governments on Oahu and Hawai'i have violated the Clean Air Act at the Waimanalo Gulch landfill at Kapolei and West Hawai'i landfill at Waikaloa.

The violations pertain to the Waimanalo Gulch landfill at Kapolei on Oahu and West Hawai'i landfill at Waikaloa on the Big Island. The Waimanalo Gulch landfill is owned by the City and County of Honolulu, and the West Hawai'i landfill is owned by the County of Hawai'i. Both landfills are run and operated for the counties by Waste Management of Hawaii, Inc.

"Landfill owners and operators need to meet the planning, permitting and control requirements to comply with clean air rules," said Deborah Jordan, director for the EPA Pacific Southwest Region's Air Division. "The goal of our action is to ensure that Waste Management and the counties effectively control emissions from both landfills."

At the Waimanalo Gulch landfill, EPA inspectors found that the gas collection and control system was installed seven years late in August 2005, and does not meet requirements. At the West Hawaii landfill, Waste Management and the County of Hawai'i violated several reporting requirements. Both landfills have been required to comply with the clean air rules since March 1996.

The EPA is requiring Waste Management and the counties to get both landfills into compliance with clean air rules. Under the Clean Air Act, they could face fines of up to $32,500 per day, per violation. Staff from the Hawai'i Department of Health's Clean Air Branch provided assistance to the EPA's investigators.

Nonmethane landfill gas contains volatile organic compounds and hazardous air pollutants that can result in adverse effects to the respiratory system, cancer, and damage to the nervous system. Methane emissions contribute to global climate change and can result in fires or explosions when they accumulate in structures on or off the landfill site.

# # #

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

CERTIFIED MAIL NO. 7003 3110 0006 2000 8182
RETURN RECEIPT REQUESTED

Paul Burns
General Manager
Waste Management of Hawaii, Inc.
92-460 Farrington Highway
Kapolei, HI 96707

CERTIFIED MAIL NO. 7003 3110 0006 2000 8175
RETURN RECEIPT REQUESTED

Eric S. Takamura, P.E.
Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia St., Suite 308
Kapolei, HI 96707

In Reply: AIR-5
Refer To: Docket No. R9-2006-06

Dear Messrs. Burns and Takamura:

Enclosed is a copy of a Finding and Notice of Violation ("NOV") that the United States Environmental Protection Agency ("EPA") is issuing to Waste Management of Hawaii ("WMH") and the City and County of Honolulu ("CCH") pursuant to Section 113 (a) of the Clean Air Act (the "Act"), 42 U.S.C. § 7413 (a). The NOV is intended to notify WMH and CCH of EPA's finding that Waimanalo Gulch Solid Waste Landfill at Kapolei on Oahu (the "Landfill") has been and is in violation of the Act.

You should be aware that Section 113(a) of the Act provides that EPA may issue an Order requiring compliance, issue an Order assessing a civil administrative penalty, or commence a civil action seeking an injunction and/or a civil penalty. Furthermore, Section 113(c) of the Act provides for criminal penalties in certain cases.

Upon a finding of adequate evidence of a continuing violation, EPA may place the Landfill on the List of Violating Facilities. See Section 306 of the Act and the regulations promulgated in 40 C.F.R. Part 32. Such facility would be declared ineligible for participation in any federal contract, grant, loan, or subagreement thereunder.

If you wish to discuss the NOV, you may request a conference with EPA. The conference will afford WMH and CCH an opportunity to present information bearing on the finding of violation, the nature of the violation, any efforts you have taken to achieve compliance, and the steps you propose to take to achieve compliance.

Please contact Brian Riedel, Office of Regional Counsel, at (415) 972-3924, to request a conference. Such request should be made as soon as possible, but in any event no later than 10 business days after receipt of this letter. Thank you for your cooperation in this matter.

Sincerely,

Debra Jordan

Deborah Jordan
Director, Air Division

Enclosures

cc: Wilfred Nagamine, CAB, HSDOH

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

CERTIFIED MAIL NO. 7004 1160 0004 3168 5961
RETURN RECEIPT REQUESTED

Paul Burns
General Manager
Waste Management of Hawaii, Inc.
92-460 Farrington Highway
Kapolei, HI 96707

CERTIFIED MAIL NO. 7004 1160 0004 3168 5978
RETURN RECEIPT REQUESTED

Michael Dworsky
Division Head
Solid Waste
Department of Environmental Management
County of Hawaii
25 Aupuni Street, Room 214
Hilo, HI 96720

In Reply: AIR-5
Refer To: Docket No. R9-2006-07

Dear Messrs. Burns and Dworsky:

Enclosed is a copy of a Finding and Notice of Violation ("NOV") that the United States Environmental Protection Agency ("EPA") is issuing to Waste Management of Hawaii ("WMH") and the County of Hawaii ("CH") pursuant to Section 113 (a) of the Clean Air Act (the "Act"), 42 U.S.C. § 7413 (a). The NOV is intended to notify WMH and CH of EPA's finding that West Hawaii landfill at Waikaloa on the Big Island (the "Landfill") has been and is in violation of the Act.

You should be aware that Section 113(a) of the Act provides that EPA may issue an Order requiring compliance, issue an Order assessing a civil administrative penalty, or commence a civil action seeking an injunction and/or a civil penalty. Furthermore, Section 113(c) of the Act provides for criminal penalties in certain cases.

Upon a finding of adequate evidence of a continuing violation, EPA may place the Landfill on the List of Violating Facilities. See Section 306 of the Act and the regulations promulgated in 40 C.F.R. Part 32. Such facility would be declared ineligible for participation in any federal contract, grant, loan, or subagreement thereunder.

If you wish to discuss the NOV, you may request a conference with EPA. The conference will afford WMH and CH an opportunity to present information bearing on the finding of violation, the nature of the violation, any efforts you have taken to achieve compliance, and the steps you propose to take to achieve compliance.

Please contact Brian Riedel, Office of Regional Counsel, at (415) 972-3924, to request a conference. Such request should be made as soon as possible, but in any event no later than 10 business days after receipt of this letter. Thank you for your cooperation in this matter.

Sincerely,

Deborah Jordan
Director, Air Division

Enclosures

cc: Wilfred Nagamine, CAB, HSDOH

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

In the Matter of: Waste Management of Hawaii, Inc. 92-460 Farrington Highway Kapolei, Oahu, Hawaii 96707 County of Hawaii 25 Aupuni Street Hilo, Hawaii 96720 Proceeding under Section 113 of the Clean Air Act, 42 U.S.C. § 7413	Docket No. R9-06-07 Finding and Notice of Violation

This Finding and Notice of Violation ("NOV") is issued pursuant to the authority of Section 113 of the Clean Air Act, 42 U.S.C. §§ 7401-7671q (the "Act") to Waste Management of Hawaii, Inc. ("WMH") and the County of Hawaii ("CH") for violations of the Act at West Hawaii Sanitary Landfill ("West Hawaii Landfill" or "Landfill") located at 71-1111 Queen Kahumanu Hwy., Waikoloa, Hawaii. The authority of the Administrator of the United States Environmental Protection Agency ("EPA") to issue an NOV pursuant to Section 113(a) of the Act, 42 U.S.C. § 7413(a), has been delegated to the Regional Administrator, EPA Region IX, and redelegated to the Director, Air Division, EPA Region IX.

STATUTORY AND REGULATORY AUTHORITY

1. Section 111(b)(1)(A) of the Act, 42 U.S.C. § 7411(b)(1)(A), requires EPA to publish a list of

categories of stationary sources that emit or may emit any air pollutant. The list must include any categories of sources which are determined to cause, or significantly contribute to, air pollution which may be reasonably anticipated to endanger public health or welfare. "New source[s]" are defined as stationary sources, the construction or modification of which is commenced after the publication of the regulations or proposed regulations prescribing a standard of performance applicable to such source. 42 U.S.C. § 7411(a). These standards are known as New Source Performance Standards ("NSPS").

2. Section 111(e) of the Act, 42 U.S.C. § 7411(e), prohibits an owner or operator of a new source from operating that source in violation of an NSPS.

3. Pursuant to Section 111(b)(1)(A) of the Act, 42 U.S.C. § 7411(b)(1)(A), and at 40 C.F.R. § 60.16, EPA has identified municipal solid waste landfills as one category of stationary sources that cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. EPA also promulgated the Standards of Performance for Municipal Solid Waste Landfills ("NSPS Subpart WWW" or "Subpart WWW"), at 40 C.F.R. Part 60, Subpart WWW, §§ 60.750 - 60.759, effective March 12, 1996.

4. NSPS Subpart WWW applies to each municipal solid waste landfill ("MSW landfill" or "landfill") that commenced

construction, reconstruction or modification on or after May 30, 1991.

5. Pursuant to NSPS Subpart WWW, each owner or operator of an MSW landfill having a design capacity ≥ 2.5 million megagrams ("Mg") and 2.5 million cubic meters ("m^3") must calculate its nonmethane organic compounds ("NMOC") emissions potential using procedures specified in 40 C.F.R. § 60.754 and report the results to EPA on an annual basis. *See* 40 C.F.R. §§ 60.752(b) and 60.757(b)(1).

6. The annual NMOC emission rate emission rate report must include all the data, calculations, sample reports and measurements used to estimate annual emissions. 40 C.F.R. § 60.757(b)(2).

7. If the calculated NMOC emissions ≥ 50 Mg/yr, the owner or operator must submit a gas collection and control design plan ("design plan") within 1 year, and install a gas collection and control system ("GCCS") within 30 months of the first report indicating emissions ≥ 50 Mg NMOC/yr, unless the landfill performs Tier 2 or 3 measurements that show NMOC emissions < 50 Mg/yr. *See* 40 C.F.R. §§ 60.752(b) and 60.757(c).

8. If the calculated NMOC emissions > 50 Mg/yr and the owner or operator elects to perform Tier 2 NMOC sampling and analysis pursuant to 40 C.F.R. § 60.754(a)(3), a revised NMOC emission rate report, with the recalculated emission rate, based on Tier 2 sampling and analysis, must be submitted to EPA within

180 days of the first calculated exceedance of 50 Mg/yr. *See* 40 C.F.R. § 60.757(c)(1).

9. On January 30, 2006, EPA delegated authority to implement and enforce NSPS Subpart WWW to the State of Hawaii, Department of Health.

10. Pursuant to Section 502(a) of the Act, sources subject to regulation under Section 111 of the Act (NSPS) must obtain an operating permit under Title V of the CAA, unless the source category is exempted by EPA.

11. Pursuant to 40 C.F.R. § 60.752(b), the owner or operator of an MSW landfill that is subject to NSPS Subpart WWW with a design capacity $\geq$ 2.5 million Mg and 2.5 million m^3 is subject to part 70 or 71 permitting requirements. *See also* 40 C.F.R. § 60.752(c).

12. Forty C.F.R. § 70.5(a)(1) requires a source applying for a part 70 permit for the first time to submit an application within 12 months after the source becomes subject to the part 70 permit program.

FINDING OF VIOLATION

13. The West Hawaii Landfill commenced construction on or after May 30, 1991.

14. Beginning March 12, 1996, the Landfill became subject to NSPS Subpart WWW.

15. On March 12, 1996, the Landfill had a design capacity that exceeded 2.5 million Mg and 2.5 million m^3.

16. On June 9, 1996, WMH submitted an Initial Design Capacity Report and Initial NMOC Emission Rate Report

(collectively, "Initial Report") for the Landfill to EPA pursuant to 40 C.F.R. §§ 60.757(a)(1), 60.757(a)(2) and 60.757(b).

17. In the Initial Report for the Landfill, submitted by WMH to EPA on June 9, 1996, Tier 1 calculations indicated that the NMOC emission rate < 50 Mg/yr.

18. WMH or CH was required to submit Annual NMOC Emission Rate Reports for 2001, 2002, 2003, 2004 and 2005 to EPA on an annual basis.

19. WMH and CH failed to submit Annual NMOC Emission Rate Reports for 2001, 2002, 2003, 2004 and 2005 to EPA on an annual basis.

20. The failure of WMH and CH to submit Annual NMOC Emission Rate Reports for 2001, 2002, 2003, 2004 and 2005 to EPA on an annual basis constitutes five (5) violations of Section 111 of the Act and 40 C.F.R. § 60.757(b).

21. On August 8, 2005, WMH completed Tier 1 calculations for the Landfill that revealed an NMOC emission rate $\geq$ 50 Mg/yr in 2002.

22. WMH has elected to recalculate the NMOC emission rate for the Landfill pursuant to Tier 2 sampling and analysis, but, to date, has not submitted a revised NMOC emission rate report to EPA.

23. WMH and CH failed to submit a revised NMOC emission rate report based on Tier 2 sampling and analysis for the Landfill within 180 days of June 9, 2002, or by December 9, 2002.

24. WMH and CH also failed to submit a design plan for the Landfill to EPA with one year of June 9, 2002 or by June 9, 2003, and failed to install a GCCS within 30 months of June 9, 2002 or by December 9, 2004.

25. The failures of WMH and CH described in the preceding two paragraphs constitute a violation of Section 111 of the Act and 40 C.F.R. § 60.757(c).

26. Pursuant to 40 C.F.R. § 70.5(a)(1), WMH or CH was required to submit an application for a part 70 permit for the Landfill within 1 year of March 12, 1996, or by March 12, 1997.

27. On June 19, 2001, CH submitted its first part 70 permit application for the Landfill.

28. WMH and CH violated 40 C.F.R. §70.5 by failing to submit the first part 70 permit application for the Landfill by March 12, 1997.

ENFORCEMENT

29. Section 113(a)(3) of the Act provides that whenever EPA finds that any person has violated, or is in violation of, any requirement or prohibition of, *inter alia*, subchapter I or V of the Act, including, but not limited to, any requirement or prohibition of any rule promulgated under Sections 111 or 502 of the Act, EPA may,

- issue an administrative penalty order pursuant to Section 113(d) for civil administrative penalties of up to $ 32,500 per day of violation, or

- issue an order requiring such person to comply with such requirement or prohibition, or
- bring a civil action pursuant to Section 113(b) for injunctive relief and/or civil penalties of not more than $ 32,500 per day for each violation.

42 U.S.C. § 7413(a)(3), as amended by Pub. L. 104-134. Furthermore, for any person who knowingly violates a requirement or prohibition of Sections 111 or 502 of the Act, Section 113(c) provides for criminal penalties or imprisonment, or both. In addition, under Section 306(a), the regulations promulgated thereunder (40 C.F.R. Part 32), and Executive Order 11738, facilities to be used in federal contracts, grants, and loans must be in full compliance with the Act and all regulations promulgated pursuant to it. Violation of the Act may result in the subject facility being declared ineligible for participation in any federal contract, grant, or loan.

PENALTY ASSESSMENT CRITERIA

Section 113(e)(1) of the Act states that the Administrator or a court, as appropriate, shall, in determining the amount of any penalty to be assessed, take into consideration (in addition to such other factors as justice may require) the size of the business, the economic impact of the penalty on the business, the violator's full compliance history and good faith efforts to comply, the duration of the violation as established by any credible evidence (including evidence other than the applicable test method), payment by the violator of penalties previously assessed for the same violation, the economic benefit of noncompliance, and the seriousness of the violation. Section 113(e)(2) of the Act allows the Administrator or a court to assess a penalty for each day of violation.

OPPORTUNITY FOR CONFERENCE

WMH and/or CH may, upon request, confer with EPA. The conference will enable WMH and/or CH to present evidence bearing on the finding of violation, the nature of the violation, and any efforts it may have taken or proposes to take to achieve compliance. WMH and/or CH may be represented by counsel. A request for a conference must be made within ten (10) working days of receipt of this NOV. The request for a conference or other inquiries concerning the NOV should be made in writing to:

Brian P. Riedel (ORC-2)
Office of Regional Counsel
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3924
facsimile (415) 947-3570

4-4-06
Date

Deborah Jordan
Director, Air Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

In the Matter of:

Waste Management of Hawaii, Inc.
92-460 Farrington Highway
Kapolei, Hawaii 96707

City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Proceeding under Section 113 of
the Clean Air Act,
42 U.S.C. § 7413

Docket No. R9-06-06

Finding and
Notice of Violation

This Finding and Notice of Violation ("NOV") is issued pursuant to the authority of Section 113 of the Clean Air Act, 42 U.S.C. §§ 7401-7671q (the "Act") to Waste Management of Hawaii, Inc. ("WMH") and the City and County of Honolulu ("CCH") for violations of the Act at Waimanalo Gulch Municipal Solid Waste Landfill ("Waimanalo Gulch Landfill" or "Landfill") located at 92-460 Farrington Highway, Kapolei, Oahu, Hawaii. The authority of the Administrator of the United States Environmental Protection Agency ("EPA") to issue an NOV pursuant to Section 113(a) of the Act, 42 U.S.C. § 7413(a), has been delegated to the Regional Administrator, EPA Region IX, and redelegated to the Director, Air Division, EPA Region IX.

STATUTORY AND REGULATORY AUTHORITY

1. Section 111(b)(1)(A) of the Act, 42 U.S.C.

§ 7411(b)(1)(A), requires EPA to publish a list of categories of stationary sources that emit or may emit any air pollutant. The list must include any categories of sources which are determined to cause, or significantly contribute to, air pollution which may be reasonably anticipated to endanger public health or welfare. "New source[s]" are defined as stationary sources, the construction or modification of which is commenced after the publication of the regulations or proposed regulations prescribing a standard of performance applicable to such source. 42 U.S.C. § 7411(a). These standards are known as New Source Performance Standards ("NSPS").

2. Section 111(e) of the Act, 42 U.S.C. § 7411(e), prohibits an owner or operator of a new source from operating that source in violation of an NSPS.

3. Pursuant to Section 111(b)(1)(A) of the Act, 42 U.S.C. § 7411(b)(1)(A), and at 40 C.F.R. § 60.16, EPA has identified municipal solid waste ("MSW") landfills as one category of stationary sources that cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. EPA also promulgated the Standards of Performance for Municipal Solid Waste Landfills ("NSPS Subpart WWW" or "Subpart WWW"), at 40 C.F.R. Part 60, Subpart WWW, §§ 60.750 - 60.759, effective March 12, 1996.

4. NSPS Subpart WWW applies to each MSW landfill that

commenced construction, reconstruction or modification on or after May 30, 1991.

5. Pursuant to NSPS Subpart WWW, each owner or operator of an MSW landfill having a design capacity ≥ 2.5 million megagrams ("Mg") and 2.5 million cubic meters ("m^3") must calculate its nonmethane organic compounds ("NMOC") emissions potential using the Tier 1 calculations at 40 C.F.R. § 60.754 and report the results to EPA. If this report indicates NMOC emissions ≥ 50 Mg/yr, the owner or operator must submit a collection and control design plan ("design plan"), prepared by a professional engineer, to EPA within 1 year, and install a gas collection and control system ("GCCS") within 30 months of the first report indicating emissions ≥ 50 Mg NMOC/yr, unless the landfill performs Tier 2 or 3 measurements that show NMOC emissions < 50 Mg/yr. *See* 40 C.F.R. §§ 60.752(b) and 60.757(c).

6. A GCCS installed in accordance with 40 C.F.R. § 60.752(b)(2) must meet the design and operation requirements of 40 C.F.R. §§ 60.752(b)(2)(ii) and 60.752(b)(2)(iii).

7. On January 30, 2006, EPA delegated authority to implement and enforce NSPS Subpart WWW to the State of Hawaii, Department of Health.

FINDING OF VIOLATION

8. The Waimanalo Gulch Landfill is owned by CCH and operated by WMH.

9. The Waimanalo Gulch Landfill commenced modification after May 30, 1991.

10. Beginning March 12, 1996, the Landfill became subject to NSPS Subpart WWW.

11. On March 12, 1996, the Landfill had a design capacity $\geq$ 2.5 million Mg and 2.5 million m^3.

12. On June 9, 1996, WMH submitted an Initial Design Capacity Report and Initial NMOC Emission Rate Report (collectively, "Initial Report") for the Landfill to EPA pursuant to 40 C.F.R. §§ 60.757(a)(1), 60.757(a)(2) and 60.757(b).

13. The Initial Report for the Landfill, submitted by WMH to EPA on June 9, 1996, is the first report in which the Landfill had an NMOC emission rate $\geq$ 50 Mg/yr.

14. WMH or CCH was required to either submit a design plan to EPA within 1 year of June 9, 1996, or by June 9, 1997, or perform Tier 2 measurements that show NMOC emissions < 50 Mg/yr and report such results to EPA by December 9, 1996.

15. WMH and CCH failed to submit a design plan to EPA by June 9, 1997.

16. WMH and CCH failed to submit Tier 2 results to EPA by December 9, 1996.

17. WMH and CCH violated Section 111 of the Act, 40 C.F.R. §§ 60.752(b)(2)(i) and 60.757(c) by failing to submit a design plan to EPA by June 9, 1997 or submit Tier 2 recalculations to EPA by December 9, 1996.

18. WMH or CCH was required to install a GCCS for the

Landfill within 30 months of June 9, 1996, or by December 9, 1998.

19. WMH and CCH failed to install a GCCS for the Landfill by December 9, 1998.

20. WMH and CCH violated Section 111 of the Act and 40 C.F.R. § 60.752(b)(2)(ii) by failing to install a GCCS for the Landfill by December 9, 1998.

21. On August 1, 2005, full operation of a GCCS for the Landfill began. However, the GCCS has not complied with, and does not comply with, the design and operation requirements of 40 C.F.R. § 60.752(b)(2). Therefore, WMH and CCH have been in violation, and are considered to be in violation, until WMH and/or CCH establishes continuous compliance with 40 C.F.R. § 60.752(b)(2).

ENFORCEMENT

22. Section 113(a)(3) of the Act provides that whenever EPA finds that any person has violated, or is in violation of, any requirement or prohibition of, *inter alia*, subchapter I or V of the Act, including, but not limited to, any requirement or prohibition of any rule promulgated under Sections 111 or 502 of the Act, EPA may,

- issue an administrative penalty order pursuant to Section 113(d) for civil administrative penalties of up to $ 32,500 per day of violation, or
- issue an order requiring such person to comply with such requirement or prohibition, or

- bring a civil action pursuant to Section 113(b) for injunctive relief and/or civil penalties of not more than $ 32,500 per day for each violation.

42 U.S.C. § 7413(a)(3), as amended by Pub. L. 104-134. Furthermore, for any person who knowingly violates a requirement or prohibition of Sections 111 or 502 of the Act, Section 113(c) provides for criminal penalties or imprisonment, or both. In addition, under Section 306(a), the regulations promulgated thereunder (40 C.F.R. Part 32), and Executive Order 11738, facilities to be used in federal contracts, grants, and loans must be in full compliance with the Act and all regulations promulgated pursuant to it. Violation of the Act may result in the subject facility being declared ineligible for participation in any federal contract, grant, or loan.

PENALTY ASSESSMENT CRITERIA

Section 113(e)(1) of the Act states that the Administrator or a court, as appropriate, shall, in determining the amount of any penalty to be assessed, take into consideration (in addition to such other factors as justice may require) the size of the business, the economic impact of the penalty on the business, the violator's full compliance history and good faith efforts to comply, the duration of the violation as established by any credible evidence (including evidence other than the applicable test method), payment by the violator of penalties previously assessed for the same violation, the economic benefit of noncompliance, and the seriousness of the violation. Section 113(e)(2) of the Act allows the Administrator or a court to assess a penalty for each day of violation. For purposes of determining the number of days of violation, where EPA makes a prima facie showing that the conduct or events giving rise to this violation are likely to have continued or recurred past the date of this NOV, the days of violation shall be presumed to include the date of this NOV and each and every day thereafter until the defendant or respondent establishes that continuous compliance has been achieved, except to the extent that the defendant or respondent can prove by the preponderance of the evidence that there were intervening days during which no violation occurred or that the violation was not continuing in nature.

OPPORTUNITY FOR CONFERENCE

WMH and/or CCH may, upon request, confer with EPA. The conference will enable WMH and/or CCH to present evidence bearing on the finding of violation, the nature of the violation, and any efforts it may have taken or proposes to take to achieve compliance. WMH and/or CCH may be represented by counsel. A request for a conference must be made within ten (10) working days of receipt of this NOV. The request for a conference or other inquiries

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concerning the NOV should be made in writing to:

Brian P. Riedel (ORC-2)
Office of Regional Counsel
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3924
facsimile (415) 947-3570

4.4-06
Date

Deborah Jordan
Director, Air Division

Appendix C

EIS Public Scoping Conducted for the Proposed Expansion of the Waimānalo Gulch Sanitary Landfill, October 2006

Appendix C
EIS Public Scoping

Waimānalo Gulch Sanitary Landfill Lateral Expansion
Waimānalo Gulch, Oahu, Hawaii

October 2006

City & County of Honolulu
Department of Environmental Services
1000 Uluohia Street, 3rd Floor
Kapolei, Hawai'i 96707

R. M. TOWILL CORPORATION
SINCE 1930
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817-4941

1-19777-01

Appendix C

EIS Public Scoping

Waimanalo Gulch Sanitary Landfill Lateral Expansion EIS
Waimānalo Gulch, O‘ahu, Hawai‘i
TMKs: (1) 9-2-003: 072 and 073

October 2006

Prepared for:
City & County of Honolulu
Department of Environmental Services
Kapolei, Hawaii 96707

Prepared by:
R.M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawai‘i 96817

Environmental Impact Statement (EIS)
Public Scoping Summary

1. Background

The Department of Environmental Services (ENV) held a series of four EIS Community Scoping Meetings between July 10 and August 10, 2006 to obtain input on issues that islandwide communities feel should be addressed in the preparation of the EIS for the expansion of the Waimanalo Gulch Sanitary Landfill. Waimanalo Gulch is located close to the boundaries of the Nanakuli and Ewa regions of Oahu but is used islandwide by all Oahu communities for the disposal of municipal refuse. The series of public scoping meetings were therefore convened to obtain input from the communities closest to the landfill, as well as other communities that are important users of the facility. The meetings were held on the following dates and at the following locations:

Mtg. No. 1	July 10, 2006	Nanakuli High and Intermediate School 98-980 Nanakuli Avenue Waianae, Hawaii 96792
Mtg. No. 2	July 11, 2006	Benjamin Parker Elementary School 45-259 Waikalua Road Kaneohe, Hawaii 96744
Mtg. No. 3	July 27, 2006	Mission Memorial Auditorium 550 South King Street Honolulu, Hawaii 96813
Mtg. No. 4	August 10, 2006[1]	Kapolei Hale 1000 Uluohia Street Kapolei, Hawaii 96707

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[1] The date for this meeting was changed from a previous date on July 26th that conflicted with the scheduling of Neighborhood Board No. 34, Makakilo/Kapolei.

2. EIS Public Scoping Meeting Agenda

Each of the four public scoping sessions was conducted by a meeting facilitator who explained that the purpose of the meetings are to obtain community input on environmental issues that the public feels should be addressed in the preparation of the project EIS. The agenda used for the meetings included:

A. An overview of the purpose of the meeting;
B. Remarks by the Department of Environmental Services (ENV) concerning the need for the project and important events that have transpired since the last EIS for the expansion of Waimanalo Gulch was approved in 2003;
C. A session during the meeting when the community provides comments on issues or subject areas that they feel should be addressed in the EIS;
D. A session summarizing the input provided by the community during the last 15-30 minutes of the meeting; and
E. Adjournment and "Thank You" to audience for attendance.

3. List of Participants and Summary of Issues and Concerns Raised

A record of each of the four meetings is attached and includes the date of the meeting, the sign-in list of meeting attendees, and written comments that were received by the close of the EIS Public Scoping comment period on August 30, 2006.

4. Summary of Issues by Topic Area

A combined summary list incorporating comments received from the four meetings are attached. Bulleted comments that are in bold are those received in writing that do not duplicate what was already provided by the community.

Meeting No. 1
Nanakuli High and Intermediate School
Monday, July 10, 2006

Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
[✓ July 10] 11, 2006
Nanakuli High and Intermediate School/Benjamin Parker Elementary School

	NAME	Address	Phone No.	E-mail Address
1	Bud Ebel EBEL	84-854 FRICKE St	696-8106	bud96792@hotmail.com
2	Lee Munson	Ko Olina	924-2345	lmunsonusa@aol.
3	Mary Josue	89-407 Mokiawe St	668 1423	ladyhands1st@hawaii.rr.com
4	Romeo Monces	Ko Olina Kai	671-2890	romeo@royalhawaiianresort.com
5	Harry Basso	89-246 PUAAG	668 5417	
6	Nina Fisher	89-639 Nanakuli		
7	Uluna Kinilau	"		
8	Hanalei Aipoalani	89-308 Mokiawe St	351-3989	haipoalani@yahoo.com
9	CLARA BATONGBACAL	87-140 Helelua ST #2		cbatongbac01@hawaiiantel.ne
10	RALPH F. HARRIS	92-1527-H Aliinui Dr	440-8999	Ralph.Harris@Kolina
11	TODD APO	92-1184 OLANI ST	680-7660	TAPO@HONOLULU.GOV
12	Cynthia K.L. Rezentes	87-149 Maipela St.	696-0131	rezentesc@aol.com
13	Kamaki Kanahele	89-237 Kawali	696-1515	
14	Agnes Cope	" "	" "	
15	Ken Williams	92-1480 Aliinui	6712512	ken@koolina.com
16	Carolyn Holmes	84-192 Kepue	695 5069	Carolyn@wisconsultingllc.com
17	Mapuana Tector	85-832 Old Gov Rd	696 7812	Mapuana@Hawaii.edu
18	Kahilaina Naomi	89-416 Nanakuli Ave	668-1039	
19	Kahilaina Michael P.	"	"	"
20	Terrie Spottkaeff	PO Box 1888 Waianae 96792	3064164	tspottkaeff@AOL.com

Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
July 10-11, 2006
Nanakuli High and Intermediate School/Benjamin Parker Elementary School

	NAME	Address	Phone No.	E-mail Address
1	Johnnie-Mae L. Perry	Waianae	—	—
2	Herb. Hew Len	86-313 Hokupaa	Waianae	
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COMMENT FORM
Waimanalo Gulch Sanitary Landfill Expansion
Public Scoping Meeting for Environmental Impact Statement (EIS)
July 10-11, 2006

Your comments are important and appreciated. Please use this form to make your comments regarding issues or concerns pertinent to the preparation of the EIS for this project. All comments should be received by **August 10, 2006. Please send to:**

Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212, Kapolei, Hawaii 96707

It is very frustrating to have been involved in mtgs. of city council hearings & testimony for several years now and then to gear up for battle again ??
The community has said "No More Landfill!" When will the City get the message - No Landfill - Yes JDI Plasma Arc Gasification!! Stop thinking about the money - think & look at our community, our families health & safety - How about designating landfills for East / Windward & Central Areas - WE always take everybody's opala - Seriously, JDI can eliminate alot of this "opala mea" plus renewable energy for who? us, the people - Address our health, safety concerns
Stop looking at ~~th~~ money, give us a chance - look at "JDI plasma arc gasification"! People take time to voice their concern - Are you all hearing them?? STOP Landfills!!

Name: Naomi Kahikina

Address: 89-416 Nanakuli Ave

Telephone: 668-1033 Fax:

COMMENT FORM

Waimanalo Gulch Sanitary Landfill Expansion
Public Scoping Meeting for Environmental Impact Statement (EIS)
July 10-11, 2006

Your comments are important and appreciated. Please use this form to make your comments regarding issues or concerns pertinent to the preparation of the EIS for this project. All comments should be received by **August 10, 2006. Please send to**:

Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212, Kapolei, Hawaii 96707

Waimanalo Gulch Issues:

o Health concerns
  1. Unknown effects to the land, water + air
  2. Who is liable is people get sick or hurt? City? Private?
  3. Community ~~of~~ has ~~no~~ right to sue?

o Community Benefits;
  1. What community benefits? Who defines?
  2. Who and how selection to committee is done?
  3. Not living up to agreement with community in closure.

o Alternative Processing;
  1. Plasma Arc Gasification
     Jacoby Inc.

Name: Representative Michael P. Kahikina

Address: 89-416 Nanakuli Ave.

Telephone: 668-1033 Fax: 586-8469

Meeting No. 2

Benjamin Parker Elementary School

Tuesday, July 11, 2006

Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
July 10-11, 2006
Nanakuli High and Intermediate School/Benjamin Parker Elementary School

	NAME	Address	Phone No.	E-mail Address
1	Shirley Foley	3926 Waokanaka St.	780-7774	foleyhawaii@aol.com
2	Sonia W. Yick	email - jsoniqwy@aol.com		
3	Bill Sager	bsager@lava.net		
4	Ron Boyle	47-128 Pulama Rd Kaneohe 96744	239 5621	boyler@rr.hawaii
5	Ken Williams	92-1480 Aliinui	6712512	ken@koolina.com
6	STANN REIZISS	KAILUA PO Box 1517	230-8199	REIZISS@CCHONO.COM
7	Lucy Gay	86-088 Farrington Hwy	696-6378	lucy@hawaii.edu
8	SUSAN BIACA	47459 HUI IWA	3921416	SUEBIACA @HOTMAIL
9	Andrew Malahoff	503 S. King St.	527-5813	amalahoff@honolulu.gov
10	Uhane Kinilau	85-639 Nanakuli Ave		
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COMMENT FORM
Waimanalo Gulch Sanitary Landfill Expansion
Public Scoping Meeting for Environmental Impact Statement (EIS)
July 10-11, 2006

Your comments are important and appreciated. Please use this form to make your comments regarding issues or concerns pertinent to the preparation of the EIS for this project. All comments should be received by **August 10, 2006. Please send to:**

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1000 Uluohia Street, Suite 212, Kapolei, Hawaii 96707

I support the full use of the Waimanalo Site before any other site is considered. Any thing else would be a terrible waste of money & resources.

Incorporate a comprehensive waste management program to minimize waste stream which needs to be land filled. Include analysis in EIS.

Address problem of fire burning deep into landfill & being impossible to put out.

Address issue of vegetation to be used when landfill is closed. Impact of hydromulch

Name: Bill Sager

Address: 44-211 Mikiola Dr, Kaneohe, HI 96744

Telephone: 235-0757

Fax: bsager@lava.net

Meeting No. 3
Mission Memorial Auditorium
Thursday, July 27, 2006

Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
July 27 - August 10, 2006
Mission Memorial Auditorium/Kapolei Hale

	NAME	Address	Phone No.	E-mail Address
1	Paul Herran	1301 Lusitana St. #611	383-8829	pherran@honolulu.gov
2	JIM CORCORAN	KAILUA 1171 LUNA'APONO PL	263-3093	corcoran@lava.net
3	ROY SOON	39 MAKAWELI ST.	396-5613	
4	Rod Ohira	Honolulu Advertiser		
5	TODD APO	530 S. KING	5477001	
6	ROBERT KAIALAU III	565 KOKEA ST. D-7 Hon 96817	3069747	—
7	Randy Ching	#818 1560 Kanunu St	942-0145	oahurandy@yahoo.com
8	Cynthia K.L. Rezentes	96792 87-149 Maipela St.	696-0131	rezentesc@aol.com
9	Uluwe Kinilau	89-639 Nanakuli Ave.		
10	Kyle Kajihiro	2426 Oahu Ave	988 6266	KKajihiro@afsc.org
11				
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Meeting No. 4
Kapolei Hale
Thursday, August 10, 2006

Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
July 27 - August 10, 2006
Mission Memorial Auditorium/Kapolei Hale

	NAME	Address	Phone No.	E-mail Address
1	BUD EBEL	84-854 FRICKE ST.	696-8164	bud96792@hotmail.com
2	James Kayhi	89-796 ILIMAPAPA PL	668-9912	
3	Cameron Nekota	1917 Colburn St.	358-2792	Cameron@hawaii.edu
4	Mike Freitas	92-1489 Hoalii	391-3702	MikeFAloha@Yahoo.COM
5	Ralph Harris	92-1527-H Aliinui	679-0085	Ralph.Harris@Koolina.Com
6	Ken Williams	92-1480 Aliinui	671 2512	ken@koolina.com
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Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
July 27 - August 10, 2006
Mission Memorial Auditorium/Kapolei Hale

	NAME	Address	Phone No.	E-mail Address
1	ROBERT H. KAIALAU	545 KOKEA ST. Hon Hi 96817	8083069727	—
2	DAVID Leong	1338 kawelokast P.C.	3516714	
3	ROBERT STRATTON	87-207 WAIOLU	265-2784	
4	BRYAN HA'O		732-9751	
5.	CHUCK & JENNIFER BENEKE	92-958 PANANA ST #27	672-8087	nobene8@aol.com
6	Michael Kaluhiwa	89-416 Nanakuli Ave Nanakuli, Hi 96792	668-1033	mkaluhiwa@bgch.com
7	GREGORY FUJITA	92-608 MALAHUNA LP KAPOLEI, HI 96707	682-4889	fujitag@msn.com
8	Beverly Munson	590 Farrington Hwy Ste 524 Kapolei, HI 96707	[illegible]	
9	Lee Munson	"	"	
10	Kuulei Jolonino	92-769 Paakai St. Kapolei 96707	682-3002 (h) 542-0628 (c)	Kuulaij@aol.com
11	STEVE KELLY	1001 KAMOKILA #255 KAPOLEI 96707	674-3289	stevek@kapolei.com
12	Cynthia K.L. Rezentes	87-149 Maipela St. Waianae Hi 96792	696-0131	rezentesc@aol.com
13	~~PAT CHARDON~~	~~92-363 KAAIOHA ST~~ KAPOLEI	~~693-6020~~	
14	~~LORRAINE MARTINEZ~~			
15	TODD APO	530 S. King St Hon 96813	547-7001	TAPO@HONOLULU.GOV

Public Scoping Meeting for Preparation of EIS
Waimanalo Gulch Sanitary Landfill Expansion
July 27 - August 10, 2006
Mission Memorial Auditorium/Kapolei Hale

	NAME	Address	Phone No.	E-mail Address
1	Maeda Timson	Kapolei Neighborhood Board		
2	C. Manu DeLaCruz	Villages of Kapolei Board		
3	Michael & Pam Anderson	Nanakuli A1+		
4	Robert Webster	91-1741 Hanua St. Kapolei	682-0201	
5	Lehua Kinilau	89-639 Nanakuli		
6	Colleen Hanabusa	[illegible]		
7	Hanalei Aipoalani	Nanakuli, HI		
8	Nalani Aipoalani-Tuiai-Tiotio	Heleloa		
9	Todd Upton	91-1067 Makahuna	561-3802	
10	Kelli Upton	↓	↓	
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Bud Ebel Republican Candidate For The 45th District House Representatives

The Landfill ! - Just a short time ago the C&C of Honolulu was under the threat of huge fines (perhaps millions of dollars) for the operation and illegal continued use of the Waimanalo Gulch landfill by the EPA, State of Hawaii and some private watchdog groups threatening legal action.

First lets get it straight ! The government will never pay a dime in fines ! Only the tax payers have that privilege.

The latest proposal is an offer by the Waste Management Co. to take over operation of the gulch from the C&C of Honolulu which has by some miracle found room for 15 years of trash storage at the site.

Needless to say the residents of the west coast are a bit perturbed.

I am fully cognizant of the fact that trash removal services are the responsibility of the county.

However as a candidate for the 45th district State House the questions about the landfill are unavoidable and must be addressed.

My Solution

Legislation being passed requiring each council district to be responsible for the trash from their district being buried in their district. If the residents of the Districts will not consent to a landfill in their district it may be buried in the Waimanalo gulch at an additional tipping charge. These charges must be of sufficient rate as to (A) encourage each district to be responsible for their trash or (B) be adequate enough for the residents of the 1st district to accept the trash from any other districts. These monies would be used for the sole benefit of the legal residents of the 1st district and only them. They could be used to offset property taxes, utility charges or many other lawful use as provided by law.

The most important safeguard would be strict accounting and keeping these monies out of the hands of any but the legal beneficiaries.

Respectfully submitted for discussion. Bud Ebel republican candidate 45th house district

Robert H Kaialau III
565 Kokea Street, Suite D7 ❖ Honolulu, HI 96817
(808) 306-9787 ❖ robert@fightdrugs.us

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10 August 2006

City and County of Honolulu
Department of Environmental Services – Refuse Division
1000 Uluohia Street, Suite 212
Kapolei, HI 96707

RE: **Waimanalo Gulch Sanitary Landfill Expansion – EIS Public Scoping Meeting**

I am Robert H Kaialau III, and I am testifying in opposition to the proposed expansion and permit extension for the Waimanalo Gulch Sanitary Landfill.

On Friday, February 3, 2006 the Honolulu Star Bulletin reported on the $2.8 million dollar fine imposed by the State Department of Health on the City and County of Honolulu and its landfill operator Waste Management, Inc. for permit violations at the Waimanalo Gulch Sanitary Landfill. To date, the public has yet to be advised of the final disposition of those fines. Have they been paid? How have the violations cited in the order been addressed?

The information provided in the Star Bulletin article validated long-held concerns by the community. In addition to the multiple environmental, health and safety threats attributable to the existing landfill – the management company contracted to operate the landfill, is unable to properly and consistently adhere to the requirements of the state issued DOH Solid Waste and LUC Special Use permits.

Mayor Hannemann's veto of Bill 37, CD 2 presented a list of "indisputable facts". Of these, the assertion that 1) the City cannot have a new landfill in operation by May 1, 2008 and 2) for the *foreseeable* future, the City "needs" a landfill on island are both inaccurate and misleading.

Before any approval of the requested permits are considered, the City and County of Honolulu's administration must be required to demonstrate the following:

1. The timely completion of the long delayed Integrated Solid Waste Management Plan, which was to have been completed and submitted to the Honolulu City Council for review and approval in 2003.
2. The issuance of a "Request for Proposals" notice and initiation of the review process for the consideration of alternative MSW processing technologies by October 2006 as stated by Director Takamura at the last City Council Public Works committee meeting held on July 27, 2006 .
3. The presentation of a plan to the Honolulu City Council for the execution of a long overdue comprehensive and mandatory island-wide Recycling program by December 2006.
4. A detailed, comprehensive closure plan for the existing Waimanalo Gulch landfill site irrespective of the proposed closure date. The plan must include details on required permits for closure, the identification of the authorizing government agencies and the listing of required monitoring activities after the closure process is complete.

In closing, it is my desire to provide the decision making body reviewing the proposed application with an additional perspective and a few requirement considerations regarding the existing landfill.

Thank you for this opportunity to provide my testimony.

Sincerely,

Robert H. Kaialau III

Robert H Kaialau, III

Additional Letters Received

Wm. Anderson and Sara Barnes
92-1001 Aliinui Drive
Kapolei, HI 96707

City & County of Honolulu
Department of Environmental Services, Refuse Division
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

Re: Waimanalo Gulch Landfill Hearing

Dear City and County Leaders:

As residents of Kai Lani at Ko Olina, we are writing to urge that you not expand the landfill at Waimanalo Gulch either temporarily or permanently. Indeed, we urge you to close the landfill as you originally promised.

We are subject to excessive dust, blowing plastic bags and garbage, increased truck traffic and noise on the highway, and at times, sickening smells due to the landfills current location and activities.

We understand the need to have landfills. As a Texas friend of mine said recently: "Everyone wants to have their trash picked up, but nobody wants to have it put down." And so, on a positive note, we think that there are three things that need to be done to address the trash/garbage problem.

1. Immediately start easy-to-use, comprehensive recycling programs throughout the island. After all, this is an island and our land and resources are even more precious here than on continental places in the world. Glass, plastic, metal and newspapers should all go into one bin and be picked up and sorted for recycling.
2. Start innovative programs to encourage us all to use less and re-use what we have. Get the business community involved in this effort. (For example: How many shoppers throw out their plastic grocery store bags? How many return them for recycling? How reuse them several times before they do any of the above? How many use cloth bags instead? Couldn't Safeway do some inexpensive consciousness raising about this?) The city and county of Honolulu and its business community could and should become a national and international leader in this area.
3. With the latest innovative technology in mind, open a new landfill at another site on another part of the island. Start over the right way. We know that this is a political challenge, but done right, it will help to teach us all – on all sides of the island - to be better stewards of the land; educate us in the latest landfill technologies; and say to the people of the Wai'anae Coast that you value this area and do not see it - or its people - as a place of garbage.

Wm. Anderson and Sara Barnes
92-1001 Aliinui Drive
Kapolei, HI 96707

We urge you to honor your previous commitment to close the landfill. We urge you not to expand it, either temporarily or permanently. We urge you to exert your leadership in being good stewards of the land and give us easy-to-accomplish incentives to re-use and recycle.

In order to remain economically viable, Honolulu must grow, but it must grow in a sustainable way. Thank you for your service to us all and for considering these comments.

Sincerely,

WABarnes
Sara Barnes
Wm. Anderson and Sara Barnes

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 692-5159 • FAX: (808) 692-5113 • WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 06-046

August 16, 2006

Mr. William Anderson and Ms. Sara Barnes
92-1001 Aliinui Drive
Kapolei, Hawaii 96707

Dear Mr. Anderson and Ms. Barnes:

Thank you for your letter regarding the Waimanalo Gulch Sanitary Landfill.

We appreciate your understanding of the need for landfills as part of our integrated solid waste management program. Our goal is to significantly reduce the volume of waste going to landfill. Over the past years our H-POWER facility has been the primary operation to meet this goal. We intend to further expand our waste-to-energy capability.

The collection of residential and commercial separated green waste for delivery and recycling to compost is another major diversion from landfill undertaking. Our sludge composting program will soon become operational. This material will also be diverted. Other materials under consideration for diversion include e-waste, mattresses, and carpet, which may better be recycled on the mainland.

As you know, we are preparing the EIS for the Waimanalo Gulch Sanitary Landfill. The community scoping meetings are part of the process and your letter will be forwarded for inclusion in the comments. We also have initiated a landfill oversight advisory committee to assist us in assuring that Waste Management Inc. continues to improve their operations.

We are proceeding in a deliberate and professional manner to manage our solid waste. Your input is again appreciated.

Sincerely,

k Dr. Eric S. Takamura, P.E.
Director

cc: RM Towill w/attachment

MAKAIWA HILLS LLC

James Campbell Building, Suite 250
1001 Kamokila Boulevard
Kapolei, Hawaii 96707
Tel 808 674-3541 / Fax 808 674-3111

August 29, 2006

City & County of Honolulu
Department of Environmental Services, Refuse Division
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707.

To Whom It May Concern:

Subject: Comments on Proposed Waimanalo Gulch Landfill Expansion EIS

Makaiwa Hills, LLC is the fee owner of approximately 1,700 acres of property located on the eastern boundary of the Waimanalo Gulch Sanitary Landfill ("Waimanalo Gulch"). It has come to our attention that certain blasting and grading activity has been occurring, and is planned as part of the proposed expansion, along the shared property line between Waimanalo Gulch and Makaiwa Hills. We are concerned that this type of activity could threaten the structural integrity of Makaiwa Hills, LLC property. Based on the foregoing, we request the Environmental Impact Statement ("EIS") address the following issues:

- Structural integrity of the slope along the shared property line.
- Appropriate blasting and grading setbacks from the shared property line.
- Proposed operations near the shared property line and line of sight to these operations.
- Proposed access points for any expansion of Waimanalo Gulch near the shared property line.
- The eventual height of Waimanalo Gulch along the shared property line.
- The distance from the top of slope that is being manufactured as part of the landfill to the shared property line.

Thank you for the opportunity to comment on the proposed EIS.

Sincerely,

Steve Kelly, AICP
Manager
Entitlements and Infrastructure

26034500\K10005

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELELPHONE: (808) 692-5159 • FAX: (808) 692-5113 • WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 06-068

October 16, 2006

Mr. Steve Kelly, AICP
Manager
Entitlements and Infrastructure
Makaiwa Hills LLC
James Campbell Building, Suite 250
1001 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Mr. Kelly:

Thank you. We received your written comments. We will incorporate the issues determined to be relevant within the environmental impact statement process.

Sincerely,

Eric S. Takamura

Dr. Eric S. Takamura, P.E.
Director

cc: Brian Takeda- RM Towill
Paul Herran-COR

COMMENT FORM

Waimanalo Gulch Sanitary Landfill Expansion
Public Scoping Meeting for Environmental Impact Statement (EIS)
July 27 - August 10, 2006

Your comments are important and appreciated. Please use this form to make your comments regarding issues or concerns pertinent to the preparation of the EIS for this project. All comments should be received by **August 30, 2006. Please send to**:

Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212, Kapolei, Hawaii 96707

Name: Cynthia K L Rezentes

Address: 87-149 Maipela St, Wai'anae 96792

Telephone: 696-0131
497-1432 (c)

Fax: 696-0131

Cynthia K.L. Rezentes
87-149 Maipela Street
Wai`anae, HI 96792-3154
(808) 696-0131
Email: Rezentesc@aol.com

August 29, 2006

Eric Takamura, Director
Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

RE: Comments Submitted for Environmental Impact Statement Public Scoping for the Proposed Waimanalo Gulch Sanitary Landfill Expansion

Dear Director Takamura:

Thank you for the opportunity to submit public scoping comments regarding the proposed Waimanalo Gulch Sanitary Landfill Expansion Environmental Impact Statement.

I continue to oppose the continuing operation of Waimanalo Gulch Sanitary Landfill beyond the agreed upon date of closure by the City and County of Honolulu in 2003 and as ordered by the State Land Use Commission. This should be the primary position of all concerned with actions taken to fulfill those commitments.

As many of us are aware, the City and County of Honolulu is at a critical point in time in making decisions as to how our municipal solid waste should be managed for future generations. It is imperative that we, as an island community, pursue the best solution for the long-term health and well being of all of the residents of O`ahu. It is with this in mind that I submit the following comments for consideration of inclusion in the proposed Draft Environmental Impact Statement (EIS) for the Waimanalo Gulch Sanitary Landfill (WGSL) to be released in the near future.

1. The EIS needs to address the State Land Use Commission Decision and Order which calls for the closure of the WGSL in May 2008 (which implies no further waste will be accepted at WGSL). This was the date presented by the previous City and County of Honolulu administration.

2. All previous violations as identified in "Department of Health, State of Hawaii v. Waste Management of Hawaii, Inc. and City and County of Honolulu" should be resolved and all challenges concluded prior to the drafting of an EIS for the expansion of WGSL. (In fact, no new permits or permit modifications should be allowed until the violations are addressed and resolved.) Each of the eighteen counts brought against Waste Management of Hawaii, Inc. (WMI) and the City and County of Honolulu (C&C) should be identified and a current status provided within the proposed EIS. Each of the following counts (Taken directly from the Notice and Finding of Violation – Docket No. 05-SHW-SWS-004) should be addressed:
    a. Exceedence of Permitted Grades
    b. Failure to Submit Annual Operating Reports in a Timely Manner
    c. Failure to place daily cover on the active faces of MSW landfill
    d. Failure to place intermediate cover material on the ash monofill
    e. Exceedance of leachate head on the liner in the ash monofill

f. Exceedance of leachate head on the liner in MSW Cell E-1 sump
g. Failure to Measure Leachate and to Maintain Records on Leachate Levels in Cell 4B Sump
h. Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in the Ash Monofill Sump
i. Failure to notify DOH of noncompliance on equipment blockage in MSW Cell 4-B leachate lateral line and inability to measure leachate levels
j. Failure to Notify DOH of Noncompliance in a Timely Manner on the Exceedences of Permit Grades and Submission of the AORs
k. Unauthorized storage of material on the ash monofill
l. Failure to manage and ban the acceptance of special waste
m. Failure to maintain records and record location of asbestos disposal at the landfill
n. Failure to cover a dead animal
o. Failure to Submit Annual Surface Water Management Plan
p. Failure to control the generation of dust from vehicular traffic
q. Failure to minimize free litter generation at the landfill
r. Failure to monitor explosive gases and maintains monitoring records

3. The EIS should clearly define the current state of the WGSL footprint and airspace occupied. This information should include the fact that the permit modification to allow the expansion for the 14.9 acres (to keep the landfill open until 2008) actually redesigned fill slopes and caused portions of the landfill to exceed the fills limits for the ash monofill. The information will provide the baseline of the actual dimensions of the landfill from which the expansion may be measured.

4. The current permitted WGSL footprint and airspace allowances should be completed and a closure plan (including stabilization of the structure) for the current permitted footprint and airspace allowances should be part of the EIS. This closure should include 30-year monitoring as part of the closure plan. This will act to separate the current landfill and any future expansion. This separation of the landfill into two separate permitted footprints with independent safety and monitoring issues effectively should build in a factor of safety thereby not compounding and confusing any future issues or problems that may arise from continued filling contiguous to the current landfill which has received numerous counts of violations in the Notice and Finding of Violation, Docket No. 05-SHW-SWS-004.

5. An explanation needs to be provided as to the conflicting position of the 1984/1985 EIS which stated that only 57+/- of the 200 or so acres owned were feasible for utilization as a landfill due to the slope angles of the hillsides. What conditions have changed to allow additional expansion? Is the quarrying of the mountain the reason for additional volume being available for MSW and monofill ash waste deposits? Has the quarrying effects on the remaining mountain range been analyzed to assure stability of not only the landfill but also the surrounding area? Those calculations should be included in the EIS. Also to be included in the EIS is the design and analysis of material removed and it's impacts on the landfill design (primarily safety issues of stability), if quarrying is the manner in which additional volume is freed up for MSW and monofill waste receipt.

6. Considering the extensive list of violations the current WGSL has received, the EIS needs to clearly identify who is to enforce the conditions of the Planning Commission Approval, LUC Decision and Order, DOH permit and as importantly, who is responsible for adherence to conditions placed on any expansion of the landfill? There needs to be a section on what

guarantees the public have that violations will not occur in the future and what role the public has in providing information regarding violations observed.

7. One of the conditions of the permit was to allow for ridgeline and site views being maintained. Currently, the landfill exceeds the view plains with the approach from Wai`anae to Honolulu. What will be done to rectify that situation and guarantee that this will not happen in the future?

8. There should be clearly identified, separate (physically divided) municipal solid waste (MSW) and ash monofill cells for the expansion

9. There should be a clearly identified location for the disposal of asbestos that is not contained within a MSW or monofill cell. This is required considering the location of the asbestos that has been disposed of in the past cannot be identified with any level of confidence.

10. Considering the violation identifying not having enough or not providing time to complete soil cover as required on a daily basis, the EIS should reflect from where the soil cover will be procured. There should be records kept on when soil cover is received and when it is used via a daily tracking system. In addition, the hours of operation should reflect the time of last disposal versus completion of the day's activities to allow for the soil cover to be done daily.

11. With the new expansion area, there should be separate stormwater retention basins, leachate systems, and methane gas monitoring and collection systems to preclude confusion with current systems and recognized violations assigned to these systems. This would be consistent with closure of the current landfill and the establishment of a new landfill with separate construction analyses, stormwater retention basins, leachate systems, gas monitoring and collection systems, and any other requirements that would need to be followed for a separate landfill.

12. The chemical composition of the ash monofill should be identified and specific issues addressed, i.e. detection of heavy metals, dioxins, furans, etc. and the information should be shared with the public. There should be established an independent testing and recording system.

13. The EIS needs to clearly identify how fugitive trash (e.g. flying plastic bags) will end. This includes fugitive trash that settles on the land or in the near shore waters. What extra measures will be taken when HPOWER (a waste-to-energy generation facility) is down for maintenance and all MSW is diverted to WGSL? As you go further back into the gulch you approach known high wind areas. That information should be included as a factor in the plans provided for fugitive trash control.

14. The EIS needs to define how dust control will be handled. During high wind days not only is fugitive trash a problem but high quantities of dust can be observed swirling above the site. This could create health problems with individuals downwind from the site and should be addressed as a plan on how this will be prevented and controlled in the future.

15. The EIS needs to provide data regarding how the current WGSL is affecting the near shore waters. This needs to include not just during arid times but also when there are significant rain events and what the stormwater runoff contains or how it will all be contained on the property.

16. The EIS needs to address traffic concerns:
    a. No trucks should be parked on Farrington Highway waiting for entrance into the facility
    b. Farrington Highway should not have mud and dirt dropped from exiting trucks (trucks should leave the facility clean)

c. Farrington Highway, fronting the facility, should be regularly cleaned of mud and dirt

17. There needs to be a commitment to maintain the route to WGSL in a clean condition (i.e. no roadside litter).

18. There should be identification of how the WGSL will be maintained facing Farrington Highway, landscaped to reflect surrounding areas, park-like upkeep, greenbelt, set backs, etc. What will this buffer look like to preclude visual impacts?

19. What specific controls will be put into place to address the odors emanating from the site? Will sewage sludge continue to be accepted, thereby adding to the odor concerns expressed in the past? Will it be pretreated or treated once received? A commitment should be made that if sewage sludge is received it will be given a high priority for immediate coverage to minimize the odor problems associated with this type of waste deposit and not wait until the end of the day final soil cover to be applied. The EIS should identify what will be contained in the odor plan and an outline should be listed.

20. There should be a section to specifically address the stability of the expansion. Static stability should discuss the safety factor with which the new expansion will be built and take into consideration and show the calculations used to provide the safety factor for construction (i.e. stability berm). What will be the safety factor (minimum is required to be 1.5 but should be greater, preferably 1.75-2.0).

Deformation characteristics caused by an earthquake need to be discussed including potential liquefaction of the fill and subsequent consequences. Considering the August 28, 2006 earthquake experienced off the east coast of O`ahu at a magnitude between 3 and 4 on the Richter scale and the USGS position that we are in a seismically active region, this is no longer remote theory but a distinct possibility. How will that affect the overall safety factor applied to the structure's construction? There should be a higher safety factor applied to the proposed landfill expansion due to this seismic instability and not the minimum of 1.5 allowed by EPA. What are the alternatives to receiving MSW, monofill or other debris after an earthquake, if an analysis of the integrity of the liner system needs to be investigated? What are the alternatives if the liner system is compromised?

21. There has been a lack of urgency on the part of WMI to provide timely reports, how will that be addressed and how will the reports be made available to the public? I request that they be placed on the C&C webpage for the Environmental Services Division (www.opala.org) since they are public documents. There should be photos with a high resolution (perhaps 5M per photo) at the beginning, middle and end of the day to record the progress made during the depositing of MSW and monofill ash. These photos should be a part of the information made available to the public on the webpage. The C&C should also consider the potential of having a webcam on the operations of the site for recordation of the daily activities.

22. What are the impacts if leachate removal is required again in the future? In the past leachate was removed from WGSL and sent to the Wai`anae Wastewater Treatment Plant which discharges secondary treated water into the offshore waters. What kinds of affects could be expected on the offshore waters, flora or fauna considering leachate, at times contain heavy metals or other undesirable chemicals?

23. A full discussion on alternative methodologies for managing MSW and monofill ash needs to be included in this EIS. Currently, there are two for-profit projects being proposed in the Wai`anae

area to do composting on the organic portion of the MSW collected. The C&C needs to answer why if these projects are profitable for private enterprises, is the C&C not pursing these and other alternative technologies which have been presented, e.g. plasma arc/torch/gasification/vitrification?

24. What is the C&C's plans for recycling and reduction of the waste stream going into WGSL? Curbside recycling, green waste recycling, adding a third boiler to HPOWER, etc?

25. What role does this expansion play in the C&C's Solid Waste Management Plan and what does the plan state as to how the C&C will address landfills in the future considering a very limited number of sites which can qualify for receipt of MSW?

The items identified need to be addressed in addition to the standard requirements as an EIS is prepared. Some of the other standard requirements may include but are not limited to: archaeological impacts, cultural impacts, social impacts, traffic concerns, noise, odor, etc.

The proposed EIS for this expansion of WGSL needs to be as comprehensive as today's knowledge base allows us to have considering the consequences of the action proposed will continue to have effects on our residents for many years to come.

Sincerely,

Cynthia KL Rezentes

Cynthia K.L. Rezentes

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 06-068

October 16, 2006

Ms. Cynthia K.L. Rezentes
87-149 Maipela Street
Waianae, Hawaii 96792

Dear Ms. Rezentes:

Thank you. We received your written comments. We will incorporate the issues determined to be relevant within the environmental impact statement process.

Sincerely,

Dr. Eric S. Takamura, P.E.
Director

cc: Brian Takeda- RM Towill
Paul Herran-COR

State Capitol
415 S. Beretania Street
Honolulu, HI 96813

Hawaii State Senate

Fax

To:	Wilma Namumnart	**From:**	Senator Colleen Hanabusa
Fax:	692-5402	**Pages:**	9, including cover
Phone:	692-5410	**Date:**	08/30/06
Re:	Comments for EIS preparation on expansion of WGSL	**CC:**	

- **Comments:** Submittal via fax.

The Senate
The Twenty-Third Legislature
of the
State of Hawaii

STATE CAPITOL
HONOLULU, HAWAII 96813

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CHIEF CLERK
PAUL T. KAWAGUCHI

August 30, 2006

Department of Environmental Services, Refuse Division
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, HI 96707

RE: Comments for EIS preparation on the Expansion of Waimanalo Gulch Sanitary Landfill

To the Department of Environmental Services, Refuse Division:

The following are my comments which will set forth issues and concerns pertinent to the preparation of an EIS for this project.

Standard To Be Met.

The EIS process is governed by HRS §343. An EIS is:

> §343-2 Definitions. As used in this chapter unless the context otherwise requires: . . .
>
> "Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The statute also sets forth what the Rules must contain, at minimum. HRS §343-6. The legal effect of administrative rules are well settled in this jurisdiction. Administrative Rules are to be followed and given the full effect of law. ***Williams v. Hawaii Medical Service Association,*** 71 Haw. 545, 549, 7984 P.2d 442, 444 (1990). The Supreme Court has clearly stated that arbitrary and capricious application of the Rules will not be tolerated. ***Windward Marine Resorts v. Sullivan,*** 86 Haw. 171, 948 P.2d 592 (ICA 1997).

HAR §11-200-14 through 23 are the requirements in the preparation of Draft and Final Environmental Impact Statements. The "General Provisions" highlight the expectation of the EIS process.

I have grave concerns that you will comply with what is required of an EIS.

The following standard set in ***Life of the Land v. Ariyoshi,*** 59 Haw. 156, 164-165, 577 P.2d 1116 (1978) for a court to determine the sufficiency of an EIS:

> In making such a determination the court is guided by the "rule of reason," under which an EIS need not be exhaustive to the point of discussing all possible details bearing on the proposed action but will be upheld as adequate if it has been compiled in good faith and sets forth sufficient information to enable the decision-maker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. County of Suffolk v. Secretary of Interior, 562 F.2d 1368, 1375 (2d Cir. 1977), cert. den., 434 U.S. 1064, 98 S. Ct. 1238, 55 L. Ed. 2d 764 (1978). [Emphasis added.]

The condition precedent to all EISs is that it be compiled in "good faith" and sets forth sufficient information. The past practice of the City has shown that EISs have not been compiled in good faith and nor does it provide sufficient information.

At the very minimum the City must take its past EISs and explain the discrepancies that have now been found and set forth whatever information it now relies upon to justify its change in position.

The best place to begin is with the discussion as to why we in the community have no rights to rely upon the representation of government that the WGSL will close. This is the position of the community that the WGSL should close.

What Was Represented As To The Closure.

At the outset, the City must explain why it has changed its position from an expansion of only 5 years to now an additional 15 years. I have heard comments from the City that there was never a "promise" to close the WGSL in 5 years; however, this is contrary to the statements made under oath to the Land Use Commission during their hearings on the conditional use permit as well as statements made in the Final Supplemental Environmental Impact Statement (FSEIS) for the 5 year expansion. The LUC was very clear in its questioning as to what the City intended to do. How does the City explain its statement under oath and the change in the FSEIS. A discussion should be had as to whether the City can be bound by its statements under oath like a person.

The EIS must address the following.

1. Waste Management's Contract

An EIS is "meaningless" if it is self-serving and rationalizes an outcome. The contract between Waste Management, Inc. and the City for the operation of WGSL was entered into in 1999 for 15 years. This was two years before the first Draft EIS in 2000; and three years before the FSEIS. At the very minimum, this shows the decision to expand WGSL was a done deal in 1999. Explain this contract and why the City entered into it in 1999. Also explain what was done after the City said the expansion would be for only 5 years. Was the contract amended?

2. Alternatives.

HRS §343-2 defines an EIS as one that discloses, among other items, the "alternatives to the action and their environmental effects."

HAR §11-200-17 addresses the requirement as to alternatives as follows:

> F. The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The section shall include a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions. Particular attention shall be given to alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks. Examples of alternatives include: . . . (Emphasis added.)

Money is not the paramount criteria in arriving at a decision which is environmentally sound.

HAR §11-200-17 F. 5 states that "For any agency actions, the discussion of alternatives shall include, where relevant, those alternatives not within the existing authority of the agency." In ***Westlands Water District v. U.S. Dept. of Interior,*** 376 F.3d 853, 866 (9th Cir. 2004), the Ninth Circuit recently reaffirmed that alternatives must be rigorously explored and that "reasonable alternatives" include those not within the jurisdiction of the lead agency. ***Westlands, supra,*** at 868. The Ninth Circuit went on to say that "[t]he existence of a viable but unexamined alternative renders an environmental impact statement inadequate." ***Id.***, citing to ***Morongo Band of Mission Indians v. FAA,*** 161 F.3d 569, 575 (9th Cir. 1998).

3. Failure to Comply with the City's Ordinance.

Ordinance 9-1/1(a)(6)(b)(1) states that by the year 2000, at least 75 percent of the solid waste generated shall be recycled, reused, composted, or otherwise diverted from incineration or placement in the landfill. What is the status and what is the consequence of this non-compliance?

4. Sludge

A major source of "odor" for the landfill is sludge. What is the City's treatment of sludge and for what period of time will it continue to be dumped in the landfill.

5. Purpose and Need.

HAR §11-200-17 D requires the Draft SEIS to "contain a separate and distinct section that includes a statement of purpose and need for a proposed action." It is a similar provision under NEPA, which is looked upon to guide the discussion on alternatives. ***Westlands, supra,*** at 866. In ***Westlands,*** the Ninth Circuit looked to whether the preparers had "arbitrarily and capriciously" narrowed the scope of the statement, thereby affecting the discussion on the alternative.

There is an application for a private landfill pending and also the fact that the Department of Agriculture will now permit the transshipment of MSW. These points must be addressed in discussing any need of the expansion, especially in light of the prior statements that there will be no need for landfills in 5 years.

6. Excavation

The City must address the discrepancies in all the draft EISs along with the reports provided by RM Towill to the Blue Ribbon Commission which was tasked with siting the new landfill. The criteria was no excavation. RM Towill determined that WGSL had a life of 20 more years with the criteria. This is in direct conflict with other EISs also prepared by RM Towill. What does the City intend to do about this obvious misrepresentation? How does the City explain this discrepancy.

The extreme slope of WGSL for the proposed expansion and the newly constructed rock berm are related. What is the stability of the expansion? How much native soil will have to be removed? Where will it be removed to? Will the excavated materials be sold?

7. Stability of the Slope

In light of the concern over the stability of slope as evidenced by the construction of the rock berm wall, how will the community be assured about its stability? How is the integrity of the liner tested? Will the rock berm wall act as the retaining wall to justify and increase in the slope?

8. The Violations of the Existing Permit

The Notice and Finding of Violation ("Notice and Finding") and Order dated January 31, 2006, of the Department of Health ("DOH") as to the operations of WGSL must be addressed. The first point of discussion is why the City had no oversight and permitted these activities to go unchecked. These violations resulted in the largest fine in the history of the State of Hawai`i.

The following violations are the most critical and must be addressed, though all violations should be addressed:

1. Since 2003, the City has placed ash above the 2002 grades and exceeded the design grades for over a year from discovery in January 2004.
2. The control of leachate and the monitoring was discovered. The DOH found 16.3 feet of leachate on the liner and 22 feet and 3 inches in the sump area. More troubling is no monitoring has been conducted since October 26, 2003. This was attributed to the ash monofill landfill.
3. As for the MSW landfill, in April 2005 and May 2005, 74 feet of leachate was measured. This was in an area where the sump was installed in November, 2003 (MSW Cell E-1). There was a gross failure to monitor the leachate
4. The leachate level in the area of 4B was unavailable because no monitoring had taken place since May.
5. The removal of soil and its impact on stability. DOH has found that in January of 2005, they were notified of the fact that grades were exceeded. The City knew that the ash had exceeded the approved grades by January, 2004 as to the ash landfill

6. Disposal of asbestos is a major concern. DOH found that the City and its operator accepted asbestos at the landfill but do not have any logs as to where it has been buried.
7. Surface Water Management. There are no surface water management plans as required by the permit for the years 2003-2004.
8. DOH found a failure to control dust.
9. DOH found a failure to control litter.
10. DOH found that there has been no monitoring of methane gas at the landfill.

The DOH Order entered in this action demonstrates the seriousness of the violations and its agency's (including County's) responsibility to monitor. There are also additional violations that were not included in the DOH Order, such as the applicant's failure to submit a revised Closure and Post-Closure Plan no later than May 1, 2005, which was finally submitted on February 22, 2006 and the operators unauthorized night work preparing a new cell for receiving waste.

9. How the Public Trust Is Being Met

The recent Hokulia case makes clear the State's public trust for the waters of our State. How has this trust obligation been met?

10. Cumulative Effects

This EIS cannot merely address the proposed expansion. It must address the cumulative effects of the operation of WGSL since the 1980s in addition to the proposed expansion on the Coast, including the disposal of leachate off site at the Waianae Wastewater Treatment plant.

11. Environmental Justice

The EIS must address the concept of environmental justice and how the City's use of this landfill and others in the Waianae Coast affect the community.

These are concerns and issues which must be addressed in the EIS. It continues to remain my position that WGSL must close. I continue to be perplexed as to how the City can change its position without any sense of obligation of keeping its word to its people.

Sincerely,

Colleen Hanabusa
Senator, Twenty-First District

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
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MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

IN REPLY REFER TO:
RA 06-068

October 16, 2006

The Honorable Colleen Hanabusa
State Senate
State Capitol
Honolulu, Hawaii 96813

Dear Senator Hanabusa:

Thank you. We received your written comments. We will incorporate the issues determined to be relevant within the environmental impact statement process.

Sincerely,

Dr. Eric S. Takamura, P.E.
Director

cc: Brian Takeda- RM Towill
Paul Herran-COR

Summary of Issues by Topic Area

Combined Issues by Topic Area for Consideration:
Developed At EIS Scoping Meetings In Waianae, Kaneohe, Downtown Honolulu, and Kapolei Regarding The Expansion Of Waimanalo Gulch Sanitary Landfill

October 31, 2006

Note: Issues that are in **bold** are those that were received in writing by August 30, 2006, and are not duplicative of what was already stated by the community during the course of the meetings.

General

- The 2001 EIS should not be used as the basis for this EIS
- EIS needs to clearly illustrate what expansion is taking place
- Need to provide number of years of continuing operation as well as the number of acres the expansion will take
- Need to clarify the location, size of the area and what the current zoning is. Documents need to be very clear and specify the boundaries
- Need to look at mainland sewage sludge studies
- New ash area that is covered in EIS needs to be specified where and size
- Impact of other new proposed private sites such as Nanakuli B – do not need both
- Need to identify impacts to RFP process
- Need to consider federal draft rules for shipping of waste
- Need to look seriously at all sites available around the island
- Need to discuss worst case scenario contingencies including earthquake etc.
- Need to determine how the DEIS will tie-in to the City's comprehensive, Solid Waste Integrated Management Plan (SWIMP) update that the city is supposed to prepare
- There is a need to be aware that other areas of the island have hosted landfill sites in the past until their capacity was reached i.e. Aikahi, Kawaianui Marsh, Kapa`a Quarry etc. – they have not all been on the Leeward side
- The EIS needs to reflect the current status at the landfill not the preferred status
- There was a concern expressed about the ability of a local planning firm to be neutral on this issue with all the political pressure
- Need to include all Federal, state and local laws that affect landfill operations
- Need to address Waste Management's 1999 contract with Mayor Harris
- Need clarity between airspace and landfill
- Need to explain why the community should believe the City at this point and why promises have not been kept
- HPOWER has never failed an EPA test on its ash – need to know why DOH has not approved reuse for concrete etc.
- Need to deal with the reality that because of our tourist economy or per person generation of waste is 7 pounds per day instead of the national average of 4 pounds

- Need to consult the County of Hawai`i who has just completed review of 61 alternatives and chosen 3 proven technologies to address this same issue
- **EIS needs to comply with all EIS rules and statutes – including those that require "good faith"**
- **Must not just address expansion but cumulative impacts since the 1980s**

Closure of Landfill

- EIS needs to focus on closing of Waimanalo Gulch now or as soon as possible – should not just go for life of area but should have a plan to reduce waste stream as quickly as possible to provide for closing sooner rather than later
- Review all alternatives available to reduce the waste stream with the intent of closing the landfill as soon as possible
- Need to consider the fact that many landowners and developers were fully aware of the landfill's existence pre-development of their current homes and projects and moved in anyway
- Landowners in the area maintain that they were told the landfill would close in '08 when they bought and had depended on these representations in making their decisions
- Need for active recycling program that would cut down the need for a landfill; need for a sensible plan that would allow for the earliest possible closure of the landfill
- Need for finite planning – Hawai`i should be at the cutting edge and shouldn't worry about costs to keep it a paradise
- City must explain why we are here – other meetings have been held in the past which promised closure of the landfill by 08 and it is still open
- EIS needs to provide factual/historic information for the issue of the promised closure in 2008 and the issuance of an operating permit that required closure in '08
- **Need a comprehensive closure plan for the existing Waimanalo Gulch landfill site irrespective of the proposed closure date**
- **Need to address the State Land Use Commission Decision and Order calling for closure in 2008**
- **Need to address the conflicting position of the 1984/1985 EIS which stated that only 57+/- of the 200 or so acres owned were feasible for utilization as a landfill due to the slop angles of the hillsides.**
- **Close it and put it somewhere else on the island**

Environmental

- Need to explain what the relationship will be between the newly created topography of the expanded landfill, and the prevailing wind patterns of the area including any impact on ocean currents and near shore water temperatures as well as any impacts the new topography may have on adjacent landowners (including the slope integrity along shared property lines, and heights and distances along these lines)
- Need to review Hawaiian Electric Company's wind study and explain the logic of the increase in height of the landfill in light of the wind energy study

- Need an assessment of the static stability of the landfill both ash and solid waste areas including consideration of past history as well as the dynamic stability of the landfill recognizing the fact that we live in a seismically active area
- Need to address how much of the mountain land space is being shaved for the landfill and discuss blasting or grading setbacks that are necessary
- Need to address environmental impacts of potential hazards
- Need to understand how 20 years of further capacity will be provided without excavation as previously stated – if there is excavation need to address where the soil will go
- Need to review recent State of Hawai`i Supreme Court case (Hokulia) regarding State DOH responsibility for water quality in relation to how it is being affected by the landfill e.g. ocean run off
- If expansion moves forward, storm water retention basins, leachate and gas monitoring systems are needed
- Address future ash monofills
- Need to know chemical composition of ash
- The location of potential hazards such as asbestos within the landfill need to be identified
- **Address unknown effects to the land, water, and air**
- **Need to address odor issues – will the expansion take sludge and if so for how long**
- **How is the liner tested and how secure is it needs to be addressed**
- **The ability of the rock berm to handle the expansion needs to be discussed**
- **Needs to address the need for a surface water management plan**
- **Need fugitive trash plan designed to end this problem**

Infrastructure

- Impact to landfill when H-POWER is down is an issue
- Impact on highway; road blockages, etc.
- Maintenance issues along Farrington Highway with heavy truck use – standards for adequate maintenance of this highway
- Any new access points and their impacts on adjacent property owners

Economic Issues

- Economic impacts
- Costs of closing landfill
- Need a solution to address lost revenues to the city should the solid waste go to a private landfill – tipping fees

Explore Alternatives

- Need to look at all alternatives that are appearing (i.e., Plasma ARC gasification, etc.) and determine how these alternatives fit in with everything else that the City is doing – including how they can reduce the waste stream to allow for the earliest closing possible of the landfill
- Need to explore all viable alternatives

- Need to look at other places, especially Europe, and how they dispose of their waste, the kinds of incentives/taxes/sanctions they use to reshape people's attitudes at the curbside
- Expansion should be limited to a specific time and coupled with a plan to reduce the waste stream
- Need to address things that can be done to reduce the amount of waste that goes to the landfill – curbside recycling, alternative technologies, partnerships with the business community to promote recycling and reuse, etc. Need to get innovative and creative.
- Need to increase HPOWER and explore reuse of ash – HPOWER type facilities could be decentralized and built anywhere
- Need to address trans-shipping of waste
- Need to address providing a funding stream to address alternatives
- Need to speed up action on alternatives
- **Plasma Arc Gasification – Jacoby Inc.**
- **Need to address the implementation of the comprehensive and mandatory island-wide recycling program (proposed to be done by December 2006)**
- **Alternatives looked at must be explained including why they are rejected – the exploration must be rigorous**

Facilities Management

- Need to look at as a facilities management problem and apply technologies correctly (especially as pertains to smells and debris)
- The EIS should address the status of all violations and what has been done regarding violations – need to close violations prior to new EIS and permit
- Hours of operation need to be clear and adhered to – the community recently expressed concerns about night operations taking place and the impact of the lighting on houses and neighborhoods
- Need to address overfilling of landfill site
- Need to look at rubbish control and sludge issues
- Need a specific operational plan for soil cover
- **Explain the contracts between the city and Waste Management Inc and the timing of these contracts.**
- **There should be a clearly identified, separate (physically divided) MSW and ash monofill cells for the expansion**
- **A separate area should be identified for asbestos disposal**
- **A full discussion of all management techniques must be included**
- **Impact of expanded operations on adjacent property owners including line of sight issues**

Monitoring and Enforcement

- Need to provide for air quality monitoring, testing as it corresponds to traffic at the site, and along the route to/from the site
- Need to examine enforcement capability and capacity of DOH – including the lack of resources required for monitoring, enforcement, reporting, and accountability

- Major dirt and dust issues; monitoring doesn't work – need for more data collection
- Need to consider past problems with the landfill (i.e., EPA violations, leachate collection system) and be sure the DEIS identifies ways to assure that they do not happen again
- Need to address and explain the $2.8 million fine that has been imposed on the landfill by the Department of Health and assure that these types of practices/violations do not continue in the expansion
- Need to assure that a system is in place to hold the operator accountable
- Monitoring should be adequate so that after the fact permit modification should not happen – example the permit modification needed for the leachate sump pump system
- Need to monitor methane gas levels
- Need to have rigid standards and adequate monitoring to ensure the health and safety of the community
- Need regular monitoring by the Department of Environmental Services
- Need to address who will be responsible for enforcement of things in the EIS and what guarantees will be made in the EIS
- Need to include status of compliance with current permit – by modifying the permit, are we negating prior violations which should not be allowed
- **Need to assure timely reporting by the operator and public access to these reports – consider webcam on site for monitoring purposes**

Leachates

- Need to also address leachate and its impact to groundwater, runoff to ocean, subsidence and slippage resulting from seismic activity, methane fires, and EPA violations relating to gas collection systems
- Need to look back and forward – what has been/will be done to take care of leachate problems and make sure these do not reoccur in the future
- Need to address leachate pumped out to the sewer treatment plant and what happens to it and what is its effect on the final outflow water quality from the sewer treatment plant
- Need to discuss comprehensively the leachate management system – including possible failure of the geo-membrane lining system and how it will be taken care of

Environmental Justice

- Need to address "environmental justice" along the Leeward Coast and as it pertains to this landfill, including the multitude of existing private and proposed sites in the area

Health impacts

- Need to include discussion of potential health hazards
- Who is liable for the health costs to residents should the landfill cause health problems
- When considering expansion, need to discuss EPA finding regarding gas collection system issues
- Compensation to neighbors for health impacts
- Impact of multiple landfills, both public and private, on air quality needs to be addressed
- Higher standards are needed for dust and debris and possible impacts to health

Community issues

- The DEIS needs to deal with the lack of sensitivity to cultural sites and issues
- What communities will benefit - who will be selected and how will the compensation benefits committees be set up also needs to be addressed
- Need to include impact of non-closure of Waimanalo Gulch on for-profit businesses in the area or planning to locate in the area
- Smells, trash escape, floating dust, truck traffic and speeding, trash on road, visual blight all need to be addressed
- Landfill should not be going above the ridge lines, which can be seen from Waianae
- **One of the conditions of the permit was to allow for ridgeline and site views being maintained**
- **No trucks should be parked on Farrington Highway waiting for entrance to the facility**
- **Trucks should be cleaned when leaving facility so the there is no mud or dirt dropped on the highway**
- **Route along Farrington Highway should be kept clean of rubbish or dirt generated by the facility**
- **There should be identification of how the Waimanalo Gulch Sanitary Landfill will be maintained facing Farrington Highway, landscaped to reflect surrounding areas, park-like upkeep, greenbelt, setbacks, etc.**

Appendix D

Hydrologic Setting and Groundwater Monitoring
Waimānalo Gulch Sanitary Landfill, 2006

Hydrologic Setting and Groundwater Monitoring
Waimānalo Gulch Sanitary Landfill
Kahe Valley, Island of O‘ahu, Hawai‘i

Waste Management, Inc./Geosyntec Consultants, Inc.
December 2006

1. HYDROGEOLOGIC SETTING

1.1 Climate and Topography

WGSL is located in a region of Oahu that is relatively arid when compared to the rest of the island due to the “rain-shadow” effect of the Waianae Mountain Range. The average annual rainfall in the area is approximately 20 inches, while gauge stations in the nearby mountains experience significantly higher rainfall averages (Hokuloa gauge, elevation 2,200 feet above mean sea level, average annual rainfall 42 inches).

The regional topography near the WGSL is dominated by the moderate to steep Waianae Range, a northerly trending volcanic mountain complex that is characterized by narrow valleys separated by steeply sloping hills and ridges. The range extends northward from the site approximately 20 miles and is up to approximately 4 miles in width. The WGSL is located at the southern toe of this range in a typically steep and narrow valley (gulch). Elevations along the main mountain ridgeline range from about 1,000 to 3,600 feet msl. Elevations drop dramatically away from the main ridgeline. Lateral slopes along the Waianae Range are asymmetrical, with steeper slopes to the west. Typical slopes on the sides of the range drop some 2,600 feet over distances of two miles or less. Near the WGSL, the mountains of the Waianae Range transition to the low-lying coastal plains. Elevations abruptly diminish from 2,300 feet msl (Puu Manawahua) to sea level in a lateral distance of two miles in the WGSL vicinity (RUST, September 1993).

The WGSL is located in a relatively narrow gulch with a steeply sloping valley floor and sides. At the mouth of the gulch, the elevation of the valley floor is approximately 50 feet msl and rises to 450 feet msl over a distance of 4,800 feet (up to an 18% slope). Relative elevations between the valley floor and the tops of the adjacent ridges range from about 60 feet to 240 feet. Waimanalo Gulch is approximately 1,000 feet wide from ridge to ridge at its widest point, and is about 500 feet wide at its narrowest point (near the confluence of the upstream tributaries). Site elevations vary from a low of about 70 feet msl in the southeast corner to a high of about 940 feet msl in the northern portion of the property.

1.2 Regional Geology

The island of Oahu represents the eroded remnants of two shield volcanoes, Waianae and Koolau. The Koolau volcano was active after the Waianae volcano became dormant, and its flows backed against the Waianae volcano shield to form the Schofield Plateau. After a long quiescent period during which erosion cut canyons several thousand feet deep, another series of lava flows, the Honolulu Volcanic Series, formed cinder and cones primarily along the southeastern portion of the island.

The Waianae Volcanic Series was formed during the Tertiary period and forms the majority of the Waianae Range. This series is divided into lower, middle and upper members. The lower member consists of sequenced lava flows and associated pyroclastic material up to 2,000 feet thick, which makes up the majority of the Waianae shield volcano. The rocks of this member are mostly thin-bedded pahoehoe that are locally intruded by dikes in the southwestern portion of the island (Takasaki, 1971).

The middle member of the Waianae Volcanic Series is in unconformable contact with the lower member and consists of rocks that accumulated in the caldera and, as such, are thick (on the order of 2,000 feet) and generally horizontally bedded (Macdonald, 1940). This member resembles the lower member but contains more a'a flows than in the lower member. The middle member also is locally intruded by dikes in the southwestern portion of the island (Takasaki, 1971).

The upper member is about 2,300 feet thick, and is mostly massive a'a flows that issued from large cinder cones (Takasaki, 1971). Dikes also locally intrude the upper member in the southwestern portion of the island, but fewer dikes are present in the upper member than in the lower two members. The valleys of the Waianae Range typically contain moderately thick deposits of alluvium[1] and colluvium[2].

Erosion has removed most of the western slope of the Waianae shield and exposed the internal structure of the volcano. The shield was built by eruptions that took place along three rift zones. The two principal rift zones trended northwestward and southeastward from the summit, while a lesser one trends northeastward (Takasaki, 1971). A rift zone of an active volcano is characterized by parallel to subparallel fissures and a line of cinder and spatter cones. These features are absent in older, dormant volcanoes such as the Waianae volcano where rift zones are identified by erosion-exposed dike complexes (Takasaki, 1971). The dikes are generally basalts and diabases and are aphanitic or have only a small content of phenocrysts. The dikes typically have glassy chilled margins and show a gradual steady increase in grain size from rim to center. Near surface lava in Hawaii typically contains high numbers of cooling joints, vesicle partings, flow-unit boundaries, rubble layers and other planes of weakness (Walker, 1987). Dikes cutting near surface flows can be highly irregular in shape. Dikes are common in the western and southwestern Waianae Range. They are sparse in the less permeable, massive, thick-bedded flows of

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[1] Sediments deposited by erosional processes, usually by streams, www.weather.gov/glossary/glossary.php.

[2] Rock and soil accumulated at the foot of a slope from gravitational forces, www.blm.gov/nhp/Commercial/SolidMineral/3809/deis/glossary.html.

the upper member and more numerous in the highly permeable, thin-bedded flows of the lower member of the Waianae Volcanic Series (Takasaki, 1971).

"Caprock", which consists primarily of alluvium, terrigenous and marine clays, and fossilized coral reef with associated calcareous detritus, overlies the volcanic sequences along much of the Oahu coastline. Portions of the caprock are important local coastal aquifers, such as in the Ewa Plain. However, much of caprock is less permeable than the sequences of volcanic rocks so it acts a confining unit above the volcanic aquifer sequence (Hufen et al, 1980; RUST, September 1993).

1.3 Regional Hydrogeology

On a regional scale, fresh groundwater in aquifers on Oahu is similar to other islands, and occurs as a lens floating above and displacing saline groundwater. Generally, the fresh water lens is thickest at the center of the island and thins toward the edges of the island at sea level (e.g. Hufen and others, 1980).

In the southeastern portion of the Waianae Range, the principal groundwater aquifer system is the middle and lower members of the Waianae Volcanic Series. The volcanic aquifers are recharged by infiltration of rainfall and surface runoff originating in the Waianae and Koolau Ranges. Flows of the upper member are largely above the water table and contain only a small perennial supply. Permeability of a volcanic aquifer is generally high due to presence of pahoehoe lava tubes and loose clinker zones and rubble between lava flows. However, permeability is highly variable on a local scale and the low-permeability dense interiors of a'a lava flows and cross-cutting near-vertical volcanic dikes can function as hydraulic barriers that locally partition groundwater both vertically and horizontally. Groundwater gradients in portions of the southern Waianae Range have been shown to be step-like rather than smooth due to the presence of dikes that act as barriers to groundwater flow (Takasaki, 1971; Hufen and others, 1980).

Groundwater generally flows from inland areas outward toward the coast. However, locally, discharge of groundwater to the sea is limited by low permeability “cap rock” that overlies the volcanics along much of the coast of Oahu. Locally, the caprock prevents the free discharge of groundwater to the ocean, and diverts groundwater flow parallel to the coastline toward areas without confining cap rock where the groundwater discharge to the sea is unimpeded.

Waimanalo Gulch is located in the Makaiwa Aquifer System as defined by the Commission on Water Resource Management (CWRM) Water Resource Protection Plan Volume II (George A. L. Yuen & Assoc., 1990). This aquifer has not been assigned a sustainable yield by CWRM, though it is adjacent to the Ewa-Kunia Aquifer System to the east and the Nanakuli Aquifer System to the northwest. The estimated sustainable yield of the Ewa-Kunia Aquifer System is 16 million gallons per day (mgd); while the Nanakuli Aquifer System is assigned one (1) mgd for sustainable yield.

Although no groundwater is developed in the Makaiwa Aquifer System and near Waimanalo Gulch, several monitoring wells and test holes have been drilled in the lower part of the valley and the neighboring Kahe Point area.

Present water levels encountered in the Ewa-Kunia Aquifer System, east of Waimanalo Gulch, are greater than 13 feet above msl. Near Makaiwa Gulch, just east of Waimanalo Gulch, a hydrologic discontinuity occurs where water levels drop to less than 6 feet above msl (see Stearns, 1940, p.36). U. S. Geological Survey test holes T-4 (2006-12) in the Ewa-Kunia Aquifer System and T-5 (2007-01) in the Makaiwa Aquifer System are only a mile apart and reflect the discontinuity (CWRM well database). **Figure 1, Well Location Map**, is a well location map that also depicts the approximate location of wells T-4 and T-5 and the boundary between the Ewa-Kunia and Makaiwa Aquifer systems. When originally drilled in 1938, the water levels for T-4 and T-5 were 17.0 feet and 6.5

feet above msl, respectively (Stearns, 1940). The last water level measurement for T-4 was 13.73 ft above msl (December 6, 2001, Honolulu Board of Water Supply measurement). Well T-5 was previously abandoned and sealed.

The Nanakuli Aquifer System, to the west of the Makaiwa Aquifer System, has only a few wells and test holes. One observation well of note was test hole T-15 (2307-01) described by Stearns (1940) and Mink (1978). This hole was drilled at an elevation of 479.6 ft above amsl. It penetrated 100 feet of talus and old alluvium before entering basalt. It was drilled to -9.0 feet above msl and had an initial water level of 2.6 feet above msl. According to Mink (1978), T-15 was used as an observation well until 1969. Regular monthly water levels were measured from 1940-1953 and ranged from 1.60 feet to 3.14 ft above msl. The average water level for the period of record was 2.0 feet above msl. Chlorides varied from 86 to 119 milligrams per liter (mg/L).

Hydraulic conductivities in dike-free basaltic lavas on Oahu typically range between 1,000 and 2,000 feet per day (ft/d). A value of 1,500 to 2,000 ft/d is commonly used in analytical and numerical groundwater models (Mink, 1980; Oki, 1997). The hydraulic gradient for dike-free lava flows is typically 1-foot per mile, which is the value found in the adjoining Ewa-Kunia Aquifer System.

For dike-impounded aquifers, the hydraulic conductivity depends upon dike spacing, their distribution and continuity, and depth of penetration into the aquifer. In an aquifer where there are more than 100 dikes per linear mile, or as used by Takasaki and others (1969) as constituting 5 percent or more of the country rock, the hydraulic conductivity is generally low (<1 percent), typically ranging between 1 and 100 ft/d. While in the marginal dike zone where dike occurrence is much less, the conductivity values typically range between 100 and 1,000 ft/d (Takasaki and Mink, 1982; Takasaki and Mink, 1985).

Wells, test holes, and monitoring observation wells were drilled in the lower valley as part of a regular monitoring program and for the proposed expansion plan.

Wells are sampled regularly and used to determine groundwater gradients. The wells listed below in **Table 1** are located near Makaiwa Gulch, Waimanalo Gulch, and Kahe Valley. Well data are from the CWRM database and data for the monitoring wells are provided by Waste Management of Hawaii, Inc.

Table 1: Wells in the Kahe Point/Waimānalo Gulch Sanitary Landfill Area

(Source: CWRM Well Database and Waste Management, Inc.)

Well No.	Old Name	Init. WL (ft amsl)	Init. Cl (mg/L)	Grnd El. (ft amsl)	Bot. Hole Elevation (ft. bmsl)	Casing Diameter (in.)	Length Screen Interval (ft)
2007-01*	T-5	5.5	484	80	-20	6	15
2107-01*	T-51	3.2	492	203	-7	4	11
2107-02	T-128	2.1	N/A	22	-182	N/A	N/A
2107-03	T-129	1.7	6750	28	-176	N/A	N/A
2107-04	T-130	5.8	362	62	-65	N/A	N/A
2107-05	T-131	1.9	3300	40	-51	N/A	N/A
2107-06	T-68	2.1	2410	58	-67	N/A	N/A
2107-07 (MW07)[a]		3.82	890	202.4**	-14.6	2	30
MW02[a]		3.88	1400	73.82**	-8.8	2	15
MW03[a]		3.84	1100	77.14**	-7.5	2	18
MW10		N/A	N/A			2	
MW11		N/A	N/A			2	

*sealed and/or lost

**top well head

a – data from Quarterly Monitoring Report for January –March 2006 at the WGSL

The wells shown in **Table 1** are located in lava flows defined by Stearns (1940) as “Lower and Middle Members” of the Waianae Volcanic Series. **Figure 1, Well Location Map** identifies the location of wells and also depicts the location of T-15.

The quality of groundwater in the volcanic aquifers is generally good, except where proximity to the ocean results in elevated salinity (Takasaki, 1971). Other sources of lower quality groundwater include leaching of hydrothermally altered volcanic rocks in the central vent area and of carbonate rocks above or adjacent to the volcanic aquifer (i.e., caprock; Takasaki, 1971). Total dissolved solids concentrations in wells to the northwest of the WGSL range from about 200 to about 2,000 mg/l. Chloride concentrations in these same wells range from about 10 to greater than 10,000 mg/l.

1.4 Site Geology

This section summarizes the results of studies related to site geology, hydrogeology, and geochemistry that have been performed at the WGSL since the early to mid 1990s.

The sequence of volcanic rocks encountered in borings and exposed on slopes at the WGSL is the lower member of the Waianae Volcanic Series (e.g. TNWRE, August 7, 1993). The lava flows include both a'a and pahoehoe flows ranging from aphanitic to porphyritic. Coloring of the rock material varies from grey to reddish grey to red, and the texture varies widely from highly vesicular to dense and fine-grained.

Based on observations made during drilling and down-hole video logs of borings drilled in October 2006 for monitoring wells MW-10 and MW-11, lava flows range in thickness from 3 to 20 feet thick, and loose clinker zones between flows comprise approximately 20 percent of the volcanic sequence (Geosyntec, December 7, 2006).

U. S. Geological Survey (USGS) personnel identified a near-vertical dike striking between about 15 and 20 degrees west of north, located at the approximate midpoint of the WGSL property. Furthermore, dikes have been documented to exist through visual observation from site personnel during excavation activities.

Two dikes were documented during the construction of Cell E1 (A-Mehr Inc, 2003). In addition, recent geologic reconnaissance has confirmed the presence of dikes to the north of the site (Mink & Yuen and Knight Enterprises, 2006). The trends of the dikes are predominantly north/northwest, and when projected to the southwest, intersect portions of the northern and northeastern cells of the existing landfill. The approximate location of near vertical dikes in the vicinity of the WGSL that cross-cut the sequence of basaltic lava flows are shown on **Figure 2**.

1.5 Site Hydrogeology

Groundwater under the WGSL is present within the lower and middle members of the Waianae Volcanic Series that dips slightly towards the coast (southwest). In the vicinity of the lower portion of the WGSL, the water table occurs at an elevation of approximately 4 feet above msl and is very flat. As a consequence of the topographic relief, depth to groundwater at the five monitoring wells ranges from 55 to 200 feet. **Table 2** provides depths and screened interval information for the five monitoring wells.

Table 2: Monitoring Wells at WGSL

	Northing (feet)	Easting (feet)	MP Elevation (ft above MSL)	approximate casing stickup (ft above gs)	-------- screen -------- top (ft bgs)	bottom (ft bgs)	10/20/2006 depth to gw (ft below MP)	10/20/2006 gw elevation (ft above MSL)	11/20/2006 depth to gw (ft btoc**)	11/20/2006 gw elevation (ft above MSL)
MW-2	66,879.36	456,496.80	73.85	1.9	82.6	82.6	69.62	4.25	69.66	4.19
MW-3	67,383.32	456,311.18	77.18	1	84.6	84.6	72.94	4.26	73	4.18
MW-7	68,092.04	456,724.17	202.42	2.3	217	217	198.31	4.13	198.28	4.14
MW-10	67,186.53	457,050.04	123.48	0	135	135	119.11	4.37	119.14	4.34
MW-11	66,570.31	456,821.29	61.13	3.5	67	67	56.68	4.45	56.775	4.36

Notes:

All five monitoring wells are Schedule 40 PVC casing.

All five monitoring wells surveyed by Park Engineering 24 October 2006.

Surveyed MP (measuring point) is top of PVC casing (TOC).

Oct 20, 2006 depth to water at MW-2, MW-3, and MW-7 was measured from top of cap for pump assembly, which is 3/16 inch (0.0156 ft) above top TOC

**** Pump assemblies at MW-2, MW_3 & MW-7 were removed prior to 11/20/2006 measurments so depth to water was measured from TOC for all wells.**

Water levels in monitoring wells are tidally influenced. Water levels reported here do not include averaging or compensation for tidal influence.

The marine sediments of the Ewa Plain to the south and east form a low permeability caprock that inhibits groundwater discharge to the ocean south and east of the WGSL. However, the caprock is reported to be generally absent along the coast to the west and northwest of Waimanalo Gulch, in the area of the Kahe Park. The distribution of confining caprock is interpreted to control the westward flow of groundwater and unimpeded discharge to the sea west to northwest of the WGSL. Salinity measurements of ocean water along this stretch of coastline performed by the USGS and TNWRE in 1991 are consistent with major discharge of fresh groundwater in this area (RUST, September 1993, 1997; Earth Tech, 2006). **Figure 3** shows an aerial photo of the general vicinity of the WGSL with approximate groundwater elevations at wells. This data supports a general northwest direction of groundwater flow toward the Kahe Beach coastline.

In the upper portion of the WGSL, a few near-vertical, north-northwest trending basaltic dikes have been mapped that cross cut the sequence of lava flows. Additional investigation is in progress to evaluate the potential influence of the dikes on groundwater flow in the upper portion of the WGSL. However, as stated earlier, all the dikes are up-canyon from the existing leachate collection sumps, so even if the dikes are barriers to groundwater flow they do not influence monitoring of groundwater for detection of potential leaks from the existing leachate collection sumps within the existing landfill footprint.

1.5.1 Hydrogeochemistry

The inorganic geochemistry of groundwater beneath the WGSL is fairly complex, reflecting both the facility’s coastal location and its proximity to the coastal cap rock. Groundwater monitoring wells at the WGSL are screened within a transitional groundwater zone in which there is mixing between freshwater and seawater. Groundwater from each of the WGSL monitoring wells is a sodium-magnesium-calcium-chloride (Na-Mg-Ca-Cl) type water which generally reflects this mixing of freshwater and seawater. Total dissolved solid (TDS) concentrations in Monitoring Wells 03M and 07 are consistently lower than TDS concentrations in Monitoring Well 02M, a condition that is also consistent with the facility's position within the coastal transition zone. The relative percentage of dissolved calcium in groundwater from Monitoring Well 02M is slightly higher than that in groundwater from Monitoring Wells 07 and 03M. This is likely related to the fact that Monitoring Well 02M is located nearer the cap rock (primarily calcium carbonate) than are Monitoring Wells 07 and 03M.

The most comprehensive study of groundwater chemistry was conducted in 1992 (by the former Waste Management Environmental Monitoring Laboratory in Geneva, Illinois). The purpose of that study was to establish the degree of hydraulic continuity across the WGSL and to further establish if the groundwater on either side of the dikes was hydraulically connected. The results of the geochemical study were consistent with little to no barrier to lateral groundwater flow between the downgradient edge of the landfill and the ocean west of the WGSL. This is further corroborated through the results of the tidal study described above which show hydraulic continuity between all monitoring wells at the WGSL with the sea. This also is consistent with the concept of transition-zone groundwater (RUST, 1997).

2. GROUNDWATER MONITORING

2.1 Groundwater Monitoring Network

Detection monitoring wells installed for the WGSL were located using previous flow direction information to better target the primary points of leachate accumulation (leachate sumps). An appropriate groundwater detection monitoring network can be designed based on flow direction and velocity information.

Water levels in monitoring wells at the WGSL are tidally influenced. The results of a tidal study conducted in November 2006 (Geosyntec, 2006) indicate groundwater flow to the northwest in the immediate vicinity of the WGSL. Historical elevations in the HECO wells indicate a water table elevation approximately 2-3 feet lower than the WGSL wells, suggesting a westerly groundwater flow direction on a local-regional scale.

The gradient calculated using the groundwater elevation data collected during the November 2006 tidal study is about 0.0003 foot/foot (approximately 1.5 feet/mile) to the northwest. This value is consistent with the hydraulic gradient for dike-free lava flows, typically about 1 foot per mile, and indicates that groundwater flow in the lower part of the WGSL is not significantly affected by dikes. Groundwater velocity is calculated using the equation V= Ki/n, where K = hydraulic conductivity, i = hydraulic gradient, and n = effective porosity. Hydraulic conductivities in basaltic lavas on Oahu typically range between 1,000 and 2,000 ft/d for dike-free lavas with a value of 1,500 to 2,000 ft/d commonly used in analytical and numerical groundwater models (Mink, 1980; Oki, 1997). Using a K value of 1,500 ft/day, a gradient of 0.0003 ft/ft, and an effective porosity of 0.20, the groundwater velocity is calculated to be approximately 2.3 ft/day.

The current groundwater monitoring network includes five monitoring wells around the toe of the WGSL (02M, 03M, 07, MW-10, and MW-11). Locations of the five monitoring wells are shown on **Figure 2**. Based on the calculated groundwater flow directions and velocity, the existing monitoring wells are sufficient for monitoring potential impacts to groundwater downgradient of the toe of the WGSL, and the ash monofill sump in cell 8. Monitoring well 07 is located west of the MSW Cell E-1 Sump and the MSW Cell 4B Sump. Based on a westerly flow direction, this well is downgradient of the sumps. Based on a northwesterly flow direction, this well is cross-gradient to down-gradient of the sumps. As discussed above in Section 1.5.1, Hydrogeochemistry, above, the apparent northwestward flow toward monitoring well 07 may be a consequence of local recharge associated with the surface water detention pond elevating water levels in monitoring wells 02M and 03M.

Results of the long-term monitoring of the WGSL monitoring wells (currently equipped with pressure transducers and data loggers) will be used to continue assessment of fluctuations in groundwater flow direction and gradient to further evaluate if the current monitoring network is sufficient for long-term detection monitoring.

2.2 Groundwater Monitoring Parameters

Chapter 11-58.1, HAR, (1) requires that MSW landfills routinely monitor groundwater for the 15 metals and 47 volatile organic compounds (VOC) listed in Appendix I of Chapter 11-58.1. This is the same list of monitoring parameters contained in the Federal Subtitle D regulations (40 CFR Part 258, Appendix I) and, in addition to containing an excessively large number of parameters, also contains several parameters (i.e., the 15 metals) which are generally viewed as ineffective monitoring parameters because of their limited mobility in most subsurface environments. The EPA intended the Appendix I analytes to be default parameters for use in those states which have not yet obtained Subtitle D authorization. Through 40 CFR Part 258.54 (a)(1) and (2), the EPA has provided authorized states, such as Hawaii, the flexibility to approve alternative lists of site-specific monitoring parameters. This flexibility, specifically outlined in Chapter 11-58.1 subsections (1)(A) and (B), HAR, has been reflected in the development of previous groundwater monitoring programs for the WGSL (e.g., RUST, 1997).

Accordingly, the groundwater monitoring program describes the approach for selecting an updated alternative list of site-specific groundwater monitoring parameters for use during detection monitoring at the WGSL, and incorporates the approximate 10 years of additional monitoring data collected since the preparation of the previous WGSL groundwater monitoring program (RUST, 1997).

2.2.1 Site-Specific Detection Monitoring Selection Strategy

It is widely accepted that a combination of volatile organic compounds (VOCs) plus selected general water quality parameters will typically provide the most reliable monitoring parameters for most MSW landfills. VOCs in particular can be highly effective parameters for providing an early indication of a potential release from a landfill because they are: (1) rarely detected in background groundwater samples; (2) detected more frequently than any other class of organic compounds in solid waste landfill leachate (Cravy et al., 1990; Plumb, 1991); and (3) are analytically sensitive (i.e., they can be detected at extremely low concentrations); and (4) are relatively mobile in the groundwater system. Although commonly present in MSW landfill leachate, semi-volatile organic compounds (SVOCs), as a group, are significantly less mobile than VOCs in most subsurface environments and do not typically provide for substantial additional monitoring benefits.

The above strategy (i.e., VOCs in conjunction with a short list of water quality parameters) has been implemented as a part of previous WGSL groundwater monitoring programs (e.g., RUST, 1997) and is consistent with the monitoring parameter selection strategy outlined in the Guidance Document. This groundwater monitoring program for WGSL reaffirms this strategy but provides a re-evaluation of water quality monitoring parameters using updated groundwater and leachate monitoring data.

The VOCs listed in Appendix I of Subtitle D, which have been monitored in accordance with the previous WGSL monitoring program (RUST, 1997) will continue to be routinely monitored.

2.2.2 Water Quality Monitoring Parameters

Water quality monitoring parameters are those parameters that occur naturally in groundwater and for which a background concentration must be established in order to provide an indication of a possible leachate release. For detection monitoring purposes, the use of the minimum number of effective water quality monitoring parameters is always the most effective approach over utilization of a very long list of monitoring parameters, such as the list of metals in Appendix I or a generic list of cations, anions, and other common parameters such as TDS. This is true because of the direct relationship between the number of statistical comparisons performed during each sampling event and the resulting false positive error rates. For example, if a given detection monitoring program consists of 5 wells each of which is sampled for 20 parameters (i.e., 100 statistical decisions per monitoring event), even using a very low error rate (e.g., 0.01, or 1%), it would yield one false positive result every sampling event. The larger the number of statistical decisions that are performed each sampling event, the higher (i.e., less conservative) the associated statistical limit must be in order to avoid excessively high false positive results.

The selection of a list of alternative monitoring parameters for the WGSL is based on actual site conditions and involves a detailed evaluation of available site-specific groundwater and leachate data which, at the WGSL, now contains extensive long-term data Geosyntec 2006). Using the strategies outlined in the State of Hawaii Guidance Document, the first step is to identify those water quality parameters whose concentration in leachate are significantly higher than in groundwater, in order to account for dilution and attenuation processes. The resulting list of potential monitoring parameters is then refined further by identifying and removing parameters that provide substantially redundant coverage (e.g., monitoring for both electrical conductivity and TDS). From the remaining parameters, those anticipated to provide the earliest and most reliable indication of a release are selected as detection monitoring parameters for statistical evaluation purposes. This determination is based on the relative mobility of the constituents, the detectability of each parameter using existing analytical methods, the likelihood of false positive results associated with each parameter, as well as any changes in the parameter that might be expected during its migration through the unsaturated and saturated zones beneath the facility (e.g., due to changes in pH or redox conditions).

The Guidance Document suggests that potential detection monitoring parameters first be screened by calculating the concentration contrast between leachate and groundwater. As noted in the Guidance Document, a potentially effective monitoring parameter would exhibit a concentration in leachate at least 5 times greater than the upper background limit in groundwater. Note that a leachate-groundwater contrast of 5 times is considered highly conservative based on EPA guidance, which identifies typical useful leachate-groundwater contrast for potentially useful indicator parameters of at least 10 to 20 times (EPA, 1996). If insufficient contrast exists for a specific parameter (i.e., the leachate concentration is consistently at or below the background groundwater limit), then that parameter is eliminated from further consideration for detection monitoring.

Table 3 summarizes the leachate-groundwater concentration contrast values for various inorganic and water quality parameters for the WGSL. These values were calculated by dividing the background concentrations using statistical prediction limits for pooled data from groundwater monitoring wells 02M, 03M, and 07 into maximum leachate values in the WGSL database (through the first half of 2005). The groundwater data was pooled in order to provide sufficient data for statistical calculations and it is assumed that the data is representative of background conditions (i.e., no leachate impact). This is a reasonable assumption given that no inorganic leachate impact is indicated in the WGSL monitoring wells, as described in the routine monitoring reports. Furthermore, numerous monitoring parameters are viable due to the large contrast between concentrations of chemicals in leachate and groundwater at the WGSL facilitates.

Table 3: Leachate - Groundwater Concentrations Contrasts

Waimānalo Gulch Sanitary Landfill

Analyte of Interest	Leachate Pt. Exhibiting Max. Concentration of Analyte of Interest[1]	Date of Max. Leachate Concentration[1]	Maximum Leachate Concentration	Groundwater Background Concentration[2]	Units	Leachate/ Groundwater Ratio
Sulfide	All	5/6/2005	ND[3]	0.05	mg/L	NM[4]
Cyanide, total	ASHMH	12/15/1998	0.022	0.02	mg/L	1.1
Iron*	MSWLS2	12/20/2004	780	636	ug/L	1.2
Sulfate	ASHMH	5/6/2005	890	514	mg/L	1.7
Arsenic*	MSWLS2	12/20/2004	37	10.0	ug/L	3.7
Magnesium*	ASHMH	12/15/1998	3390	793.9048	mg/L	4.3
Beryllium*	MSWLS2	12/20/2004	26	5.0	ug/L	5.2
Alkalinity (as caco3)	MSW-LSE1	5/6/2005	1800	288	mg/L	6.3
Specific conductance field	ASHMH	12/15/2002	91000	13047.5	umhos/cm	7.0
Cobalt*	MSWLS2	12/20/2004	420	50.0	ug/L	8.4
Thallium*	ASHMH	12/29/1999	146	10.0	ug/L	15
Vanadium*	MSWLS2	12/20/2004	1000	50.0	ug/L	20
Chloride	ASHMH	12/26/2000	100000	4510	mg/L	22
Solids, total dissolved	ASHMH	12/14/2001	185000	7891.257	mg/L	23
Calcium*	ASHMH	12/26/2000	21400	816.558	mg/L	26
Nickel*	MSWLS2	12/20/2004	1700	51.2	ug/L	33
Selenium-dissolved	ASHMH	5/6/2005	180	5.0	ug/L	36
Chemical oxygen demand	ASHMH	12/20/2004	5900	160.4427	mg/L	37
Mercury*	ASHMH	12/20/2004	8.7	0.20	ug/L	44
Sodium*	ASHMH	12/20/2004	51000	1108.4675	mg/L	46
Barium*	ASHMH	12/15/1998	11700	200	ug/L	59
Nitrogen, total kjeldahl	ASHMH	4/3/1996	84.4	1.0	mg/L	84
Chromium*	MSWLS2	12/20/2004	1000	10.0	ug/L	100
Bromide	ASHMH	12/26/2000	2270	22.1772	mg/L	102
Lead*	ASHMH	12/20/2004	630	5.0	ug/L	126
Zinc*	MSWLS2	12/20/2004	2700	20.0	ug/L	135
Copper*	ASHMH	12/20/2004	4900	25.0	ug/L	196
Total organic carbon	ASHMH	12/20/2004	2300	7.3	mg/L	315
Potassium*	ASHMH	12/29/1999	17800	38.3028	mg/L	465
Cadmium*	ASHMH	12/20/2004	2400	5.0	ug/L	480
Manganese*	DET-POND	5/20/2005	31	0.0522	mg/L	594
Nitrogen, nitrate	DET-POND	4/27/2005	5880	7.52	mg/L	782
Nitrogen, ammonia	DET-POND	4/27/2005	646	0.24	mg/L	2692

Notes:

[1] based on data through the first half of 2005

[2] based on statistical prediction limit of background data set through the first half of 2005

[3] ND = analyte not detected in any leachate samples

[4] NM = ratio not meaningful because leachate data sets contain no detections of this parameter

* Note that contrast evaluation compares the "total" concentration of a metal in leachate to the "dissolved" concentration in groundwater

The contrast values shown on **Table 3** range over several orders of magnitude and can be categorized as follows:

Leachate/Groundwater = <10:

- Arsenic
- Beryllium
- Cyanide, total
- Magnesium
- Sulfate
- Barium
- Chloride
- Mercury
- Selenium
- Sodium
- Thallium
- Alkalinity
- Cobalt
- Iron
- Specific conductance field
- Leachate/Groundwater = 10 to 99:
- Calcium
- Chemical oxygen demand
- Nickel
- Nitrogen, total Kjeldahl
- Solids, total dissolved
- Vanadium

Leachate/Groundwater = 100 to 999:

- Bromide
- Chromium
- Lead
- Nitrogen, nitrate
- Zinc
- Cadmium
- Copper
- Manganese
- Potassium
- Total organic carbon

Leachate/Groundwater = >1000

- Nitrogen, ammonia

Because of groundwater flow conditions at the WGSL, the latter two groups with leachate-groundwater concentration contrasts on the order of 100 to 1,000 are of particular interest in the process of identifying potentially useful site detection monitoring parameters and are further evaluated below.

In the group with contrast values between 100 and 999, the trace metals cadmium, chromium, copper, lead, manganese, and zinc are eliminated from consideration due to mobility considerations. Several processes interact to influence the transport of metals in the leachate-soil-groundwater system, including complexation reactions, oxidation/reduction processes, and reactions that result in the removal of metal ions from liquid such as adsorption and precipitation. It is widely recognized that, due to the positive charge of metal ion species, adsorption of metals onto negatively charged clay mineral or organic matter is an important limiting process with respect to metals mobility in this environment. A cation with greater valence state is adsorbed more strongly that a cation with a lower valence state and, for a given valence state, the cation with the smallest radius is adsorbed more strongly than a cation with a large radius. Trace metals, therefore, can be expected to be adsorbed more strongly than the major metals, such as sodium, potassium, calcium, and magnesium, all of which possess relatively large atomic radii and relatively low valence states. Based on these factors, cadmium, chromium, copper, lead, manganese, and zinc are unlikely to provide effective indication of a release from the waste management.

Additionally, bromide is excluded from further consideration due to its association with seawater, which is known to influence site groundwater chemistry (**Section 1.3**). Therefore, Total organic carbon (TOC), potassium, and nitrate as nitrogen are considered potentially effective indicators of site leachate. However, for detection monitoring purposes at the WGSL, chemical oxygen demand (COD) is selected as a replacement for TOC, in spite of its lower concentration contrast. Both COD and TOC are gross-scale measures of the organic carbon content of water and a strong positive statistical correlation between TOC and COD is evident in site leachate. The WGSL's previous monitoring program incorporated COD as a detection monitoring parameter. Therefore, significantly more recent background data exist for COD in the WGSL database, thereby facilitating statistical analysis.

Ammonia-nitrogen exhibits a relatively large leachate-groundwater concentration contrast (approximately 2,700). Clearly, this parameter is highly concentrated in site leachate relative to groundwater. However, ammonia-nitrogen is most mobile under relatively strongly reducing and/or acidic conditions. Groundwater conditions at WGSL are such that rapid oxidation and rapid neutral pH buffering can be expected. These effects would serve to limit the mobility of ammonia-nitrogen upon release to the groundwater system. Therefore, ammonia-nitrogen, in spite of its large contrast value, would be expected to be a less effective detection monitoring parameters than COD, potassium, and nitrate.

2.2.3 Supplemental Geochemical Parameters

In addition to the use of VOCs, COD, potassium, and nitrate as detection monitoring parameters, the WGSL also incorporates analysis of supplemental geochemical parameters into the routine monitoring program. These supplemental geochemical parameters augment the site-specific detection monitoring parameters such that the general chemical nature of groundwater can be further characterized and potential mechanisms affecting water quality (both natural and man-made) can be better understood and evaluated. The supplemental parameters will not be evaluated statistically. However, they can, on an as-needed basis, provide critical data for evaluating data reliability and potential changes in groundwater quality without affecting the site-wide false-positive statistical error rate. The following supplemental geochemical parameters are to be analyzed in conjunction with routine detection monitoring parameters during each monitoring event:

- Total Alkalinity (reported as bicarbonate and carbonate)
- Bromide
- Chloride
- Sulfate
- Dissolved Calcium, Magnesium, Potassium, Sodium
- Total Dissolved Solids

2.2.4 Summary of Site-specific Detection Monitoring and Supplemental Parameters

The updated detection monitoring parameters for use in detection monitoring at the WGSL are summarized in **Table 4**. Concentration limits using both statistical and non-statistical methods, as appropriate, will be established for each of the detection monitoring parameters (as described in Section 4.0). In addition to routine analysis of the detection monitoring parameters, the supplemental geochemical parameters listed in **Table 4** will also be analyzed during each routine monitoring event. These supplemental monitoring parameters are collected for geochemical informational purposes and are not subject to statistical analysis or other compliance-related evaluation.

As additional leachate data is generated throughout the course of landfill operations, the detection monitoring parameter list will be re-evaluated and updated as required. If parameters are added to the routine detection-monitoring list, background concentrations will be determined using appropriate statistical methods and added to the long-term monitoring program after the changes are approved by the DOH.

2.3 Groundwater Monitoring Schedule

Groundwater monitoring will be performed each quarter for recently installed wells MW-10 and MW-11 until a minimum of 8 background data sets are obtained to facilitate statistical evaluation (i.e., quarterly for a minimum of two years). Quarterly monitoring will continue at monitoring wells 02M, 03M, and 07 for two years. If appropriate and approved by DOH, and following statistical evaluation of two years of quarterly data from the five monitoring wells, the monitoring frequency will decrease from quarterly to semiannually.

Table 4: Detection Monitoring Parameters

Waimānalo Gulch Sanitary Landfill

Constituents	Frequency	Locations
GROUNDWATER **Detection Monitoring Parameters** Volatile Organic Compounds (VOCs) -- EPA 8260B Parameters Chemical Oxy. Demand; Potassium, dissolved; Nitrate-N	Quarterly	Wells: 02M, 03M, 07, MW-10 and MW-11
Supplemental Monitoring Parameters Total Alkalinity (reported as bicarbonate and carbonate) Bromide; Chloride; Sulfate; Dissolved Calcium; Dissolv. Magnesium; Dissolv. Sodium; Total Dissolv. Solids	Quarterly	Wells: 02M, 03M, 07, MW-10 and MW-11
Groundwater Characterization Parameters (1) detection monitoring parameters, above (2) supplemental geochemical parameters, above (3) Subtitle D Appendix II parameters, below 17 "dissolved" trace metals: Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, Sn, V, Zn Cyanide, total; Total Sulfide; Semivolatile Organic Compounds; Pesticides; Herbicides; PCBs	Once, upon installation	MW-10 and MW-11 first event; any newly installed wells
LEACHATE **Routine Leachate Monitoring Parameters** Total Alkalinity (reported as bicarbonate and carbonate); Bromide; Chloride; Sulfate; Calcium, total; Magnesium, total; Potassium, total; Sodium, total; Total Dissolved Solids; Chemical Oxygen Demand; Nitrate-N; VOCs (EPA Method 8260B analytes)	Annually	Ash monofill (Cell 8 Sump), MSW Cell E-1 Sump, MW Cell 4B Sump
Non-Routine Leachate Characterization Parameters 17 "total" trace metals: Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, Sn, V, Zn Cyanide, total; Total Sulfide; Semivolatile Organic Compounds; Pesticides; Herbicides; PCBs Major cations and anions (covered by routine monitoring, above) – (Mg, Na, Ca, K, Cl, carbonate, sulfate, and bicarbonate) Major leachate indicators (partially covered by routine monitoring, above) – (TDS, TOC, Total Alkalinity, Nitrogen–Ammonia, Cl, Fe) Field measurements (performed in accordance with Sampling and Analysis procedures in Section 5.0) – (electrical conductance, pH, temperature, and turbidity)	Biennially	Ash monofill (Cell 8 Sump), MSW Cell E-1 Sump, MW Cell 4B Sump, plus any newly sampled leachate locations

3. LEACHATE MONITORING

Leachate monitoring has been performed on a routine basis at the WGSL in accordance with the WGSL solid waste operating permit and with previous site monitoring programs (e.g., RUST 1997). Currently, monitoring is conducted pursuant to the Monitoring Plan, the *Groundwater, Surface Water, and Leachate Sampling Guide* (WMI 2000), and the DOH letter request (DOH 2005). Monitoring is conducted quarterly and reported along with groundwater monitoring (e.g. Earth Tech, 2006).

3.1 Leachate Monitoring System

Leachate samples will be routinely collected to augment the database of potential source information and to evaluate the suitability of site monitoring parameters. Sampling of the following leachate monitoring locations (see **Figure 1**) is proposed on an annual basis:

- Ash monofill (Cell 8 Sump)
- MSW Cell E-1 Sump
- MW Cell 4B Sump (pending DOH approval and installation)

3.2 Leachate Monitoring Parameters

Routine leachate monitoring parameters will consist of the same parameters used for groundwater detection monitoring and the supplemental geochemical parameters including:

- Total Alkalinity (reported as bicarbonate and carbonate)
- Bromide; Chloride; Sulfate
- Calcium, total
- Magnesium, total
- Potassium, total
- Sodium, total
- Total Dissolved Solids

- Chemical Oxygen Demand
- Nitrate-N
- VOCs (EPA Method 8260B analytes)

Note that leachate samples are not filtered and, therefore, the major cations are shown as “total” for leachate (as opposed to “dissolved” for groundwater).
In addition to the above routine parameters, leachate samples collected from new leachate locations, and leachate samples collected from existing locations every two years (biennial characterization) will be analyzed for the following Subtitle D Appendix I parameters and “leachate indicators”, per the Guidance Document:

- 17 trace metals (Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Ni, Se, Ag, Tl, Sn, V, Zn) plus cyanide and sulfide
- Semivolatile Organic Compounds
- Pesticides
- Herbicides
- PCBs
- Major cations and anions (covered by routine monitoring, above) – (Mg, Na, Ca, K, Cl, CO3, SO4, HCO3)
- Major leachate indicators (partially covered by routine monitoring, above) – (TDS, TOC, Total Alkalinity, Nitrogen–Ammonia, Cl, Fe)
- Field measurements (performed in accordance with Sampling and Analysis procedures in Section 5.0) – (electrical conductivity, pH, temperature, and turbidity)

4. DATA EVALUATION METHODS

The following subsections describe the criteria by which groundwater data will be evaluated at the WGSL for detection monitoring purposes. These criteria represent a conservative approach to groundwater analysis and incorporate state–of–the–practice statistical and other evaluation methodologies consistent with the Guidance Document.

4.1 Statistical Methodology for Evaluation of Inorganic Parameters

Consistent with the existing groundwater monitoring program at the WGSL, an intra-well monitoring strategy using Shewhart-CUSUM control charts will be used for routine detection monitoring. Shewhart-CUSUM control charts (Gibbons, 1992; Gibbons 1994) are particularly effective in this capacity because they are capable of detecting both sudden and gradual changes in groundwater chemistry. Combined Shewhart–CUSUM control charts will be constructed for each well where intra-well monitoring is performed to provide a statistical and visual tool for detecting trends and abrupt changes in inorganic groundwater chemistry. The combined Shewhart–CUSUM procedure assumes that the data are independent and normally distributed. The most important assumption is independence (Gibbons, 1994). Therefore, care should be taken to never sample wells more frequently than sample independence can be demonstrated based on site–specific hydrogeological factors. The assumption of normality is somewhat less of a concern because the data can usually be adequately transformed for most applications. Non-detects (NDs) can be replaced by one–half of the PQL without serious consequence, although this procedure should be applied only to constituents that are detected in at least 25% of all samples. For data sets with less than 25% detected values in the background data set, non-parametric prediction limits will be used in lieu of Shewhart-CUSUM control charts.

Intra-well monitoring is always the preferred approach for wells not already impacted by inorganic waste constituents because it eliminates the spatial component of chemistry variability from the statistical evaluation. No impact from inorganic waste constituents has been identified to date in WGSL groundwater. A statistically significant trend in sodium concentrations exhibited by well 03M, as reported in 2004 was demonstrated to be unrelated to impact from the facility (A-Mehr, 2004).

For intrawell comparisons, a minimum of eight background samples (i.e., from each well in the monitoring program) is required for parametric (i.e., Shewhart-CUSUM) tests and 13 background samples for nonparametric (i.e., Prediction Limit) tests. Additional discussion of intrawell monitoring can be found in Gibbons (1987a, 1987b, 1990, and 1994). Statistical evaluation of groundwater monitoring data will be performed using DUMPStat^{TM} statistical modeling software, developed consistent with USEPA and ASTM guidance on groundwater monitoring at Subtitle D and Subtitle C facilities (Gibbons and Discerning Systems, 1994; www.discerningsystems.com).

4.2 Non-Statistical Methodology for Evaluation of VOCs

VOCs have been demonstrated to be effective indicators of a release from MSW landfills. However, because these compounds are rarely naturally detected in background groundwater samples, establishing monitor well–specific limits for VOCs is generally not an option. Therefore, a detection monitoring decision rule based on laboratory–specific practical quantitation limits (PQL) will be used to identify a statistically significant monitoring result with respect to VOCs.

It is generally accepted that when a landfill facility actually produces a leachate release to groundwater, multiple constituents contained in the leachate are associated with the source fluids and are subsequently detected by the groundwater monitoring program. A single constituent at very low concentration (i.e. below the PQL) typically is not the signature that is produced from an actual release. The calculation of laboratory–specific PQLs (Gibbons, et al., 1992) already incorporates a measure of the statistical uncertainty that is associated with the measurement process. Therefore, any VOC detected and verified at a concentration above the PQL would be statistically significant, and would therefore trigger assessment monitoring (or an alternative source demonstration if the detection is unrelated to a release from the landfill). This decision rule only applies in cases where the constituent has rarely, or never, been detected in background samples.

PQLs assure that the quantitative value of the analyte is close to the measured value. Method detection limits (MDLs), on the other hand, indicate that the analyte is present in the sample with a specified degree of confidence (Gibbons et al., 1991). For analytes with estimated concentrations greater than the MDL but not the PQL, it can only be concluded that the true concentration is greater than zero; the actual concentration cannot be determined. The actual concentration of an analysis result between the PQL and the MDL (often referred to as a "trace" result or a "J-flagged" result) may actually be less than the MDL. Therefore, comparison of a detected concentration to a maximum contaminant level (MCL), or any other concentration limit, is not meaningful unless the concentration is greater than the PQL.

Although the use of VOC results reported between the MDL and PQL is not appropriate for use in the decision rule, such trace/J-flagged results can be used to guide further investigation in the event that long-term, repeatable trace/J-flagged results are observed, such as the recent case with WGSL well 07; in that case, repeatable trace detections of VOCs were the basis for initiating further study that resulted in the identification of a probable non-landfill source (GeoChem Applications, 2005).

4.3 Detection Verification Procedure

If groundwater analysis results have been collected, checked for quality assurance and quality control (QA/QC) consistency and are determined to be above the appropriate statistical level (i.e., the Shewhart-CUSUM control chart limit or non-parametric prediction limit for inorganic monitoring parameters, or the PQL for one or more VOCs), the results should be verified in accordance with the objectives of 40 CFR Part 258.53 and HAR Chapter 11-58.1.

Verification resampling is an integral part of the statistical methodology described by the USEPA's *Addendum to Interim Final Guidance Document – Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (July 1992). Without verification resampling, much larger statistical limits would be required to achieve site–wide false positive rates of 5% or less. Furthermore, the resulting false negative rate would be greatly increased. For the WGSL groundwater detection monitoring program, the following procedure will be performed for each compound determined to initially be above its statistical limit. Note that only those compounds that initially exceed their statistical limit should be sampled for verification purposes; otherwise, an unacceptably high false-positive error rate can be expected (e.g., if PCE is the only compound detected during an EPA Method 8260B scan, then only PCE is targeted and reported by the laboratory during the retest).

Volatile Organic Compounds

If one or more VOCs is/are detected above statistical limit(s) (i.e., PQL), one immediate resample and analysis should be conducted. A statistical exceedance will be recorded and assessment monitoring initiated if any single VOC is measured above the PQL in the verification resample, or an alternative source demonstration may be performed if the exceedance is not anticipated to be associated with a release from the facility.

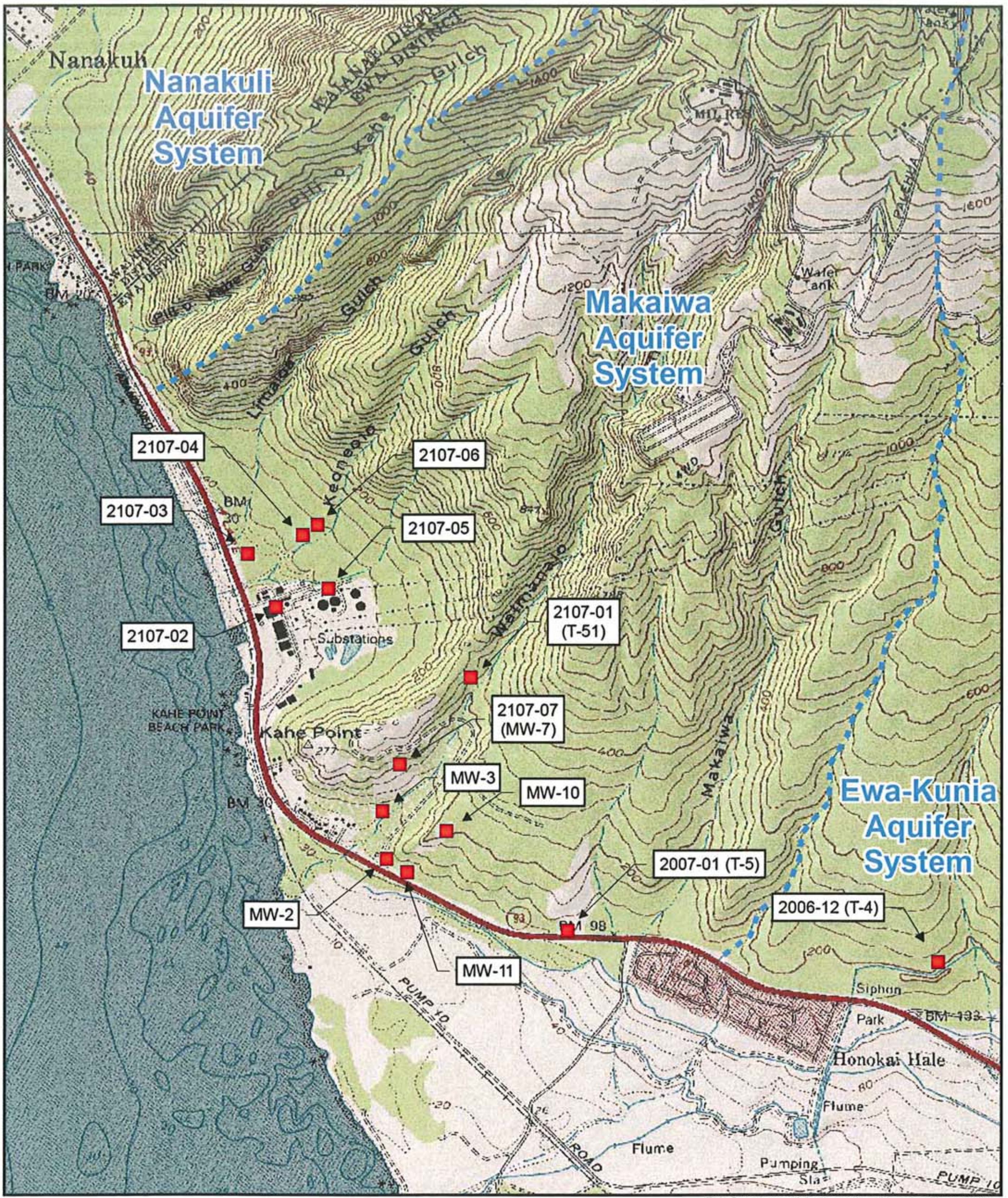
Inorganic Constituents

If one or more of the inorganic parameters are detected above their statistical limit (i.e., Shewhart–CUSUM control chart limit or non-parametric Prediction Limit), one verification resample will be collected at the next scheduled sampling event. A statistical exceedance will be recorded and assessment monitoring initiated if verification of an elevated parameter is confirmed for one discrete verification resample, or an alternative source demonstration performed if the exceedance is not a result of a release from the facility

5. FIGURES

See attached figures referenced in this document:

Figure 1 - Well Location Map
Figure 2 - Near Vertical Dikes in the Vicinity of Waimānalo Gulch Sanitary Landfill
Figure 3 - Approximate Water Table Elevation, WGSL and Vicinity



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LEGEND

- 🟥 Monitoring Well Locations
- ▪▪ Major Aquifer Approximate Boundary

FIGURE 1

AREA AQUIFERS AND MONITORING WELLS

WAIMANALO GULCH SANITARY LANDILL

0637105805F02R01.mxd 11/14/07 | KBD

NOTES:

1. EXISTING TOPOGRAPHY BASED ON 30 DECEMBER 2005 AND 29 DECEMBER 2001 AERIAL SURVEY PROVIDED BY OWNER USING LOCAL COORDINATE SYSTEM.

2. LOCATIONS OF DIKES D1, D2, AND D3 ARE BASED ON HISTORICAL REPORTS (E.G. RUST, 1993, 1997; EARTH TECH, 2006A) BUT NO EVIDENCE OF REPORTED DIKES D1, D2, AND D3 IS VISIBLE IN THE SLIDE SLOPES OF WAIMANALO GULCH. LOCATIONS OF DIKES D3, D4, AND D5 ARE BASED ON RECENT GEOLOGIC RECONNAISSANCE MAPPING AND GPS COORDINATES (MINK & YUEN AND KNIGHT ENTERPRISES, 2006).

GeoSyntec Consultants

SITE PLAN

WAIMANALO GULCH LANDFILL
OAHU, HAWAII

FIGURE NO.	2
PROJECT NO.	WR0935
DATE:	DECEMBER 2006

P:\GIS\Waimanalo\AI\August2007\Figure 2 Site Plan with MWs.ai

Notes:

1. MSL - Mean Sea Level
2. Posted values are general water levels elevations (ft above MSL)

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Approximate Water Table Elevation

WGSL and Vicinity
Kapolei, Oahu, Hawaii

DRAFT

Figure 3

WR0935

December 2006

P:\GIS\Waimanalo\AI/Figure 5 Site Aerial.ai

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Appendix E

Botanical Resources Report for Alternative Municipal Refuse Disposal Sites on the Island of O‘ahu, 2007

Botanical resources report for alternative municipal refuse disposal sites on the Island of Oʻahu[1]

February 20, 2007 *AECOS* Consultants No. 065

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INTRODUCTION

Although solid waste generated by the populace on the Island of Oʻahu is increasingly diverted to various other forms of disposal, there remains today a need to landfill a portion of the waste stream. The need for a solid waste disposal site will likely be reduced in the future, but not eliminated. This report considers botanical resources extant at potential landfill sites as presented by the City & County of Honolulu. The purpose of this report is to establish which, if any of the proposed locations, support plants of special concern: either species that are listed by the state and federal governments under an endangered species program, or plant assemblages that are substantially native in their composition, and therefore represent intact or partially intact native communities capable of supporting biological resources unique to the Hawaiian Islands.

Five (5) potential landfill sites are investigated: Māʻile Quarry, Nānākuli B, Waimanalo Gulch (lateral expansion), Makaīwa Gulch, and Kapaʻa (Fig. 1). All but the last site are located on leeward Oʻahu; Kapaʻa is the Ameron quarry site on windward Oʻahu (located between Kāneʻohe and Kailua).

With respect to the potential for any of the sites to support an assemblage of plants with significant native species representation, it must be realized that selection of potential sites was limited to those parts of the island *makai* (seaward) of the Underground Injection Control (UIC) and *makai* of the Groundwater Protection Zone (GPZ). The boundaries defining these two

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[1] This report was prepared for R. M. Towill for inclusion in the EIS titled "Waimanalo Gulch Sanitary Landill Lateral Expansion EIS."

zones closely approximate each other and the zones occupy most of the interior of the Island of O'ahu. This requirement for placement of a waste landfill restricts such development to a rather narrow coastal belt around the Island. This coastal belt is mostly populated or otherwise developed and disturbed; with few exceptions, most disturbed by human activities, including those of the ancient Hawaiian population. Further, from an initial larger set of potential sites, some that were in more pristine areas (such as 'Ohikilolo Valley) were eliminated from consideration for both environmental and accessibility reasons. Thus the selection process has already moved significantly in a direction driven in part by factors that minimize adverse impacts on special botanical resources.

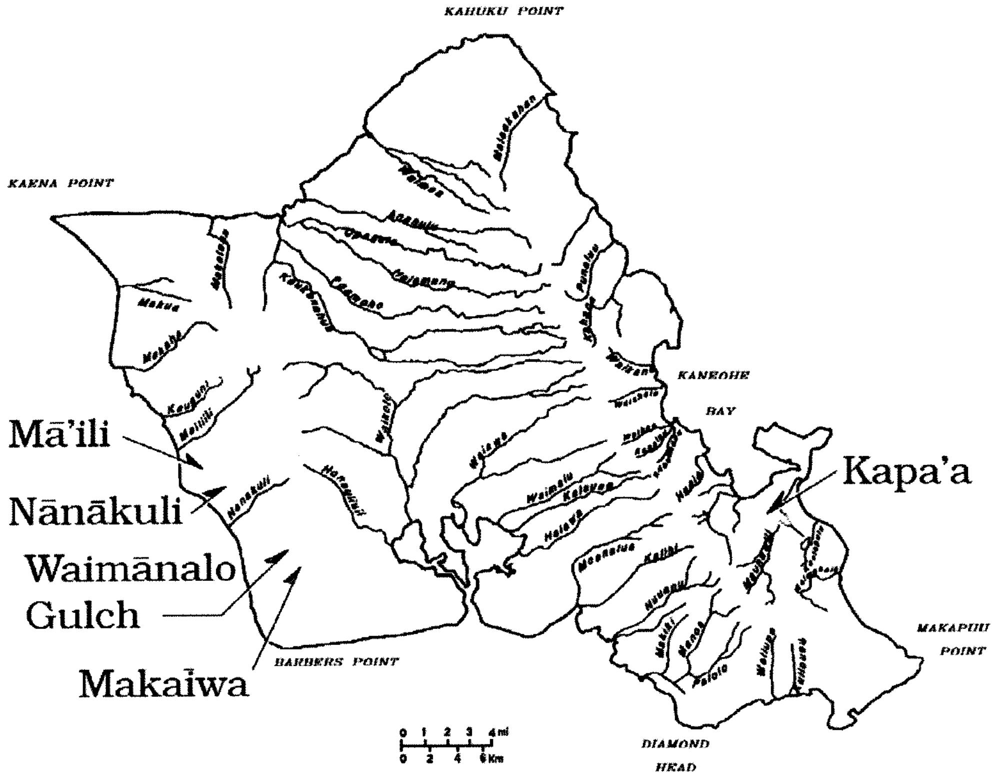

Figure 1. Map of O'ahu showing location of the five sites considered for solid waste landfills on the island.

METHODS

For various reasons, it was not possible to conduct surveys of the botanical resources found on each of the proposed landfill sites. Permission was granted, and a site survey conducted, in the Waimanalo Gulch Expansion Area, representing the alternative of expanding the present-day solid waste landfill site further back up into Waimanalo Gulch. For the other locations, botanical resources were assessed by means of consulting past reports, reviewing the Hawaii Natural Heritage Program (HNHP) data base, and visiting the area to establish the nature of the extant vegetation and the likelihood that valuable botanical resources would be present. Results of these approaches to establishing actual more likely botanical resources present are presented under the individual site descriptions that follow.

The botanical survey for the Waimanalo Gulch expansion area followed a standard protocol utilized for discovery-type surveys called a wandering pedestrian transect. In more basic terms, this amounts to a botanist hiking around the property in a manner that allows a visual survey of all of the various types of habitats present on the property. During the transect, each plant species is noted as it is encountered, material is collected where a field identification proves difficult, photographs are taken, and a sense of the relative abundance of each species on the property is developed.

As the survey progressed, 15 waypoints (intermittent position locations) were entered into a hand-held GPS unit (Garmin *eTrex* "Vista"®). These 15 positions were later downloaded into a computer mapping program (TOPO!®) and a map produced showing the general route of the survey.

The survey of the Waimanalo Gulch was conducted during the wet season (January 2007). Consequently, most of the plants encountered (including annuals) were growing well and were in flower, making positive field identifications relatively straight forward. Nonetheless, a one time survey cannot expect to list every plant species growing on a subject property. Some species are seasonal or opportunistic, while others might be present, but in such low numbers that they are simply not encountered. Every square foot of the land cannot reasonably be covered, and some areas—in this case dangerously steep portions of the gulch margins and high cliff faces—will not be accessed. The botanist attempts to reach all physiographic types characteristic of the property and reach plants appearing from a distance to be "unique". Steep but traversable portions of the gulch margins and smaller cliff faces serve as representative of the inaccessible habitats on the property.

SITE DESCRIPTIONS

This section of the report provides known information on the botanical resources of the five sites considered as potential landfill sites. The discussion of sites is arranged from west to east as shown in Fig. 1.

MĀ'ILI

The Mā'ili Site (TMK: 8-7-10:003) is located in the Wai'anae District on leeward O'ahu. The approximately 200 ac (80+ ha) site presently supports an active limestone quarrying operation (Fig. 2). Although most of the site is clearly disturbed as quarry pits, material sorting and storage areas, access roads, or other ancillary operations as needed to support the quarry, some portions of the property do appear to retain a remnant *kiawe* forest. At least three separate quarry sites are present. The active quarry is the large central pit in Fig. 3. This pit has been expanded to the northwest through the buffel grass field seen in the satellite image since the image was obtained. Another pit, largely overgrown, appears in the satellite photo to the southeast. The original quarry pit is directly south, seen as an area of white soil with kiawe trees. Slurry lagoons lie along one side of this quarry pit.

The vegetation is largely ruderal in nature: consisting of plants adapted to disturbed ground. The assemblage would be mostly non-native in composition, although indigenous *'uhaloa* (*Waltheria indica*) and *'ilima* (*Sida fallax*) may be present as both respond well to land clearing. Less recently disturbed or undisturbed areas support either buffel grass (*Cenchrus ciliaris*) grassland or a *kiawe* forest with a buffel grass groundcover.

The adjacent Naval Radio Transmitting Facility (NRTF) was previously surveyed by Funk (Botanical Associates, 1984; Traverse Group, 1987) and more recently, Guinther and David (2003) surveyed the highly disturbed (by regular mowing) environment of the central part of NRTF across Pa'akea Road from Mā'ili Quarry. In general, there are a number of rare and/or listed species of plants found at much higher elevations of the Naval Reservation which extends to Kolekole Pass on the Wai'anae ridgeline, but few species of interest or concern have been found on the lowlands. Exceptions are a semi-aquatic fern called *'ili'ihi* (*Marsilea villosa*) and scattered occurrences of an endemic hibiscus, *ko`oloa ula* (*Abutilon menziesii*). The fern is discussed further on page 31; the hibiscus was noted in Guinther & David (2002) and later confirmed by Navy biologists (Julie Rivers, pers. comm.) This hibiscus, a listed species, is not expected to be present on the Mā'ili Site, although its presence cannot be ruled out entirely, as the only reason it would not be present is the long-standing disturbance of most of the property.

No surveys of botanical resources at the Mā'ili Limestone Quarry are known to this author. The plant assemblages present is certainly dominated by non-natives. Native plants of interest or concern (for example, listed species) would be rare if present at all.

Figure 2. Pacific Aggregate (Mā'ili) Limestone Quarry. Quarry operations are mining an ancient limestone (reef) deposit, slowly removing the *kiawe* forest (background) on the northwest end of the property.

NĀNĀKULI

The Nānākuli (or "Nānākuli B" Site in some records of the site selection process; TMK: 8-7-9:001 & 8-7-21:026) is located in the Wai'anae District on leeward O'ahu. The site is presently undeveloped, but is adjacent to (and the land owned by) a private entity (PVT Land Co.) operating a landfill that accepts mostly construction debris. The PVT Landfill is located on the west side of Lualualei Naval Road across from the proposed Nānākuli Site, which extends along the east side of that road to the vicinity of an old cement plant (Fig. 4 and 6).

Figure 3. Mā'ili Site (outlined in orange) is mostly a disturbed area supporting a limestone quarry operation. A *kiawe* forest is present in the southwest and northwest portions of the parcel. All of the upper corner in this satellite image is NRTF Lualualei where the grounds are regularly mowed to reduce fire hazard.

Figure 4. Much of the Nānākuli Site is low sloping grassland, here looking across the site towards the old cement plant and Lualualei Valley. The PVT Landfill is the hill across the Lualualei Naval Road (left of center).

The Nānākuli Site consists of gradually rising ground that becomes steeper to the east, eventually reaching a peak at 1890 ft (576 m) known as Pu'u Heleakalā. The lower, moderately sloped areas are colluvium: eroded material of basaltic origin moved by gravity and water flow downslope from the ridge. Above the colluvial slope (generally above 400 to 500 ft (120-150 m) the layers of basalt representing ancient lava flows form a characteristic cliff and ledge formation (Fig. 5).

The proposed landfill site was surveyed for botanical resources by *AECOS* Inc. in 1991 (Guinther & Miranda, 1992). Nearby lower slopes of Pu'u Heleakalā have also been surveyed for a proposed golf course just north of the Nānākuli site (Char, 1990a).

The vegetation of the site is mostly grassland. The dry conditions and occasional fires tend to favor exotic grasses over native grasses, shrubs, and trees. Scrutiny of the satellite image (Fig. 3) reveals a complex of fire roads cut into the steeper slopes to control the spread of fires that can occur with unfortunate regularity on leeward O'ahu between about May and September of most years. Buffel grass dominates, and becomes self-preserving by increasing the intensity of fires that occur, itself capable of regrowing from basal stems when rains return (Hughes, Vitousek, and Tunison, 1991; Tix, undated, Latz, 1991). Native Hawaiian plants are not adapted to fire, and are gradually eliminated from areas subjected to repeated fires (Mueller-Dombois, 1981).

Figure 5. Alluvial pasture land (foreground), colluvial slope (middle ground with boulders and *kiawe* trees) and cliff and ledge habitats on Pu'u Heleakalā at and above the Nānākuli Site.

Table 1 is modified from Guinther & Miranda (1992) to reflect plants observed in a survey of the lands east of Lualualei Naval Road comprising the proposed Nānākuli Site (the complete survey report covered lands on both sides of the road as well as along Ulehawa Stream). The species list (flora) is fairly typical for this part of the Wai`anae coast. The only species of interest is *'ihiahialo'e* or coast sandalwood (*Santalum ellipticum*), an endemic species that does persist in areas invaded by exotics (Wagner, Herbst, and Sohmers, 1990) and Hawaiian cotton or *ma'o* (*Gossypium*

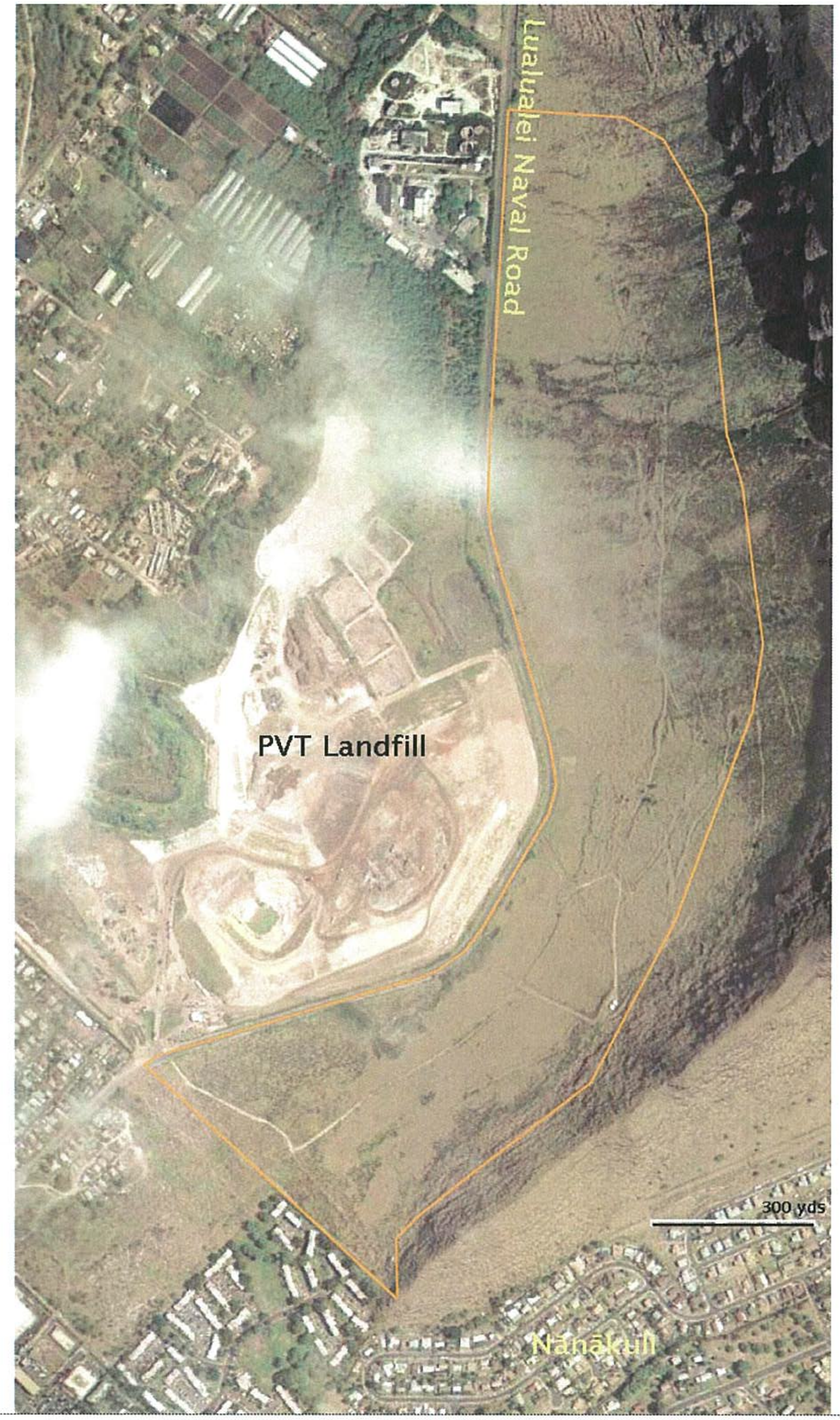

Figure 6. The Nānākuli Site (outlined in orange) lies on the east side of Lualualei Naval Road against a ridge of Pu'u Heleakalā (far right).

Table 1. Listing of plants (flora) for the Nānākuli Site, west O'ahu, Hawai'i from a survey conducted October and December, 1991 (Guinther & Miranda, 1992)

Species listed by family	Common name	Status	Abundance		Notes
			LOW	UPL	
FERNS					
POLYPODIACEAE					
indet.	---	Nat.		R	(2)
PTERIDACEAE					
Pteris sp.	?cliff brake	Nat.		R	
FLOWERING PLANTS					
DICOTYLEDONES					
AMARANTHACEAE					
Amaranthus spinosus L.	spiny amaranth	Nat.		R	
ASTERACEAE (COMPOSITAE)					
Bidens sp.	---	Nat.		U	
Emilia fosbergii Nicolson	*pualele*	Nat.		O	
Pluchia carolinensis (Jacq.) G. Don	sourbush	Nat.		U	
Sonchus oleraceus L.	sow thistle	Nat.		U	
Synedrella nodiflora (L.) Gaertn.	nodeweed	Nat.		R	
Verbesina enceliodes (Cav.) Benth. & Hook.	golden crown-beard	Nat.		U	
CACTACEAE					
Opuntia ficus-indica (L.) Mill.	*pānini*	Nat.		U	
CONVOLVULACEAE					
Ipomoea cairica (L.) Sweet	*koali 'ai*	**Ind.**		C	
Merremia aegyptia (L.) Urb.	hairy merremia	Nat.		C	
EUPHORBIACEAE					
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	Nat.		U	
FABACEAE					
Acacia farnesiana (L.) Willd.	*klu*	Nat.	U	O	
Desmanthus virgatus (L.) Willd.	virgate mimosa	Nat.	C		
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat.	A	A	
Indigofera suffruticosa Mill.	indigo	Nat.	R	U	
Macroptilium lathyroides (L.) Urb.	cow pea	Nat.		O	
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	*kiawe*	Nat.		O	
LAMIACEAE					
Hyptis pectinata (L.) Poit.	comb hyptis	Nat.		U	
MALVACEAE					
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	Nat.		R	
Abutilon incanum (Link) Sweet	*ma'o*	**Ind.**		O	(1)
Gossypium tomentosum Nutt. ex Seem.	*ma'o*	**End.**	U		
Malvastrum coromandelianum (L.) Garck	false mallow	Nat.		O	(1)

Table 1 (continued).

Species listed by family	Common name	Status	Abundance LOW	Abundance UPL	Notes
MALVACEAE (continued)					
Sida fallax Walp.	*`ilima*	**Ind.**	C	C	(1)
PASSIFLORACEAE					
Passiflora foetida L.	love-in-a-mist	Nat.		R	
PORTULACACEAE					
Portulaca oleracea L.	pigweed	Nat.		O	
Portulaca pilosa L.				O	
SANTALACEAE					
Santalum ellipticum Gaud.	*'iliahialo'e*	**End.**		R	
STERCULIACEAE					
Waltheria indica L.	*`uhaloa*	Nat..	A	A	(1)
VERBINACEAE					
Stachytarpheta jamaicensis (L.) Vahl.	Jamaican vervain	Nat.		U	
MONOCOTYLEDONES					
COMMELINACEAE					
Commelina benghalensis L.	hairy *honohono*	Nat.		O	
POACEAE					
Cenchrus ciliaris L.	buffelgrass	Nat.	AA	A	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat.	P	R	
Melinus repens (Willd.) Zizka	Natal redtop	Nat.	R		
Panicum maximum Jacq.	Guinea grass	Nat.		C	

STATUS = distributional status for the Hawaiian Islands:
end. = endemic; native to Hawaii and found naturally nowhere else.
Ind. = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
nat. = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

ABUNDANCE AREAS:
LOW – Grassland, to moderate slopes on colluvium.
UPL – Rocky tallus and cliffed areas

ABUNDANCE CODES:
Abundance codes used in 1991 have been modified here to fit more recent practice as reflected in Table 2, below.

NOTES:
(1) – locally abundant in disturbed areas (road and fire trail cuts).
(2) – only dried fronds presnt.

tomentosum). Neither one is a listed species, but both are increasingly uncommon on O'ahu due to steady development of dry, lowland environments for housing. In 1991, *ma'o* was far more abundant in this area on the west side of Lualualei Naval Road; being rather rare in the proposed landfill site. Char (1990a) reported a very similar flora for the adjacent property to the north, although with only one endemic plant present, the *wiliwili* (*Erythrina sandwicensis*) tree.

Although no part of the property is included in a designated critical habitat for an endangered species, the eastern property boundary lies west some 200 and 300 ft (60 to 90 m) of the O'ahu critical habitat Unit 15 boundary (USFWS, 2003). Unit 15 in this area incorporates the steepest parts of Pu'u Heleakalā; on the western slope incorporating elevations above 400 to 600 ft (120 to 180 m). This part of Unit 15 includes critical habitat for an endangered species of *'akoko* (*Chamaesyce kuwaleana*; see page 33).

WAIMĀNALO GULCH EXPANSION AREA

Waimānalo Gulch (TMK: 9-2-3:072 & 073) is located along the southern slopes of the Wai'anae Mountain. It is the last gulch above the 'Ewa Plain, traveling westward, before the Wai'anae coast, lying between Kahe Gulch on the west and an unnamed gulch (part of Makaīwa watershed) on the east. The Expansion Area comprises about 60.5 acres (24 ha) of the property above the existing municipal landfill (Fig. 7).

The v-shaped gulch is narrow and incised on the order of 200 ft (60 m) into the Wai'anae mountain. The gulch margins vary from steep to very steep (Fig. 8) and show the same alternating cliff and ledge structure so apparent on the dry, leeward parts of the island. Along the bottom of the gulch is an intermittent stream.

The Waimānalo Gulch Expansion Area was surveyed for this report. The general route taken by the biological team is indicated in Fig. 9 from the recorded waypoints as described under Methods, above, in this case transferred onto a satellite image after plotting on a topographic map. The actual route taken by the team was more convoluted than is shown on the map. The results of the floristic survey are summarized in Table 2: a listing of species observed and their relative abundances as recorded by the survey team.

The vegetation of the expansion area is fairly homogeneous, consisting of grassed slopes with scattered *kiawe* trees. In places, especially along the

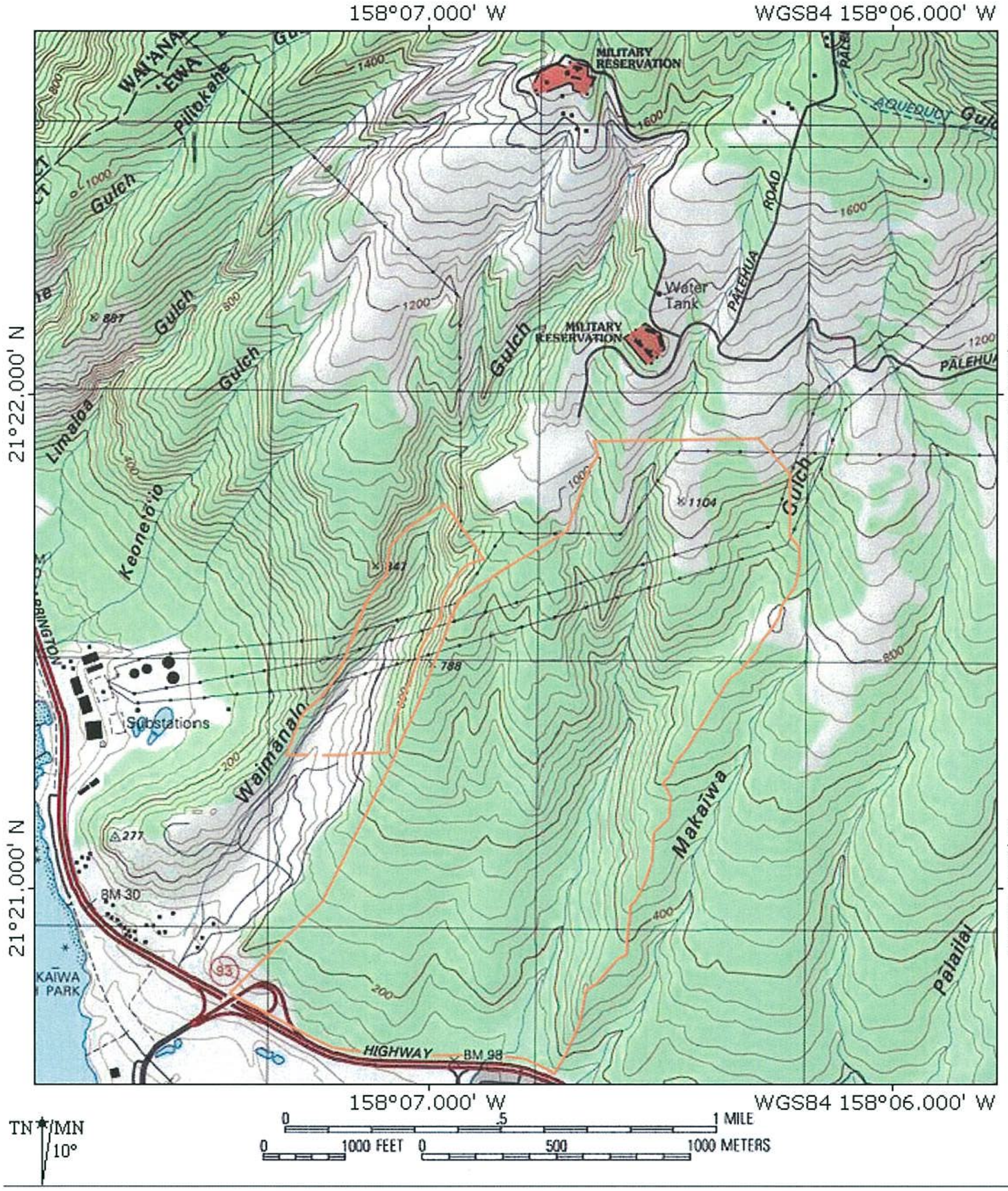

Figure 7. Topographic map showing the Waimānalo Gulch expansion area and Makaīwa Gulch parcel.

bottom and eastern slope of the gulch, the trees form an open forest grading to savannah. The grass is predominantly Guinea grass (*Panicum maximum*),although near the ridgelines, buffel grass (*Cenchrus ciliaris*) becomes the dominant species, and in one area along the top of the western ridge, native pili grass (*Heteropogon contortus*) is abundant in large patches. *Kiawe*, *klu* (*Acacia farnesiana*), and *koa-haole* dominate the scrub-shrub and tree components of the vegetation, which are relatively sparse on the upper slopes particularly, and made more so by recent fires that have burned across portions of the property and destroyed many of the *kiawe* trees. Crude roads have been bulldozed into the gulch, and these are marked by a diverse assemblage of weedy plants (see Note 1 in Table 2).

Figure 8. Steep, rocky terrain typifies most of the Waimānalo Gulch Expansion Area. In the background (down slope) can be seen the upper end of grading operations at the existing municipal landfill

A total of 50 species were recorded from the proposed Expansion Area. Of these, only 6 species (12%) are indigenous species (plants native to Hawai`i, but found elsewhere as natives as well). Lowland sites on O'ahu typically have between 6 and 12% of the species present as natives. Thus, the percentage of natives in lower Waimānalo Gulch is better than might be expected, although not special. All of the species are widely encountered on leeward O'ahu; none is considered rare or threatened. The only unusual botanical resource encountered was several large patches of *pili* grass across a broad shoulder of the ridge between Waimānalo Gulch and Kahe

Gulch at the 600 ft (180 m) elevation. *Pili* grass may be locally abundant because there is no longer any grazing of cattle in this particular area.

Table 2. Listing of plants (flora) for the Waimanalo Gulch expansion area, west O'ahu, Hawai'i

Species listed by family	Common name	Status	Abundance	Notes
FLOWERING PLANTS				
DICOTYLEDONES				
AMARANTHACEAE				
Amaranthus spinosus L.	Spiny amaranth	Nat.	U	(1)
Amaranthus virdis L.	slender amaranth	Nat.	R	
ASCLEPIADACEAE				
Stapelia gigantea N.E. Brown	giant toad plant	Nat.	U	
ASTERACEAE (COMPOSITAE)				
Agerarum conyzoides L.	*maile honohono*	Nat.	U2	(1)
Bidens cynapiifolia Kunth	---	Nat.	R	
Emilia fosbergii Nicolson	*pualele*	Nat.	O2	(1)
Pluchia carolinensis (Jacq.) G. Don	sourbush	Nat.	U	
Sonchus oleraceus L.	sow thistle	Nat.	O2	
Tridax procumbens L.	coat buttons	Nat.	U3	(1)
Verbesina enceliodes (Cav.) Benth. & Hook.	golden crown-beard	Nat.	R	
CACTACEAE				
Opuntia ficus-indica (L.) Mill.	*pänini*	Nat.	R	
CHENOPODIACEAE				
Atriplex cf. *suberects* Verd.	saltbush	Nat.	R	
CONVOLVULACEAE				
Ipomoea obscura (L.) Ker-Gawl.	---	Nat.	U	
Merremia aegyptia (L.) Urb.	hairy merremia	Nat.	C	
CUCURBITACEAE				
Momordica charantia L.	balsam pear	Nat.	U	
EUPHORBIACEAE				
Chamaesyce hirta (L.) Millsp.	garden spurge	Nat.	O2	
Ricinus communis L.	castor bean	Nat.	U	
FABACEAE				
Acacia farnesiana (L.) Willd.	*klu*	Nat.	C	
Crotalaria incana L.	fuzzy rattlepod	Nat.	U	
Crotalaria pallida Aiton	smooth rattlepod	Nat.	O3	(1)
Desmanthus virgatus (L.) Willd.	virgate mimosa	Nat.	C	
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat.	C	
Indigofera suffruticosa Mill.	indigo	Nat.	U	
Macroptilium atropurpureum (DC) urb.	---	Nat.	C	(1)

Table 2 (continued).

Species listed by family	Common name	Status	Abundance	Notes
FABACEAE (continued)				
Macroptilium lathyroides (L.) Urb.	cow pea	Nat.	U	
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	*kiawe*	Nat.	O	(2)
LAMIACEAE				
Hyptis pectinata (L.) Poit.	comb hyptis	Nat.	R	(1)
Leonotis nepetifolia (L.) R. Br.	lion's ear	Nat.	A	(1)
MALVACEAE				
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	Nat.	O	
Abutilon incanum (Link) Sweet	*ma‘o*	**Ind.**	C	
Malvastrum coromandelianum (L.) Garck	false mallow	Nat.	U	(1)
Sida fallax Walp.	*`ilima*	**Ind.**	O	
NYCTAGINACEAE				
Boerhavia acutifolia (Choisy) J.W. Moore	*alena*	**Ind.**	U	
PLUMBAGINACEAE				
Plumbago zeylanica Lam.	*‘ilie‘e*	**Ind.**	U	
PAPAVERACEAE				
Argemone sp.	prickly poppy	???	R	(3)
PASSIFLORACEAE				
Passiflora foetida L.	love-in-a-mist	Nat.	R	
PORTULACACEAE				
Portulaca oleracea L.	Pigweed	Nat.	U	
SOLANACEAE				
Nicandra physalodes (L.) Gaertn.	apple of Peru	Nat.	R	
Nicotiana glauca R.C. Graham	tree tobacco	Nat.	C	(1)
Solanum americanum Mill.	*pöpolo*	**Ind.**	R	
Solanum lycopersicum var. *cerasiforme* (Dunal) Spooner, G. Anderson,& Jansen	wild cherry tomato	Nat.	R	
STERCULIACEAE				
Waltheria indica L.	*`uhaloa*	Nat..	C	
VERBINACEAE				
Stachytarpheta jamaicensis (L.) Vahl.	Jamaican vervain	Nat.	R	
MONOCOTYLEDONES				
COMMELINACEAE				
Commelina benghalensis L.	hairy *honohono*	Nat.	R	
POACEAE				
Cenchrus ciliaris L.	buffelgrass	Nat.	AA	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat.	U2	

Table 2 (continued).

Species listed by family	Common name	Status	Abundance	Notes
POACEAE (continued)				
Heteropogon contortus (L.) P. Beauv, ex Roem. & Schult.	*pili* grass	**Ind.**	U3	
Melinus repens (Willd.) Zizka	Natal redtop	Nat.	O2	
Panicum maximum Jacq.	Guinea grass	Nat.	AA	
Paspalum sp.			R1	(1)

STATUS = distributional status for the Hawaiian Islands:
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Ind. = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
nat. = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

ABUNDANCE AREAS:
Expansion Area is treated as one plant assemblage or association.

ABUNDANCE CODES:
R – Rare; seen in only one or perhaps two locations.
U – Uncommon; seen at most in several locations
O – Occasional; seen with some regularity
C – Common; observed numerous times during the survey
A – Abundant; found in large numbers; may be locally dominant.
AA - Very abundant; abundant and dominant; defining vegetation type.

Numbers following an occurrence rating indicate clusters within the survey area. The ratings above provide an estimate of the likelihood of encountering a species within the specified survey area; numbers modify this where abundance, as encountered, tends to be greater than the occurrence rating:
1 – several plants present
2 - many plants present
3 – locally abundant

NOTES:
(1) – Especially abundant in disturbed areas as along rough graded road into valley.
(2) – Previously more common, but many burned trunks now present.
(3) – Plant lacking flowers or fruit.

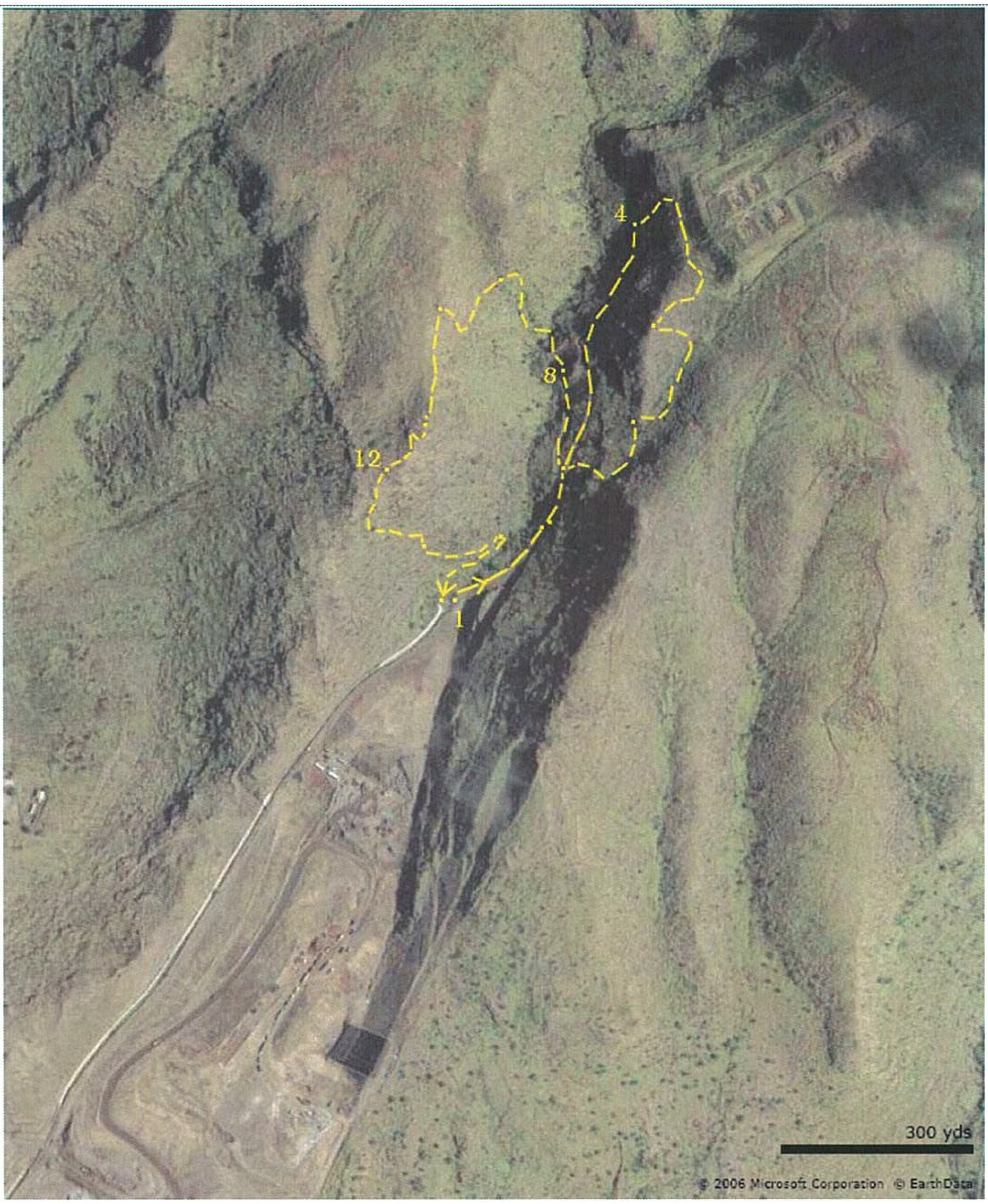

Figure 9. Satellite image of the Waimanalo Gulch landfill and proposed expansion area further upslope, showing general route taken during the botanical survey. Selected waypoints are numbered.

MAKAĪWA GULCH

Makaīwa Gulch (TMK: 9-2-3) is located along the southern slopes of the Wai'anae Mountain directly east of Waimanalo Gulch. The proposed site actually is a parcel encompassing two unnamed gulches between Makaīwa Gulch on the west and Waimanalo Gulch on the east (Fig. 7), within which a 338 ac (137 ha) area (essentially the eastern of the two unnamed gulches) was selected as an optional location for a municipal landfill. This gulch has generally less severe side slopes than nearby Waimānalo Gulch (Fig. 10).

Figure 10. The unnamed gulch (proposed landfill site) immediately west of Makaīwa Gulch photographed in the early morning.

Because this land is part of the land-owners long-range plans for expansion of the Makakilo residential area (to be called Makaīwa Hills), various surveys have been undertaken on the property, including botanical surveys in 1990 (Char, 1990b) and 2005 (David and Guinther, 2006b). A flora listing from the latter survey (and including plants observed only in 1990) is provided herein as Table 3.

Table 3. Listing of plants (flora) for the Makaīwa Gulch Site on west Oʻahu, Hawaiʻi (after David & Guinther, 2006 and Char, 1990b).

Species listed by family	Common name	Status	Abundance	Notes
FERNS				
PTERIDACEAE				
Doryopteris decipiens (Hook.) J. Sm.	*kumuniu*	**End.**	--	(1)
FLOWERING PLANTS				
DICOTYLEDONES				
ACANTHACEAE				
Asystasia gangetica (L.) T. Anderson	Chinese violet	Nat.	U	
AIZOACEAE				
Trianthema portulacastrum L.	---	Nat.	O	
AMARANTHACEAE				
Achyranthes aspera L.	---	Nat.	--	(1)
Amaranthus spinosus L.	spiny amaranth	Nat.	--	(1)
Amaranthus viridis L.	slender amaranth	Nat.	U	
ANACARDIACEAE				
Schinus terebinthefolius Raddi	Christmasberry	Nat.	R	
ARALIACEAE				
Schefflera actinophylla (Endl.) Harms.	octopus tree	Nat.	--	(1)
ASCLEPIADACEAE				
Crypyostegia grandiflora (Roxb.) R.Br.	Indian rubber vine	Nat.	--	(1)
Stapelia gigantea N.E. Brown	carrion flower	Nat.	O	
ASTERACEAE (COMPOSITAE)				
Acanthospermum australe (Loefl.) Ktze.	spiny-bur	Nat.	--	(1)
Ageratum conyzoides L.	*maile hohono*	Nat.	R	
Ambrosia artemisiifolia L.	common ragweed	Nat.	--	(1)
Bidens cynapiifolia Kunth	---	Nat.	O	
Bidens pilosa L.	---	Nat.	--	(1)
Calyptocarpus vialis Less.	---	Nat.	O	
Conyza bonariensis (L.) Cronq.	horseweed	Nat.	R	
Eclipta prostrata (L.) L.	---	Nat.	R	
Emilia fosbergii Nicolson	*pualele*	Nat.	U	
Lactuca serriola L.	prickly lettuce	Nat.	--	(1)
Lipochaeta lobata (Gaud.) DC	*nehe*	**End.**	--	(1)
Pluchia carolinensis (Jacq.) G. Don	sourbush	Nat.	U	
Pluchea indica (L.) Less.	Indian fleabane	Nat.	--	(1)
Sonchus oleraceus L.	sow thistle	Nat.	R	
Tridax procumbens L.	coat buttons	Nat.	U	
Verbesina enceliodes (Cav.) Benth. & Hook.	golden crown-beard	Nat.	U	

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
ASTERACEAE (continued)				
Vernonia cinerea var. *parviflora* (Reinw.) DC	little ironweed	Nat.	--	(1)
Xanthium strumarium L.	*kikiana,* cockleburr	Nat.	R	
BRASSICACEAE				
Lepidium virginicum L.	peppergrass	Nat.	--	(1)
CACTACEAE				
Opuntia ficus-indica (L.) Mill.	*panini*	Nat.	R	
CAPPARACEAE				
Cleome gynandra L.	wild spider flower	Nat.	R	
CHENOPODIACEAE				
Atriplex semibaccata R. Br.	Australian saltbush	Nat.	--	(1)
Atriplex suberecta Verd.	---	Nat.	O	
Chenopodium carinatum R. Br.	---	Nat.	U	
Chenopodium murale L.	*`aheahea*	Nat.	--	(1)
CLUSIACEAE				
Clusia rosea Jacq.	copey	Nat.	--	(1)
CONVOLVULACEAE				
Ipomoea cairica (L.) Sweet	*koali `ai*	**Ind.**	U	
Ipomoea obscura (L.) Ker-Gawl.	---	Nat.	O	
Merremia aegyptia (L.) Urb.	hairy merremia	Nat.	O	
CUCURBITACEAE				
Coccinia grandis (L.) Voigt.	scarlet-fruited gourd	Nat.	R	
Cucumis dipsaceus Ehrenb. ex Spach	teasel gourd	Nat.	--	(1)
Momordica charantia L.	balsam pear	Nat.	U	
EUPHORBIACEAE				
Chamaesyce hirta (L.) Millsp.	garden spurge	Nat.	U	
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	Nat.	--	(1)
Euphorbia heterophylla L.	*kaliko*	Nat.	U	
Phyllanthus debilis Klein ex Willd.	niruri	Nat.	--	(1)
Ricinus communis L.	castor bean	Nat.	U	
FABACEAE				
Acacia confusa Merr.	Formosan koa	Nat.	--	(1)
Acacia farnesiana (L.) Willd.	*klu*	Nat.	A	
Chamaecrista nictitans (L.) Moench.	*lauki*	Nat.	U	
Crotalaria incana L.	fuzzy rattlepod	Nat.	--	(1)
Crotalaria pallida Aiton	smooth rattlepod	Nat.	O	
Desmanthus pernambucanus (L.) Thellung	virgate mimosa	Nat.	U	
Desmodium tortuosum (Sw.) DC	Florida beggarweed	Nat.	--	(1)

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
FABACEAE (continued)				
Indigofera suffruticosa Mill.	indigo	Nat.	--	(1)
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat.	C	
Macroptilium atropurpureum (DC) Urb.	---	Nat.	R	
Macroptilium lathyroides (L.) Urb.	cow pea	Nat.	U	
Mimosa pudica L.	sensitive plant	Nat.	--	(1)
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	*kiawe*	Nat.	A	
Senna surattensis (N.L. Burm.) H. Irwin & Barneby	*kolomana*	Nat.	R	
GENTIANACEAE				
Centaurium erythraea Raf.	bitter herb	Nat.	--	(1)
LAMIACEAE				
Hyptis pectinata (L.) Poit.	comb hyptis	Nat.	O	
Hyptis suaveolens (L.) Poit.	---	Nat.	--	(1)
Leonotis nepetifolia (L.) R. Br.	lion's ear	Nat.	U	
Ocimum basilicum L.	wild basal	Nat.	O	
MALVACEAE				
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	Nat.	R	
Abutilon incanum (Link) Sweet	hoary abutilon	**Ind.**	O	
Malva parviflora L.	cheese weed	Nat.	R	
Malvastrum coromandelianum (L.) Garck	false mallow	Nat.	U	
Sida ciliaris L.	---	Nat.	O	
Sida fallax Walp.	*'ilima*	**Ind.**	AA	
Sida rhombifolia L.	Cuba jute	Nat.	U	
Sida spinosa L.	prickly sida	Nat.	R	
MORACEAE				
Ficus microcarpa L. f.	Chinese banyan	Nat.	--	(1)
MYRTACEAE				
Eucalyptus sp.	gum tree	Nat.	--	(1)
Syzygium cumini (L.) Skeels	Java plum	Nat.	R	
NYCTAGINACEAE				
Boerhavia acutifolia (Choisy) J.W. Moore	*alena*	**Ind.**	O	
PAPAVERACEAE				
Argemone glauca (Nutt. ex Prain) Pope	*pua kala*	**End.**	--	(1)
PASSIFLORACEAE				
Passiflora foetida L.	running pop	Nat.	U	
Passiflora suberosa L.	*huehue-haole*	Nat.	--	(1)
PLUMBAGINACEAE				
Plumbago zeylanica L.	*'ilie'e*	**Ind.**	R	

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
PORTULACACEAE				
Portulaca oleracea L.	pigweed	Nat.	U	
PROTEACEAE				
Grevillea robusta A. Cunn. ex R.Br.	silk oak	Nat.	R	
RUBIACEAE				
Hedyotis corymbosa (L.) Lam.	---	Nat.	R2	
Spermacoce assurgens Ruiz & Pav..	buttonweed	Nat.	R	
SAPINDACEAE				
Dodonaea viscosa Jacq.	*a'ali'i*	**Ind.**	--	(1)
SOLANACEAE				
Solanum lycopersicum var. *cerasiforme* (Dunal) Spooner, G. Anderson,& Jansen	wild cherry tomato	Nat.	--	(1)
Nicandra physalodes (L.) Gaertn.	apple of Peru	Nat.	--	(1)
Solanum americanum Mill.	*popolo*	**Ind.**	--	(1)
Solanum linnaeanum Hepper & P. Jaeger	apple-of-Sodom	Nat.	--	(1)
STERCULIACEAE				
Waltheria indica L.	*'uhaloa*	Nat..	C	
VERBENACEAE				
Lantana camara L.	lantana	Nat.	R	
Stachytarpheta australis Moldenke		Nat.	O	
Stachytarpheta cayennensis (Rich.) Vahl.	nettle-leaved vervain	Nat.	--	(1)
Stachytarpheta jamaicensis (L.) Vahl.	smooth vervain	Nat.	R	
Verbena littoralis Kunth	*oi*	Nat.	--	(1)
MONOCOTYLEDONES				
AGAVACEAE				
Agave sisalana Perrine	sisal	Nat.	R	
CYPERACEAE				
Cyperus rotundus L.	nutgrass	Nat.	--	(1)
COMMELINACEAE				
Commelina benghalensis L.	hairy honohono	Nat.	U	
POACEAE				
Bothriochloa pertusa (L.) A. Camus	pitted beardgrass	Nat.	A	
Brachiaria mutica (Forssk.) Stapf	California grass	Nat.	--	(1)
Cenchrus ciliaris L.	buffelgrass	Nat.	AA	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat.	C	
Chloris radiata (L.) Sw.	radiate fingergrass	Nat.	--	(1)
Cynodon dactylon (L.) Pers.	Bermuda grass	Nat.	--	(1)
Digitaria ciliaris (Retz.) Koeler	crabgrass	Nat.	--	(1)

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
POACEAE (continued)				
Digitaria insularis (L.) Mez. ex Ekman	sourgrass	Nat.	--	(1)
Digitaria setigera Roth	*kukaipua'a*	**Ind.**	--	(1)
Echinochloa colona (L.) Link	jungle-rice	Nat.	R	
Eleusine indica (L.) Gaertn.	beach wiregrass	Nat.		
Eragrostis cf. *tenella* (L.) R & S	lovegrass	Nat.	O	
Eragrostis sp.			U	
Heteropogon contortus (L.) P. Beauv. ex Roem. & Schult.	*pili*, pili grass	**Ind.**	--	(1)
Melinus repens (Willd.) Zizka	Natal redtop	Nat.	O	
Panicum maximum Jacq.	Guinea grass	Nat.	AA	
Panicum maximum var. *trichoglume* Eyles ex Robyns	Guinea grass	Nat.	--	(1)
Paspalum sp.		Nat.	R	
Setaria verticillata (L.) P. Beauv.	bristly foxtail	Nat.	--	(1)
Sporobolus sp.	---	Nat.	U	

STATUS = distributional status for the Hawaiian Islands:
end. = endemic; native to Hawaii and found naturally nowhere else.
Ind. = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
nat. = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.
ABUNDANCE AREAS:
Expansion Area is treated as one plant assemblage.
ABUNDANCE CODES:
R – Rare; seen in only one or perhaps two locations.
U – Uncommon; seen at most in several locations
O – Occasional; seen with some regularity
C – Common; observed numerous times during the survey
A – Abundant; found in large numbers; may be locally dominant.
AA - Very abundant; abundant and dominant; defining vegetation type.
NOTES:
(1) – Especially abundant in disturbed areas as along unpaved road into valley.
(2) – Prev iously more common, but many burned trunks now present.
(3) – Plant lacking flowers or fruit.

Char (1990b) divided the vegetation on the hillside (her survey covered a wider area) into two vegetation types: (1) Grassland/Shrubland and (2) Kiawe Forest. These vegetation types were somewhat reinterpreted by David & Guinther (2006). The higher elevation slopes of the parcel are dominated by a Grassland/Shrubland of mostly Guinea grass, but several other prominent grass species are present as well: buffelgrass, pitted beardgrasss (*Bothriochloa pertusa*), and *Chloris* spp. (not in flower at the time of the survey). Common shrubs and large herbs include *klu* (*Acacia farnesiana*), *'ilima* (*Sida fallax*), wild basal (*Ocimum basilicum*), and *'uhaloa* (*Waltheria indica*). Near the upper boundary at Pālehua Road, several tree species (e.g., Christmasberry or *Schinus terebinthifolius*) are present that increase in abundance upslope, but are not present much below the road. *Kiawe* abundance, on the other hand, increases downslope, the trees forming copses scattered around the hills and open to closed forest stands along gulch bottoms. Further downslope is an open *kiawe* forest dominated by an understory of buffelgrass, characteristic of the natural vegetation of lower slopes on leeward O'ahu.

No ferns or fern allies were observed during the 2005 plant survey, although Char (1990) earlier reported *kumuniu* (*Doryopteris decipiens*), a native species. The vegetation is comprised of flowering plants which are overwhelmingly dominated by alien plant species, especially grasses. Of the total of 72 species of plants identified as present in 2006 by David & Guinther (2006), only five (6.9%) are known from the Hawaiian Islands before the arrival of James Cook in 1778. None of these five species is considered an endemic (that is, a species unique to the Hawaiian Islands). All five are indigenous species, and therefore not likely to be of concern for future listing as threatened or endangered under either Federal or State of Hawai'i endangered species statutes. One species, hoary abutilon (*Abutilon incanum*), common in the mid-to-lower elevations on the property, is considered to be somewhat rare on O'ahu. If we consider the abundance estimates for these six native species, all but three (*'Ilima* or *Sida fallax*, hoary abutilon or *Abutilon incanum*, and *'alena* or *Boerhavia acutifolia*) are rare or uncommon in the survey area. Thus, in terms of biomass, as well as number of species, native plants are a relatively minor component of the vegetation found on the site.

Where access by cattle is restricted (and perhaps moisture regime enhanced) in the steep gulch margins, Guinea grass is especially dense and grows to a large stature. On more gentle slopes accessed by grazing cattle, the grasses tend to be cropped and erosion can be a problem, although areas of dense buffelgrass are present where cattle have not recently grazed.

Of particular interest in considering the results of the two surveys conducted in and around the proposed landfill site at Makaīwa are three endemics recorded in 1990, but not seen in 2005. These are *kumuniu* (fern; *Doryopteris decipiens*), *nehe* (*Lipochaeta lobata*), and *pua kala* (*Argemone glauca*), none of which was observed in 2005. These species were noted mostly from the upper part of the property (near Pālehua Road, presumably). *Kumuniu* is described as a relatively common fern in dry shrublands, grasslands, and forests (Palmer, 2003). A variety of *nehe* (*L. lobata* var. *leptophylla* is a listed species (Federal Register, 1991) and known only from a few locations between Kolekole Pass and Kānehoa (Lualaulei) on the Wai`anae Mountain. This plant grows on dry to mesic cliffs, ridges, and slopes between 840 and 3208 ft (256 to 978 m) elevations (Federal Register, 2003). The more common variety—*L. l.* var. *lobata*, presumably the variety observed by Char—is found near the coast from 0 to 1300 ft (0 to 400 m) on Ni'ihau, O'ahu, and West Maui (Wagner, Herbst, and Sohmer, 1990). *Pua kala* is common in leeward parts of all the islands.

Figure 11. A significant determinant of natural vegetation at the Makaīwa Gulch, Waimānalo Gulch, and Nānākuli proposed landfill sites are frequent fires. This view looking downslope into Makaīwa Gulch was taken on August 24, 2005 from Pālehua Road at the 1500 ft (460 m) elevation.

A significant factor in determining the nature of the flora at the Nānākuli, Waimanalo Gulch, and Makaīwa Gulch sites are dry season fires that sweep over grass-covered hillsides (Fig. 11, above). The origin of many fires in these areas in recent years has been arson, although an accident caused the smaller Makaīwa Mauka fire that burned lower Pālailai Gulch in 2005 and power line electrical arching was suspected in the Nānākuli fire of 2005 (Fujimori, 2005a,b). Modern landfills, such as the existing one in Waimanalo Gulch, do not burn garbage and are not a source of accidental wildfires.

KAPA'A GULCH

Kapa'a Gulch (TMK: 4-2-015:001) is located in the District of Ko'olaupoko on the windward side of O'ahu. The proposed landfill site is a presently active basalt rock quarry operated by Ameron International Inc encompassing 391 acres (158 ha). Neither maps of the site provided showing the property nor recent USGS topographic sheets (Kaneohe and Koko Head quadrangles dated 1998) reflect the true contours of this site, which today presents a deep pit with sheer walls cut back towards Mahinui Ridge (Fig. 12).

Figure 12. In this aerial photo of the Ameron Quarry at Kapa'a, north is roughly to the left and Mahinui Ridge runs along the bottom. The large road passing left to right near the top of the photograph is the H-3 Interstate (photo by Brian Daniel, September 20, 2002).

The proposed landfill would utilize the existing quarry, shown in Fig. 13. The quarry pit is massive, certainly the largest on O'ahu. Although plants are present along the ledges above each vertical step, these ledges are planted and maintained by Ameron. Given that a municipal landfill operation in Kapa'a Valley would likely utilize the existing pit without the need to expand over undisturbed ground, and soil cover would come from existing, adjacent overburden stock piles, impacts to vegetation would be minimal.

Figure 13. Ameron International quarry pit at Kapa'a. Only minimal vegetation grows in the pit area, proposed as landfill site.

Botanical resources within Kapa'a Valley were surveyed in 2002 (Oceanit, 2002; see also Guinther, undated). In general, where undisturbed, the valley is inhabited by a mesic forest dominated by *koa haole* on the upper slopes, grading into a more diverse forest of Java plum (*Syzigium cumini*) and monkeypod (*Samanea saman*) near the valley floor. The somewhat scrubby growth of *koa haole* on the higher slopes is increasingly invaded by fiddlewood (*Citharexylum caudatum*) all along the Oneawa Hills (Mahinui Ridge). The lower half of the valley is highly disturbed, although once contained an extension of Kawai Nui marsh on the valley floor. While some wetland still remains here, much of this area is now fill land.

Plant surveys along the ridgelines of Ulumawao, the upland forming the east side of Kapa'a Valley, have revealed several native species as present: 'ūlei (*Osteomeles anthyllidifolia*), 'ākia (*Wikstroemia oahuensis*), and 'ōhi'a lehua (*Metrosideros polymorpha*; Guinther and Montgomery, pers. comm.). The latter species is particularly interesting as this species occurs as a small copse of stunted shrubs (Fig. 14) on the northern side of the highest part of Ulumawao where the peak rises to 980 ft (m). These native species might also occur on the Mahinui ridgeline above the quarry.

Figure 14. Dr. S. Montgomery inspecting *'ōhi'a lehua* blossoms for insects near the top of Ulumawao in Kailua.

PLANT RESOURCES DISCUSSION

This section of the report covers various jurisdictional issues and data bases containing information relative to special botanical resources at or near the proposed landfill sites. In addition, plant species of interest or concern are discussed in more detail as each species is brought in from a record of interest.

USFWS CRITICAL HABITAT DESIGNATIONS

Critical habitat under the Endangered Species Act of 1973 (ESA) refers to specifically bounded areas thought to be important to the conservation and recovery process of species listed under the ESA. Although federal actions within a designated critical habitat area require consultation under Section 7 of the ESA, actions by other entities also come under this requirement if the action is funded or authorized by a federal agency. All entities are subject to provisions of the ESA when it comes to actions impacting on a listed species; critical habit involves actions occurring within a designated area, whether the listed species is present or not.

A total of 22,274 ha (55,040 ac) of land on O'ahu have been designated as critical habitat for 99 species of plants. The total number of separate areas (known as "units") on O'ahu representing designated habitats for these 99 species of plants is 36.

There are no critical habitat units in the vicinity of Waimanalo Gulch, Makaīwa Gulch, or Kapa'a Valley. Closest to any of these three sites is Unit 16, encompassing much of the south slopes of Nānākuli Valley between about 400 and 1500 ft (120 to 460 m), designated as critical habitat for *Isodendrion pyrifolium.*, a species last seen on O'ahu in 1870 (Wagner, Herbst, & Sohmer, 1990). The ridgeline representing the southernmost extent of Unit 16 is just over 1 mi (1.8 km) from the northwest ridgeline bounding the Waimanalo Gulch parcel. No part of any proposed site overlaps into a critical habitat unit (Federal Register, 2003). However, critical habitat units are close to the proposed Mā'ili and Nānākuli sites.

The proposed Mā'ili site is near Units 12, 13, and 14. Unit 12 encompasses Pāhe'ehe'e Ridge and Mauna Kūwale as designated for *Chamaesyce kuwaleana.* This unit is about 2 mi (3.2 km) north of the quarry at Mā'ili. Unit 13 is located at the westernmost corner of the Naval Radio Transmitting Facility (NRTF) at Lualualei near Ma'ili'ili Stream, only a short distance west of the Mā'ili site property boundary. Both Unit 13 and nearby Unit 14 are designated for the fern, *Marsilea villosa.* Unit 14 is located just inside the southern boundary of the NRTF Lualualei approximately 0.5 mi (0.8 km) southeast of the Mā'ili quarry site.

The proposed Nānākuli Site is near Critical Habitat Units 14 and 15. As described above, Unit 14 is located just inside the southern boundary of the NRTF Lualualei—0.75 mi (1.2 km) northwest of the closest part of the proposed Nānākuli Site. Unit 15 covers an extensive area of the uplands surrounding Lualualei Valley above 500 ft (150 m). A portion of this designated unit is directly upslope of the Nānākuli Site, encompassing the upper slopes of Pu'u Heleakalā. Although 39 species of listed plants have some part of Unit 15 designated as critical habitat, only *Chamaesyce kuwaleana*, has critical habitat on Pu'u Heleakalā. The area proposed for the landfill lies mostly at the base of the western face of Pu'u Heleakalā between 60 and 120 ft (18 – 37 m) elevations (the 611 ac parcel extends up to about the 360 ft or 110 m elevation).

ENDANGERED SPECIES ACT LISTED SPECIES

The previous subsection described relationships between designated critical habitat areas on O'ahu and the five proposed landfill sites. Although no site is within any of the 36 designated critical habitat units on the Island, this fact does not preclude their being ESA listed species present on one or more of the sites. In the absence of recent site surveys for four of the five sites, endangered species presence or absence must be inferred from what is known about the sites and the distribution of those species likely to be present based upon historical data. Presumably, once a site is selected and before it is developed, a botanical survey would be undertaken, and the finding of a listed species would then subject the site development process to provisions of the Act.

A number of species are known from individual specimens or populations growing near to some of the proposed municipal landfill sites and these are discussed here.

Marsilea villosa or *'ili'ihi* is a small aquatic or semi-aquatic fern resembling a clover (Fig. 15). The fern requires periodic flooding and drying of the ground to complete its short life cycle, and thus is confined to shallow basins subjected to brief periods of flooding during the wet season. The following description is from the Recovery Plan for the *Marsilea villosa* as given by USFWS (undated):

> This fern requires periodic flooding for spore release and fertilization, then a decrease in water levels for the young plants to establish. It typically occurs in

shallow depressions in clay soil, or lithified sand dunes overlaid with alluvial clay. All reported populations occur at or below 500 feet (150 meters) elevation. While *M. villosa* can withstand minimal shading, it appears most vigorous growing in open areas.

Figure 15. The fern, *Marsilea villosa* or *'ili'ihi*, is an endangered species, here growing among grasses at O'ahu critical habitat Unit 15 on Naval Transmitting Facility property at Lualualei.

Five populations are known from three locations on O'ahu at Koko Head (2), Lualualei Naval Reservation (2), and Kealakipapa (near Makapu'u) (Palmer, 2003), although a USFWS website confusingly lists 6 locations to account for "three currently occur[ing populations] on O`ahu... (USFWS, undated).

It is possible that *'ili'ihi* could occur on the Mā'ili Site given the close proximity of known populations of this fern. Both populations are located at topographically low points on the Base, and were perhaps more extensive before off base areas were developed. On the Base, periodic mowing of the areas appears to help maintain the populations against overgrowth by aggressive introduced species, thus extensive disturbance of the Mā'ili Site by quarrying operations cannot be cited as a reason to rule out the ferns presence there. Exclusion of grazing may be a factor in the preservation of the fern populations where they are presently found.

The author surveyed both the Nānākuli A and B sites in 1991 before the PVT landfill occupied most of the Nānākuli A site (Guinther & Miranda, 1992). *Marsilea villosa* was not recorded and no habitat suitable for this fern was observed on the Nānākuli A or B sites, the latter being mostly a sloped hillside (Fig. 5). Similarly, suitable habitat is not present at Waimanalo Gulch, Makaīwa Gulch, or Kapa'a sites.

Chamaesyce kuwaleana, is a species of *'akoko* listed as endangered (Federal Register, 1991). Critical habitat for this species has been designated in seven units. Unit 15 encompasses 454 ac (184 ha) of Pu'u Heleakalā and is thought to presently harbor 300 individual plants (USFWS, 2003). Unit 15 lies upslope of the Nānākuli site. The plant is a small shrub between 0.2 and 0.9 m (8 to 35 in) high, known only from "arid volcanic cliffs, 250 m [820 ft high], Wai'anae Mountains, and also known from one specimen from Mokumanu, Kāne'ohe, O'ahu" (Wagner, Herbst, and Sohmer, 1990).

HAWAII NATURAL HERITAGE DATABASE

The Hawaii Natural Heritage Program (HNHP) was accessed and maps showing data entries were reviewed covering the lands for at least 1 mile around each proposed site. The data base has no rare or listed species of native plants at or close to any of the five proposed landfill sites. Within a distance of 1.25 mile (2 km), the data base yields entries for some of the sites.

For the proposed Mā'ili Quarry Site, the *'ili'ihi* fern is shown occupying an area on NRTF Lualualei close to Mā'ili Stream. This is the same area designated as critical habitat for this species, and is something less than 0.5 mile from the closest edge of the quarry property. However, given the special habitat requirement of this species (see p. 31, above), more than proximity would be required for the species to be established on the Mā'ili Site.

Schiedea ligustrina is indicated as having been reported from near the peak (northeast slope) of Pu‘u Heleakalā approximately 0.7 mi (1.2 km) from the Nānākuli Site. At nearly the same distance away, at Ulehawa Beach Park, two rare plant records are in the data base: *maiapilo* (*Capparis sandwichiana*) and *nehe* (*Lipochaeta lobata* var. *lobata*).

Schiedea ligustrina is an endemic shrub that grows "[s]cattered in dry forest to diverse mesic forest, often on cliffs, usually in shaded sites, (305)-640-730(-830) m, Pālehua to Pu‘ulaua and Keawapilau Gulch, and Mokulē‘ia, Wai‘anae Mountains, O‘ahu" (Wagner, Herbst, and Sohmer, 1990). *Schiedea ligustrina* is not a listed species. *Maiapilo* is uncommon on O‘ahu, but also not a listed species.

Nehe (*Lipochaeta lobata*) is presently considered to be found in the wild as two distinguishable varieties (Wagner, erbst, and Sohmer, 1990). *Lipochaeta lobata* var. *leptophylla* is a listed variety (Federal Register, 1991); The few remaining plants of *L. l.* var. *leptophylla* are located above Lualualei Valley but the known elevation range of this variety is well above the properties proposed for landfill use. The lowland or coastal variety, *L. l.* var. *lobata* is not listed and not presently regarded for listing consideration.

Within roughly 1 mi (1.6 km) of the Waimānalo Gulch and Makaīwa Gulch properties, the data base indicates the now extirpated populations of *‘Ewa ‘akoko* (*Chamaesyce skottsbergii* var. *skottsbergii*) that once occupied land that is Barbers Point Deep Draft Harbor and associated dredge tailings. This endangered variety is no longer present in this area (David and Guinther, 2006), but is being maintained at several sites in Kalaeloa (former Barbers Point Naval Air Station).

CONCLUSIONS

The results of all botanical surveys and searches of pertinent sources of information indicate that there are no special concerns or legal constraints related to botanical resources on any of the proposed sites. Non-native or introduced species of plants clearly dominate the natural vegetation in all areas proposed for landfill use, and the remnants of native vegetation extant on or near these sites consists of generally sparse growth of a limited number of species that remain relatively common in all undeveloped lowlands around O'ahu. Although some rare native plants, and in a couple of cases, endangered species or varieties of plants, can be found within 2 km (1.2 mi) of a proposed landfill site, there is no reason to believe that the operation of a landfill at these sites would have any adverse impacts on such species.

Figure 16. Composite photo of the eastern side of Waimānalo Gulch showing the upper end of the permitted landfill area (right) with reshaping of the site underway.

The operation of a municipal solid waste landfill, by its very nature and in compliance with the most modern environmental requirements designed to minimize and contain offsite movement of pollutants, will require removal of the vegetation from the selected site. Figure 16 (above) shows the Waimānalo Gulch (existing City & County landfill) operation at the very beginning of setting up the cells into which refuse is permanently stored. Although for each site this may differ to some degree, this initial phase entails making cuts into hillsides to create room and obtain inert material for use as cover. Whatever botanical resources are present at the selected site will likely be completely removed, the only possible exceptions being areas around the margins of a site where the terrain becomes too steep to alter. Following grading and use of the site for land-filling, surface stabilization practices will eventually include replacing the vegetation. An emphasis on utilizing appropriate native species could be followed.

It is generally the case that many rare native plants of interest (an exception is the fern, *'ili'ihi*) growing in the lowlands of O'ahu will be confined to steep gulch slopes and cliffs. In most cases, these habitats would tend not to be developed, although as Fig. 16 shows, steep gulch slopes could be incorporated into the overall reshaping of the site to a greater degree than might be the case for most other kinds of land development. At two of the proposed sites (Mā'ili Quarry and Kapa'a Quarry), the landfill would utilize existing, highly disturbed, quarry pits. The conclusion cannot be drawn that because steep, rocky gulch margins and cliff faces and ledges provide habitat for rare native plants, the two existing quarry sites (Mā'ili and Kapa'a) might then harbor special species. Rare plants occur in nearly inaccessible places because these places are not accessed by grazing cattle and, certainly in some cases, are protected from fires spreading over the landscape. The special plants hang on in these locations because the common sources of disturbance are minimized. Quarry walls and ledges are highly disturbed sites and not ideal habitat for rare native plants. These plants—in the absence of the many disturbances (including aggressive introduced species)—would populate areas today used for housing, recreation, and grazing.

This report provides information from the recent investigation of the Waimānalo Gulch site and data associated with prior investigations of the Nānākuli, Mā'ili, Makaīwa, and Kapa'a sites. There is no guarantee that some small number of specimens of a listed species might be present at one or another of the proposed sites that have not been subjected to a recent survey. Should one or more of these sites be selected for landfill use, additional botanical surveys should be conducted as deemed practical to better establish the conclusion of no adverse impacts on listed species. The desirability of doing such a future survey or surveys will depend upon habitat present at the site, proximity of the site to known populations of endangered species, and how recently and completely past botanical surveys covered the site. For assessment purposes, this report should suffice to cover any such concerns involving investigation of the Waimānalo Gulch site.

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Appendix F

Survey of the Avifaunal and Feral Mammals for the Proposed Waimānalo Gulch Landfill Expansion Project, O‘ahu, 2007

SURVEY OF THE AVIFAUNA AND FERAL MAMMALS FOR THE PROPOSED WAIMANALO GULCH LANDFILL EXPANSION PROJECT, OAHU

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INTRODUCTION

The purpose of this report is to present the findings of a bird and mammal field survey, conducted on 26 September 2006 at Waimanalo Gulch, Leeward Oahu. This same area was previously surveyed (Bruner 1999). Data from the earlier study is also given in this report for comparison purposes, along with references to pertinent literature and unpublished reports since 1999.

The objectives of the field survey were to:

1- Document what bird and mammal species currently occur on the property.

2- Provide comparative data on the relative abundance of each species.

3- Determine the presence or likely occurrence of native or migratory birds, those that are listed as endangered or threatened.

4- Determine if the habitats on this site are comparable with that seen in 1999.

SITE DESCRIPTION

The proposed expansion area is located in a narrow "V" shaped valley with a dry stream bed that only contains water during flash flood events. Introduced vegetation continues to dominate the plant communities at this site. Many of the trees that were present in 1999 were burned in the August 2005 fire that ravaged this region. Most of the surviving trees are along the stream bed. Dry grass covers most of the site.

Weather during the survey was clear and warm. Winds were from the east at 10-15mph.

STUDY METHODS

The site was walked using the same access road as in 1999. I also continued on mauka from the end of the road to an old fence that crossed the valley. Field observations were made with the aid of binoculars and by listening for vocalizations.

All birds seen or heard were tallied. These data provide the basis for the relative abundance estimates given in Table One. Data from the 1999 survey are also given for comparison. Observations of feral mammals were limited to visual sightings. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution.

Scientific names of birds and mammals used in this report follow those given in Checklist of the Birds of Hawaii (Pyle 2002) and Mammal Species of the World (Honacki et al. 1982). These sources use names cited in the most current scientific literature.

RESULTS AND DISCUSSION

Resident Endemic (Native) Birds:

As was the case in 1999 no native land birds were recorded on the survey. The Hawaiian Owl or Pueo (*Asio flammeus sandwichensis*) is listed as endangered by the State of Hawaii on the island of Oahu. This species was not recorded on the survey but may forage in this area. Since 1999 I have observed Pueo in Leeward Oahu at locations only a few miles on either side of this property. Pueo hunt over grasslands as well as forests and nest on the ground in tall grass (Pratt et al. 1987, Hawaii Audubon Society 2005).

Migratory Indigenous (Native) Birds:

No migratory shorebirds were recorded on the survey. This area lacks suitable habitat for these species.

Resident Indigenous (Native) Seabirds:

No seabirds were observed. The White-tailed Tropicbird (*Phaethon lepturus*) can be seen soaring above valleys and over ridges on Oahu. This species is not endangered or threatened.

Resident (Native) Waterbirds:

The stream only contains water during flash floods. No waterbirds would be expected at this site.

Exotic (Introduced) Birds:

Only nine species of exotic birds were recorded during the course of the field survey compared with 13 species in 1999. The array of species was comparable to that observed on other surveys in similar habitat (Bruner 1989, 1990a, 1990b, 1992, 1993, 1996, 1999, 2000, 2001a, 2001b, 2002, 2003). Table One gives the relative abundance of each species recorded on the 1999 and 2006 survey. None of these species are listed as endangered or threatened.

Feral Mammals:

The only feral mammal observed was the Small Indian Mongoose (*Herpestes auropunctatus*). Two were seen in the stream bed. Rats (*rattus sp.*) and Mice (*Mus musculus*) were not seen but probably occur on this site. The endemic and endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) is rarely seen on Oahu (Tomich 1986, Kepler and Scott 1990). No bats were observed on the survey. This species is known to roost solitarily in trees and forages for flying insects (Jacobs 1993). They use a variety of habitats including native forests, ranchlands, ponds and bays as well as urban areas (Jacobs 1991, Reynolds et al. 1998).

CONCLUSIONS

The absence of native and migratory birds on this property is not unexpected given the elevation and available habitats. The Pueo (Hawaiian Owl) might forage on occasion in this region. All of the birds recorded in 1999 and on this survey were alien (non-native, introduced) species. The fact that there were fewer alien species and lower relative abundance on this 2006 survey may be due to the August 2005 fire which had a major impact on this habitat. Other factors may also account for the differences in bird populations between 1999 and 2006 (Williams 1987, Moulton 1990). In conclusion this site is not remarkable in either the array or number of birds and mammals. There are no unique habitats. Similar areas occur all along the leeward side of Oahu.

TABLE 1

Alien (introduced) species of birds recorded on and near the site of the proposed Waimanalo Gulch Landfill Expansion, Oahu during the 1999 and 2006 field surveys. Relative abundance estimates are based on total numbers of birds recorded:
A = abundant (30-50); C = common (15-29); R = rare (1-4).
Species not recorded are indicated by a (-).

Common Name	**Scientific Name**	**Relative Abundance 1999**	**2006**
Cattle Egret	*Bubulcus ibis*	U	R
Erckel Francolin	*Francolinus erckelii*	R	-
Rock Dove	*Columba livia*	C	-
Spotted Dove	*Streptopelia chinensis*	A	C
Zebra Dove	*Geopelia striata*	C	U
Red-vented Bulbul	*Pycnonotus cafer*	A	R
Common Myna	*Acridotheres tristis*	A	U
Japanese White-eye	*Zosterops japonicus*	R	C
Northern Cardinal	*Cardinalis cardinalis*	R	R
House Finch	*Carpodacus mexicanus*	U	-
Common Waxbill	*Estrilda astrild*	A	C
Red Avadavat	*Amandava amandava*	-	R
Nutmeg Mannikin	*Lonchura punctulata*	U	-
Java Sparrow	*Padda oryzivora*	R	-

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REPORT OF POTENTIAL BIRDS AND MAMMALS AT FOUR PROPOSED ALTERNATIVE LANDFILL SITES ON OAHU

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INTRODUCTION

The purpose of this report is to provide a guideline of the potential birds and mammals that might be found on a field survey of each of the four proposed alternative landfill sites on Oahu. In addition, any potential problems associated with a landfill and native or migratory birds on or nearby the sites is noted.

MAILI SITE

Native Birds:

None would be expected on this site due to its location, lack of appropriate habitats and current land use.

Migratory Birds:

The potential species that might forage at this site, provided there is open habitat is the Pacific Golden-Plover or Kolea (*Pluvialis fulva*). This species often forages on lawns and fallow agricultural lands. It is not endangered or threatened. They spend the non-breeding season (August – April) in Hawaii and nest in western Alaska during June – July.

Alien (Non-native, Introduced) Birds:

Without actually surveying the site it is impossible to provide a complete and accurate accounting of alien birds on this site. Nevertheless some of the more common species likely to be found on or near this area include:

Spotted Dove (*Streptopelia chinensis)*

Zebra Dove (*Geopelia striata*)

Red-vented Bulbul (*Pycnonotus cafer*)

Common Myna (*Acridotheres tristis*)

House Finch (*Carpodacus mexicanus*)

Common Waxbill (*Estrilda astrild*)

NANAKULI B SITE

Native Birds:

The only native bird that might forage on or around this site is the Hawaiian Owl or Pueo (*Asio flammeus sandwichensis*). The Oahu population of this species is listed as endangered by the state of Hawaii. They forage over a variety of habitats included lands such as the Nanakuli B site and area up slope of this property. I have seen Pueo as recently as three years ago in the general area of this proposed alternative landfill site. Pueo forage in a wide variety of natural and disturbed habitats.

Migratory Birds:

The only migrant that might be expected in large open spaces free of brush and high grass is the Pacific Golden-Plover or Kolea (*Pluvialis fulva*).

Alien (Non-native, Introduced) Birds:

The most likely common species are:

Spotted Dove (*Streptopelia chinensis*)
Zebra Dove (*Geopelia striata*)
Red-vented Bulbul (*Pycnonotus cafer*)
Common Myna (*Acridotheres tristis*)
Japanese White-eye (*Zosterops japonicus*)
House Finch (*carpodacus mexicanus*)
Common Waxbill (*Estrilda astrild*)
Game Birds such as Erckel Francolin (*Francollinus erckelii*) and Gray Francolin (*Francolinus pondicerianus*) may also occur in the steeper areas above the site.

MAKAIWA GULCH SITE

Native Birds:

Aside from the Pueo (Hawiian Owl) no native birds likely would be found at this site.

Migratory Birds:

The only migratory bird that could occur on the property is the Pacific Golden-Plover.

Alien (Non-native, Introduced) Birds:

This site is so similar in habitat, topography and elevation to the Waimanalo Gulch site that the list of alien species that probably occur on or near this area would coincide with that obtained in the 1999 and the current 2006 faunal field surveys of Waimanalo Gulch. The relative abundance of these species might vary a little between the two sites.

AMERON QUARRY SITE

Native Birds:

Native birds would not be expected to frequent the actual quarry site but several species of native, endangered waterbirds do occur at the nearby Kawainui Marsh. Of the four alternative landfill sites, Ameron Quarry poses the greatest potential threat to native birds through groundwater or flood water contamination of Kawainui Marsh.

Migratory Birds:

The Pacific Golden-Plover occurs in open habitats around the quarry.

Alien (Non-native, Introduced) Birds:

Common alien species in this area include but are not limited to:

Cattle Egret (*Bubulcus ibis*)
Spotted Dove (*Streptopelia chinensis*)
Zebra Dove (*Geopelia striata*)
Red-vented Bulbul (*Pycnonotus cafer*)
Common Myna (*Acridotheres tristis*)
Japanese White-eye (*Zosterops japonicus*)
Northern Cardinal (*Cardinalis cardinalis*)
Red-crested Cardinal (*Paroaris coranata*0

House Finch (*Carpodacus mexicanus*)

Common Waxbill (*Estrilda astrild*)

FERAL MAMMALS

All four sites likely have some or all of the following feral mammals: cats, dogs, rats, mice and the Small Indian Mongoose.

CONCLUSIONS

This report is only intended to provide a general overview of the more common species of birds and mammals that might be expected at the alternative landfill sites. An actual field survey would obviously yield a more complete assessment of faunal use of these areas. The only alternative site with potentially serious impact is the Ameron Quarry property. Its proximity to a wetland with endangered species could spell trouble in the form of water contamination from flooding or through groundwater drainage.

Appendix G

Archaeological Inventory Survey
Waimānalo Gulch Landfill Expansion Project, 2008

Archaeological Inventory Survey for the Waimānalo Gulch Sanitary Landfill Expansion Project Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu (TMK: [1] 9-2-003: por. 072 and 073)

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Kailua, Hawaiʻi
(Job Code: HONOU 6)

September 2008

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Management Summary

Reference	Archaeological Inventory Survey for the Waimānalo Gulch Sanitary Landfill Expansion Project, Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu (TMK: [1] 9-2-003: por. 072 and 073) (Dalton and Hammatt 2008)
Date	September 2008
Project Number	Cultural Surveys Hawaii, Inc. (CSH) Job Code: HONOU 6
Investigation Permit Number	The fieldwork for this investigation was carried out under archaeological permit number 07-19, issued by the Hawaiʻi State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawaiʻi Administrative Rules (HAR) Chapter 13-282.
Project Location	The proposed landfill expansion area is located immediately *mauka* (northeast) of the existing Waimānalo Gulch Sanitary Landfill. Waimānalo Gulch is generally located immediately inland of Farrington highway, roughly between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Hawaiian Electric Co.'s (HECO) Kahe Power Plant to the northwest. This area is depicted on the 1998 ʻEwa USGS 7.5 minute topographic quadrangle.
Project Funding and Land Jurisdiction	City and County of Honolulu (City)
Agencies	City Department of Environmental Services, SHPD
Project Description	The proposed landfill expansion area comprises approximately 90 acres of undeveloped land within the overall 200-acre Waimānalo Gulch Landfill property (TMK: [1] 9-2-003: 072 and 073). The proposed landfill expansion area is to be used for the disposal of municipal refuse, H-POWER associated ash and residue, and operational activities associated with running the landfill. The landfill expansion is meant to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill. Minimally, land disturbing activities associated with the landfill expansion project would include: major grading, including blasting of exposed rock surfaces, and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; excavation for the installation of a storm water runoff control channel along the west side of the gulch; and filling of the expansion area with refuse material.

Area of Potential Effect (APE)	The project's APE is defined as the entire approximately 90-acre proposed expansion area.
Definition of the Current Study Area.	Background research confirmed that the approximately 90-acre landfill expansion project area had been previously surveyed by CSH as part of an earlier archaeological inventory survey (AIS) of the entire 200-acre Waimānalo Gulch Landfill property (Hammatt and Shideler 1999). In early 2007, at the request of the project proponents, CSH completed additional AIS investigation, including systematic pedestrian inspection and limited subsurface testing, of a 36-acre portion of the overall 90-acre APE that represents the core of the expansion area (located within TMK: [1] 9-2-003: 073). This 36-acre portion of the overall 90-acre APE is defined as the study area for the current AIS investigation.
Historic Preservation Regulatory Context	As a City-funded project on City-owned land, the proposed landfill expansion is a project requiring compliance with State of Hawaii historic preservation review legislation. This investigation was performed to fulfill Hawaii State archaeological inventory survey standards (Hawaii Administrative Rules [HAR] Chapter 13-276) and support the project's historic preservation review under Hawaii Revised Statutes [HRS] Chapter 6E-8 and HAR Chapter 13-275. It also is intended to support the project's environmental review under HRS Chapter 343.
Fieldwork Effort	Fieldwork for the current AIS investigation of the study area was accomplished over a one-week period from January 25, 2007 to February 2, 2007. The CSH field crew consisted of Matt Bell, B.A., Amy Hammermiester, B.A., and Kevin Dalton, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The field effort required 13 person-days to complete.
Results	Through the combined effort of the earlier AIS investigation of the entire 200-acre Waimanalo Gulch Landfill property (Hammatt and Shideler 1999) and the current AIS investigation of the 36-acre study area, all of the expansion area APE was subjected to systematic pedestrian inspection, with limited subsurface testing where appropriate. This effort located a single historic property: SIHP # 50-80-12-6903, three rock uprights, which are recommended eligible to the Hawai‘i Register of Historic Places (Hawaii Register) under significance Criteria D (for information content) and E (for traditional-cultural significance to Native Hawaiians).

Consultation Effort Related to SIHP # 50-80-12-6903	For the project's AIS consultation effort, CSH worked with the Office of Hawaiian Affairs, SHPD, and knowledgeable cultural consultants. This effort was dove-tailed with the cultural consultation effort for the project's cultural impact assessment, which CSH prepared pursuant to HRS Chapter 343 and the Office of Environmental Quality Control's guidelines for assessing cultural impacts. This consultation effort included several on-site, at the SIHP # 50-80-12-6903 location, meetings that included SHPD personnel (Mr. Adam Johnson, Ms. Teresa Davan, Ms. Linda Kaleo Paik, and Ms. Lauren Morawski), as well as knowledgeable cultural consultants, including Mr. McD Philpotts, Mr. Alika Silva, Mr. Glen Kila, Mr. Shad Kane, Mr. William Ailā, and Mr. Eric Enos. Through this consultation CSH sought the opinions of cultural consultants regarding the age, function, cultural affiliation, and significance of the three stone uprights. All cultural consultants felt the stones were significant Native Hawaiian cultural resources that were used in the past by traditional Hawaiian cultural practitioners. There is no clear consensus, however, regarding the specific function of the upright stones. Potential functions discussed included trail markers, markers for observation points for celestial observation and/or navigation, or markers used to calculate the location of specific coastal and/or off-shore resources. Potential mitigation measures for the stones, including preservation in place and relocation, were discussed with the cultural consultants.
Effect Recommendation	After weighing the options, the project proponents have determined that the three stones that make up SIHP # 50-80-12-6903 cannot be preserved in place in a safe and appropriate manner. Accordingly, a project effect determination of "effect with agreed upon mitigation commitments" is warranted.

Mitigation Recommendation	The project proponents propose the interim relocation of the three SIHP # 50-80-12-6903 stones to the vicinity of Battery Arizona, located in the southwestern portion of the Waimānalo Gulch Landfill property. The proposed relocation would ensure the safety of the stones during the landfill’s expansion and would make them much more accessible to interested parties. The City & County is willing to commit to move the stones back to, as close as possible, their original location and is prepared to commit to this in a Memorandum of Agreement. This relocation could only take place after that portion of the landfill had been filled. At this time there is some uncertainty regarding when that portion of the landfill would be closed but it seems likely it will take at least 15 years and could take as long as 50 years. The specifics of the proposed stone relocation would be the subject of the project’s archaeological preservation/ mitigation plan for SIHP # 50-80-12-6903. Additionally a Memorandum of Agreement will be drafted by the project proponents and will be reviewed by the SHPD prior to the implementation of the project.

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Section 1 Introduction

1.1 Project Background

The City and County of Honolulu (City) intends to expand the active landfill operations within the 200-acre Waimānalo Gulch Sanitary Landfill property, located in Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu (TMK: [1] 9-2-003: 072 and 073). Waimanalo Gulch is generally located immediately inland of Farrington highway, roughly between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Hawaiian Electric Co.'s (HECO) Kahe Power Plant to the northwest. This area is depicted on the 1998 ʻEwa USGS 7.5 minute topographic quadrangle. The proposed expansion area includes approximately 90 acres of the overall property that is located generally *mauka* (northeast) of the existing and in-use landfill operations (Figure 1, Figure 2, & Figure 3).

The Waimānalo Gulch Sanitary Landfill was established in 1989; is owned by the City and County of Honolulu (C&C) under the jurisdiction of the Department of Environmental Services/Refuse Division, and operated by Waste Management of Hawaiʻi. The landfill currently takes in roughly 500,000 tons per year.

The proposed landfill expansion area of potential effect (APE) comprises approximately 90 acres of undeveloped land within the overall 200-acre Waimānalo Gulch Landfill property (TMK: [1] 9-2-003: 072 and 073). The proposed landfill expansion area is to be used for the disposal of municipal refuse, H-POWER associated ash and residue, and operational activities associated with running the landfill. The landfill expansion is meant to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill. Minimally, land disturbing activities associated with the landfill expansion project would include: major grading, including blasting of exposed rock surfaces, and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; excavation for the installation of a storm water runoff control channel along the west side of the gulch; and filling of the expansion area with refuse material.

As a City-funded project on City-owned land, the proposed landfill expansion is by definition a project requiring compliance with Hawaii State environmental (Hawaii Revised Statutes [HRS] Chapter 343) and historic preservation [HRS Chapter 6E-8 and Hawaii Administrative Rules (HAR) Chapter 13-275] review legislation. Accordingly, at the request of R.M. Towill Corporation, on behalf of the City, Cultural Surveys Hawaiʻi Inc. (CSH) conducted an archaeological inventory survey (AIS) to support the project's environmental and historic preservation review. This investigation was performed to fulfill Hawaii State archaeological inventory survey standards (HAR Chapter 13-276) and support the project's environmental and historic preservation review. An earlier (April 2008) draft of the present AIS was reviewed by the SHPD in their Chapter 6E-8 Historic Preservation review letter of August 29,2008 (Log No 2008.1458, Doc No 0808LM10; present Appendix A). This revised AIS addresses the concerns enumerated.

Background research confirmed that the approximately 90-acre landfill expansion project area had been previously surveyed by CSH as part of an earlier archaeological inventory survey (AIS)

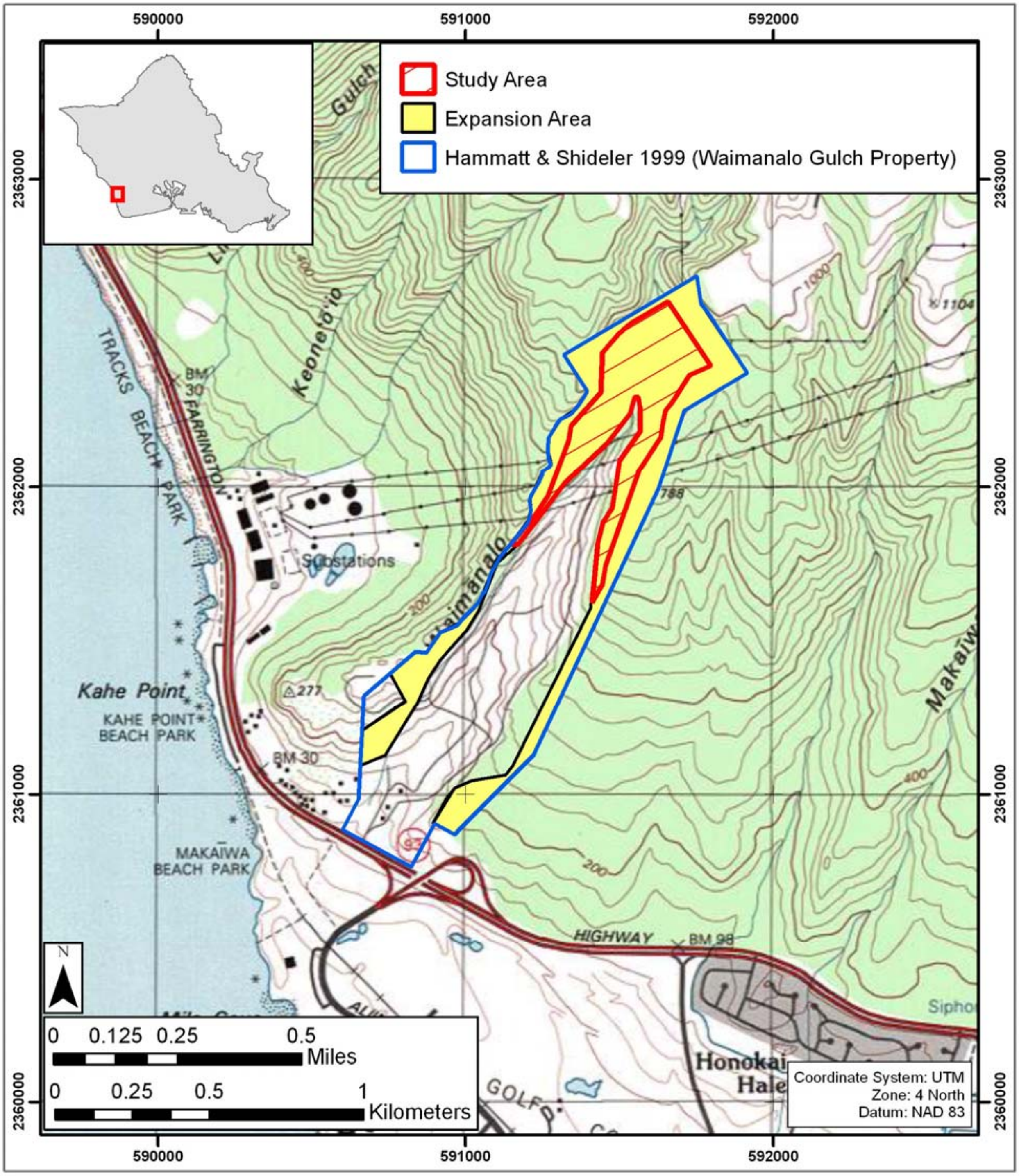

Figure 1. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing the location of the Hammatt & Shideler (1999) study area, the Waimānalo Gulch Sanitary Landfill proposed expansion area, and the current study area

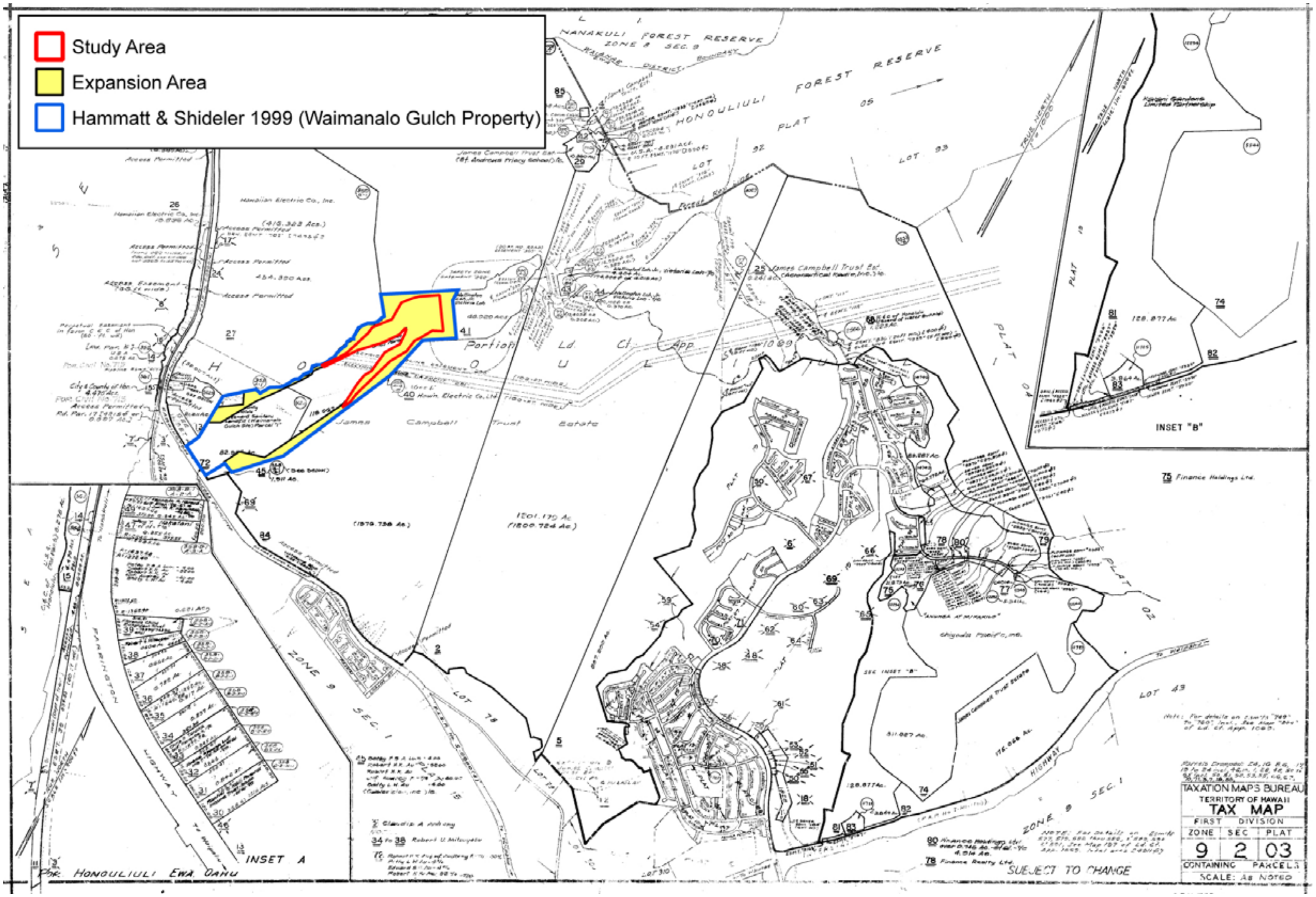

Figure 2. TMK [1] 9-2-03 showing the location of the Hammatt & Shideler (1999) study area, the Waimānalo Gulch Sanitary Landfill proposed expansion area, and the current study area

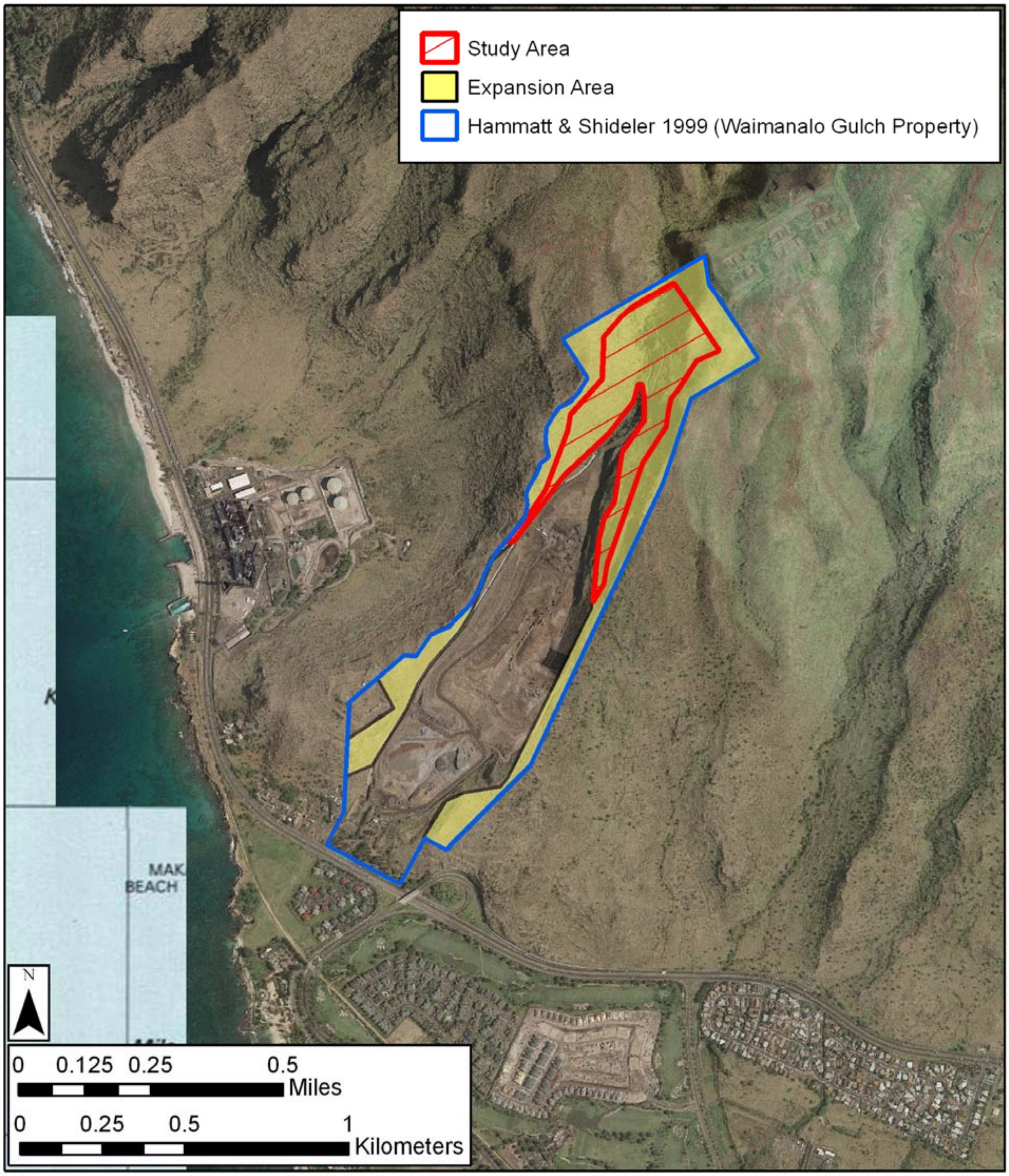

Figure 3. Aerial photograph showing the location of the Hammatt & Shideler (1999) study area, the Waimānalo Gulch Sanitary Landfill proposed expansion area, and the current study area (source: USGS Orthoimagery 2005)

of the entire 200-acre Waimānalo Gulch Landfill property (Hammatt and Shideler 1999). In early 2007, at the request of the project proponents, CSH completed additional AIS investigation, including systematic pedestrian inspection and limited subsurface testing, of a 36-acre portion of the overall approximately 90-acre landfill expansion APE (see Figure 1, Figure 2, & Figure 3). This 36-acre area represents the core of the expansion area (located within TMK: [1] 9-2-003: 073, refer to Figure 1). This 36-acre portion of the overall approximately 90-acre APE is defined as the study area for the current AIS investigation. Through the combined effort of the earlier AIS investigation of entire 200-acre Waimanalo Gulch Landfill property (Hammatt and Shideler 1999) and the current AIS investigation of the 36-acre study area, 100 percent of the project APE was subjected to systematic pedestrian inspection, with limited subsurface testing where appropriate.

1.2 Scope of Work

The archaeological inventory survey and its accompanying report document all historic properties within the project's APE. The following scope of work satisfies State and County requirements for an archaeological inventory survey [per HAR 13-13-276]:

1. A complete ground survey of the entire project area for the purpose of site inventory was completed. All sites were located, described, and mapped with evaluation of function, interrelationships, and significance. Documentation included photographs and scale drawings of selected sites and complexes. All sites were assigned State Inventory of Historic Properties (SIHP) numbers.
2. Limited subsurface testing was conducted to determine if subsurface deposits were located in the project area (particularly in potential archaeological sites).
3. Research on historic and archaeological background, including search of historic maps, written records, and Land Commission Award documents. This research focused on the specific area with general background on the *ahupua‘a* and district and emphasized settlement patterns.
4. As appropriate, consultation with knowledgeable individuals regarding the project area's history, past land use, and the function and age of the historic properties documented within the project area.
5. Preparation of this inventory survey report included the following:
   a) A project description;
   b) A section of a USGS topographic map showing the project area boundaries and the location of all recorded historic properties;
   c) Historical and archaeological background sections summarizing prehistoric and historic land use of the project area and its vicinity;
   d) Descriptions of all historic properties, including selected photographs, scale drawings, and discussions of age, function, laboratory results, and significance, per the requirements of HAR 13-276;

e) A section concerning cultural consultations [per the requirements of HAR 13-276-5(g) and HAR 13-275/284-8(a)(2)].

f) A summary of historic property categories, integrity, and significance based upon the Hawaiʻi Register of Historic Places criteria;

g) A project effect recommendation;

h) Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible to the Hawaiʻi Register of Historic Places.

This scope of work included coordination with the State Historic Preservation Division (SHPD), and County relating to archaeological matters.

1.3 Environmental Setting

1.3.1 Natural Environment

The proposed Waimānalo Gulch Landfill expansion area is located within Waimānalo Gulch, in the southern foothills of the Waiʻanae Mountain range. The proposed expansion area is located approximately 400 to 970 meters east of the coastline. Elevations within the proposed expansion area range from approximately 90 to 1000 ft AMSL. Lands within the proposed expansion area generally consist of steep sloping gulch walls, with a dry stream channel at the base of the gulch. The stream channel is understood to only have running water during periods of heavy rainfall, which are relatively uncommon in dry leeward Oʻahu. The proposed expansion area receives an average of approximately 600-700 mm (24-28 in.) of annual rainfall (Giambelluca et al. 1986).

Soils within the study area consist entirely of Rock Land (rRK) (Foote et al. 1972) (Figure 4). Rock Land is described as "made up of areas where exposed rock covers 25 to 90 percent of the surface…rock outcrops and very shallow soils are the main characteristics" (Foote et al. 1972).

With regards to the vegetation Frierson (1972) suggests that prior to the introduction of exotic vegetation in 1790, the slopes of the Waiʻanae Range extending down to about 150 m (500 ft.) elevation supported a dry forest of native trees and shrubs between an upper *ʻōhiʻa* wet forest and lower grassy savannah area. Frierson (1972:4) summarizes the following patterns suggested by J.F. Rock (1913) for the indigenous vegetation in the area prior to 1778:

a) Lowland zone - open grassland on the leeward side

b) Lower Forest - beginning about 1000 feet and richer in species than the rainforest: *kukui*, *ʻōhiʻa ʻai, koa, kalia*, sandalwood, *ʻōhiʻa lehua, hau, ti, ape, pia*, banana, ginger, birdnest fern and *honohono*, as well as grasses and cyperaceous plants.

c) Specifically leeward lower forest – *ʻohe, wiliwili, maile, halapepe* and *alani*, with almost no undergrowth.

Historical accounts presented by Frierson (1972) describe these lower forest species as extending to 500 feet, with the presence of sandalwood observed down to as low as 300 feet. The lower forest then is hypothesized to have covered much of the current landfill expansion area.

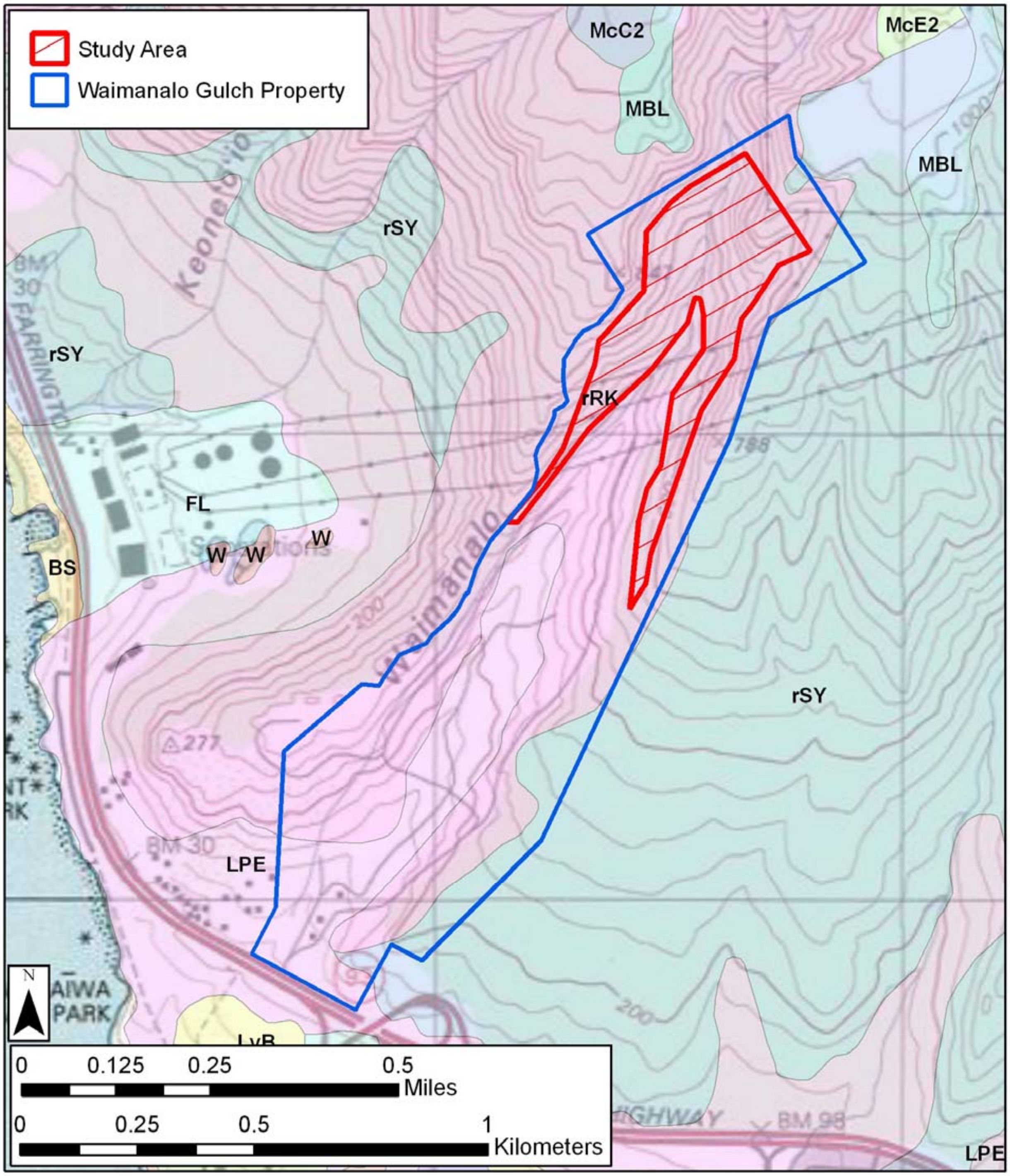

Figure 4. Overlay of Soil Survey of the State of Hawaiʻi (Foote et al. 1972), indicating sediment types within the study area (source: Soils Survey Geographic Database [SSUGRO] 2001, U.S. Department of Agriculture)

This was always a rain shadow slope and we may more accurately envisage a park land community rather than a thick forest in early Hawaiian times. The current vegetation in the project area is comprised mostly of scattered *koa haole* and various grasses. As a result of a relatively recent wildfire, the grasses within the project area have grown dense and thick, covering about 90% of the ground surface, making ground surface observation difficult throughout the project area (Figure 5 and Figure 6).

1.3.2 Built Environment

Lands within the study area are currently undeveloped, with the exception of unpaved access roads. Lands within Waimānalo Gulch, immediately *makai* (southwest) of the study area consist of the active Waimānalo Gulch Sanitary Landfill, and include solid waste disposal sites and associated landfill infrastructure. *Makai* (southwest) of the landfill site is the Ko Olina Resort, including a golf course and residential subdivision. West of the landfill site are the Kahe Point Homes residential subdivision and the HECO Kahe Power Plant. Lands to the east and north of the Waimānalo Gulch landfill are the undeveloped Makaiwa Hills and Palehua areas.

The present state of the study area can be seen in Figure 5 and Figure 6.

Figure 5. Photograph showing the *makai* portion of the study area, view to southwest

Figure 6. Photograph showing the *mauka* portion of the study area, view to northeast

Section 2 Methods

2.1 Field Methods

Fieldwork was accomplished over a one-week period from January 25th to February 2nd, 2007. The CSH field crew consisted of Matt Bell, B.A., Amy Hammermiester, B.A., and Kevin Dalton, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The field effort required 13 person-days to complete.

Fieldwork consisted of a 100% coverage pedestrian inspection of the study area and limited subsurface testing at select locations. The pedestrian inspection of the study area was accomplished through systematic sweeps (transects). The spacing interval between archaeologists was 5-10 meters. Cliffs and rock overhangs were inspected thoroughly for evidence of burials or cultural activity. All potential historic properties encountered were recorded and documented with a written field description, site map, photographs, and located utilizing the Global Positioning System technology utilizing a Garmin GPSmap76S unit (three to five meter horizontal accuracy) or a Trimble PRO XR GPS (submeter horizontal accuracy).

Subsurface testing consisted of the partial excavation, by hand, of selected natural features located during the pedestrian survey. The purpose of the subsurface testing was to aid in determining if selected geological features (i.e. rock shelters, rock mounds, etc.) had been culturally modified or contained subsurface cultural deposits. All excavated material was sifted through a 1/8 in. wire mesh screen to separate out the soil matrix. Each test excavation was documented with a scale section profile, photographs, and sediment descriptions. Sediment descriptions included characterizations of Munsell color, compactness, texture, structure, inclusions, cultural material present, and boundary distinctness and topography.

2.2 Document Review

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources (DLNR); a review of geology and cultural history documents at Hamilton Library of the University of Hawaiʻi, the Hawaiʻi State Archives, the Mission Houses Museum Library, the Hawaiʻi Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawaiʻi State Archives and the Archives of the Bishop Museum; and a study of historic maps at the Survey Office of the DLNR. Information on LCAs was accessed through Waihona ʻĀina Corporation's Māhele Data Base (www.waihona.com).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected type and location of sub-surface pre and post-contact historic properties in the project area.

2.3 Consultation

For the project's archeological inventory survey consultation effort, carried out pursuant to the requirements of HAR 13-276-5(g) and HAR 13-275/284-8(a)(2), CSH worked with the

Office of Hawaiian Affairs (OHA), SHPD, and knowledgeable cultural consultants. This effort is dove-tailed with the cultural consultation effort currently underway for the project’s cultural impact assessment, which CSH is also preparing pursuant to HRS Chapter 343 and the Office of Environmental Quality Control’s guidelines for assessing cultural impacts. Table 1 summarizes the individuals and organizations/agencies that have been consulted.

Table 1. Cultural and/or Agency Consultants

Name	**Affiliation**
Ailā , William	Hui Malāma I Nā Kūpuna
Amaral, Annelle	‘Ahahui Siwila Hawai‘i O Kapolei Hawaiian Civic Club
Cope, Aggie	Hale O Na‘auao Society
Desoto, Frenchy	Wai‘anae Coast Archaeological Preservation Representative
Davan, Teresa	O‘ahu Island Archaeologist, SHPD
Eaton, Arline	*Kupuna* at Iroquois Elementary School
Enos, Eric	Cultural practitioner and director of Ka‘ala Farms
Flanders, Judith	Granddaughter of Alice Kamōkila Campbell
Greenwood, Alice	O’ahu Island Burial Council Member, Wai‘anae District
Ho‘ohuli, “Black” Jo	Wai‘anae Neighborhood Board No 24
Rezentes, Cynthia	Wai‘anae Neighborhood Board No 24
Johnson, Adam	Former O‘ahu Island Archaeologist, SHPD
Johnson, Rubellite	Hawaiian scholar
Josephides, Analu	O‘ahu Island Burial Council Member, Wai‘anae District
Kanahele, Kamaki	President of Nānākuli Homestead Association
Kane, Shad	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board and ‘Ahahui Siwila Hawai’i O Kapolei Hawaiian Civic Club
Kila, Glenn	Koa Mana
Makaiwi, Martha	Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34
McKeaque, Kawika	O‘ahu Island Burial Council member ‘Ewa District
Momoa, Joseph	*Kama‘āina* of Nānākuli and member of Kamo‘i Canoe Club
Morawski, Lauren	O’ahu Island Archaeologist, SHPD
Nāmu‘o, Clyde	Administrator at Office of Hawaiian Affairs
Paik, Kaleo	Culture and Historic Branch, SHPD
Philpotts, McD	Cultural practitioner and long time resident of Waimānalo ‘Ili
Silva, Alika	Koa Mana

Name	Affiliation
Tiffany, Nettie	Kahu of Lanikūhonua and Former Oʻahu Island Burial Council member, ʻEwa District
Timson, Maeda	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34 and President of Ua Au O Kapolei

This consultation effort has included written consultation letters, which were sent via email and U. S. post. These consultation letters were followed up with telephone communication. Additionally, project-related cultural consultation included several on-site meetings that included SHPD personnel (Mr. Adam Johnson, Ms. Teresa Davan, Ms. Linda Kaleo Paik, and Ms. Lauren Morawski), as well as knowledgeable cultural consultants, including Mr. McD Philpotts, Mr. Alika Silva, Mr. Glen Kila, Mr. Shad Kane, Mr. William Ailā, and Mr. Eric Enos. Through this consultation CSH has sought the opinions of cultural consultants regarding the age, function, cultural affiliation, and significance of the single historic property documented within the project's APE. Potential historic property mitigation measures, including preservation in place and relocation, were discussed with these cultural consultants during the on-site meetings.

Section 3 Background Research

3.1 Traditional and Historical Background

3.1.1 Historical Setting

Waimānalo Gulch is located in the western portion of Honouliuli Ahupua‘a, within the ‘Ewa District of Leeward O‘ahu (Figure 7). Honouliuli Ahupua‘a is the largest traditional land unit on O‘ahu, extending from the West Loch of Pearl Harbor in the east, to the border of Nānākuli Ahupua‘a at Pili o Kahe in the west. Honouliuli Ahupua‘a includes approximately 19 km (12 mi.) of open coastline from One‘ula westward to Pili o Kahe. The *ahupua‘a* extends *mauka* (almost pie-shaped) from West Loch nearly to Schofield Barracks in Wahiawā; the western boundary is the Wai‘anae Mountain crest running north as far as Pu‘u Hapapa (or to the top of Ka‘ala Mountain according to some).

Within Honouliuli Ahupua‘a, not only is there a long coastline fronting the normally calm waters of leeward O‘ahu, but there is also four miles of waterfront along the west side of West Loch of Pearl Harbor. The land immediately *mauka* of the coast consists of a flat, karstic raised limestone reef, forming a level nearly featureless "desert" plain marked in pre-contact times by a thin or non-existent soil mantle. The micro-topography is notable in containing countless sinkholes caused by chemical weathering (dissolution) of the limestone shelf. Proceeding *mauka* from this limestone plain, the shelf is overlain by alluvium deposited through a series of gulches draining the Wai‘anae Mountains. The largest of these is Honouliuli Gulch, located in eastern Honouliuli, which empties into the West Loch of Pearl Harbor. To the west are fairly steep gradient gulches forming a more linear than dendritic drainage pattern. The major gulches are, from east to west: Kalo‘i, Makakilo, Awanui, Pālailai, Makaīwa, Waimānalo, and Limaloa. These gulches are steep-sided in the uplands and generally of a high gradient until they emerge onto the flat ‘Ewa plain. The alluvium they have carried has spread out in delta fashion over the *mauka* portions of the plain, which comprises a dramatic depositional environment at the stream gradient change. These gulches are generally dry, but during seasonal Kona storms carry immense quantities of runoff onto the plain and into the ocean. As typical drainages in arid slopes they are either raging uncontrollably or are dry, and as such do not form stable water sources for traditional agriculture in their upper reaches. The western Honouliuli gulches, in contrast to those draining into Pearl Harbor to the east, do not have valleys suitable for extensive irrigated agriculture. However, this lack is more than compensated by the rich watered lowlands of the base of Honouliuli Gulch (the *‘ili* of Honouliuli).

Honouliuli Ahupua‘a, as a traditional land unit, had tremendous and varied resources available for exploitation by early Hawaiians. The “karstic desert” and marginal characterization of the limestone plain, which is the most readily visible terrain, does not do justice to the *ahupua‘a* as a whole. The richness of this land unit is marked by the following available resources:

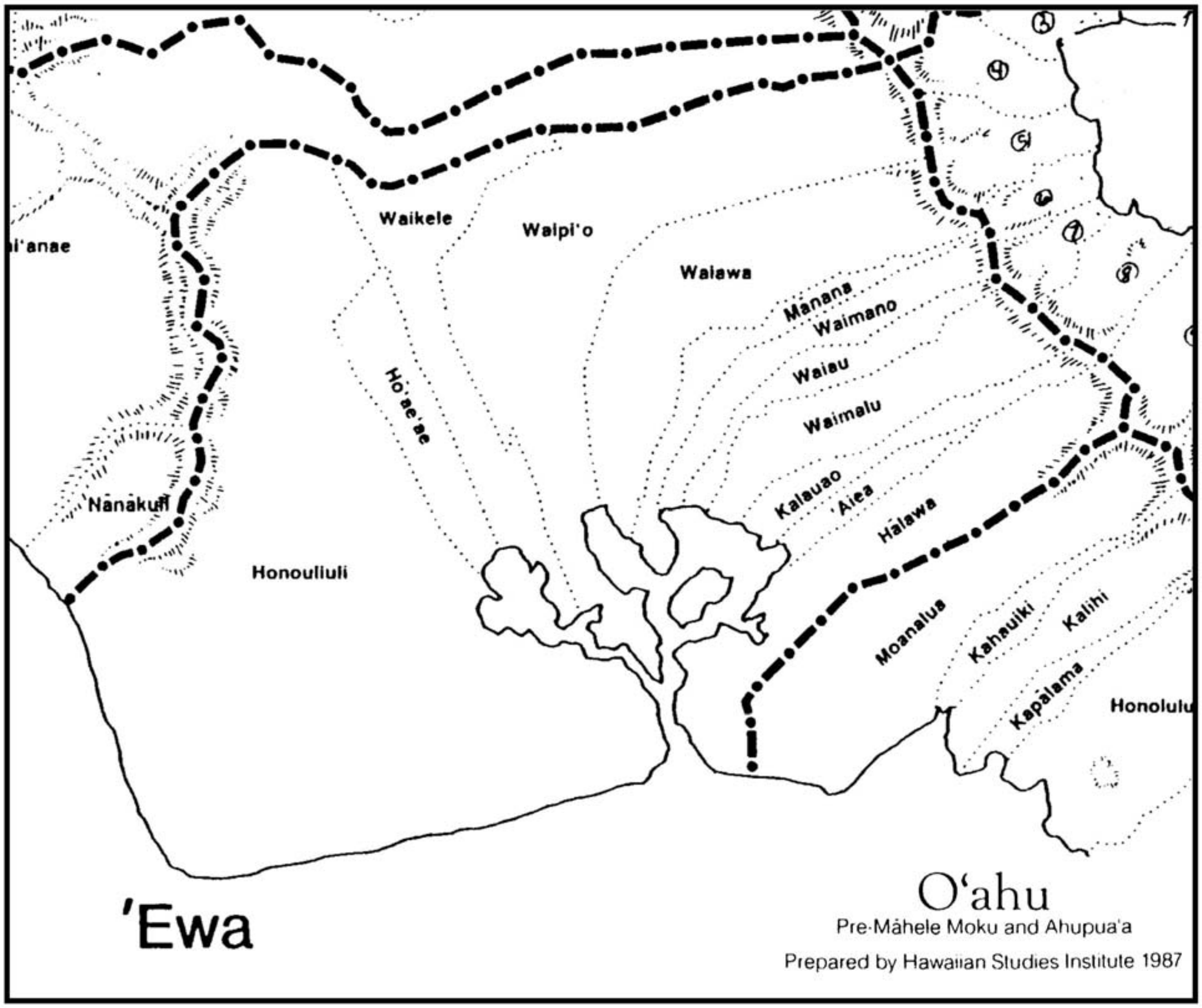

Figure 7. Portion of Hawaiian Studies Institute (1987) map of O‘ahu, showing pre-Māhele *moku* (district) and *ahupua‘a* boundaries

1. 12 miles of coastline with continuous shallow fringing reef, which offered rich marine resources.

2. Four miles of frontage on the waters of West Loch that offered extensive fisheries (mullet, *awa*, shellfish) as well as frontage suitable for development of fishponds (for example, Laulaunui).

3. The lower potion of Honouliuli Gulch in the ‘Ewa plain offered rich level alluvial soils with plentiful water for irrigation from the stream as well as abundant springs. This irrigable land would have stretched well up the valley.

4. A broad limestone plain which, because of innumerable limestone sinkholes, offered a nesting home for a large population of avifauna. This resource may have been one of the early attractions to human settlement.

5. An extensive upland forest zone extending as much as 12 miles inland from the edge of the coastal plain. As Handy and Handy (1972:469) have pointed out, the forest was much more distant from the lowlands here than on the windward coast, but it was much more extensive. Much of the upper reaches of the *ahupua‘a* would have had species-diverse forest with *kukui*, *‘ōhia*, *‘iliahi* (sandalwood), *hau*, *ti*, banana, etc.

The political and cultural center of the Honouliuli Ahupua‘a is understood to have been the relatively dense settlement and rich lands for irrigated taro cultivation at the *‘ili* of Honouliuli located where Honouliuli Stream empties into the north portion of West Loch. The name of the *ahupua‘a*, translated as “dark bay” (Pukui et al. 1974:51) may refer to the nature of the waters of West Loch at the mouth of Honouliuli Stream. Early accounts and maps indicate a large settlement at the *‘ili* of Honouliuli and it may well be that the political power of this village was so great that it was able to extend its jurisdiction well to the northwest into an area which might have been anticipated to fall under the dominion of the Wai‘anae ruling chiefs.

3.1.2 Mythological and Traditional Accounts

The traditions of Honouliuli Ahupua‘a have been complied and summarized numerous times, in studies by Sterling and Summers (1978), Hammatt and Folk (1981), Kelly (1991), Charvet-Pond and Davis (1992), Maly and Rosendahl (1993), and Tuggle & Tuggle (1997). Some of the themes of these traditions, include connections with Kahiki (the traditional homeland of Hawaiians, probably in reference to central Polynesia) and the special character and relationship of the places known as Pu‘uokapolei and Kualaka‘i (near Barbers Point).

Connections with Kahiki are found in numerous place names, traditional events, and with the beings associated with Honouliuli. There are several versions of Kaha‘i leaving from Kalaeloa for a trip to Kahiki to bring breadfruit back to ‘Ewa (e.g. Kamakau 1991:110). There are several stories that associate places in the region with Kamapua‘a and the Hina family, as well as with Pele’s sisters, all of whom have strong connections with Kahiki (cf. Kamakau 1961:111; Pukui et al. 1974:200).

Puʻuokapolei was one of the most sacred places in Honouliuli (cf Sterling and Summers 1978:33). Puʻuokapolei's connections with Kahiki are emphasized when it is noted that the hill was the home of Kamapuaʻa's grandmother, Kamaunuaniho, the Kahiki ancestor to the people of Oʻahu (Fornander 1916-20, V:318; Kahiolo 1978:81, 107). By name, Kapolei is associated with the goddess Kapo, another connection with the Pele and Kamapuaʻa stories (Kamakau 1976:14).

McAllister (1933:108) records that a *heiau*, or temple, was located on Puʻuokapolei, but was destroyed before his survey of the early 1930s. The *heiau* may have been associated with the sun (Fornander 1916-20, III:292). The hill was used as a point of solar reference or as a place where such observations were made. Puʻuokapolei might have been understood as the gate of the setting sun. It is notable that the rising sun at the eastern gate of Kumukahi in Puna is associated with the Hawaiian goddess Kapo (Emerson 1978:41). There is little specific information for Puʻuokapolei, but the place name itself ("hill of beloved Kapo") is hard to ignore. It is mentioned in some cosmologies that Kū was the god of the rising sun, and Hina should be associated with the setting sun (Hina is the mother of Kamapuaʻa). Fornander (1916-20, III; 292) states, Puʻuokapolei may have been a jumping off place (also connected with the setting sun) and associated with the dead who roamed the adjacent Plain of Kaupeʻa.

Puʻuokapolei was also the primary landmark for travelers between Pearl Harbor and the west Oʻahu coast, with a main trail running just inland of it (ʻĪʻī 1959:27, 29; Figure 8). Puʻuokapolei was probably the most common name used as a reference for the area of the ʻEwa Plain in traditional Hawaiʻi (cf. Fornander 1916-20, II: 318; E.M. Nakuina 1904, in Sterling and Summers 1978:34).

3.1.3 Early Historic Period

Although no specific documentation of pre-contact or early historic land use is known for the specific study area in Waimānalo Gulch, various Hawaiian legends and early historical accounts indicate that the *ahupuaʻa* of Honouliuli was once widely inhabited by pre-contact Hawaiian populations, including the Hawaiian *aliʻi*. This substantial population is attributable for the most part to the plentiful marine and estuarine resources available at the coast, along which several sites interpreted as permanent habitations were located. Other attractive subsistence-related features of the *ahupuaʻa* included irrigated lowlands suitable for wetland taro cultivation (Hammatt and Shideler 1990), as well as the lower forest area of the mountain slopes for the procurement of forest goods.

Exploitation of the forest resources along the slopes of the Waiʻanae Range - as suggested by E. S. and E.G. Handy - probably acted as a viable subsistence alternative during times of famine:

> ...The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *ʻwao*, or upland jungle, than was the case on the windward coast. Yet the *ʻwao* here was more extensive, giving greater opportunity to forage for wild foods during famine time. (Handy and Handy 1972:469-470)

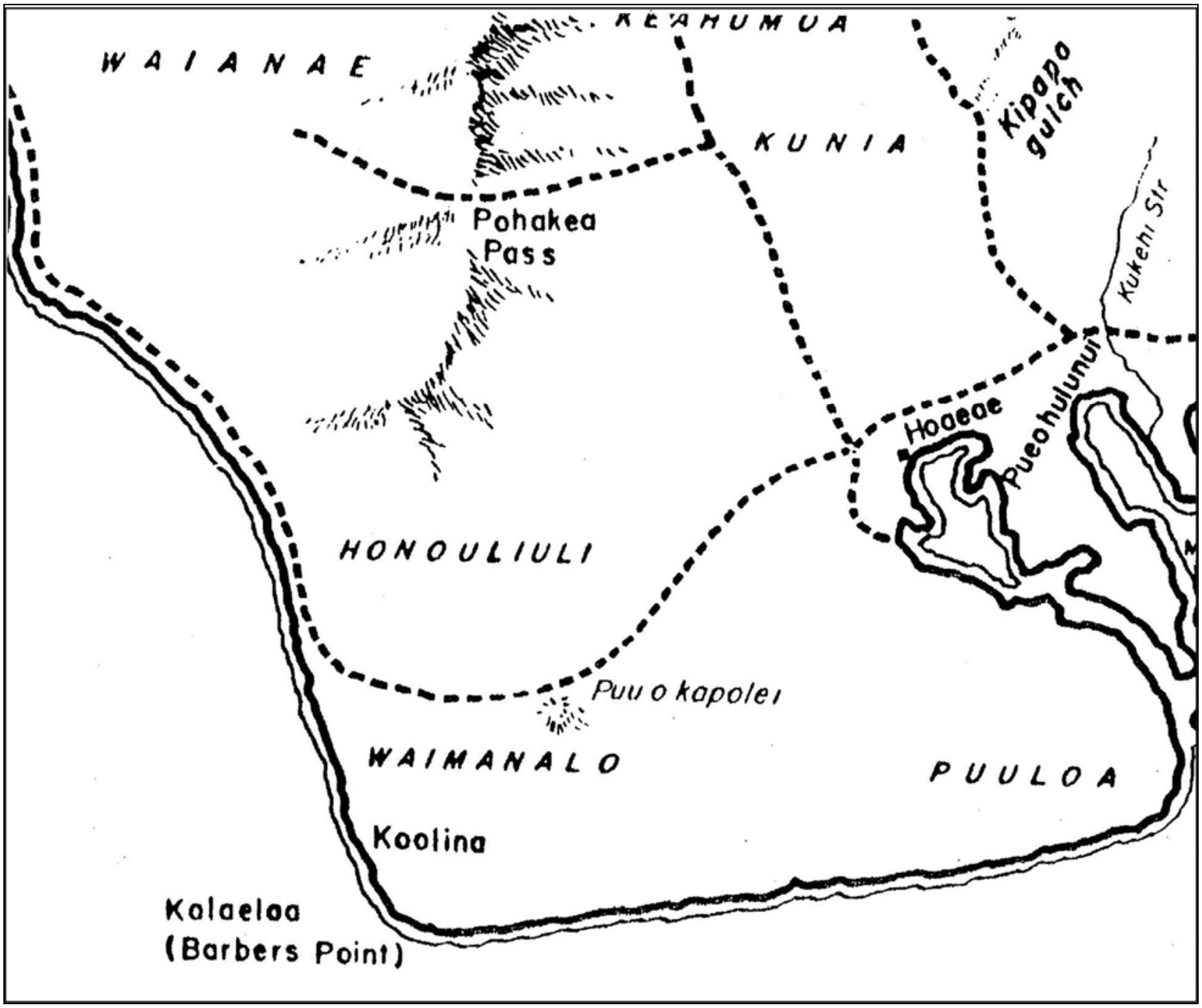

Figure 8. Trails of Leeward O‘ahu as Described by John Papa ‘Ī‘ī; Map by Paul Rockwood (‘Ī‘ī 1983:96)

These upper valley slopes may have also been a significant resource for opportunistic quarrying of basalt for the manufacturing of stone tools. This is evidenced in part by the existence of a probable quarrying site (50-80-12-4322) in Makaīwa Gulch at 152 m (500 ft.) elevation, east of the current project area (Hammatt et al. 1991).

The Hawaiian *aliʻi* were also attracted to the region. One historical account of particular interest refers to an *aliʻi* residing in Ko Olina, southwest of the current project area:

> Ko Olina is in Waimānalo near the boundary of ʻEwa and Waiʻanae. This was a vacationing place for chief Kākuhihewa and the priest Napuaikamao was the caretaker of the place. Remember reader, this Ko Olina is not situated in the Waimānalo on the Koʻolau side of the island but the Waimānalo in ʻEwa. It is a lovely and delightful place and the chief, Kākuhihewa loved this home of his (Sterling and Summers 1978:41).

John Papa ʻĪʻī describes a network of Leeward Oʻahu trails (see Figure 8) which in later historic times encircled and crossed the Waiʻanae Range, allowing passage from West Loch to the Honouliuli lowlands, past Puʻu Kapolei and Waimānalo Gulch to the Waiʻanae coast and onward circumscribing the shoreline of Oʻahu (ʻĪʻī 1959:96-98). Following ʻĪʻī's description, a portion of this trail network would have passed immediately *makai* (south) of the southern border of the Waimānalo Gulch property, roughly following the route of the present Farrington Highway.

ʻĪʻī, who was born about 1800, also recounts an incident at Waimānalo that occurred when he was eight or nine years old. While the young ʻĪʻī was staying at Nānākuli, he learned:

> …of the burning of the houses in Waimanalo. The overseer in charge of the burning told [ʻĪʻī and his relatives] that it was so ordered by the royal court because the people there had given shelter to the chiefess, Kuwahine, who ran away from her husband Kalanimoku after associating wrongfully with someone. Kuwahine was the daughter of the Kaikioewa who reared Kamehameha III in his infancy. She had run away because she had been beaten for her offense and for other reasons, too, perhaps. She had remained hidden for about four or five days before she was found. Here we see the sadness that befell the people through the fault of the chiefs. The punishment fell on others, though they were not to blame. (ʻĪʻī 1959:29)

ʻĪʻī's sad account reveals that the coastal Waimānalo portion of Honouliuli Ahupuaʻa continued to be inhabited during the first portion of the 19th century.

Other early historical accounts of the general region typically refer to the more populated areas of the ʻEwa district, where missions and schools were established and subsistence resources were perceived to be greater. However, the presence of archaeological sites along the coral plains and coast of southwest Honouliuli Ahupuaʻa, indicate that pre-contact and early post-contact populations also adapted to less inviting areas, despite the environmental hardships.

Subsequent to western contact in the area, the landscape of the ʻEwa plains and Waiʻanae slopes was adversely affected by the removal of the sandalwood forest, and the introduction of domesticated animals and new vegetation species. Domesticated animals including goats, sheep and cattle were brought to the Hawaiian Islands by Vancouver in the early 1790s, and allowed to graze freely about the land for some time after. L.A. Henke reports the existence of a longhorn cattle ranch in Waiʻanae by at least 1840 (in Frierson 1972:10). During this same time, perhaps as early as 1790, exotic vegetation species were introduced to the area. These typically included vegetation best suited to a terrain disturbed by the logging of sandalwood forest and eroded by animal grazing. The following dates of specific vegetation introduced to Hawaiʻi are given by R. Smith and outlined by Frierson (1972:10-11):

1. "early," c. 1790:

   Prickly pear cactus, *Opuntia tuna*
   Haole koa, *Leucaena leucocephala*
   Guava, *Psidium guajava*

2. 1835-1840:

   Burmuda [sic] grass, *Cynodon dactylon*
   Wire grass, *Eleusine indica*

3. 1858:

   Lantana, *Lantana camara*

The *kiawe* tree (*Prosopis pallida*) was also introduced during this period, either in 1828 or 1837 (Frierson 1972:11).

Intensive sandalwood harvesting, according to H. St. John (in Frierson 1972:7) occurred in the Hawaiian Islands between 1815-1830. As it is likely that sandalwood forests once occupied the lower, dry slopes of the Waiʻanae Range, the current project area was likely impacted by the cutting and burning of these forests.

3.1.4 Mid- to late-1800s

Associated with the Māhele of 1848, 99 individual land claims in the *ahupuaʻa* of Honouliuli were registered and immediately awarded by King Kamehameha III. The vast majority of the Land Commission Awards (LCA) were located near the Puʻuloa Salt Works and the taro lands of the *ʻili* of Honouliuli. The present study area appears to have been included in the largest award (Royal Patent 6071, LCA 11216, ʻĀpana 8) granted in Honouliuli Ahupuaʻa to Miriam Keʻahi-Kuni Kekauʻōnohi on January 1848 (Native Register). Kekauʻōnohi acquired a deed to all unclaimed land within the *ahupuaʻa*, including a total of 43,250 acres.

Kamaukau relates the following about Kekauʻōnohi as a child:

> Kamehameha's granddaughter, Ke-ahi-Kuni Kekau-ʻōnohi...was also a tabu chiefess in whose presence the other chiefesses had to prostrate and uncover themselves, and Kamehameha would lie face upward while she sat on his chest. (in Hammatt and Shideler 1990:19-20)

Kekauʻōnohi was one of Liholiho's (Kamehameha II's) wives, and after his death, she lived with her half-brother, Luanuʻu Kahalaʻiʻa, who was governor of Kauaʻi (Hammatt and Shideler

1990:20). Subsequently, Kekauʻōnohi ran away with Queen Kaʻahumanu's stepson, Keliʻi-ahonui, and then became the wife of Chief Levi Haʻalelea. Upon her death on June 2, 1851, all her property was passed on to her husband and his heirs. When Levi Haʻalelea died the property went to his surviving wife, who in turn leased it to James Dowsett and John Meek in 1871 for stock running and grazing.

In 1877, James Campbell purchased most of Honouliuli Ahupuaʻa for a total of $95,000. He then drove off 32,347 head of cattle belonging to Dowsett, Meek and James Robinson and constructed a fence around the outer boundary of his property (Bordner and Silva 1983:C-12). In 1879, Campbell brought in a well-driller from California to search the ʻEwa plains for water, and a "vast pure water reserve" was discovered (Armstrong and Bier 1983). Following this discovery, plantation developers and ranchers drilled numerous wells in search of the valuable resource. By 1881, the Campbell property of Honouliuli prospered as a cattle ranch with "abundant pasturage of various kinds" (Briggs in Haun and Kelly 1984:45). Within 10 years of the first drilled well in ʻEwa, the addition of a series of artesian wells throughout the island was supplying most of Honolulu's water needs (Armstrong and Bier 1983).

In 1889, Campbell leased his property to Benjamin Dillingham, who subsequently formed the Oʻahu Railway & Land Co. (O.R. & L) in 1890. To attract business to his new railroad system, Dillingham subleased all land below 200 feet elevation to William Castle who in turn sublet the area to the ʻEwa Plantation Company for sugar cane cultivation (Frierson 1972:15)(Figure 9). Dillingham's Honouliuli lands above 200 feet elevation that were suitable for sugar cane cultivation were sublet to the Oʻahu Sugar Co. Throughout this time and continuing into modern times, cattle ranching continued in the area, and Honouliuli Ranch established by Dillingham was the "fattening" area for the other ranches (Frierson 1972:15).

ʻEwa Plantation Co. was incorporated in 1890 and continued in full operation up into modern times (Figure 9). The plantation grew quickly with the abundant artesian water. As a means to generate soil deposition on the coral plain and increase arable land in the lowlands, the ʻEwa Plantation Co. installed ditches running from the lower slopes of the mountain range to the lowlands and then plowed the slopes vertically just before the rainy season to induce erosion (Frierson 1972:17).

The Oʻahu Sugar Co. was incorporated in 1897, and included lands in the foothills above the ʻEwa plain and Pearl Harbor. Prior to commercial sugar cultivation, the lands occupied by the Oʻahu Sugar Co. were described as being "of near desert proportion until water was supplied from drilled artesian wells and the Waiāhole Water project" (Conde and Best 1973:313). The Oʻahu Sugar Co. took control over the ʻEwa Plantation lands in 1970 and continued operations into the 1990s.

Dillingham's *mauka* lands in western Honouliuli that were unsuitable for commercial sugar production remained pasture for grazing livestock. From 1890 to 1892, the Ranch Department of the O.R. & L. Co. desperately sought water for their herds of cattle by tapping plantation flumes and searching for alternative sources of water. Ida von Holt leaves this account of her husband Harry's (Superintendent of the O.R. & L Ranch Dept.) search for water in the foothills of the Waiʻanae Range:

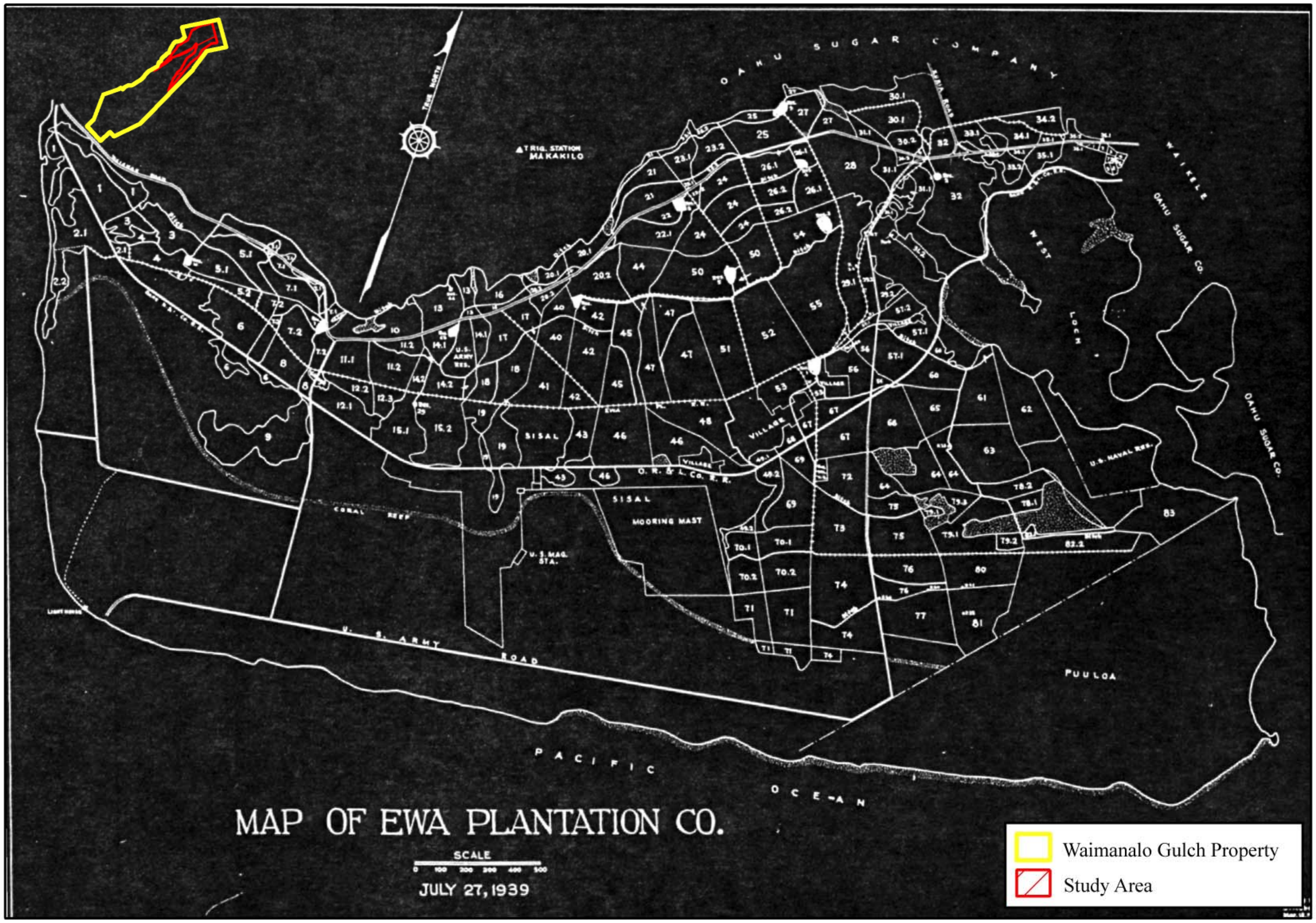

Figure 9. Map of 'Ewa Plantation Co. (Conde and Best 1973:285), showing the extent of sugar cane cultivation in the vicinity of the study area.

> One of those places is on the old trail to Palehua, and had evidently been a place of which the Hawaiians had known, for its name is Kaloi (the taro patch), and even in dry weather water would be standing in the holes made by the cattle, as they tried to get a drop or two. (Von Holt 1985:136)

A second account is given of the discovery of spring water in an area over the ridge on the north side of Kaloʻi Gulch:

> Shouting to the men to come over with their picks and shovels, he [Harry von Holt] soon got them busy clearing away lots of small stones and earth. Almost at once they could see that there were evidences of a paved well, and at about three feet down they came upon a huge flat rock, as large around as two men could span with their arms. Digging the rock loose and lifting it to one side, what was their astonishment to find a clear bubbling spring! (Von Holt 1985:138).

Following the discovery, two old Hawaiians began to ask Von Holt about the spring:

> Finally he [Harry von Holt] got them to explain that the spring, called "Waihuna" (Hidden Spring) had been one of the principal sources of water for all that country, which was quite heavily populated before the smallpox epidemic of 1840…A powerful Kahuna living at the spring had hidden it before he died of the smallpox, and had put a curse on the one who disturbed the stone, that he or she would surely die before a year was out. (Von Holt 1985:138-140)

3.1.5 1900s

By 1920, the lands of Honouliuli were used primarily for commercial sugar cane cultivation and ranching (Frierson 1972:18). Much of the *mauka* lands in western Honouliuli, including ridges and deep gulches, were unsuitable for commercial sugar cultivation and remained pasture for grazing livestock. Historic maps of the Waimānalo Gulch area indicate a lack of any significant development in the area into the 1940s (Figure 10, Figure 11, & Figure 12). Modest constructions in the area included the realignment of the "Waianae Road" (present Farrington Hwy.) to run along the *makai* (southern) edge of the Waimānalo Gulch property, and a road the top of the Kahe Point ridge, within the Waimānalo Gulch property.

In the late 1920s, the main residential communities were at the northeast edge of the ʻEwa Plain. The largest community was still at Honouliuli village. ʻEwa was primarily a plantation town, focused around the sugar mill, with a public school as well as a Japanese School. Additional settlement was in Waipahu, centered around the Waipahu sugar mill, operated by the Oʻahu Sugar Company.

Major land use changes came to western Honouliuli when the U.S. Military began development in the area. Long before the Japanese bombing of Pearl Harbor in December 1941, the U.S. military had initiated the Oahu Coast Defense Command, a series of coastal artillery batteries designed to assist in the defense of Pearl Harbor and to prevent invasion of Oʻahu. Military installations were constructed both near the coast, as well as in the foothills and upland areas. The following military installations were located in the general vicinity of the current study area. Barbers Point Military Reservation (a.k.a. Battery Barbers Point, 1937-1942),

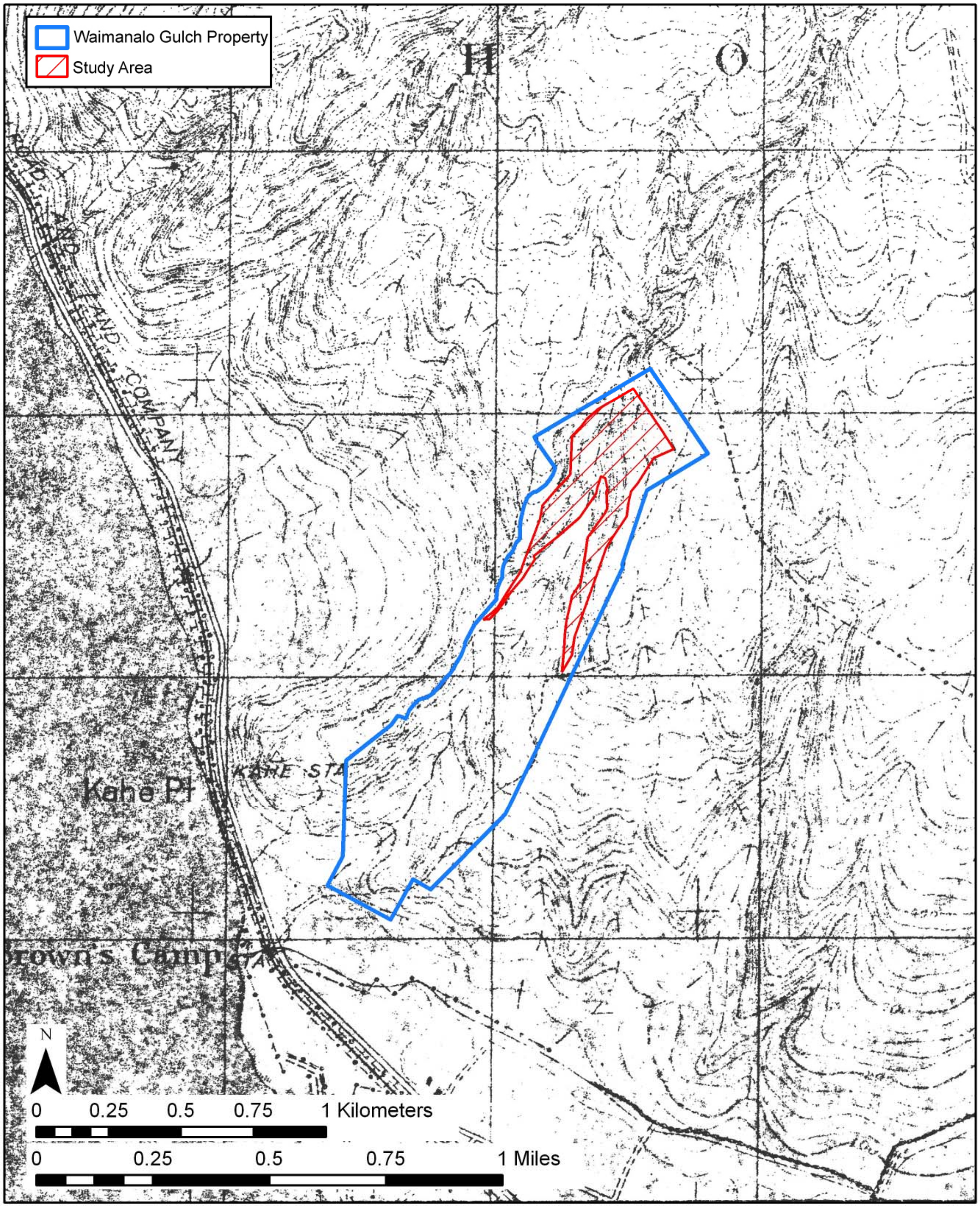

Figure 10. 1918 Fire Control Map, showing the location of the Waimānalo Gulch property and study area

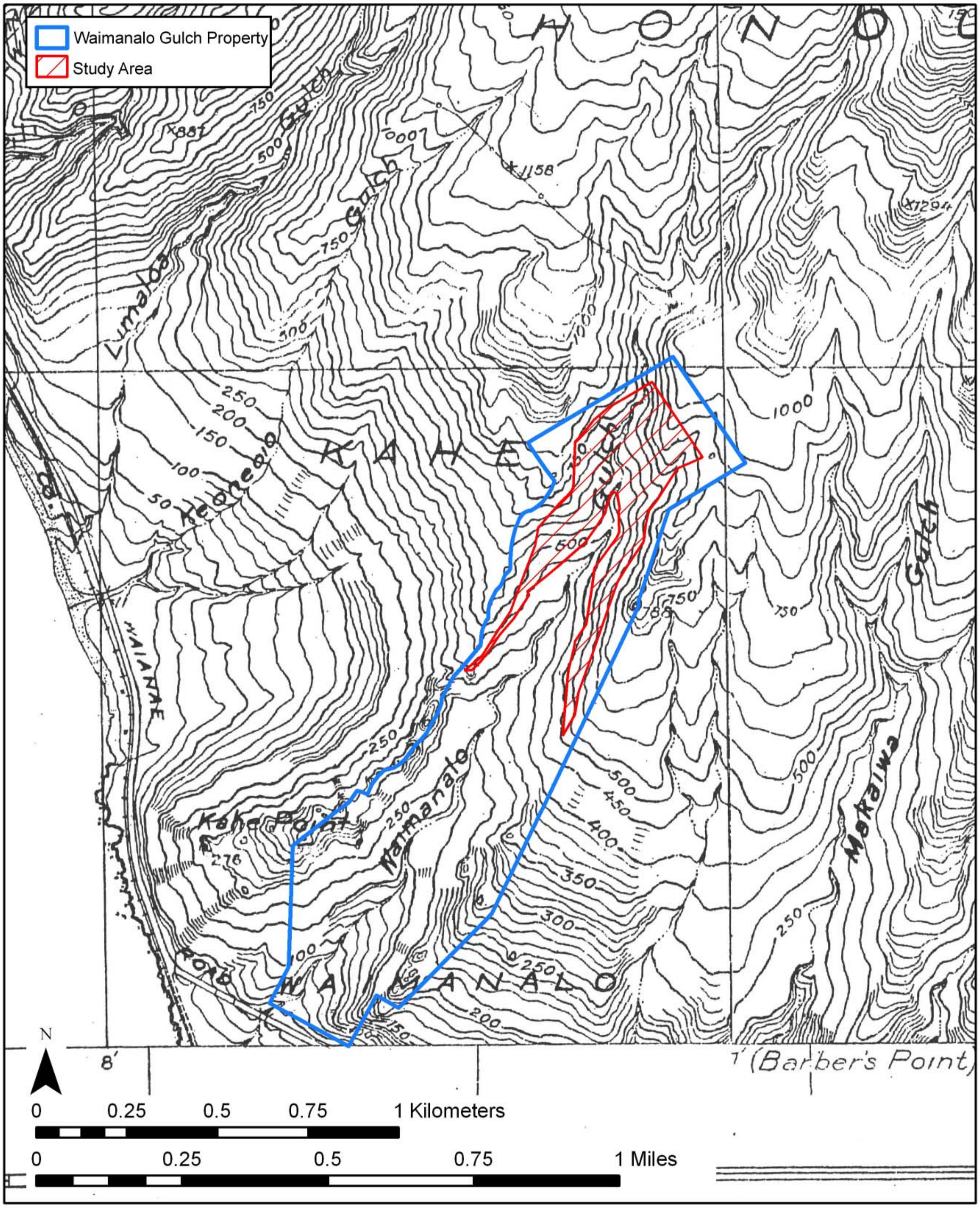

Figure 11. 1928 USGS Topographic Map, Waiʻanae Quad, showing the location of the Waimānalo Gulch property and the study area

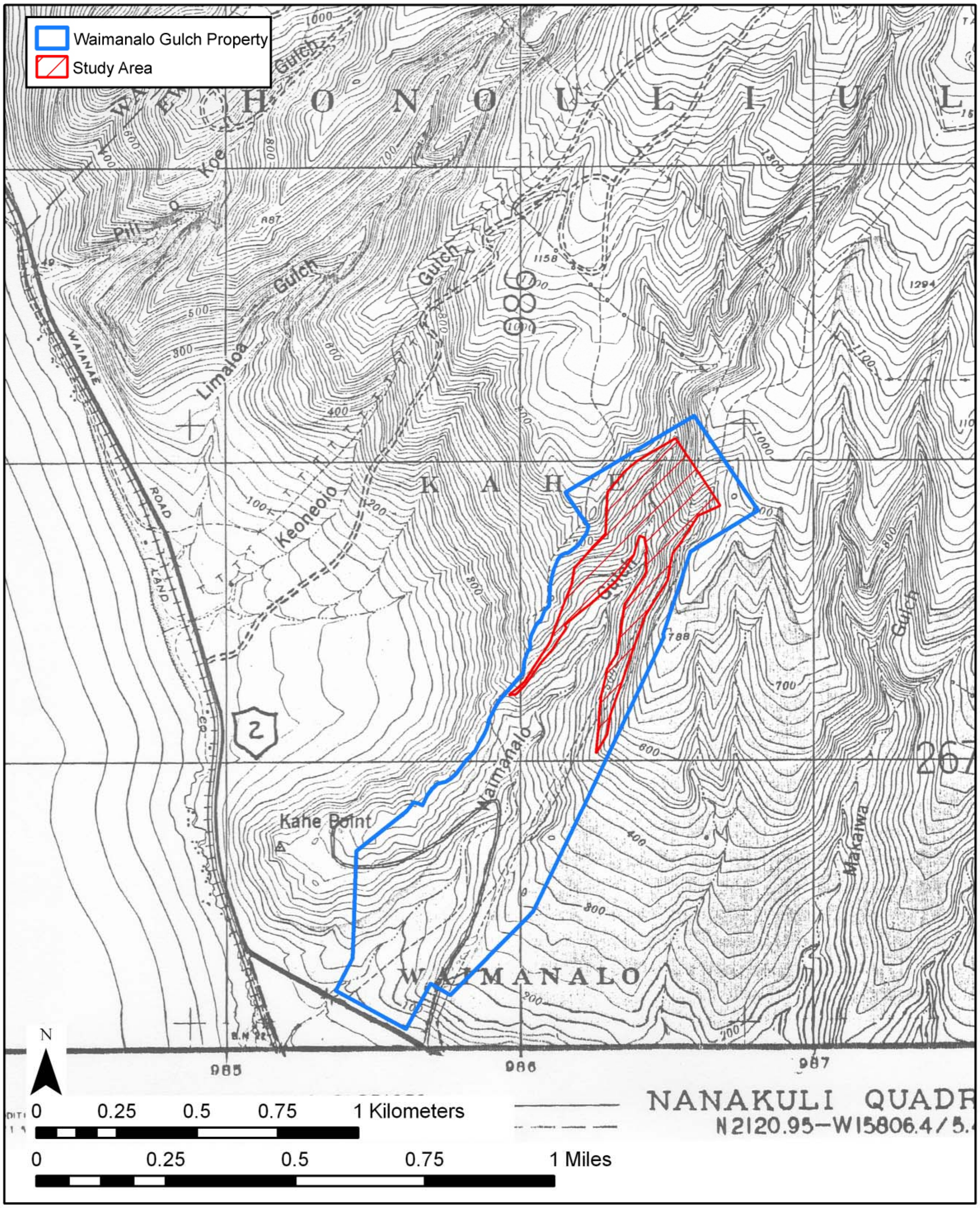

Figure 12. 1943 War Department Map, Nanakuli Quad, showing the location of the Waimānalo Gulch property and the study area

located at Barbers Point Beach, was used beginning in 1921 as a training area for firing 155 mm guns (Payette 2003). Camp Malakole Military Reservation (a.k.a. Honouliuli Military Reservation until 1941), located south of Barbers Point Harbor, was used from 1939 as an anti-aircraft artillery training firing point (Payette 2003). Gilbert Military Reservation, located east of Barbers Point Harbor, was used from 1922-1944 as a railway battery firing position (Payette 2003). Brown's Camp Military Reservation (a.k.a. Brown's Camp Battery from 1937-1944 and Battery Awanui from 1940-1945), located near Kahe Point (Figure 13), was a railway battery firing position (Payette 2003). Fort Barrette (a.k.a. Kapolei Military Reservation and Battery Hatch), located atop Puʻu Kapolei, was in use from 1931 to 1948 for housing four 3-inch anti-aircraft batteries (Payette 2003). In the 1950s, the site was used as a NIKE missile base. Palailai Military Reservation (a.k.a. Battery Palailai from 1942-1944), located atop Puʻu Palailai, was used from the 1920s and included Fire Control Station "B" (Payette 2003). Barbers Point NAS, in operation from 1942 into the 1990s, was the largest and most significant base built in the area. It housed numerous naval and defense organizations, including maritime surveillance and anti-submarine warfare aircraft squadrons, a U.S. Coast Guard Air Station, and the U.S. Pacific Fleet.

3.1.6 Battery Arizona

On the southwest ridge above Waimānalo Gulch are the subterranean remnants of Battery Arizona, an ambitious World War II military project. The attack of December 7, 1941 impelled the construction of further defensive armament for portions of the Oʻahu coastline not protected by the existing batteries. Even the sunken ships at Pearl Harbor would be enlisted in Oʻahu's defense. When, early in 1942, it was discovered that the two rear three-gun turrets of the U.S.S. Arizona were salvageable, an ambitious plan to mount them at two land installations on Oʻahu was set into motion. The two sites chosen were the tip of Mōkapu Peninsula at Kāneʻohe Bay, designated Battery Pennsylvania, and Kahe Point above the Waiʻanae Coast, designated Battery Arizona.

Construction of Batteries Pennsylvania and Arizona commenced in April 1943. A formidable subterranean complex was contrived to house the turrets at the two sites. According to a U.S. Army Corps of Engineers report prepared in 1946:

> The design that was eventually produced consists of a central barbette well of concrete set in rock, having an overall depth of about 60 ft. and an inside diameter of about 24 ft., with three levels below the bottom of the turret connected by stairways. Two tunnels radiate from this well to house projectiles and powder magazines immediately adjacent to the well. Beyond and in line with the projectile magazine is a large power room for three 125 KW generators, all miscellaneous switchgear, air conditioning, and ventilating equipment. In a separate tunnel off the main tunnel in the vicinity of the powder room is a 10,000 gallon emergency water tank to maintain the battery for several days in case of siege. Beyond the power room in a separate leg of the tunnel are the operations rooms. Because during prolonged action it might be necessary for the entire battery personnel to remain in the battery and be self sustaining, these gas proofed and air conditioned operations rooms normally comprised of radio and

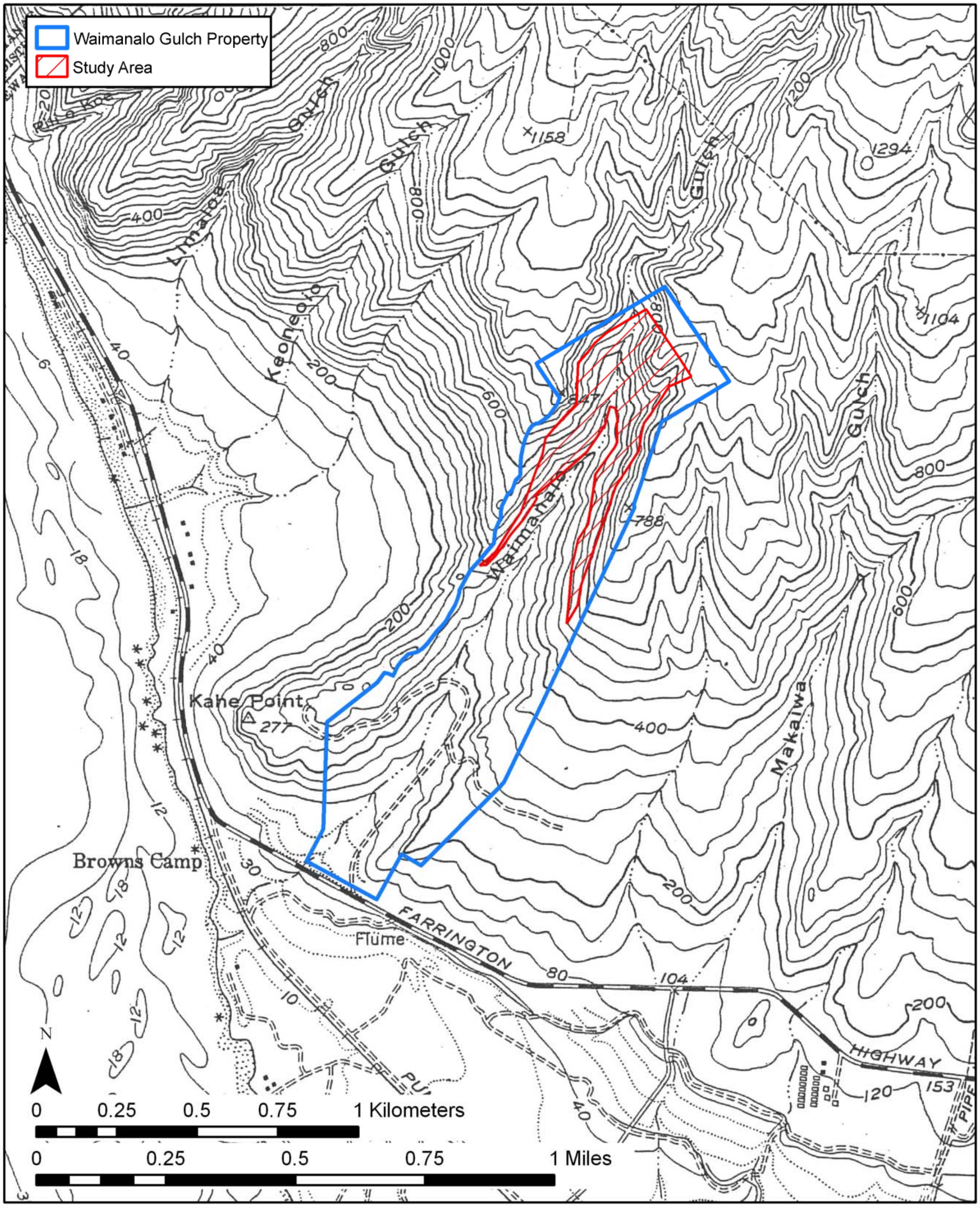

Figure 13. 1953 USGS Topographic Map, ʻEwa Quad., showing the location of the Waimānalo Gulch property and the study area

> switchboard, plotting, and radar rooms included latrines for officers and enlisted men, a galley, first aid room, offices, and storerooms.

The salvaged turrets were stored at a facility on Pearl City Peninsula. Refurbishing of the turrets proved to be a formidable task:

> An immediate complication arose from the fact that removal of the turrets from the Arizona was begun prior to any thought of their reuse; hence, much of the cutting was done rapidly and crudely with no consideration for future reassembly. As a result, the reconstruction frequently was held up by the painstaking realignment and joining of turret segments. Other difficulties arose from the initial damage and subsequent immersion suffered by the armament components. (Kirchner and Lewis 1967:432)

Records in the archives of the U.S. Army Museum at Ft. DeRussy reveal the months' long search across the Mainland for replacement parts, especially motors, and for parts to adapt the turrets to installation on land. It was finally determined that, because they had been so long under water, every part of the turrets' operating systems had to be repaired or replaced.

Perhaps appropriately for the former battleship armaments, the turrets were transported to their respective battery sites by sea. According to the 1946 Army Corps of Engineers report:

> The heavy section of the turrets comprising three 14-inch guns were moved by barge from Pearl Harbor to beaches near the battery sites. Here they were cleaned, painted, and put into condition for installation in the barbette. Special equipment was designed at each site for raising the parts from the ground and lowering to their correct position in the barbette.

Construction of the two batteries continued through all of 1944 and into two-thirds of 1945. Problems--associated with wartime conditions and the unique engineering feat of adapting shipboard weaponry to land installation--dogged the two projects over the many months:

> This work involving repair, replacement, or remanufacture of thousands of separate parts placed great demands upon the Army and Navy ordnance facilities and workers. Often, drawings were not available for damaged or missing items, and a particular stage of reconstruction had to be awaited before such parts could be reproduced...In one instance, well over a year was required to procure a single turret turning gear worm and pinion.
>
> ...The various problems were further complicated by the sheer mass of the armament and the size of the battery structures...Special heavy equipment...had to be erected at each installation for raising the turret members from the shore and for assembling the armament at the site. Some segments had to be moved on rollers along specially constructed roads, while the 71-ton gun tubes were lifted by parkbuckles from the beaches to the emplacements high above.

> ...Site peculiarities placed severe restrictions upon the battery layouts. The fire-control radars, for example, because of their sensitivity to concussion, could not be near the turrets; yet the ideal positions for the radars both technically and topographically were but a few yards away...
>
> During late 1944, the battery construction reached a bottleneck stage when progress depended upon a few highly skilled technicians and the closely timed arrival of a few critical armament components. By Christmas, 1944, the number of personnel that could effectively work at the two installations was limited to about 35 specialists. At this time, Battery Pennsylvania's turret was roughly half assembled, while Battery Arizona was even further behind. (Kirchner and Lewis 1967:432-433)

The slow pace of construction of the two batteries reflected a diminishing urgency for defense of Oʻahu and its military installations. The war front was moving west across the Pacific as successive defeats impelled Japan's retreat. Battery Pennsylvania at Mōkapu Point was near completion in August 1945 when its guns were test fired around the same time of Japan's surrender. Battery Arizona had not been completed by the war's end; its guns, though installed, were never fired.

Neither of the two batteries was ever placed in operation during the post-war years. The batteries had been rendered obsolete "due to the development of air power, new assault techniques and nuclear weapons. The guns were scrapped in 1949..." (Bouthillier 1995: 12).

A 1943 War Department map (see Figure 12) indicates a road was constructed within the *makai* (southern) portion of Waimānalo Gulch, ascending the western slope to the top of the Kahe Point ridge. This road, along with several other roads and trails indicated on the map, were likely constructed in association with the Battery Arizona complex and other military installations and training areas in the vicinity.

3.1.7 1950s to Present

Waimānalo would once again play a role in the Oʻahu defense system when, sometime after 1959, the United States Army purchased or exchanged land with the Campbell Estate for the construction of a Nike-Hercules anti-aircraft missile base located at the head of Waimānalo Gulch (Figure 14). The Nike complex, in used between 1961 and 1968 consisted of two control sites and one double-sized launcher site (Murdock 2003). The tunnel complex of Battery Arizona was also used for civil defense circa 1960.

Development in the uplands of western Honouliuli have generally been limited to ranch related housing and infrastructure, military training and NIKE missile stations, as well as the construction of military and commercial communication and atmospheric observation stations on the ridges near Pālehua. In 1975, the U.S. Air Force constructed the Pālehua Solar Observatory with five solar optical telescopes. A circa 1980s aerial photograph (Figure 15) shows limited development in the vicinity of the Waimānalo Gulch landfill property.

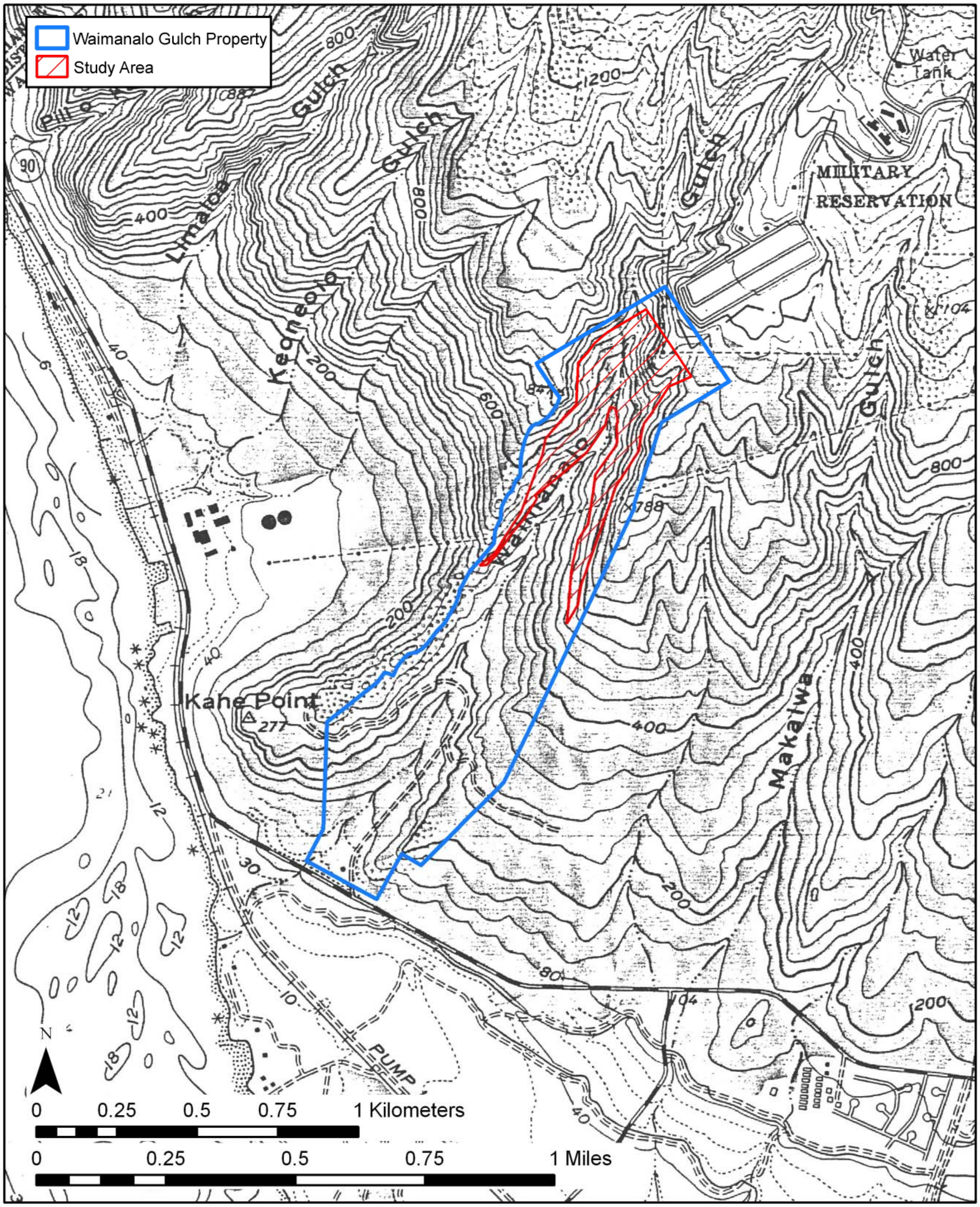

Figure 14. 1962 USGS Topographic Map, ʻEwa Quad., showing the location of the Waimānalo Gulch property and the study area

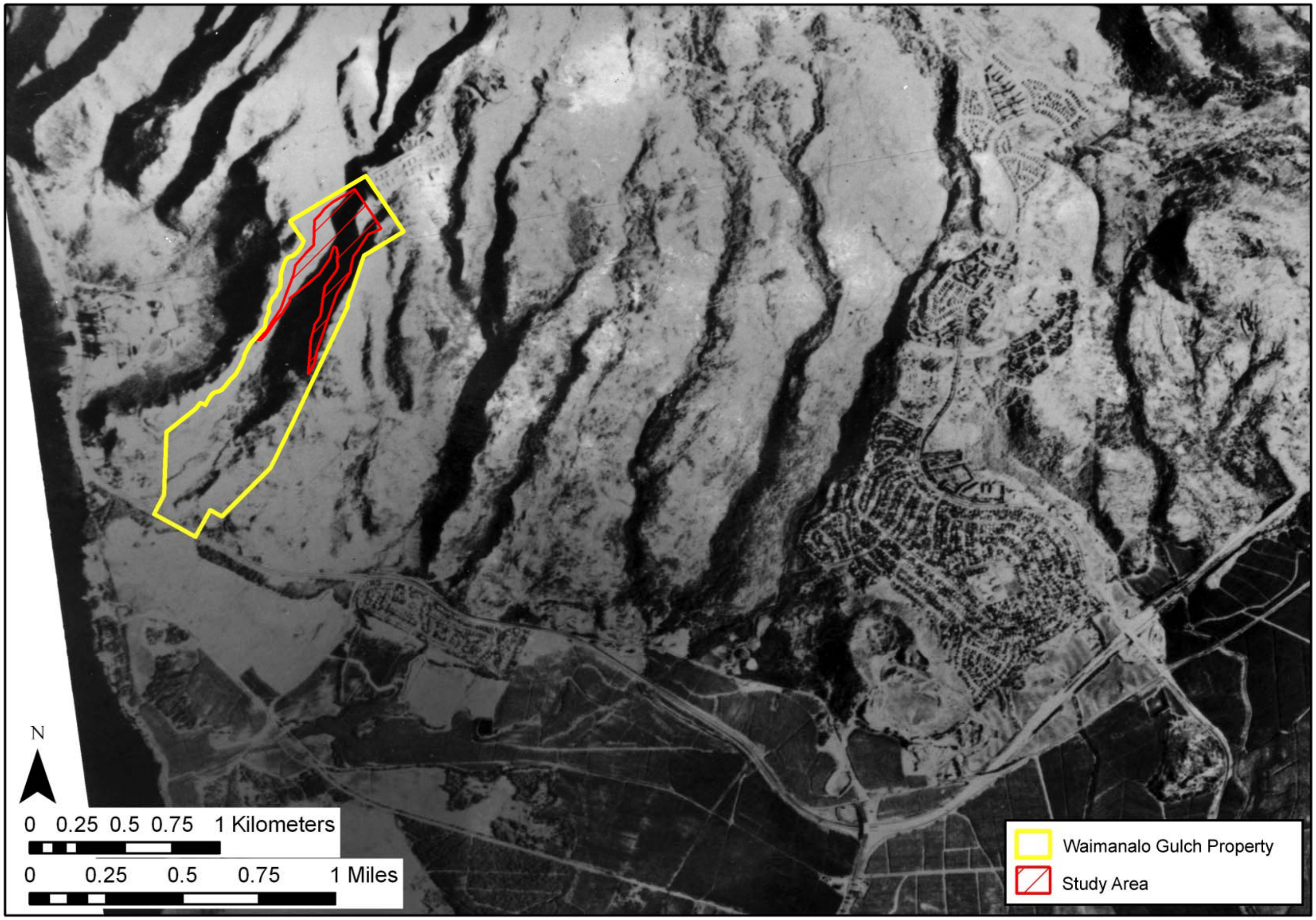

Figure 15. Circa 1980s aerial photograph of western Honouliuli, showing the location of the Waimānalo Gulch property and the study area

In 1985, the City and County of Honolulu condemned 81.5 acres of agricultural land in Waimānalo Gulch for use as a landfill to dispose of municipal refuse and ash from the H-POWER incinerator to be built nearby at Campbell Industrial Park. Work on the landfill began in 1987. In 1988, workers constructing the Waimānalo Gulch landfill were reporting strange incidents at the site. According to a newspaper article by Bob Krauss:

> "We've been having funny things happen," said one of the men on the site. "Unnatural things. In one case, a man was standing on a flat rock and the thing threw him over. All of a sudden, it just flipped over."
>
> Another time a backhoe was knocking down kiawe trees. The trees have shallow roots systems so they usually just fall down. But one of the trees jumped up and did a somersault...
>
> Then there was the payloader filling in a huge hole where a $17,000 fiberglass fuel tank had been placed. The story is that the driver put his machine in reverse but it jumped forward and leaped into the hole, smashing the tank (Honolulu Advertiser, 6/20/88:A-1, A-4).

Other incidents reported to Krauss were a truck that had flipped over, tools that had vanished, and a huge stone that had disappeared. The workers called in:

> a woman recommended for lifting curses and banishing evil spirits. She said the trouble was caused by a certain stone, the "chief of the valley," which was lying on its side.
>
> The men quickly set the stone upright. But they got it upside down. Things went from bad to worse. The woman came out again and recommended they place the stone on the hill where it will not be covered by rubbish when the landfill opens(Honolulu Advertiser, 6/20/88:A-1, A-4).

According to Krauss, in April 1988, the stone was moved to a "nest of boulders so that it faces east," at the "end of a Hawaiian Electric Co. Road to one of its relay stations on top of [a] hill." This site lies close to the Battery Arizona bunkers in the southwest portion of the Waimānalo Gulch landfill property.

3.2 Previous Archaeological Research

The coral plains of ʻEwa have been the focus of more than 50 archaeological studies over the last two decades, largely as the result of required compliance with county, state, and federal legislation. The Kalaeloa (Barber's Point) area is one of the most studied places in Polynesia. In contrast, relatively little research has been conducted in the uplands of Honouliuli, along the southern slopes of the Waiʻanae Range. This discussion of previous archaeological research will focus on the results of this prior archaeological work at the southern end of the Waiʻanae range (Table 1).

Recent archaeological investigations in the southern Waiʻanae Range have generally been focused on deep gulch areas for potential landfill locations, lower slopes for residential development, and mountain peaks for antennae or satellite tracking infrastructure (Figure 16).

Table 1. Previous Archaeological Investigations in the in the Uplands of Honouliuli Ahupuaʻa

Reference	**Type of Investigation**	**General Location**	**Findings**
Kelly 1959	Kūʻula stone documentation	Along Pālehua Rd., TMK [1] 9-2-003: 002	One Kūʻula stone documented (SIHP No. 50-80-08-2316).
Soehren 1964	House site documentation	Waimānalo Gulch, TMK [1] 9-2-003: 072	House site documented (SIHP No. 50-80-12-2317).
Bordner 1977a	Archaeological Reconnaissance	Proposed Makaīwa Gulch Landfill Site	No archaeological sites identified.
Bordner 1977b	Archaeological Reconnaissance	Proposed Kaloʻi Gulch Landfill Site	3 sites (-2600, -2601, -2602), low stacked boulder walls.
Bordner and Silva 1983	Archaeological Reconnaissance and Historical Documentation	Proposed Waimānalo Gulch Landfill Site	No archaeological sites identified.
Sinoto 1988	Archaeological Reconnaissance	Makakilo Golf Course	Low stacked boulder wall (-1975).
Bath 1989	Petroglyph Documentation	Waimānalo Gulch	3 petroglyphs (SIHP No. 50-80-12-4110).
Hammatt & Shideler 1989	Archaeological Reconnaissance	[1] 9-2-003: 027	One pre-Contact agricultural terrace observed.
Hammatt et al. 1991	Archaeological Inventory Survey	Makaīwa Hills Project Site, TMK: [1] 9-1-015: 005 & 017; 9-2-003: 002, 005, and 084.	34 sites, including prehistoric habitation and agricultural features, rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure.
Cleghorn & Anderson 1992	Archaeological Inventory Survey	Kahe Point “Tracks” Beach Park, TMK [1] 9-2-003: 26	Section of the previously recorded Oahu Railway and Land Company Right of Way (SIHP No. 50-80-12-9714) observed.

Reference	**Type of Investigation**	**General Location**	**Findings**
Hammatt 1992	Archaeological Inventory Survey	KAIM Radio Tower, Pālehua, TMK [1] 9-2-005: 013	No archaeological sites identified.
Nakamura et al. 1993	Archaeological Inventory Survey	Makakilo D and D-1 Development Parcels	Cement irrigation flume (-4664).
Borthwick & Hammatt 1997	Archaeological Assessment	Satellite Multi-Ranging Station, Pālehua, TMK: TMK: [1] 9-2-003: 002	No archaeological sites identified.
Dega et al. 1998	Archaeological Inventory Survey	UH West Oʻahu, TMK: [1] 9-2-002: 001 & [1] 9-2-002: 001	Two historic site complexes, (50-80-08-5593 historic irrigation system and 50-80-09-2268 Waiāhole Ditch System).
Hammatt and Shideler 1999	Archaeological Inventory Survey and Assessment	Waimānalo Gulch Sanitary Landfill Project Site	Battery Arizona Complex and modern “shrine” site.
Hammatt and Shideler 2001	Archaeological Assessment	TMK: TMK: 9-2-03: 084	No archaeological sites identified.
Monahan 2004	Archaeological Inventory Survey	TMK: 9-2-03: 002	4 historic properties associated with19th or 20th century commercial agriculture identified: SIHP No. 50-80-12-4341, water flume that is a component of the previously identified site by Hammatt et al. 1991; SIHP No. 50-80-12-6654, a stone ranch wall; SIHP No. 50-80-12-6655, a pair of concrete bridge supports; and SIHP No. 50-80-12-6656, low rock walls and rock stacking.

Reference	Type of Investigation	General Location	Findings
Tulchin, J and Hammatt 2004	Archaeological Field Inspection	Proposed HECO Meteorological Observation Stations	Three small stone features identified: an *ahu*, a stone terrace, and a small C-shape.
Tulchin, T. and Hammatt 2004a	Archaeological Inventory Survey	86-Acre Proposed Pālehua Community Association (PCA) Common Areas Parcels, Makakilo (TMK: 9-2-03: 78 por. and 79)	4 historic properties identified: a complex of concrete and iron structures associated with industrial rock quarry operations (Site 50-80-12-6680); three boulder mounds believed to be related to land clearing or ditch construction by the Oahu Sugar Co. (Site 50-80-12-6681); a small terrace believed to function as a historic water diversion feature (Site 50-80-12-6682); and a remnant portion of the Waiāhole Ditch (Site 50-80-09-2268).
Tulchin, T. and Hammatt 2004b	Archaeological Inventory Survey	Adjacent to Kahe Power Plant, TMK [1] 9-2-03: 027	A total of four archaeological sites (SIHP No. 50-80-12-6647, -6648, -6649, & -6650) comprising fifteen individual features were identified. Sites observed consisted of rock walls, mounds, and platforms. Site age ranged from historic to pre-Contact. Site function was determined to be predominantly agricultural in nature.
Hoffman et al. 2004	Archaeological Assessment	Adjacent to Kahe Power Plant, TMK [1] 9-2-03: 027	No historic properties identified.
Tulchin, T. and Hammatt 2005	Archaeological Inventory Survey	71-Acre Proposed Pālehua East B Project, Makakilo, (TMK: 9-2-03: 76 and 78)	Three historic properties identified: SIHP No. 50-80-12-6666 (pre-contact agricultural alignment and mound), SIHP No. -6667 (plantation-era stacked basalt boulder walls and a ditch), and SIHP No. -6668 (single alignment of upright basalt boulders and a small, low terrace).

Reference	Type of Investigation	General Location	Findings
O'Leary et al. 2007	Archaeological Inventory Survey Addendum	Makaīwa Hills Project Site, TMK: [1] 9-1-015: 005 & 017; 9-2-003: 002, 005, and 084.	Two historic properties identified: SIHP No. 50-80-12-6870, a terrace, three springs, and a small rock shelter; SIHP No. -6871, a paved area situated on a ridge top.
Tulchin & Hammatt 2007	Archaeological Field Inspection	TMK: [1] 9-2-003:002 por. and 005 por.	A total of 26 archaeological sites were identified. Archaeological features representing distinct periods of land use were observed, including: pre-contact indigenous Hawaiian habitation and associated agricultural and ceremonial features; historic ranching and related features; and historic quarrying and related features.
Tulchin & Hammatt 2008	Archaeological Field Inspection	TMK: [1] 9-2-003: 004, 009, 029, 084 por., & 085	Pedestrian inspection has confirmed the presence of 10 archaeological sites within the study area. Archaeological features representing distinct periods of land use were observed, including: pre-contact indigenous Hawaiian habitation; historic ranching; and historic railroad operations.

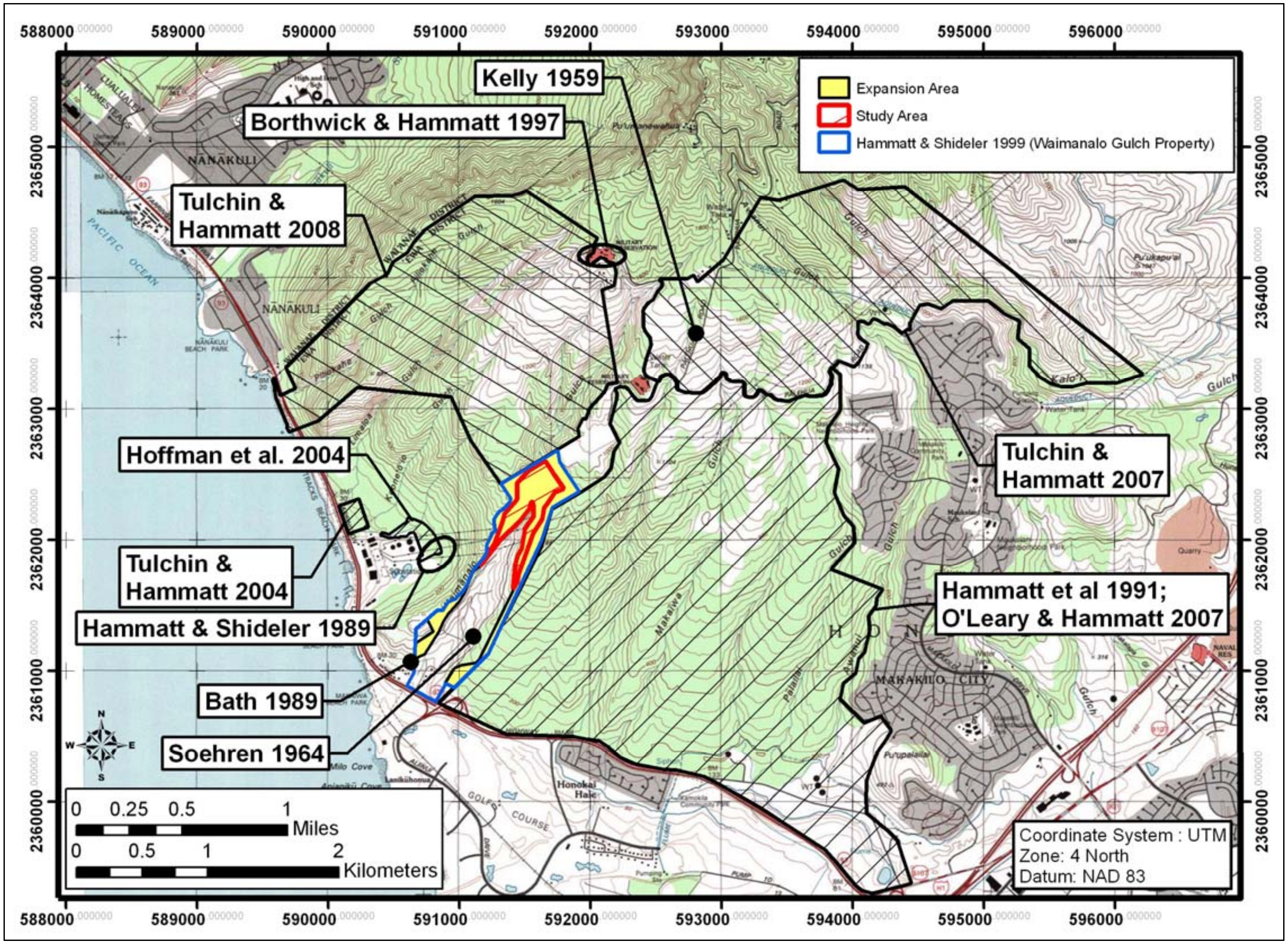

Figure 16. Previous archaeological investigations in the vicinity of the study area

The earliest attempt to record archaeological remains in Honouliuli Ahupuaʻa was made by Thrum (1906). He reports the existence of a *heiau* located on Puʻu Kapolei, approximately 5 km (3 mi.) southeast of the current study area. Puʻu Kapolei Heiau was described as "Ewa-size and class unknown. Its walls thrown down for fencing" (Thrum 1906:46).

In his surface survey of 1930, archaeologist J. Gilbert McAllister recorded the specific locations of important sites, and the general locations of less important sites (at least at Honouliuli). Archaeological investigations by McAllister along the southern slopes of the Waiʻanae Range identified a number of sites which are of interest (Figure 17).

McAllister documents Puʻu Kapolei Heiau as Site 138 and notes:

> The stones from the heiau supplied the rock crusher which was located on the side of this elevation, which is about 100 feet away on the sea side. There was formerly a large rock shelter on the sea side where Kamapuaa (the pig-god) is said to have lived with his grandmother (Kamaunuahihio). (McAllister 1933:108)

McAllister's Site 136 is located near Mauna Kapu, northeast of the current study area, and is described as a small platform on the ridge dividing the ʻEwa and Waiʻanae districts. The 4 to 6 square foot platform was constructed of coral and basalt stones, and was believed to be an alter (McAllister 1933:107). It is noted to have been destroyed by the time of Sterling and Summers' work in the late 1950's (Sterling and Summers 1978:32).

McAllister's Site 137 is located at Puʻu Kuʻua, a prominent landmark northeast of the current study area. Puʻu Kuʻua Heiau was described by McAllister as:

> (Destroyed) The heiau was located on the ridge overlooking Nanakuli as well as Honouliuli at the approximate height of 1800 feet. Most of the stones of the heiau were used for a cattle pen located on the sea side of the site. The portion of the heiau which has not been cleared for pineapple has been planted in ironwoods. (McAllister 1933:32)

The presence of Puʻu Kuʻua *heiau*, provides some archaeological evidence of the Puʻu Kuʻua settlement described in the Hawaiian Newspaper "*Ka Loea Kalaiaina*" (see Section III: Honouliuli Settlement Patterns).

None of these sites are in the immediate vicinity of the current study area. However, the presence of extant or former archaeological remains demonstrates Hawaiian use of these *mauka* lands.

In 1959, the Bishop Museum was notified of a *kūʻula* stone (stone god used to attract fish) located along Pālehua Road. The *kūʻula* stone was briefly documented and assigned as SIHP No. 50-80-08-2316 (Kelly 1959). SIHP No. 50-80-08-2316 is located approximately 1500 m northeast of the current study area, along the western edge of Pālehua Road.

In 1964, the Bishop Museum was notified of a "house site" located in the lower elevations of Waimanalo Gulch. The site was briefly documented and assigned as SIHP No. 50-80-12-2317 (Soehren 1964). SIHP No. 50-80-12-2317 is located approximately 500 m southwest of the current study area.

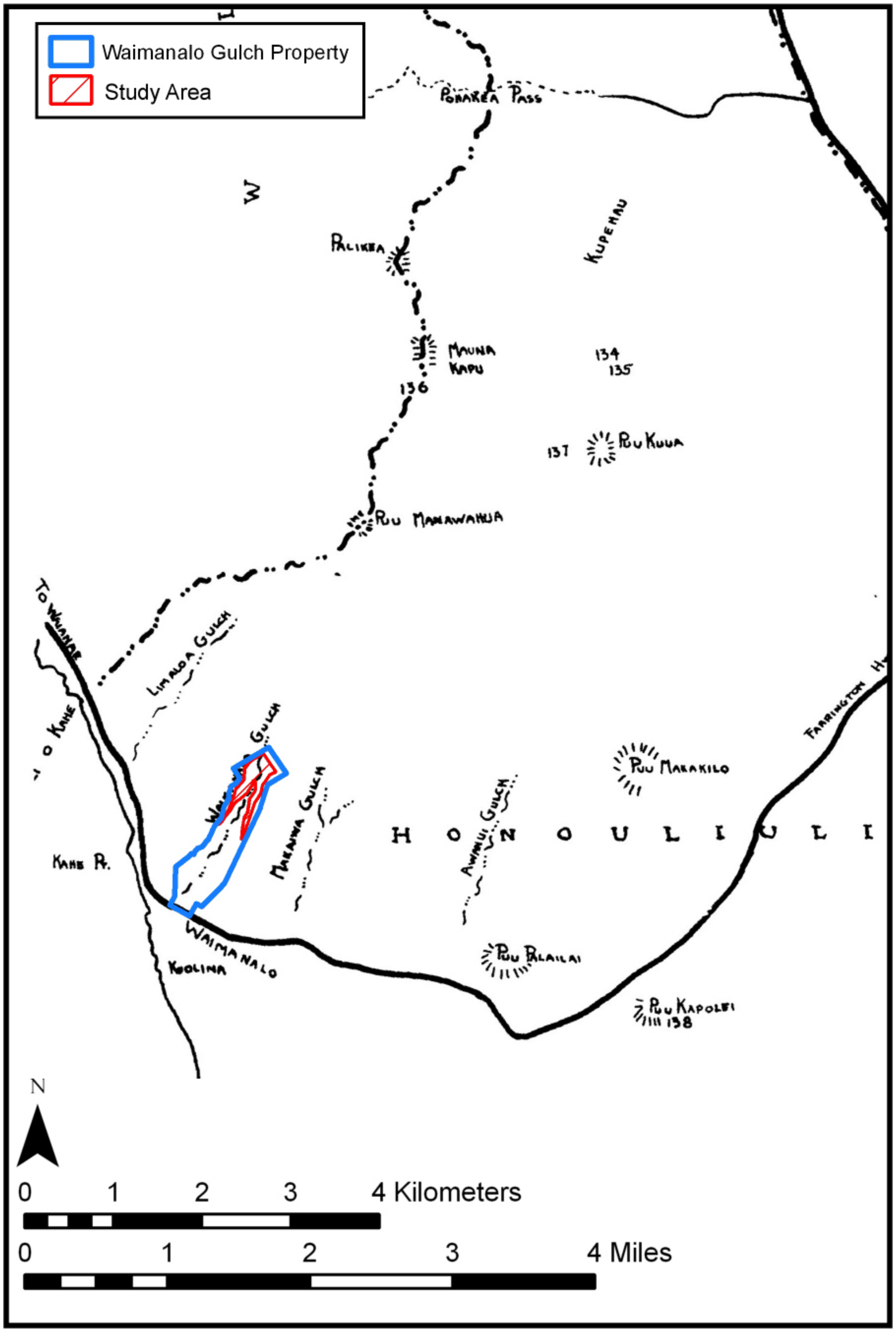

Figure 17. Portion of Map by Sterling and Summers (1978), showing the location of the Waimānalo Gulch property in relation to archaeological sites discussed in the text

In 1983, an archaeological survey of the lower portions of Waimānalo Gulch (the future site of the Waimānalo Gulch Sanitary Landfill), up to the 430-foot elevation, identified no archaeological sites (Bordner and Silva 1983).

In 1989, SHPD was notified of petroglyphs located in the lower elevations at the mouth of Waimanalo Gulch. Three petroglyphs were observed "pecked into black lava rock" (Bath 1989). Two were anthropomorphic and one consisted of abstract symbols. The site was briefly documented and assigned as SIHP No. 50-80-12-4110. SIHP No. 50-80-12-4110 is located approximately 900 m southwest of the current study area.

In 1989, CSH conducted an archaeological reconnaissance for a proposed HECO training facility located approximately 200 m west of the current study area (Hammatt & Shideler 1989). One small rock terrace was observed and documented. The terrace was thought to be associated with pre-contact agricultural activities.

An archaeological inventory survey of the "Makaīwa Hills" development project, just 80 m east of the current study area, located several pre-contact as well as post-contact archaeological sites (Hammatt et al. 1991). A total of 34 historic properties were located, including pre-contact habitation structures (temporary and permanent), agricultural features (terrace and mounds), rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure (Figure 18).

Within the "Makaīwa Hills" project area, habitation sites were found to be clustered in higher elevations above 1000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991). The higher elevations would contain ample forest subsistence resources for gathering on both a continual basis, as well as during times of famine and drought. The lower elevations would be in close proximity to the shoreline and bountiful coastal resources.

In 1997, CSH conducted an archaeological assessment for the proposed Ministry of Transportation Satellite Multi-Ranging Station project site, located 1500 m to the northwest of the current study area (Borthwick & Hammatt 1997). No historic properties were identified.

In 1999, CSH conducted an archaeological inventory survey for the proposed Waimanalo Gulch Sanitary Landfill Project Site (Hammatt & Shideler 1999). The study area included a large section of Waimanalo Gulch, extending from the base of the gulch up to a 1000 ft elevation, and encompasses the proposed expansion area, including the current study area. The "Battery Arizona" military complex (WWII bunker complex) and a contemporary shrine site (two sacred stones and a petroglyph) were observed (Figure 19). The stones of the "shrine" site were understood to have been previously relocated from the central portion of Waimānalo Gulch circa 1988. Both sites are located within the Waimanalo Gulch property, but are outside of the proposed expansion area. It was recommended that impact to the southwestern portion of the Waimanalo Gulch Sanitary Landfill property, containing the Battery Arizona and the contemporary shrine, be avoided.

In 2004, CSH conducted an archaeological assessment of an approximately 30-acre parcel adjacent to the Kahe Power Plant, located approximately 640 m southwest of the current study area (Hoffman et al. 2004). No historic properties were observed.

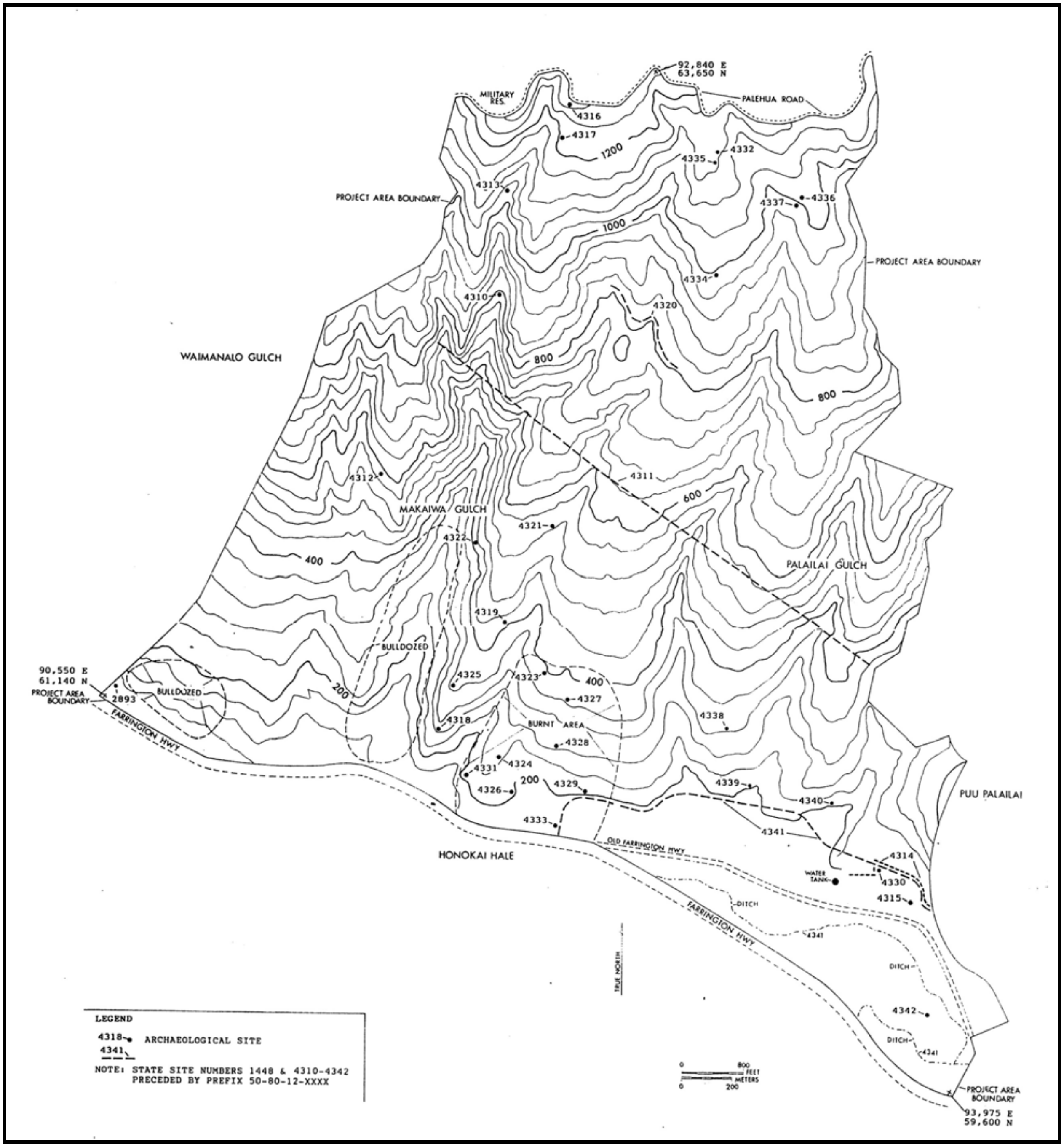

Figure 18 . Makaīwa Hills Project Area Showing the Location of Identified Archaeological Sites (Hammatt et al 1991:7)

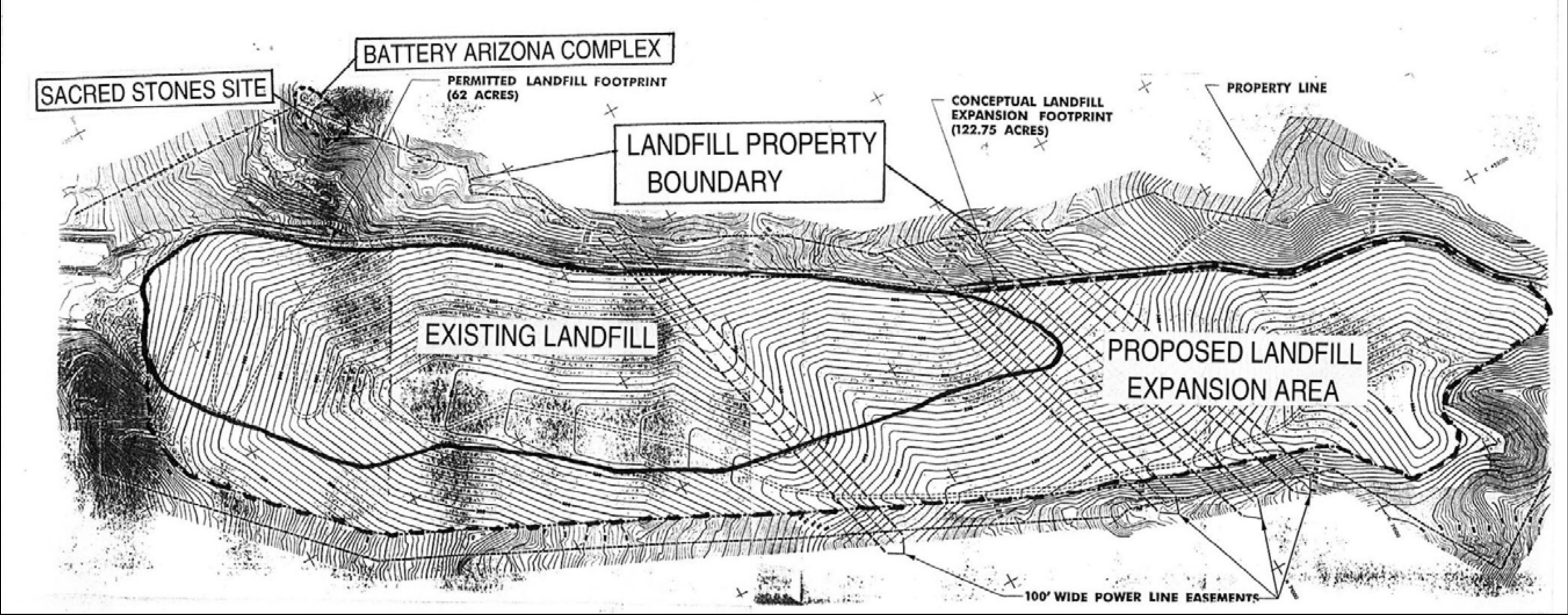

Figure 19. Waimanalo Gulch Sanitary Landfill Project Site Showing the Location of Identified Archaeological Sites (Hammatt & Shideler 1999)

In 2004, CSH conducted an archaeological inventory survey of an approximately 24-acre parcel adjacent to the Kahe Power Plant, located approximately 630 m south of the current study area (T. Tulchin & Hammatt 2004). A total of four archaeological sites (SIHP No. 50-80-12-6647, -6648, -6649, & -6650) comprising fifteen individual features were identified. Sites observed consisted of rock walls, mounds, and platforms. Site age ranged from historic to pre-Contact. Site function was determined to be predominantly agricultural in nature. Of note was the presence of a possible fishing shrine (*koʻa*) at the base of Keoneʻōʻio Gulch. The shrine is constructed of both upright and stacked limestone boulders creating a level paved platform. Branch coral and water rounded coral cobbles were observed within the interior cobble fill of the structure.

In 2007, O'Leary conducted an addendum to the archaeological inventory survey conducted for the "Makaīwa Hills" development project, originally surveyed by Hammatt et al in 1991 (see above). Because 15 years had passed since the last archaeological inspection of the project area CSH field personnel conducted a reconnaissance of the project area to relocate the 17 historic properties. During this fieldwork two additional historic properties were identified in the *mauka*/west corner of the project area. SIHP No. 50-80-12-6870 consists of a historic ranching-era terrace constructed to create a large level soil area in front of three natural springs. The second site, SIHP # 50-80-12-6871, consists of a paved area comprised of large basalt boulders prominently positioned on a ridge top overlooking the western half of the ʻEwa Plain, possibly functioning as a resting place, a trail marker, or possibly had a religious role. The excavation of test units at both sites did not reveal any further information regarding site function.

In 2007, CSH conducted an archaeological field inspection of an approximately 790-acre parcel at Pālehua, located just east of the current study area (J. Tulchin & Hammatt 2007). A total of 26 archaeological sites were identified. Archaeological features representing distinct periods of land use were observed, including: pre-contact indigenous Hawaiian habitation and associated agricultural and ceremonial features; historic ranching and related features; and historic quarrying and related features.

In 2008, CSH conducted an archaeological field inspection of an approximately 809-acre of Kahe Ranch Land, abutting the northeast corner of the current study area (J. Tulchin & Hammatt 2008). A total of 10 archaeological sites were identified. Archaeological features representing distinct periods of land use were observed, including: pre-Contact indigenous Hawaiian habitation; historic ranching; and historic railroad operations.

3.3 Background Summary and Predictive Model

Historical background research of Honouliuli Ahupuaʻa indicated that pre-contact settlement of the *ahupuaʻa* would have been centered around the rich cultivated lands of Honouliuli *ʻili* for extensive wetland taro cultivation and abundant coastal resources. The extensive limestone plain would also include recurrent use habitations for fishermen and gatherers, and sometimes gardeners. The upland dry forest areas would be used for hunting and gathering of forest resources, but likely not for widespread permanent settlement. In the intermediate area between the limestone plain and the upland forests indigenous Hawaiian activities would have been limited to dry land agriculture within gulches or near springs, and *mauka*/*makai* transportation routes (i.e. trails) and associated temporary shelters.

By 1920, the lands of Honouliuli were used primarily for commercial sugar cane cultivation and ranching (Frierson 1972:18). Much of the *mauka* lands in western Honouliuli, including ridges and deep gulches, were unsuitable for commercial sugar cultivation and remained pasture land for grazing livestock. Historic maps indicate a lack of any significant development within the study area into the late 1920s, suggesting that the lands within the study area were unsuitable for commercial sugar cane cultivation and were utilized as pasture land for grazing livestock.

Major land use changes came to western Honouliuli when the U.S. Military began development in the area. Military installations were constructed both near the coast, as well as in the foothills and upland areas. A 1943 War Department map reflects the military presence and associated land use within and south of the study area during this time period. Access roads to power lines and telecommunications lines are indicated throughout the southeastern portion of study area. Also of note are the presence of access roads leading to the Battery Arizona, a subterranean WWII bunker complex identified by Hammatt and Shideler in 1999, situated on the southwest ridge above Waimānalo Gulch.

Previous archaeological research in the vicinity of the study area has identified numerous pre-contact sites including: habitation structures (platforms and enclosures), agricultural features (walls, terraces, and mounds), and religious sites (*kūʻula* stone and *koʻa*). Within the "Makaīwa Hills" project area, which is abuts the southeastern boundary of the current study area, pre-contact habitation sites were found to be clustered in higher elevations above 1000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991).

Historic archaeological sites identified in the vicinity of the study area include the Battery Arizona military complex (WWII bunker complex), sugar cane cultivation infrastructure, and walls and fences attributed to the Campbell Ranch.

Based on background research historic properties are not expected to be encountered within the study area. This is based on a review of the archaeological inventory survey for the proposed Waimanalo Gulch Sanitary Landfill Project Site conducted by CSH in 1999, in which no historic properties were identified within the current study area (Hammatt & Shideler 1999). However, if historic properties are encountered they are likely to include both pre-contact and historic archaeological sites. Pre-contact archaeological sites may include: dry land agricultural sites, including planting mounds and terraces in the vicinity of springs or drainage gulches; habitation sites, including enclosures and platforms; trail markers (*ahu)*; religious sites including enclosures, terraces, platforms, and/or upright stones located on prominent hills or other significant locations; and burials located within discrete rock shelters and/or caves. Historic archaeological sites may include: ranch related structures including walls, fences, and maintained springs; and military related structures including concrete bunkers, radio towers and related infrastructure.

Section 4 Results of Fieldwork

Fieldwork for the current AIS investigation of the study area was accomplished over a one-week period from January 25, 2007 to February 2, 2007. The CSH field crew consisted of Matt Bell, B.A., Amy Hammermiester, B.A., and Kevin Dalton, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The field effort required 13 person-days to complete. CSH completed the archaeological assessment fieldwork under state archaeological permit No. 07-19 issued by SHPD, per HAR Chapter 13-13-282. Fieldwork involved a 100% pedestrian inspection of the study area with limited subsurface testing.

4.1 Survey Findings

Pedestrian inspection of the study area identified one historic property, State Inventory of Historic Properties (SIHP) # 50-80-12-6903, within the study area (Figure 20). SIHP #50-80-12-6903 is of pre-contact origin, and consists of three large upright boulders potentially utilized as trail or boundary markers. A detailed description of this historic property is presented in Section 4.3 below.

Numerous caves and rock shelters were observed within the study area. These caves and rock shelters were thoroughly inspected for cultural modifications and/or the presence of human burials. Where significant sediment deposits were observed, subsurface testing in the form of controlled hand excavation was undertaken to establish if any subsurface cultural deposits were present. Documentation of the inspection and testing of these natural geologic features is presented in Section 4.2 below.

The observed topography within the study area consisted of talus slopes with an average slope of 65°. The observed geology consisted of exposed basalt outcrops with minimal soil deposition. Figure 21 shows the topography and geology encountered during the survey of the study area.

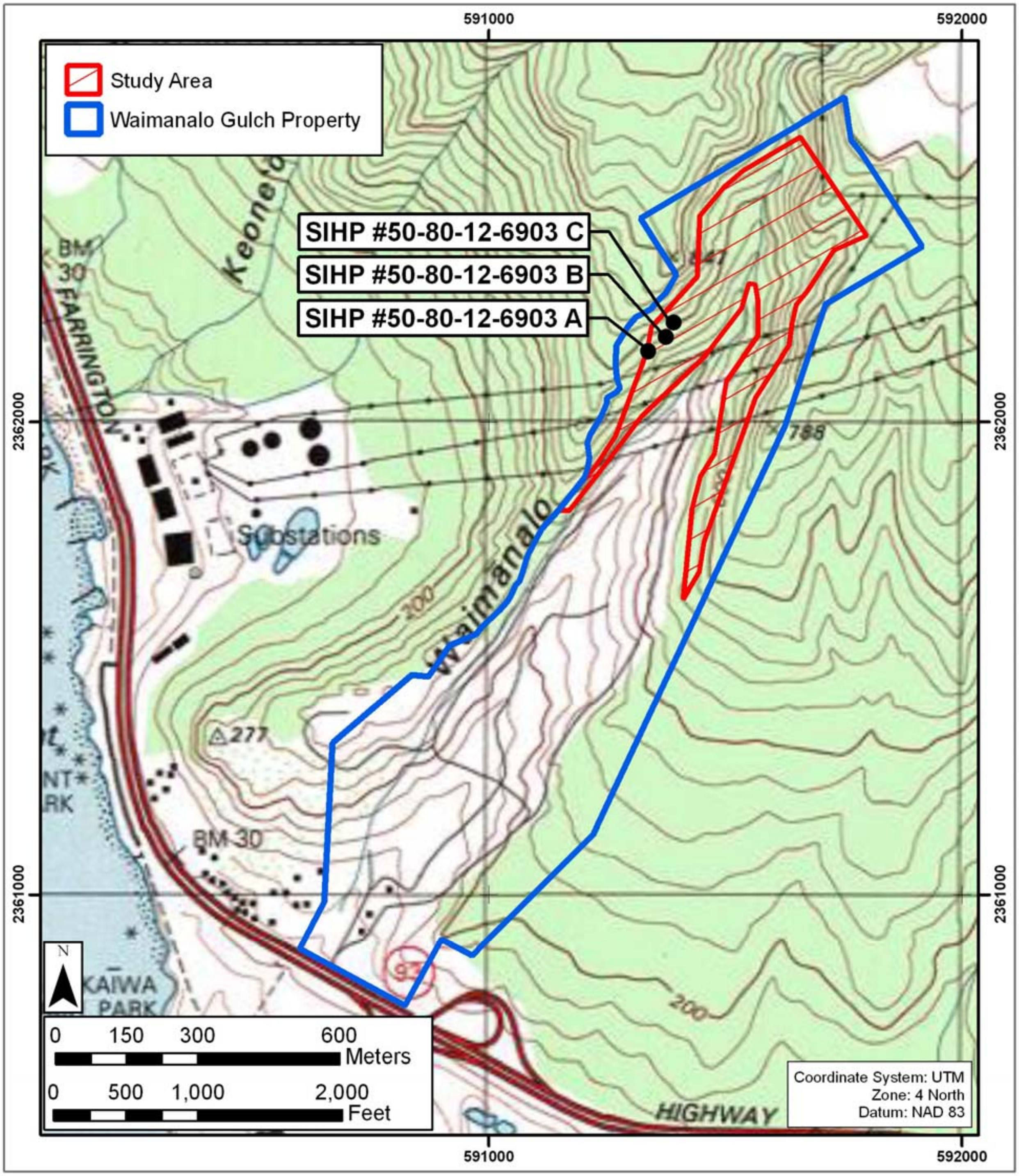

Figure 20. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing location of SIHP #50-80-12-6903 (Features A-C)

Figure 21. Photograph looking west, showing the topography and geology of the study area

4.2 Inspection and Subsurface Testing of Geologic Features

Numerous natural caves and rock overhangs area were discovered and investigated during the pedestrian inspection of the study area. The larger caves and overhangs (greater than two meters in depth and 4 meters in width) were documented and their position mapped using a Garmin GPSmap76S unit or a Trimble PRO XR GPS (Figure 22).

Also of note was a rock alignment (CSH 3) located near the northeastern edge of the study area. The alignment was determined to be of modern origin due to its location along a talus slope, in which soil erosion and rainwater runoff channels were observed. If the feature was of antiquity it would reflect disturbances associated with erosion and/or rainwater runoff, such as the retention of eroding rock and soil or the displacement of boulders incorporated into the alignment. Subsurface testing was conducted at this alignment to confirm the initial age determination of this feature.

4.2.1 Cave 1

Cave 1 is located on the western slope of Waimānalo Gulch, situated at the base of a small rock outcrop (see Figure 22). The mouth of the cave opens to the northeast and measures 1.5 m high (Figure 23). The internal dimensions of the cave are as follows: 8.0 m wide and 4.0 m deep, with a maximum ceiling height of 1.2 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Due to the presence of soil within the cave interior, two 0.5m^2 test units (TU 1 & TU 2) were excavated in order to determine if any subsurface cultural deposits were present (Figure 24). The stratigraphy of Test Unit 1 (TU 1) consisted of a single stratum of sandy loam (Stratum I) overlying bedrock (Figure 25 & Table 2). No cultural material was observed during the excavation of this test unit.

The stratigraphy of Test Unit 2 (TU 2) consisted of consisted of a sandy loam deposit (Stratum I) overlying a thin layer of decomposing bedrock (Stratum II) (Figure 26 & Table 3). No cultural material was observed during the excavation of this test unit.

4.2.2 Cave 2

Cave 2 is located on the western slope of Waimānalo Gulch, situated at the base of a pronounced rock outcrop (see Figure 22). The mouth of the cave opens to the east and measures 1.3 m high (Figure 27). The internal dimensions of the cave are as follows: 8.0 m wide and 4.1 m deep, with a maximum ceiling height of 0.8 m. The roof of the cave has experienced some collapse and now covers approximately 70 percent of the floor (Figure 28). No cultural material or human skeletal remains were observed on the surface of the cave floor.

Due to the presence of soil within the cave interior, two 0.5m^2 test units (TU 1 & TU 2) were excavated in order to determine if any subsurface cultural deposits were present. The stratigraphy of Test Unit 1 (TU 1) consisted of a sandy loam deposit (Stratum I) followed by a layer of decomposing bedrock (Stratum II) (Figure 29 & Table 4). No cultural material was observed during the excavation of this test unit.

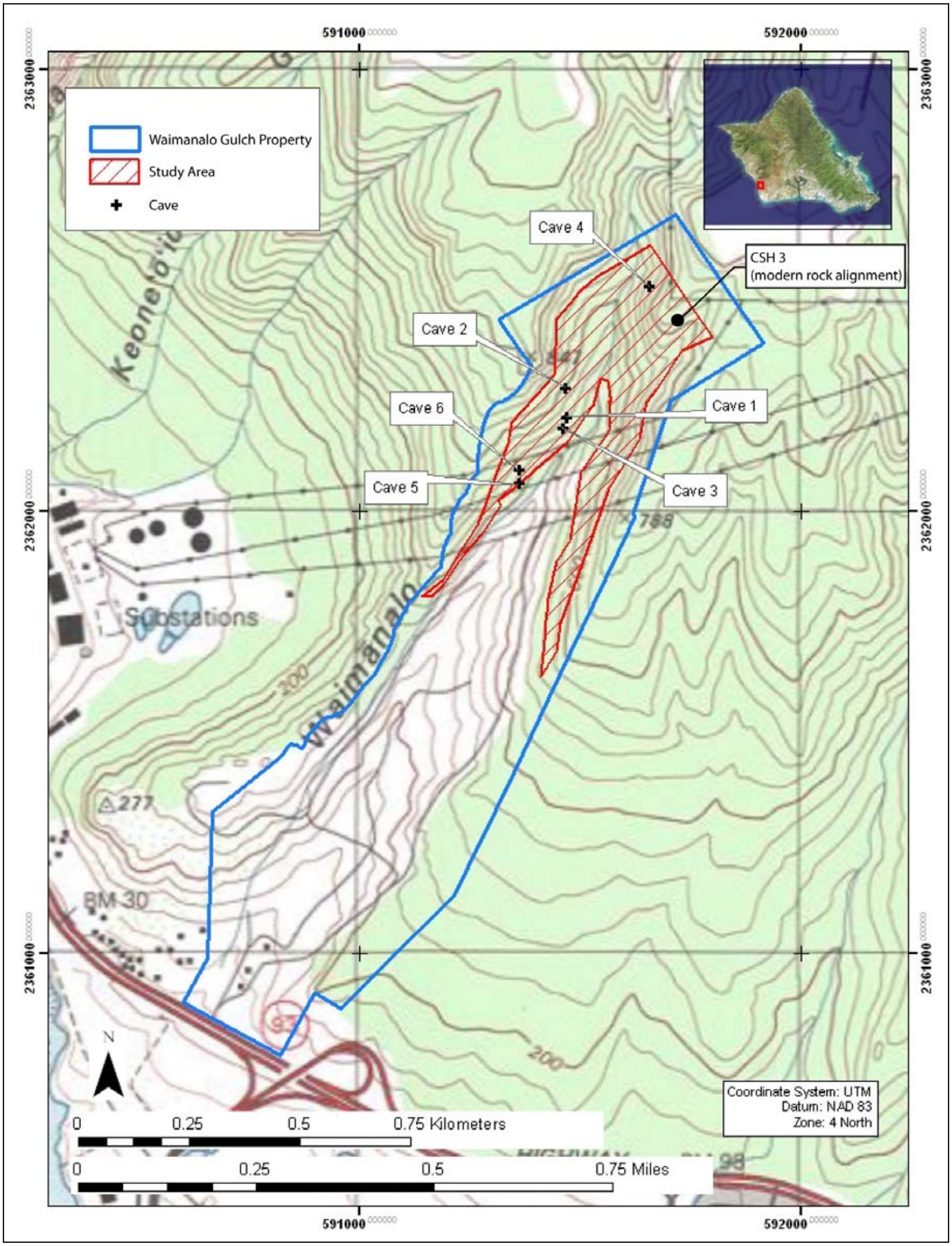

Figure 22. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing the location of documented caves within the study area

Figure 23. Photograph of opening of Cave 1, view to north

Figure 24. Photograph of interior of Cave 1, view to south

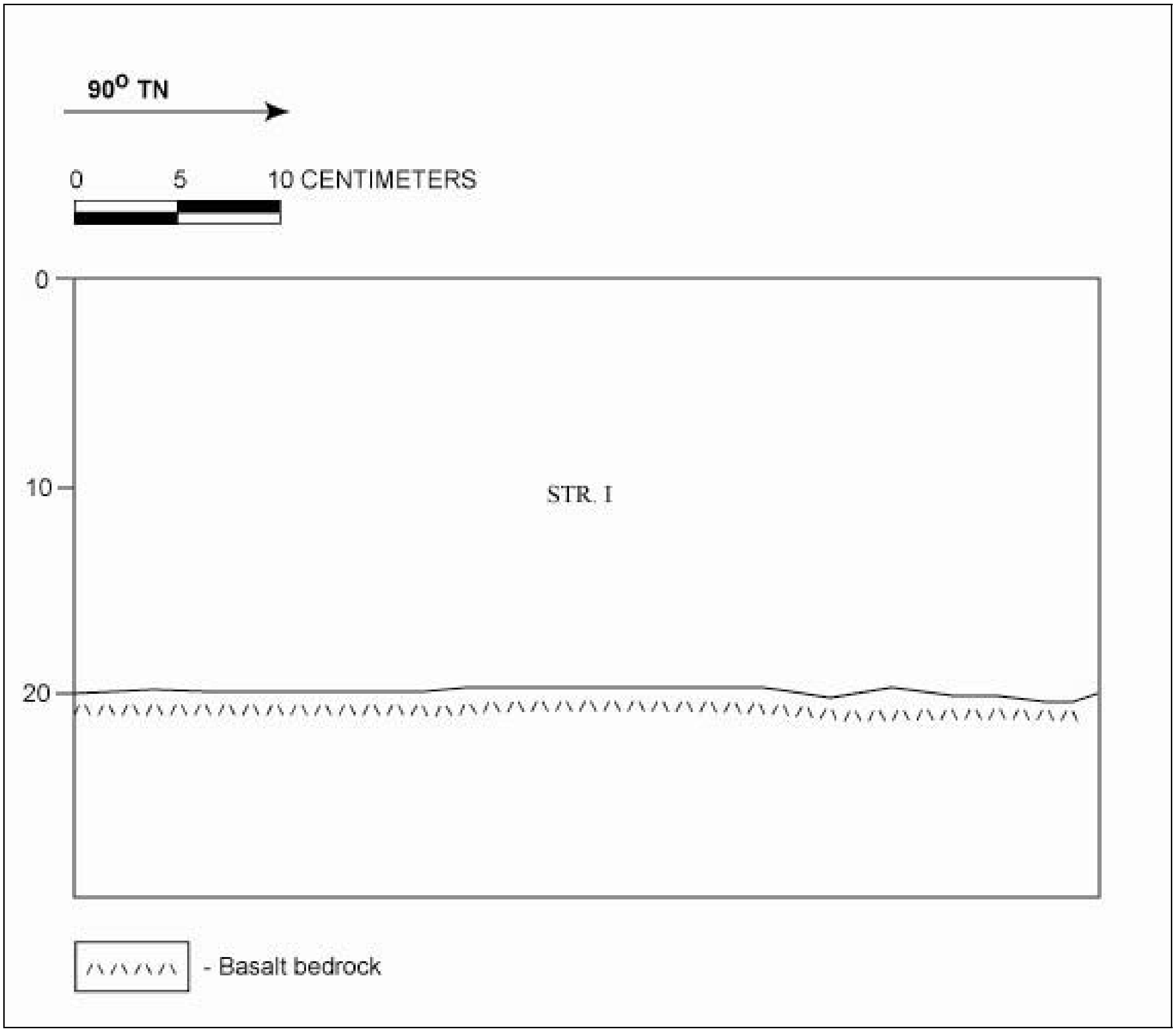

Figure 25. Cave 1, profile of the east wall of Test Unit 1

Table 2. Strata Observed at Cave 1, Test Unit 1

Stratum	Depth (cmbs)	Description
I	0 – 20	10 YR 3/2, dark brown; sandy loam; weak, fine, crumb structure; weakly coherent dry consistency; non plastic; no cementation; terrestrial origin; clear boundary; smooth topography. Stratum I is conprised of loose volcanic soil of aeoloian origin. No clutural material observed.

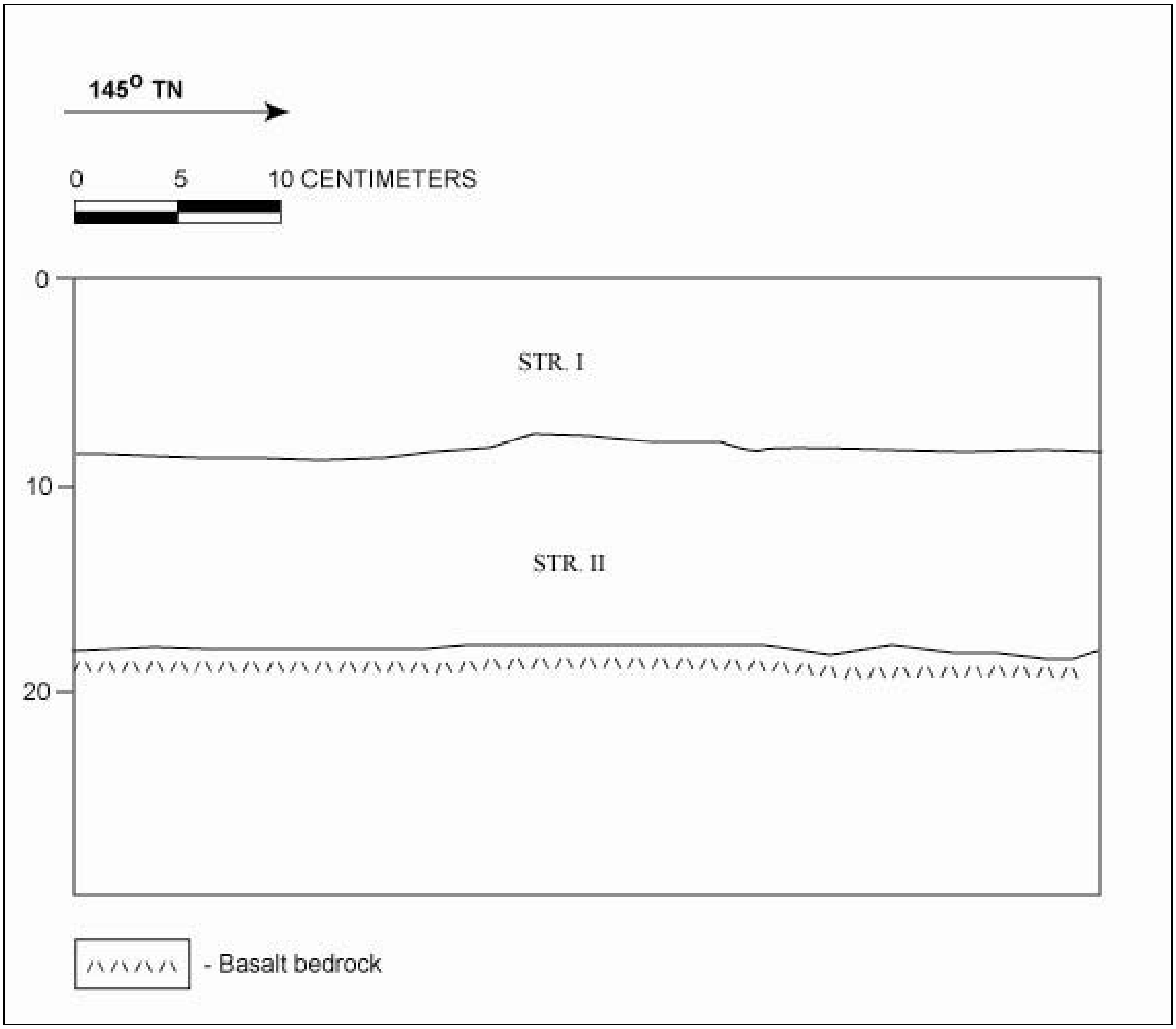

Figure 26. Cave 1, profile of the south wall of Test Unit 2

Table 3. Strata Observed at Cave 1, Test Unit 2

Stratum	Depth (cmbs)	Description
I	0 – 8	10 YR 3/2, very dark grayish brown; sandy loam; weak, fine, crumb structure; weakly coherent dry consistency; non plastic; no cementation; terrestrial origin; clear boundary; smooth topography. Stratum I is comprised of loose volcanic soil of aeoloian origin. One fish vertabra was observed. No ccultural material observed.
II	8 - 18	10 YR 5/4, yellowish brown; deteriorated bedrock; weak, coarse, crumb structure; slightly hard dry consistency; non plastic; weak cementation; terrestrial origin; abrupt boundary; irregular topography. Sediment is a mixture of aeolian silt and decomposing bedrock. No clutural material observed.

Figure 27. Photograph of Cave 2 opening, view to the northwest

Figure 28. Photograph Cave 2 interior, view to the west

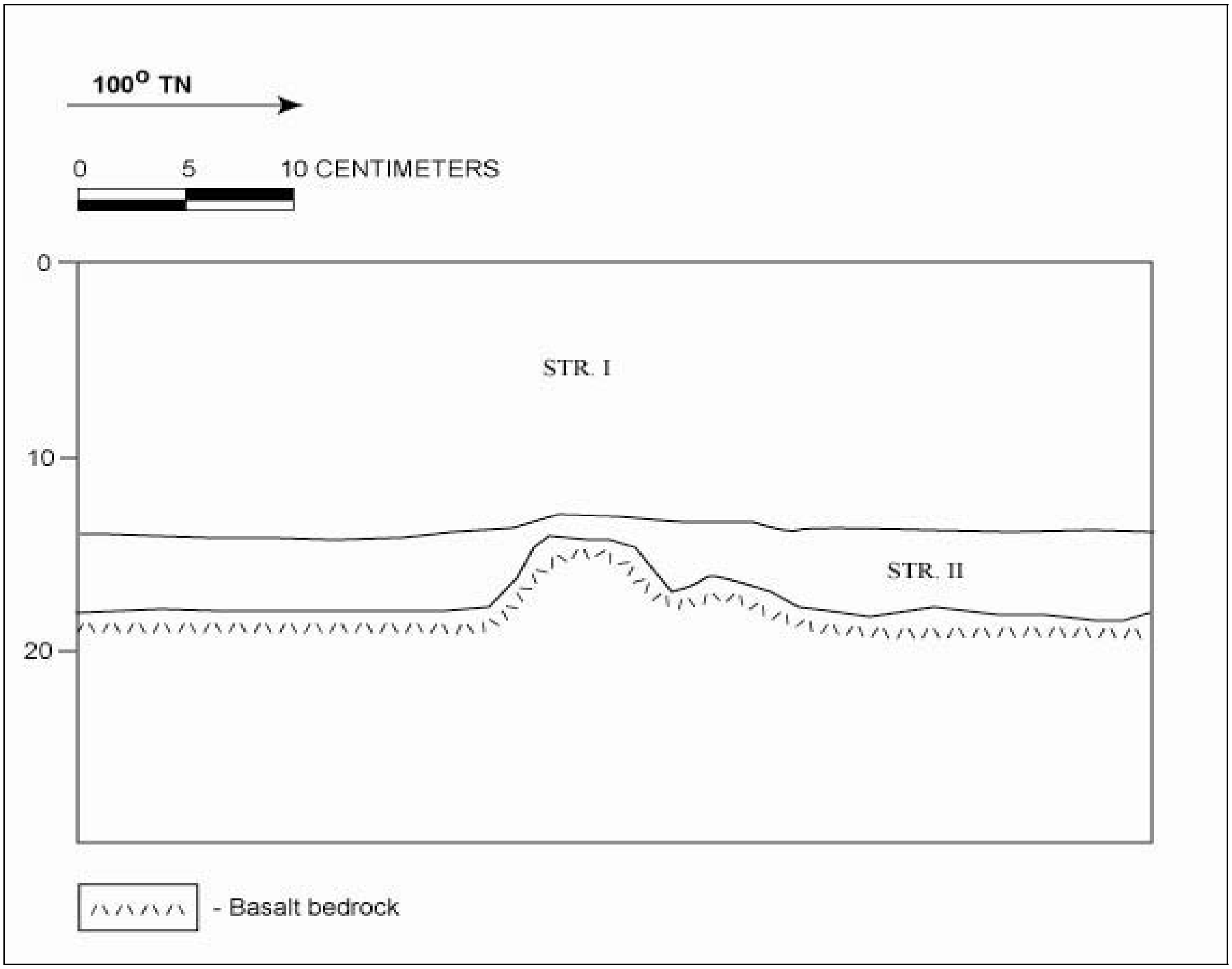

Figure 29. Cave 2, profile of the north wall of Test Unit 1

Table 4. Strata Observed at Cave 2, Test Unit 1

Stratum	Depth (cmbs)	Description
I	0 – 14	10 YR 3/3, dark brown; sandy loam; weak, fine, granular structure; weakly coherent dry consistency; non plastic; no cementation; terrestrial origin; clear boundary; irregular topography. Stratum I is comprised of loose volcanic soil of aeoloian origin. No cultural material observed.
II	14 - 18	10 YR 4/6, dark yellowish brown; deteriorated bedrock and sandy loam mix; weak, coarse, crumb structure; slightly hard dry consistency; non plastic; weak cementation; terrestrial origin; abrupt boundary; irregular topography. Sediment is a mixture of aeolian silt and decomposing bedrock. No cultural material observed.

The stratigraphy of Test Unit 2 (TU 2) consisted of sandy loam (Stratum I) overlying bedrock (Figure 30 & Table 5). No cultural material was observed during the excavation of this test unit.

4.2.3 Cave 3

Cave 3 is located on the western slope of Waimānalo Gulch (see Figure 22). The mouth of the cave opens to the south and measures 1.2 m high. The internal dimensions of the cave are as follows: 4.0 m wide and 2.0 m deep, with a maximum ceiling height of 1.2 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Only minimal soil deposits were observed within the cave interior and thus no subsurface testing was conducted at Cave 3.

4.2.4 Cave 4

Cave 4 is located on the eastern slope of Waimānalo Gulch (see Figure 22). This cave consists of a rock overhang situated at the base of the large rock outcrop (Figure 31). The mouth of the cave opens to the west and measures 2.0 m high. The internal dimensions of the cave are as follows: 10.0 m wide and 4.0 m deep, with a maximum ceiling height of 2.5 m. A pair of small skeleton keys was observed within the cave (Figure 32). No other cultural material or human skeletal remains were observed on the surface of the cave floor.

Only minimal soil deposits were observed within the cave interior and thus no subsurface testing was conducted at Cave 4.

4.2.5 Cave 5

Cave 5 is located on the western slope of Waimānalo Gulch, situated near the southwestern end of the study area, overlooking the modern landfill (see Figure 22). The mouth of the cave opens to the south and measures 1.0 m high. The internal dimensions of the cave are as follows: 1.4 m wide and 1.3 m deep, with a maximum ceiling height of 0.8 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Only minimal soil deposits were observed within the cave interior and thus no subsurface testing was conducted at Cave 5.

4.2.6 Cave 6

Cave 6 is located on the western slope of Waimānalo Gulch (see Figure 22). The mouth of the cave opens to the east and measures 1.2 m high. The internal dimensions of the cave are as follows: 2.4 m wide and 1.5 m deep, with a maximum ceiling height of 0.7 m. No cultural material or human skeletal remains were observed on the surface of the cave floor.

Only minimal soil deposits were observed within the cave interior and thus no subsurface testing was conducted at Cave 6.

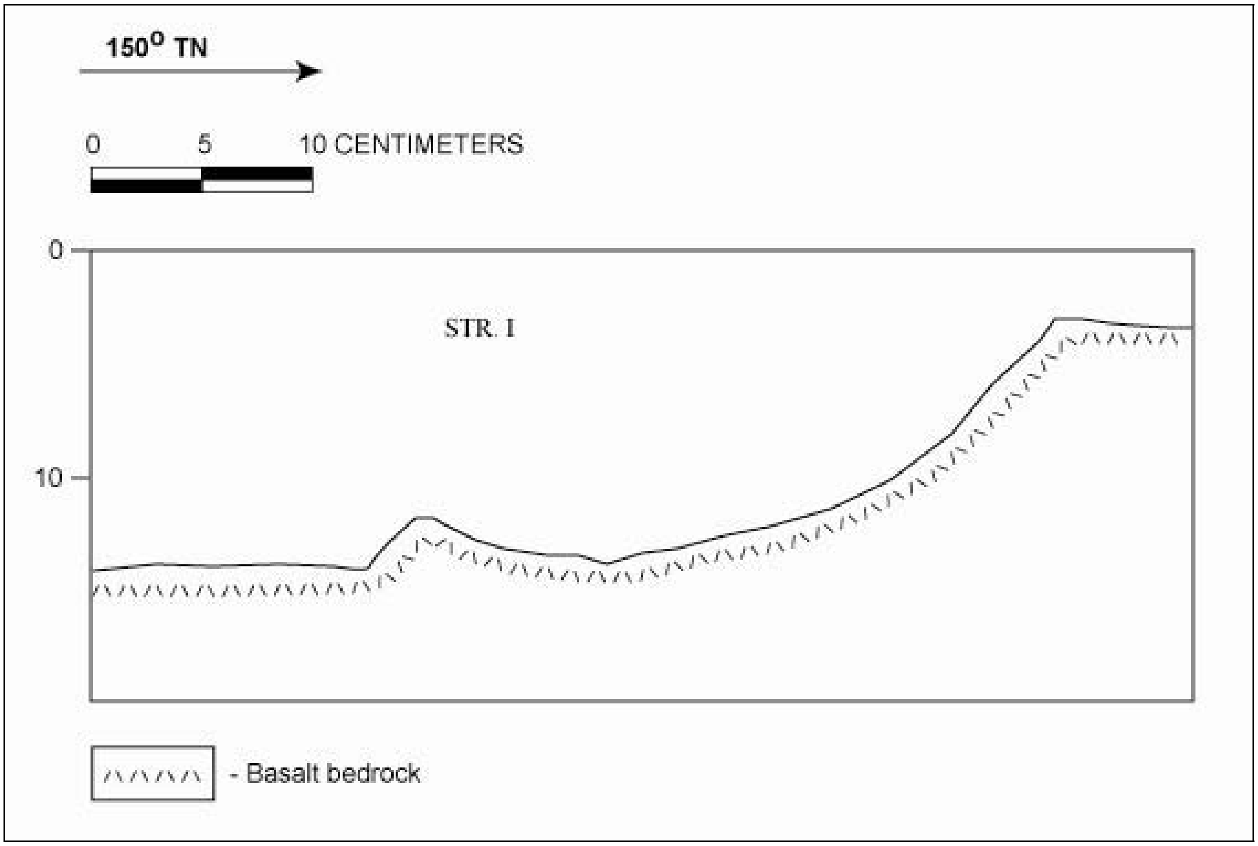

Figure 30. Cave 2, profile of the north wall of Test Unit 2

Table 5. Strata Observed at Cave 2, Test Unit 2

Stratum	Depth (cmbs)	Description
I	0 - 14	10 YR 3/3, dark brown; sandy loam; weak, fine, granular structure; weakly coherent dry consistency; non plastic; no cementation; terrestrial origin; clear boundary; irregular topography. Stratum I is comprised of loose volcanic soil of aeoloian origin. No cultural material observed.

Figure 31. Photograph of Cave 4 opening, view to the northeast

Figure 32. Photograph of skeleton keys from Cave 4

4.2.7 Modern Rock Alignment (CSH 3)

A linear rock alignment (CSH 3) was located near the northeastern edge of the study area (see Figure 22). The alignment is constructed of a single course of six small boulders, situated on the eastern slope of Waimānalo Gulch (Figure 33 & Figure 34). It measures 1.2 m long and 0.6 m wide, and is aligned cross slope. The alignment was determined to be of modern origin due to its location along a talus slope, in which soil erosion and rainwater runoff channels were observed. If the feature was of antiquity it would reflect disturbances associated with erosion and/or rainwater runoff, such as the retention of eroding rock and soil or the displacement of boulders incorporated into the alignment. No cultural material was observed on the ground surface in the vicinity of this feature.

One $0.5m^2$ test unit (TU 1) was excavated in the center of the rock alignment (CSH 3) to prospect for subsurface cultural deposits and to confirm the initial age determination of this feature. The stratigraphy of Test Unit 1 (TU 1) consisted of sandy loam (Stratum I) overlying bedrock (Figure 35 & Table 6). No cultural material was observed during the excavation of this test unit. Test excavation confirmed that the alignment consisted of only a single course of boulders and that no buried wall construction was present, thus confirming the modern origin of the feature.

Figure 33. Photograph of CSH 3, view to west

Figure 34. Photograph of CHS 3, view to south

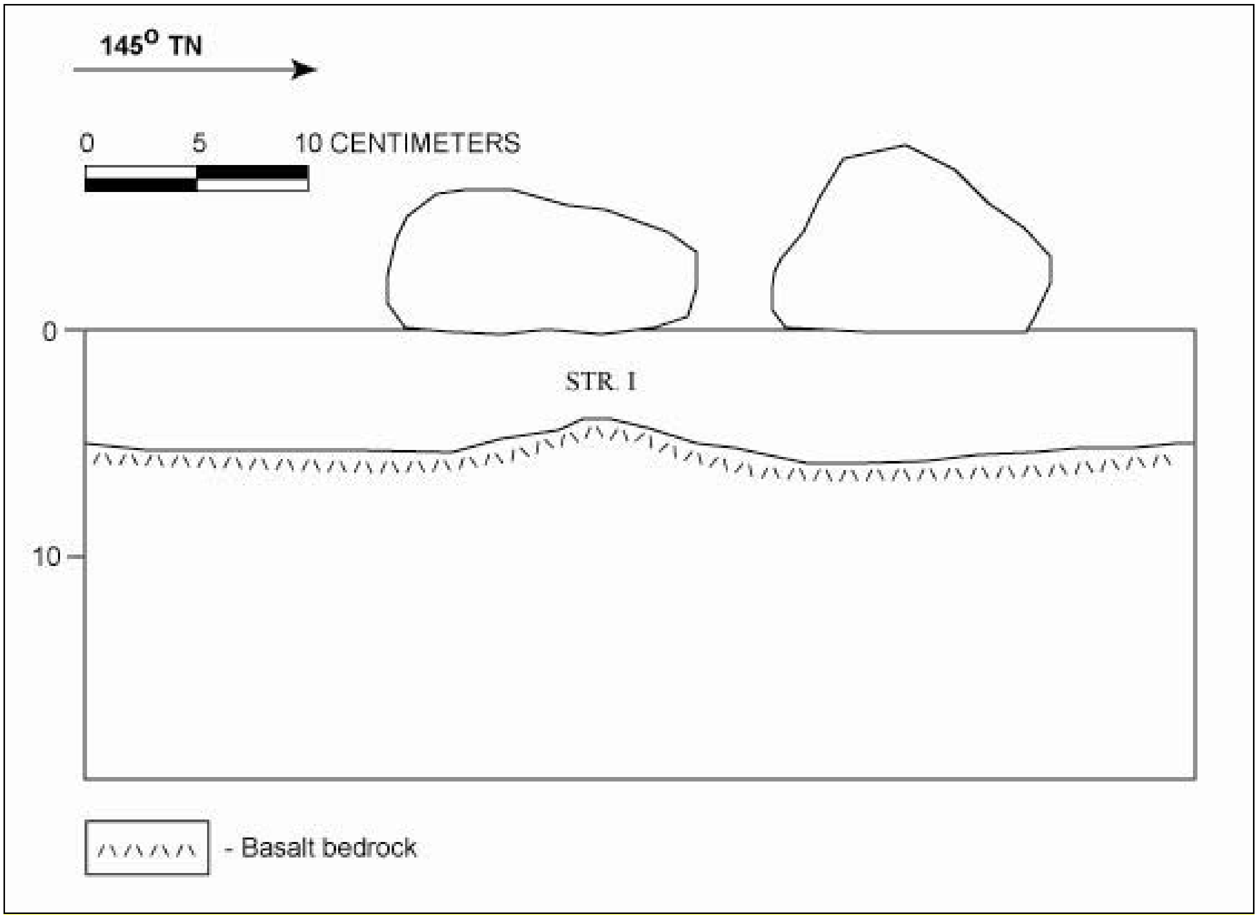

Figure 35. CSH 3, profile of the east wall of Test Unit 1

Table 6. Strata Observed at CSH 3, Test Unit 1

Stratum	Depth (cmbs)	Description
I	0 - 5	10 YR 3/2, dark brown; sandy loam; weak, fine, granular structure; weakly coherent dry consistency; non plastic; no cementation; terrestrial origin; clear boundary; irregular topography. Stratum I is comprised of loose volcanic soil of aeoloian origin. No cultural material observed.

4.3 Historic Property Descriptions

4.3.1 SIHP # 50-80-12-6903

FORMAL TYPE:	Rock uprights
FUNCTION:	Trail / boundary marker
# OF FEATURES:	3
AGE:	Pre-contact
DIMENSIONS:	80 m long (NE-SW) x 10 m wide (NW-SE)
LOCATION:	Waimānalo Gulch
TAX MAP KEY:	TMK: [1] 9-2-003:073
LAND JURISDICTION:	City and County of Honolulu

SIHP #50-80-12-6903 consists of three large upright boulders (Features A-C) utilized as trail or boundary markers, located approximately 1320 m (4330 ft) inland of the coast along the western edge of the study area (see Figure 20). The site is situated approximately 140 m (459 ft) north of existing Waimanalo Landfill operations. The topography of the immediate area is moderately sloping to the southwest, while the geology consists of exposed basalt bedrock outcrops with pockets of shallow soil. *Koa haole* and exotic grasses dominate the surrounding landscape.

SIHP# 50-80-12-6903 Feature A consists of a large upright basalt boulder measuring 1.20 m length, 1.12 m wide, and 2.10 m high (Figure 36 & Figure 37). There appears to be no intentionally placed rocks surrounding the base of this upright. The flat face of this stone is directed south, as to mark a trail or boundary for a traveler moving up slope. The face of this feature is discolored and appears to have once rested on the ground. Feature A is interpreted as being of pre-contact origin, and its function is determined to be a trail or boundary marker. No cultural material was observed on the ground surface in the vicinity of this feature.

SIHP # 50-80-12-6903 Feature B consists of a large triangular upright basalt boulder measuring 1.63 m long, 0.75 m wide, and 1.78 m high (Figure 38 & Figure 39). The upright appears to have one or more stones intentionally set at its western base. However, the majority of the upright's base rests upon naturally exposed bedrock. Feature B is interpreted as being of pre-contact origin, and its function is determined to be a trail or boundary marker. No cultural material was observed on the ground surface in the vicinity of this feature.

SIHP # 50-80-12-6903 Feature C consists of a large upright basalt boulder measuring 2.3 m long, 1.7 m wide, and 2.5 m high (Figure 40 & Figure 41). This feature is believed to be in a natural upright position. Feature C is interpreted as being of pre-contact origin, and its function is determined to be a trail or boundary marker. No cultural material was observed on the ground surface in the vicinity of this feature.

Cultural consultation with knowledgeable community members was utilized to better establish the age, function, cultural affiliation, and significance of this historic property (see Section 5 below).

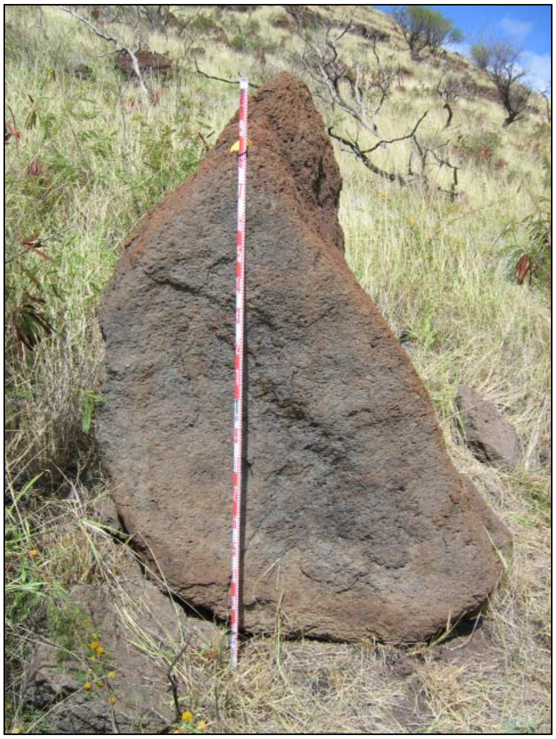

Figure 36. Photograph of SIHP #50-80-12-6903 Feature A, upright boulder, view to north

Figure 37. Photograph of SIHP #50-80-12-6903 Feature A, upright boulder, view to west

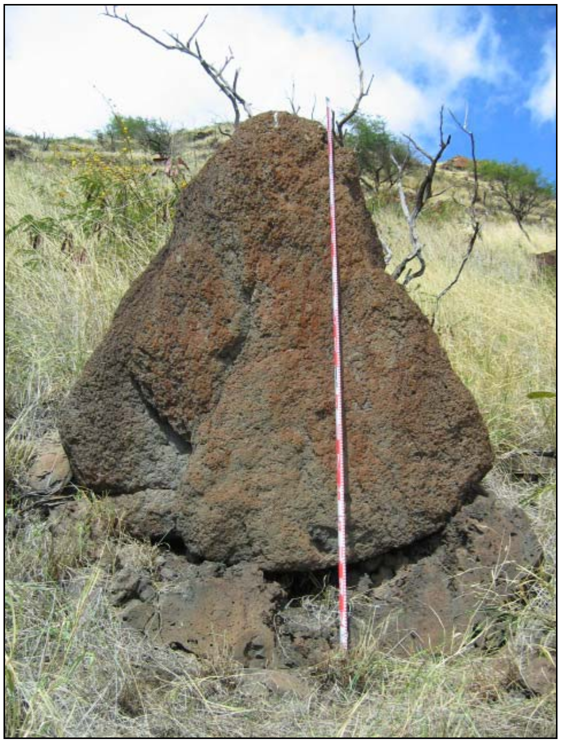

Figure 38. Photograph of SIHP #50-80-12-6903 Feature B, upright boulder, view to north

Figure 39. Photograph of SIHP #50-80-12-6903 Feature B, upright boulder, view to west

Figure 40. Photograph of SIHP #50-80-12-6903 Feature C, upright boulder, view to west

Figure 41. Photograph of SIHP #50-80-12-6903 Feature C, upright boulder, view to northwest

Section 5 Cultural Consultation Results

Pursuant to the requirements of State of Hawaii archaeological inventory survey regulations [HAR 13-276-5(g)] and State of Hawaii historic preservation review legislation [HAR 13-275-8(a)(2)], CSH carried out cultural consultation for this archaeological inventory survey investigation. This cultural consultation effort focused on locating any additional cultural and/or historical land use information for the study area. It also focused on better establishing the age, function, cultural affiliation, and significance of the historic property documented within the study area. Finally, this consultation effort focused on the development of appropriate mitigation for the significant historic property that will be affected by landfill expansion.

This consultation effort focused particularly on SIHP #50-80-12-6903, three large upright boulders utilized as trail or boundary markers. The following discussion is arranged chronologically and documents the effort and the results.

5.1 Chronology of Consultation Effort and Results

March 13, 2007

During an SHPD site visit to the study area, then Oahu Island Archaeologist Mr. Adam Johnson toured the location of SIHP #50-80-12-6903 and its vicinity. At this on-site meeting SHPD directed CSH to proceed with cultural consultation to establish the cultural significance of the three upright stones. Mr. Johnson indicated that, based on the results of this consultation, it was likely that the upright stones would be determined significant under criteria D (information content) and E (traditional cultural significance to an ethic group) of the Hawaii Register of Historic Places.

March 27 2007

CSH conducted a cultural consultant site visit of SIHP #50-80-12-6903 and its vicinity with Mr. William Ailā (Hui Malāma I Nā Kūpuna), Mr. Eric Enos (cultural practitioner and Director of Kaʻala Farms), Mr. Shad Kane (ʻAhahui Siwila Hawaiʼi O Kapolei Hawaiian Civic Club), and Mr. McD Philpotts (long-time resident of Waimānalo ʻIli). At this meeting the age, function, cultural affiliation, and significance of the upright stones were discussed. Potential functions for the stones included trail markers, markers for observation points for celestial observation and/or navigation, or markers used to calculate the location of specific coastal and/or off-shore resources. Although there was no clear consensus regarding the function of the stones, all of the cultural consultants present indicated that the stones were significant and that they had been used by traditional Native Hawaiian cultural practitioners in the past. They indicated that the stones' location was likely an important part of their cultural significance and function. Potential mitigation measures, including preservation in place and relocation were discussed.

The cultural consultants at this meeting expressed concern regarding the final appearance of the landfill once it has reached capacity and will no longer be used. They wanted to see the new surface of the landfill naturalized with the random placement of basalt boulders and more natural vegetation, preferably Native Hawaiian dry land species, so that the final landfill surface appears more like the surrounding hill sides.

May 1 2007

CSH mailed out a consultation letter to the Office of Hawaiian Affairs (OHA). This consultation was initiated pursuant to HAR Chapter 13-276-5 and 13-275-6. Appendix B is a copy of this consultation letter.

May 24 2007

OHA provides a response to CSH's May 1 2007 consultation letter. Appendix C is a copy of this letter. With its response letter, OHA asked for additional project-related cultural consultation with members of the Koa Mana organization, as well as Ms. Nettie Tiffany of Lanikūhonua. Additionally, the letter queried whether or not subsurface testing was undertaken as part of the project's archaeological inventory survey. Finally, OHA's letter took the position that the single historic property documented in the project area, SIHP #50-80-12-6903--three upright stones, should be preserved through adjustment of the current study area boundaries.

CSH responded to OHA's May 24 2007 letter in a March 7 2008 mitigation consultation letter, see discussion below. As a result of OHA's suggestions, members of the Koa Mana organization came out to the SIHP #50-80-12-6903 location and its vicinity and provided their input. Additionally, Ms. Nettie Tiffany was included in further cultural consolation.

July 18 2007

CSH held another on-site cultural consultant visit to the SIHP #50-80-12-6903 location and its vicinity. Mr. Glenn Kila and Mr. Alika Silva from Koa Mana were present, along with Ms. Kaleo Paik from the SHPD Culture and History Branch. At this meeting the age, function, cultural affiliation, and significance of the upright stones were discussed. Potential mitigation measures, including preservation in place and relocation were discussed. Once again, there was no clear consensus regarding the function of the stones, all of the cultural consultants present indicated that the stones were significant and that they had been used by traditional Native Hawaiian cultural practitioners in the past.

October 5 2007

CSH holds another on-site meeting at the SIHP #50-80-12-6903 location with the current SHPD Oahu Island Archaeologists, Ms. Lauren Morawski and Ms. Teresa Davan. The archaeological inventory survey effort and results are discussed and the three upright stones are observed. CSH provided the SHPD archaeologists with a summary of the project's cultural consultation effort to date.

March 7 2008

A mitigation consultation letter was sent out to OHA, SHPD, Mr. William Ailā (Hui Malāma I Nā Kūpuna), Mr. Eric Enos (cultural practitioner and Director of Kaʻala Farms), Mr. Shad Kane (ʻAhahui Siwila Hawai'i O Kapolei Hawaiian Civic Club), Mr. McD Philpotts (long-time resident of Waimānalo ʻIli), Ms. Nettie Tiffany (Lanikūhonua), Mr. Glenn Kila (Koa Mana) and Mr. Alika Silva (Koa Mana). This consultation letter included response information to OHA's May 24, 2007 letter. It included the results of the project's archaeological inventory survey investigation and a description of SIHP #50-80-12-6903, the three upright stones. It also summarized the project's cultural consultation effort to date. Finally, it described the proposed mitigation measures for SIHP #50-80-12-6903. Appendix D is a copy of this consultation letter.

In March 2008, following the posting and emailing of the March 7 2008 consultation letter, CSH attempted to contact letter recipients by email and telephone to obtain their feedback and comments. As a result of this effort on March 20 2008, CSH was contacted by telephone by Mr. Shad Kane (ʻAhahui Siwila Hawai'i O Kapolei Hawaiian Civic Club) and Mr. McD Philpotts (long-time resident of Waimānalo ʻIli). Their comments are summarized below.

Mr. Doug "McD" Philpotts telephoned Matt McDermott of CSH at 3:45 pm on March 20 2008. Mr. Philpotts had four general comments based on his review of the March 7 2008 mitigation consultation letter:

1) He confirmed that he felt the stones were indeed naturally occurring and that they had not been modified or set up-right by human hands.
2) He and his son went out in his canoe to see how visible the stones were from offshore Lanikūhonua, *makai* of Waimanalo Gulch. He said he could see the stones faintly, by knowing where to look, but that the stones did not stand out on the Waimanalo Gulch slope and were hard to see. He said the stones did line up with the location of a fishing spot he knew, but that other landscape features were more easily discernable and made much better geographic reference points for triangulation.
3) He finds the proposed treatment of the stones, their movement to the Battery Arizona location, an acceptable form of mitigation
4) He is most concerned about the final look of the landfill once it reaches capacity and the area will no longer be used. He feels the new final surface of the landscape needs to be landscaped to be more natural, with native Hawaiian dry-land vegetation, and a more natural land covering of basalt stones. He thinks this naturalization of the surface will make the area much more useful in the future.

Mr. Shad Kane telephoned Matt McDermott of CSH at 5:45 pm on March 20 2008. Mr. Kane had five general comments based on his review of the March 7 2008 mitigation consultation letter:

1) He is disappointed about the landfill project as a whole as well as the proposed movement of the three stones (SIHP #50-80-12-6903)—but he understands the need and why the landfill needs to be expanded and the stones need to be moved.
2) He indicated that the stones' meaning and significance will be lost once they are moved from their original location.
3) He is interested in having research continue on the stones after they were moved. This further research should focus on determining the stones past use and/or significance to Native Hawaiian cultural practitioners.
4) He is in favor of interpretation of the stones based on the results of further research, with signage and public access.
5) He would like to see the stones moved back to as close as possible to their original location, from temporary curation at Battery Arizona, after the landfill has reached capacity and it would be safe to move the stones back.

As a result of follow up telephone contact to the March 7, 2008 consultation letter, Ms. Nettie Tiffany (Lanikūhonua) telephoned Matt McDermott of CSH at 8:45 am on March 31, 2008. Although Ms. Tiffany had not participated in the previous site visits to the SIHP # 50-80-12-

6903 location, she did have four general comments based on her review of the mitigation consultation letter:

1) She indicated the description of the stones, their location, and photographs included in the consultation letter accurately portrayed what her mother described to her as trail markers that marked *mauka*/*makai* trails. These trails were used by Native Hawaiians to support *mauka*/*makai* trade and/or resource distribution. They were also used by bird catchers to access the *mauka* forests.
2) She was disappointed with the Landfill expansion project and that the stones could not be left in place.
3) She felt that the stones significance as trail markers would be ruined if the stones are relocated.
4) She would like to see the stones moved back to as close as possible to their original location, from temporary curation at Battery Arizona, after the landfill has reached capacity and it would be safe to move the stones back.

March 25 2008

SHPD staff Ms Kaleo Paik (Culture and History Branch) and Oahu Island Archaeologists Ms. Lauren Morawski and Ms. Teresa Davan met with CSH to discuss the project's ongoing consultation effort results. The project proponent's proposed mitigation for SIHP #50-80-12-6903 where also discussed. The SHPD staff had the following comments regarding the stones and their proposed mitigation:

1) Ms. Kaleo Paik thought it was unlikely that the stones would have functioned for marking coastal or offshore locations or resources, because of their position and the difficulty of seeing the stones from a distance.
2) All felt that the stones should be preserved in place if at all possible because their significance and function are likely tied to their current location.
3) If preservation in place is truly not an option, they were in favor of temporary relocation of the stones to Battery Arizona, with movement back of the stones to as near as possible to their original location once the landfill is closed.
4) They all were in favor of further research regarding the stones significance and function, with eventual public signage and interpretation for the stones once they are moved back to as close as possible to their original location.

5.2 Consultation Summary

This cultural consultation effort focused on locating any additional cultural and/or historical land use information for the study area. It also focused on better establishing the age, function, cultural affiliation, and significance of SIHP #50-80-12-6903, three large upright boulders documented within the study area. Finally, this consultation effort focused on the development of appropriate mitigation for the significant historic property (SIHP #50-80-12-6903) that will be affected by landfill expansion.

Consultation efforts determined that there was no clear consensus regarding the function of SIHP #50-80-12-6903, however, all of the cultural consultants indicated that the stones were significant and that they had been used by traditional Native Hawaiian cultural practitioners in the past. All cultural consultants also felt that the stones should be preserved in place if at all possible because their significance and function are likely tied to their current location. If preservation in place is truly not an option, most were in favor of temporary relocation of the stones to Battery Arizona, with movement of the stones back to as near as possible to their original location once the landfill is closed.

Some cultural consultants expressed an interest in having research continue on the stones after they were moved. This further research would focus on determining the stones past use and/or significance to Native Hawaiian cultural practitioners. Once the results of this additional research were interpreted, public access to the stones with interpretive signage was felt to be appropriate.

The cultural consultants also expressed concern regarding the final appearance of the landfill once it has reached capacity and will no longer be used. They wanted to see the new surface of the landfill naturalized with the random placement of basalt boulders and more natural vegetation, preferably Native Hawaiian dry land species, so that the final landfill surface appears more like the surrounding hill sides.

CSH would like to thank all the cultural consultants and OHA and SHPD representatives for their time and consideration during the project’s archaeological consultation effort. Their input is extremely valuable and will help all concerned parties make the best, most well-informed management decisions for the historic property in the project APE.

Section 6 Summary and Interpretation

In compliance with and to fulfill applicable Hawaiʻi state historic preservation legislation, CSH completed this archaeological inventory survey investigation for the proposed Waimānalo Gulch Landfill Expansion. Land disturbing activities associated with the landfill expansion would include: major grading, including blasting of exposed rock surfaces, and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; excavation for the installation of a storm water runoff control channel along the west side of the gulch; and filling of the expansion area with refuse material.

Per the Hawaiʻi state requirements for archaeological inventory surveys [HAR Chapter 13-276], this inventory survey investigation includes the results of cultural, historical, and archaeological background research, cultural consultation, and fieldwork. The background research focused on summarizing the study area's pre- and post-contact land use, cultural significance, and types and locations of potential historic properties within the study area and its vicinity. The cultural consultation focused on potential mitigation measures for the single historic property identified within the study area.

Pedestrian inspection of the study area identified one historic property, SIHP #50-80-12-6903. SIHP #50-80-12-6903 is located along the western edge of the study area, situated on the western slope of Waimānalo Gulch (see Figure 20). It is of pre-contact origin, and consists of three large upright boulders (Features A-C) utilized potentially as trail or boundary markers.

The inventory survey fieldwork also involved a thorough inspection of caves and rock shelters observed within the study area (see Figure 22). These caves and rock shelters were inspected for cultural modifications and/or the presence of human burials. Where significant sediment deposits were observed, subsurface testing in the form of controlled hand excavation was undertaken to establish if any subsurface cultural deposits were present. All observed and inspected caves contained no indications of cultural modification, subsurface cultural deposits, or use a human interment site.

Also of note was a rock alignment (CSH 3) located near the northeastern edge of the study area (see Figure 22). The alignment was determined to be of modern origin due to its location along a talus slope, in which soil erosion and rainwater runoff channels were observed. If the feature was of antiquity it would reflect disturbances associated with erosion and/or rainwater runoff, such as the retention of eroding rock and soil or the displacement of boulders incorporated into the alignment. Test excavations yielded no cultural material and confirmed the modern construction of the alignment.

These findings are largely in keeping with expectations, based on background research. An archaeological inventory survey of the "Makaīwa Hills" development project, totaling 1850 acres and encompassing large portions of Makaīwa and Pālailai gulches, identified pre-contact habitation sites clustered in higher elevations above 1000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991). Hammatt et al. (1991) indicated that the higher elevations would contain ample forest subsistence resources for gathering on both a continual basis, as well as during times of famine and drought, while the lower elevations would be in close proximity to the shoreline and bountiful coastal resources. The current study area is located 80 m east of the “Makaīwa Hills” development project, contains a similar topographic and geologic setting, and is situated within an elevation range of 400 to 900 ft, the zone in which pre-contact archaeological sites were absent in the neighboring “Makaīwa Hills” study area. Thus, the fact that only a single historic property was identified within the current study area is not surprising as it is consistent with the pattern observed by Hammatt et al. in 1991. Furthermore the historic property (SIHP #50-80-12-6903) consists of trail and/or boundary markers utilized by pre-contact populations, suggesting that portions of the study area were utilized for transportation to more resource rich areas (i.e. the coast and upland forest).

Both the Hammatt et al. (1991) study and the current archaeological inventory survey are important because they have provided valuable data towards establishing a settlement pattern for the leeward gulches and ridges of Honouliuli Ahupua‘a. The current study area has been determined to be situated in an intermediate zone between the coast and the upland forest. This intermediate zone is defined by an extremely arid environment, a lack of vegetation, and steep rocky terrain which would have made pre-contact habitation and agriculture very difficult. This intermediate zone is focused between 500 and 1000 ft elevations and was most likely utilized for transportation between the more hospitable coast and upland forest areas.

Section 7 Significance Assessments

The inventory survey investigation and documentation of the project area's single historic property have provided sufficient information for significance evaluations. Significance is determined after evaluation of each historic property in light of the five broad criteria used by the Hawaiʻi State Registers of Historic Places (HAR 13-275-6). The criteria are the following:

A	Historic property reflects major trends or events in the history of the state or nation.
B	Historic property is associated with the lives of persons significant in our past.
C	Historic property is an excellent example of a site type.
D	Historic property has yielded or may be likely to yield information important in prehistory or history.
E	Historic property has cultural significance to an ethnic group, including, but not limited to, religious structures and burials.

SIHP #50-80-12-6903, three rock uprights, has integrity of location and materials and is recommended eligible to the Hawaiʻi Register under criteria D & E

Section 8 Project Effect and Mitigation Recommendations

It is the position of the project proponents (the City and County of Honolulu) that, as the only municipal landfill site on the island of Oʻahu, the continued use of the Waimānalo Gulch facility is of utmost importance to the health and safety of the island's population. The expansion of the existing Waimānalo Gulch facility is crucial to the facility's continued operation over the next approximately 15 year period of anticipated use. After weighing the options, the project proponents have determined that the three stones that make up SIHP #50-80-12-6903 cannot be preserved in place in a safe and appropriate manner.

Preservation in place would require a significant reduction of the overall area and volume of the proposed facility expansion. Additionally, with the proposed blasting, mass grading, and excavation in the vicinity of the stones, the safety of the stones cannot be guaranteed if they were preserved in place. For example, refer to Figure 42, which shows the stones' proximity to the large storm water drainage channel and Cell E6, immediately above and below the stones' location. The controlled blasting, mass grading, and excavation associated with the installation of needed landfill infrastructure would subject the stones to repeated vibration over the next approximately 15 years as the landfill expansion progressed. The vibrations from mass grading, controlled blasting, and related earthwork would potentially be sufficient to dislodge the stones from their current resting place, causing them to roll down the steep slope they rest on. Finally, the relocation of the stones would be considered a more culturally sensitive treatment that would provide for their future preservation.

8.1 Project Effect

After weighing the options, the project proponents have determined that the three stones that make up SIHP # 50-80-12-6903 cannot be preserved in place in a safe and appropriate manner. Accordingly, a project effect determination of "effect with agreed upon mitigation commitments" is warranted.

8.2 Mitigation Recommendations

The project proponents propose the relocation of the three SIHP # 50-80-12-6903 stones to the vicinity of Battery Arizona, located in the southwestern portion of the Waimānalo Gulch facility (Figure 43). There is a precedent for this relocation as three noteworthy stones of cultural significance to Native Hawaiians have already been relocated to the Battery Arizona site from the expanding Waimānalo Gulch Landfill. These stones, described by Hammatt and Shideler (1999), were relocated to the Battery Arizona site in 1988. Figure 44 shows the location of this already established stone repository in relation to the Battery Arizona features. Figures 48 and 49 are photographs, showing the proposed relocation area for SIHP # 50-80-12-6903 along the southeast facing slope at Battery Arizona and in relation to the already established stone repository. The proposed relocation would ensure the safety of the stones during the landfill's expansion and would make them much more accessible to interested parties.

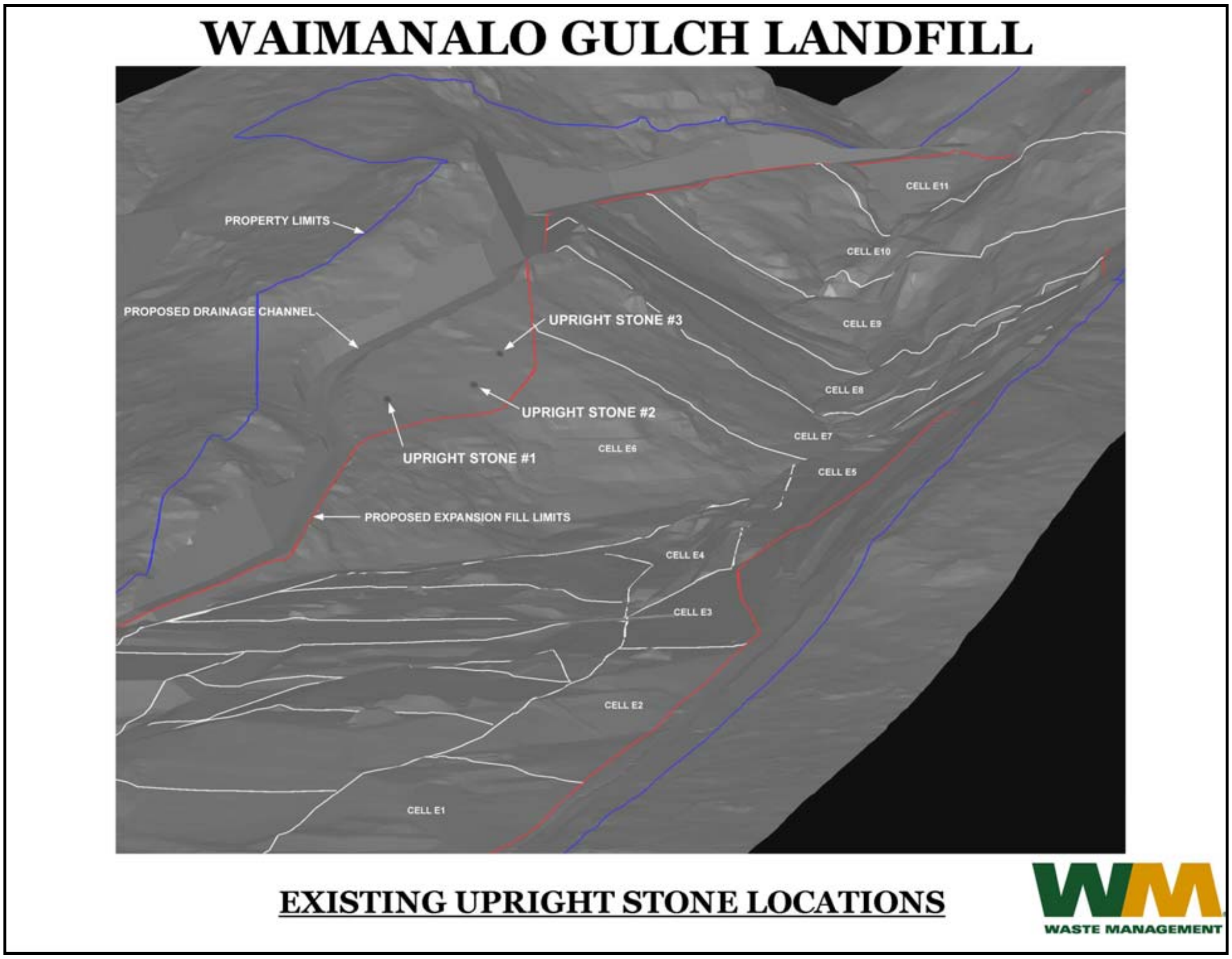

Figure 42. Three-dimensional graphic showing the proposed landfill expansion in relation to the three stones of SIHP # 50-80-12-6903. Note the large drainage channel upslope of the stones and the cell E6 immediately down slope

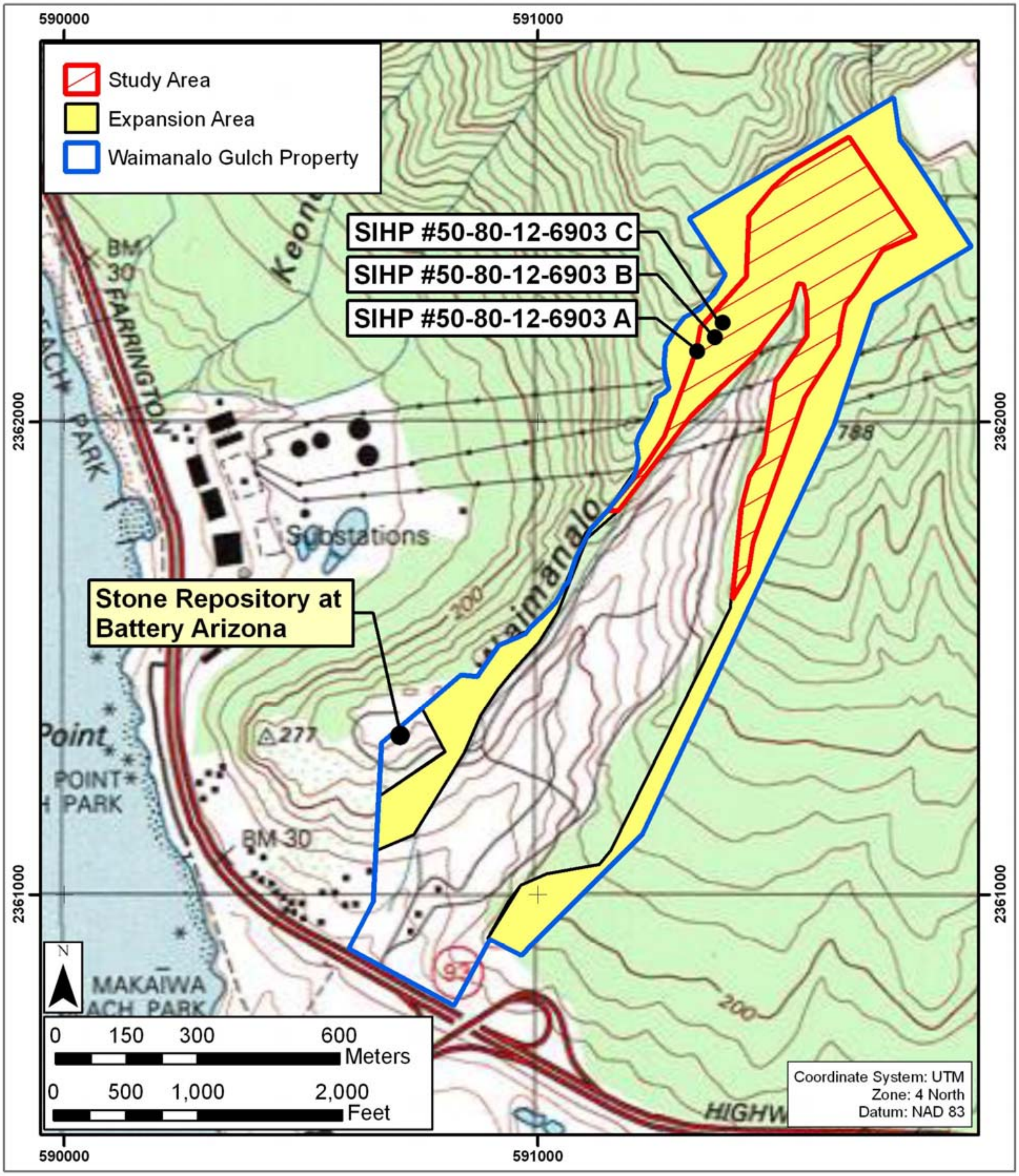

Figure 43. Portion of the 1998 ‘Ewa USGS 7.5-minute topographic quadrangle showing the Waimānalo Gulch property boundaries, the boundaries of the proposed 90-acre expansion area, the 36-acre study area, the location of Features A, B, and C of SIHP #50-80-12-6903, and the previously established stone repository at Battery Arizona.

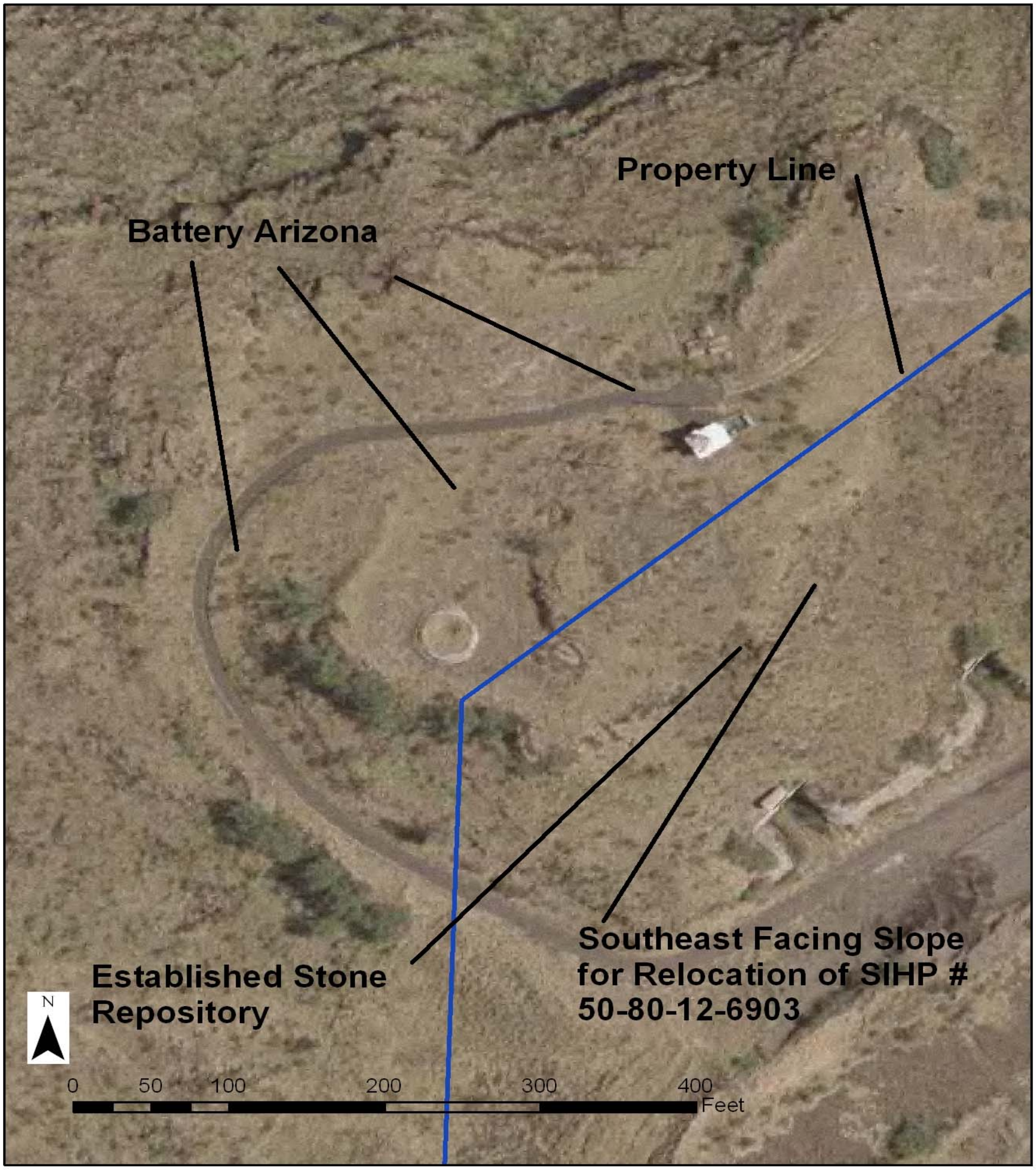

Figure 44. Aerial photograph of Battery Arizona showing the established stone repository and the proposed relocation area for SIHP # 50-80-12-6903

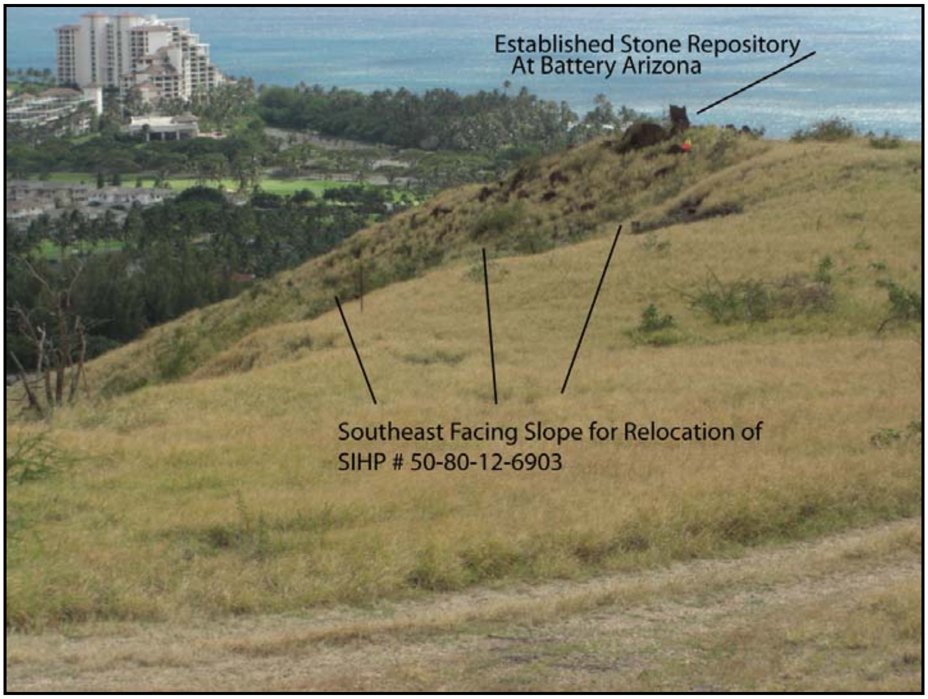

Figure 45. Photograph, view to the south, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

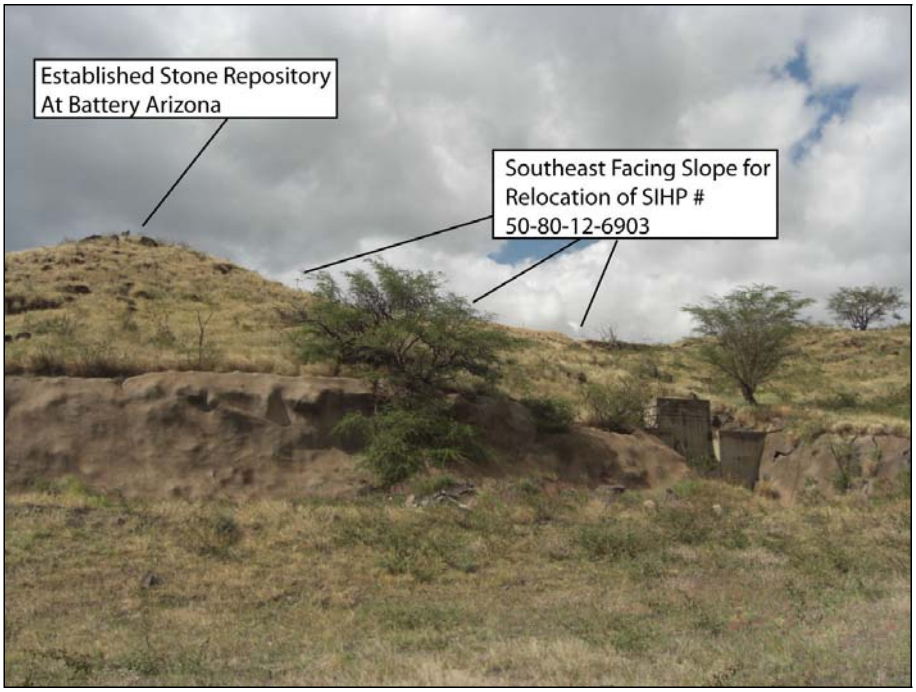

Figure 46. Photograph, view to the north, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

The specifics of the proposed stone relocation would be the subject of the project's archaeological mitigation plan for SIHP # 50-80-12-6903. These specifics would be worked out through further consultation with cultural consultants, SHPD, and the project proponents. Based on the results of cultural consultation, cultural informants would prefer to see the stones eventually returned to near their original resting places, once the landfill is no longer active, with interpretive signage based on further background research and public access. The City & County of Honolulu is willing to commit to putting the stones back, as close as possible to their original resting places. Figure 47 is a modified photograph that shows approximately what this would look like from coastal Honouliuli. This relocation could only take place after that portion of the landfill had been filled. At this time there is some uncertainty regarding when that portion of the landfill would be closed but it seems likely it will take a minimum of approximately 15 years.

A Preservation/Mitigation Plan detailing the relocation and interim preservation methods and the long term preservation including appropriate signage and interpretation will be submitted and reviewed by the SHPD. Additionally a Memorandum of Agreement will be drafted by the project proponents and will be reviewed by the SHPD prior to the implementation of the project.

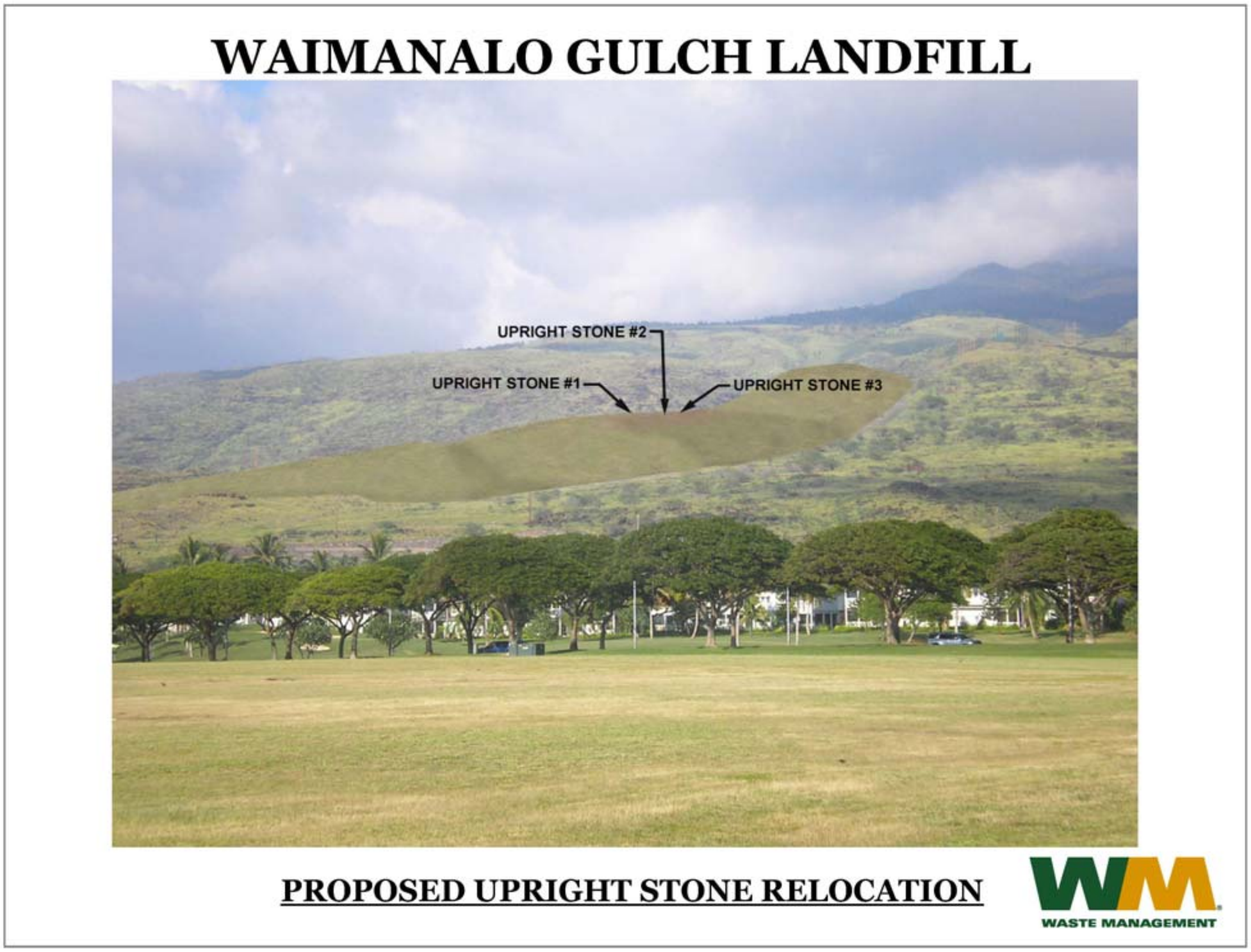

Figure 47. Altered photograph showing the planned landfill surface topography in 15 years. The potential SIHP # 50-80-12-6903 relocation site, on top of the new landfill surface, is shown

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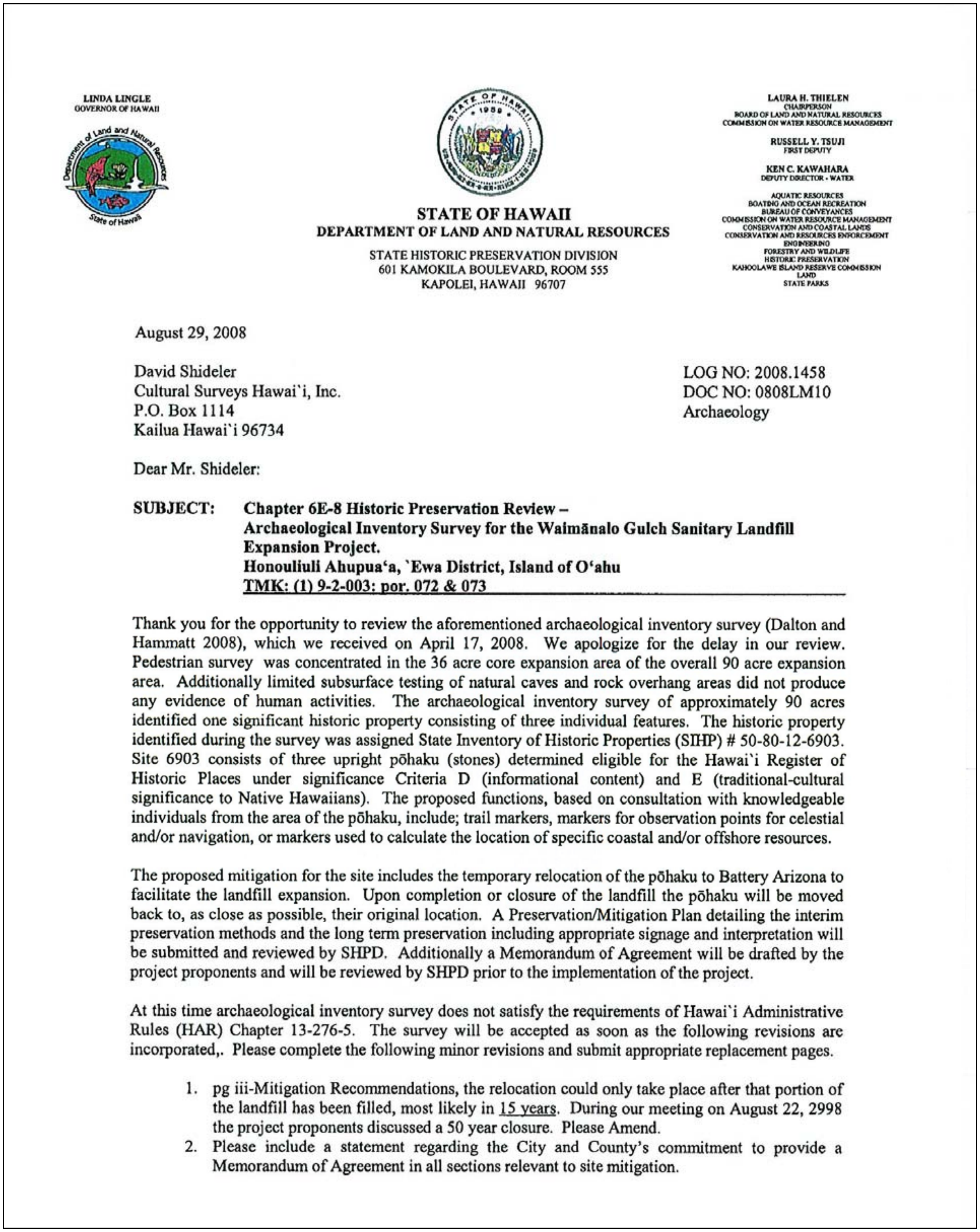
Appendix A SHPD Chapter 6E-8 Historic Preservation Review of August 29, 2008



LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
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BOARD OF LAND AND NATURAL RESOURCES
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STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

August 29, 2008

David Shideler
Cultural Surveys Hawai`i, Inc.
P.O. Box 1114
Kailua Hawai`i 96734

LOG NO: 2008.1458
DOC NO: 0808LM10
Archaeology

Dear Mr. Shideler:

SUBJECT: Chapter 6E-8 Historic Preservation Review –
Archaeological Inventory Survey for the Waimānalo Gulch Sanitary Landfill Expansion Project.
Honouliuli Ahupuaʻa, `Ewa District, Island of Oʻahu
TMK: (1) 9-2-003: por. 072 & 073

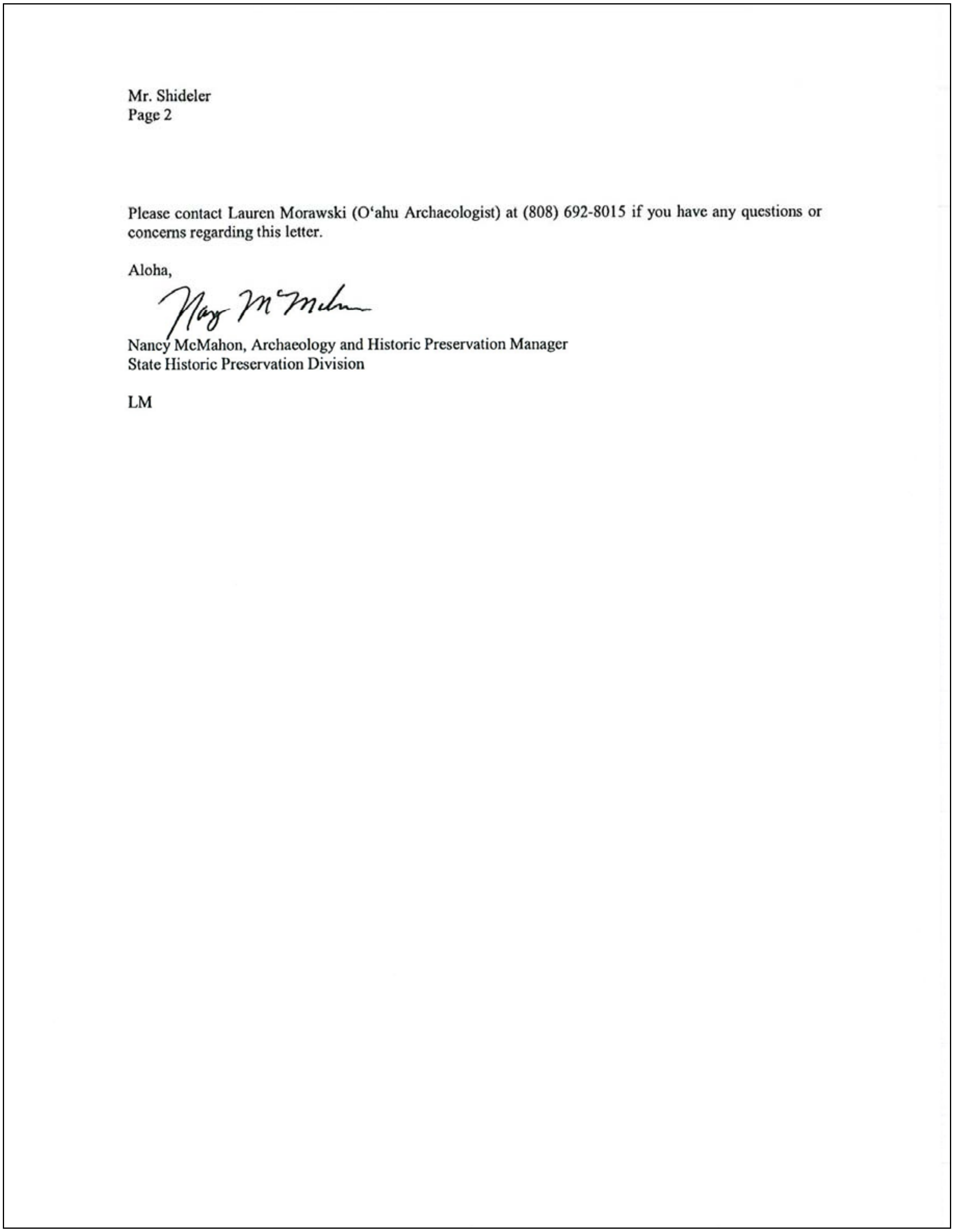
Thank you for the opportunity to review the aforementioned archaeological inventory survey (Dalton and Hammatt 2008), which we received on April 17, 2008. We apologize for the delay in our review. Pedestrian survey was concentrated in the 36 acre core expansion area of the overall 90 acre expansion area. Additionally limited subsurface testing of natural caves and rock overhang areas did not produce any evidence of human activities. The archaeological inventory survey of approximately 90 acres identified one significant historic property consisting of three individual features. The historic property identified during the survey was assigned State Inventory of Historic Properties (SIHP) # 50-80-12-6903. Site 6903 consists of three upright pōhaku (stones) determined eligible for the Hawai`i Register of Historic Places under significance Criteria D (informational content) and E (traditional-cultural significance to Native Hawaiians). The proposed functions, based on consultation with knowledgeable individuals from the area of the pōhaku, include; trail markers, markers for observation points for celestial and/or navigation, or markers used to calculate the location of specific coastal and/or offshore resources.

The proposed mitigation for the site includes the temporary relocation of the pōhaku to Battery Arizona to facilitate the landfill expansion. Upon completion or closure of the landfill the pōhaku will be moved back to, as close as possible, their original location. A Preservation/Mitigation Plan detailing the interim preservation methods and the long term preservation including appropriate signage and interpretation will be submitted and reviewed by SHPD. Additionally a Memorandum of Agreement will be drafted by the project proponents and will be reviewed by SHPD prior to the implementation of the project.

At this time archaeological inventory survey does not satisfy the requirements of Hawai`i Administrative Rules (HAR) Chapter 13-276-5. The survey will be accepted as soon as the following revisions are incorporated,. Please complete the following minor revisions and submit appropriate replacement pages.

1. pg iii-Mitigation Recommendations, the relocation could only take place after that portion of the landfill has been filled, most likely in 15 years. During our meeting on August 22, 2998 the project proponents discussed a 50 year closure. Please Amend.
2. Please include a statement regarding the City and County's commitment to provide a Memorandum of Agreement in all sections relevant to site mitigation.

Figure 48. SHPD Chapter 6E-8 Historic Preservation Review letter of August 29,2008, page 1



Mr. Shideler
Page 2

Please contact Lauren Morawski (O‘ahu Archaeologist) at (808) 692-8015 if you have any questions or concerns regarding this letter.

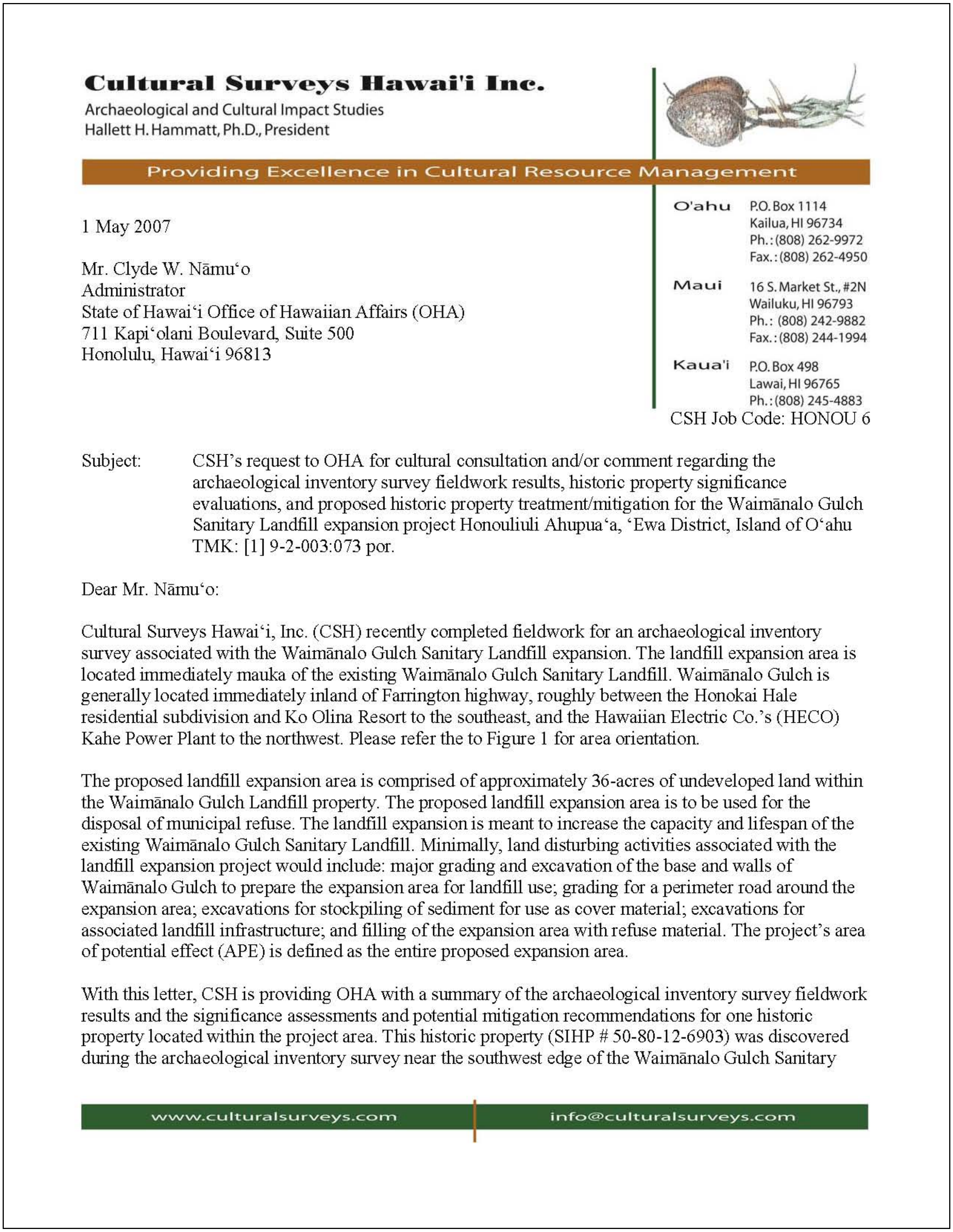
Aloha,

Nancy McMahon, Archaeology and Historic Preservation Manager
State Historic Preservation Division

LM

Figure 49. SHPD Chapter 6E-8 Historic Preservation Review letter of August 29,2008, page 2

Appendix B CSH Request for Cultural Consultation from OHA



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Hallett H. Hammatt, Ph.D., President

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1 May 2007

Mr. Clyde W. Nāmuʻo
Administrator
State of Hawaiʻi Office of Hawaiian Affairs (OHA)
711 Kapiʻolani Boulevard, Suite 500
Honolulu, Hawaiʻi 96813

CSH Job Code: HONOU 6

Subject: CSH's request to OHA for cultural consultation and/or comment regarding the archaeological inventory survey fieldwork results, historic property significance evaluations, and proposed historic property treatment/mitigation for the Waimānalo Gulch Sanitary Landfill expansion project Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu TMK: [1] 9-2-003:073 por.

Dear Mr. Nāmuʻo:

Cultural Surveys Hawaiʻi, Inc. (CSH) recently completed fieldwork for an archaeological inventory survey associated with the Waimānalo Gulch Sanitary Landfill expansion. The landfill expansion area is located immediately mauka of the existing Waimānalo Gulch Sanitary Landfill. Waimānalo Gulch is generally located immediately inland of Farrington highway, roughly between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Hawaiian Electric Co.'s (HECO) Kahe Power Plant to the northwest. Please refer the to Figure 1 for area orientation.

The proposed landfill expansion area is comprised of approximately 36-acres of undeveloped land within the Waimānalo Gulch Landfill property. The proposed landfill expansion area is to be used for the disposal of municipal refuse. The landfill expansion is meant to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill. Minimally, land disturbing activities associated with the landfill expansion project would include: major grading and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; and filling of the expansion area with refuse material. The project's area of potential effect (APE) is defined as the entire proposed expansion area.

With this letter, CSH is providing OHA with a summary of the archaeological inventory survey fieldwork results and the significance assessments and potential mitigation recommendations for one historic property located within the project area. This historic property (SIHP # 50-80-12-6903) was discovered during the archaeological inventory survey near the southwest edge of the Waimānalo Gulch Sanitary

Landfill expansion area. This resource is comprised of three rock uprights designated Features A-C, which may have been placed upright or may be in a natural standing position. These features rest on an east facing slope, they are situated on exposed outcrops, with Feature A and Feature B along the same outcrop, and Feature C located on an outcrop upslope, they are spaced 50-60 meters apart. This resource is interpreted as traditional Native Hawaiian, and may have functioned as a trail or boundary markers. No additional cultural constituents were observed near this location. In consultation with the State Historic Preservation Division, this historic property is recommended eligible to the Hawaiʻi Register of Historic Places (Hawaiʻi Register) under criterion D, for its potential to yield information important in prehistory or history, and under criterion E, for its cultural significance to an ethnic group.

Pursuant to Hawaiʻi Administrative Rules (HAR) Chapter 13-276-5 and 13-275-6, CSH is hereby seeking OHA's input regarding the significance and treatment of these historic properties.

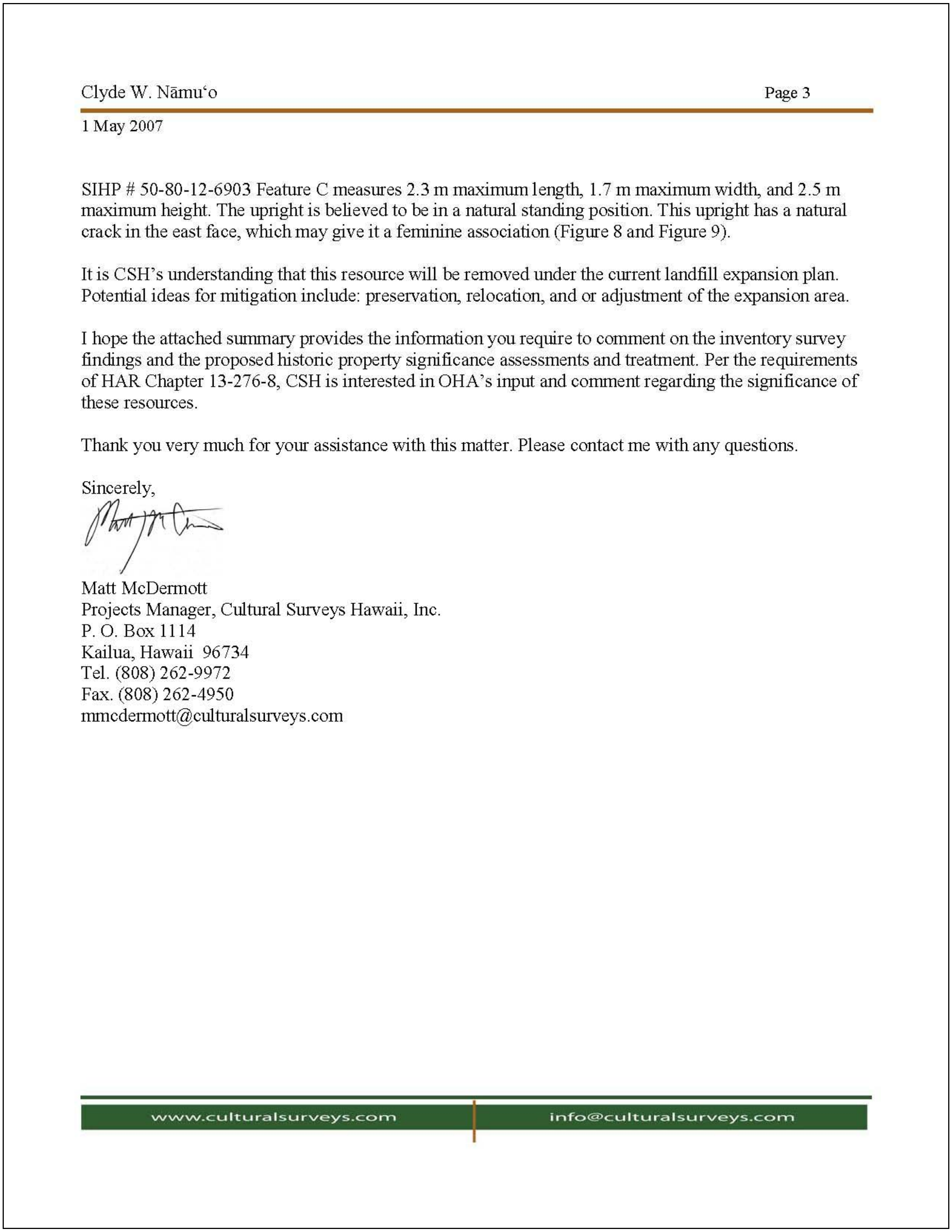
As part of this cultural consultation effort, CSH is working with SHPD and knowledgeable cultural consultants, including Mr. William Aila and Mr. Shad Kane. In mid-March 2007 SHPD Oahu Island Archaeologist Mr. Adam Johnson visited the site with CSH personnel. In late March 2007, CSH made a site visit to SIHP # 50-80-12-6903 with Mr. William Aila and Mr. Shad Kane, where their opinions regarding the age, function, and significance of the site were discussed. Throughout April 2007 CSH has worked with the cultural consultants to obtain their input regarding the site. This input will be included in the project's archaeological inventory survey report.

The project's archaeological inventory survey fieldwork was carried out in January and February 2007. Background research confirmed that that some of the project area had been surveyed by Cultural Surveys Hawaii previously, however due to changes in the project area and the political context of this project, a new 100% pedestrian survey was conducted of the entire proposed expansion area. The archaeological inventory survey resulted in the location of one new historic property (SIHP # 50-80-12-6903). This historic property is briefly described below and shown on the attached USGS topographic map (Figure 2 and Figure 3).

SIHP # 50-80-12-6903 was discovered during the archaeological inventory survey near the southwest edge of the Waimānalo Gulch Sanitary Landfill expansion area and is comprised of three stone uprights designated Features A-C.

SIHP # 50-80-12-6903 Feature A measures 1.20 m maximum length, 1.12 m maximum width, and 2.10 m maximum height. There appear to be no intentionally placed rocks surrounding the base of this upright. The flat face of this stone is directed south. The face of this feature is discolored and appears to have once rested on the ground (Figure 4 and Figure 5).

SIHP # 50-80-12-6903 Feature B measures 1.63 m maximum length, .75 m maximum width, and 1.78 m maximum height. The upright appears to have one or more stones at its western base, which may have been intentionally placed, however the majority of this uprights base rests in a natural area of exposed bedrock. Once identified this feature could be clearly scene from the landfill below. Feature B is triangular in shape forming a small point at its apex (Figure 6 and Figure 7).



SIHP # 50-80-12-6903 Feature C measures 2.3 m maximum length, 1.7 m maximum width, and 2.5 m maximum height. The upright is believed to be in a natural standing position. This upright has a natural crack in the east face, which may give it a feminine association (Figure 8 and Figure 9).

It is CSH's understanding that this resource will be removed under the current landfill expansion plan. Potential ideas for mitigation include: preservation, relocation, and or adjustment of the expansion area.

I hope the attached summary provides the information you require to comment on the inventory survey findings and the proposed historic property significance assessments and treatment. Per the requirements of HAR Chapter 13-276-8, CSH is interested in OHA's input and comment regarding the significance of these resources.

Thank you very much for your assistance with this matter. Please contact me with any questions.

Sincerely,

Matt McDermott
Projects Manager, Cultural Surveys Hawaii, Inc.
P. O. Box 1114
Kailua, Hawaii 96734
Tel. (808) 262-9972
Fax. (808) 262-4950
mmcdermott@culturalsurveys.com

Attachments:

Figure 1. Aerial photograph showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area (source: USGS Orthoimagery 2005)

Figure 2. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing the location of the Waimānalo Gulch Sanitary Landfill property, the proposed expansion project area, and the newly documented historic property (SIHP # 50-80-12-6903)

Figure 3. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing a close-up view of the location of historic property (SIHP # 50-80-12-6903)

Figure 4. SIHP # 50-80-12-6903 Feature A, Photograph of face of rock upright, view to the north

Figure 5. SIHP # 50-80-12-6903 Feature A Photograph of side profile of rock upright, view to the south

Figure 6. SIHP # 50-80-12-6903 Feature B, Photograph of face of rock upright, view to the northwest

Figure 7. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the south

Figure 8. SIHP # 50-80-12-6903 Feature C, Photograph of side profile of rock upright, view to the

Figure 9. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the southwest

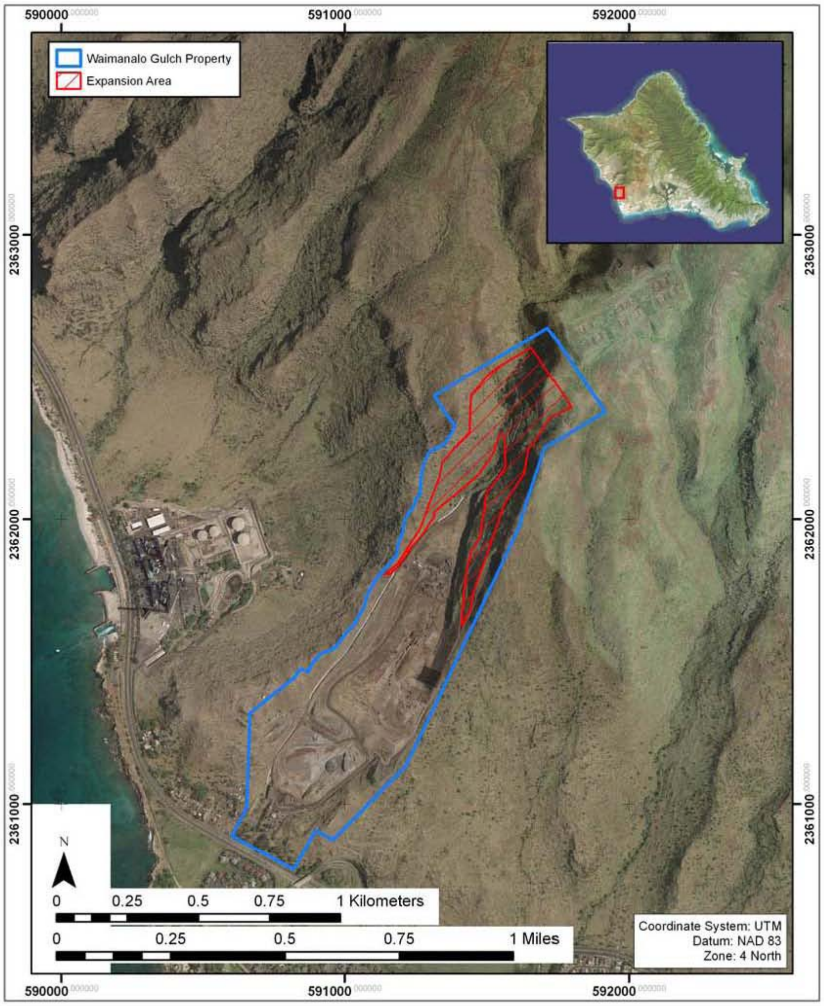


Figure 1. Aerial photograph showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area (source: USGS Orthoimagery 2005)

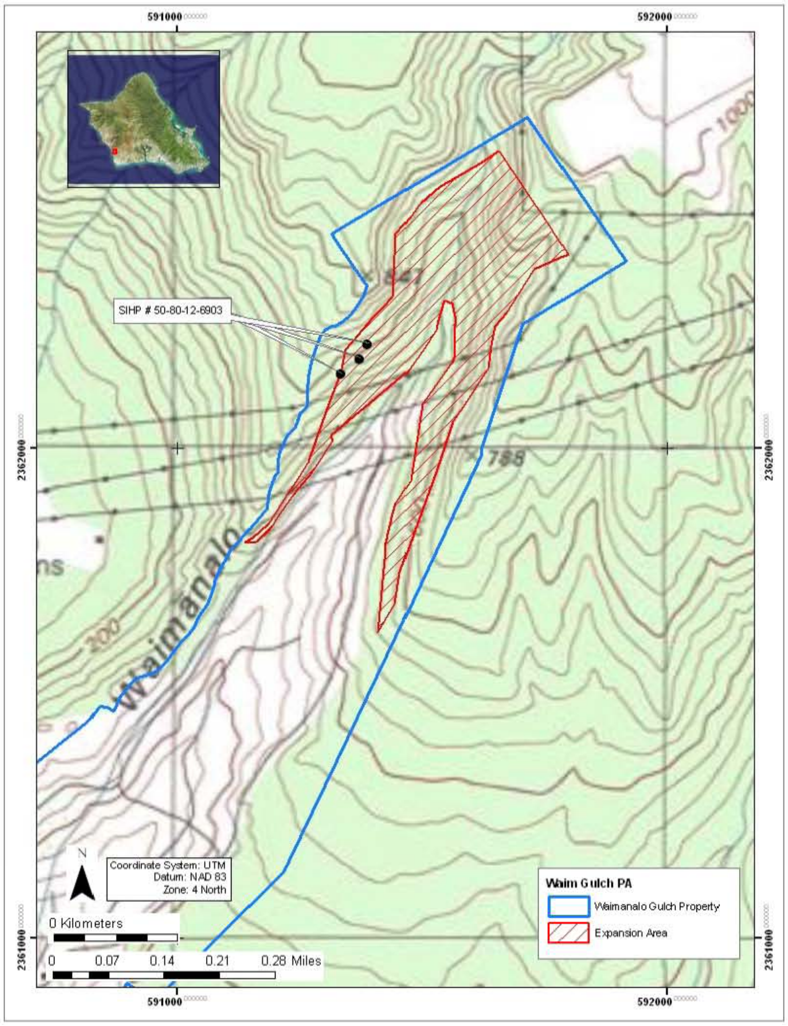


Figure 2. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing the location of the Waimānalo Gulch Sanitary Landfill property, the proposed expansion project area, and the newly documented historic property (SIHP # 50-80-12-6903)

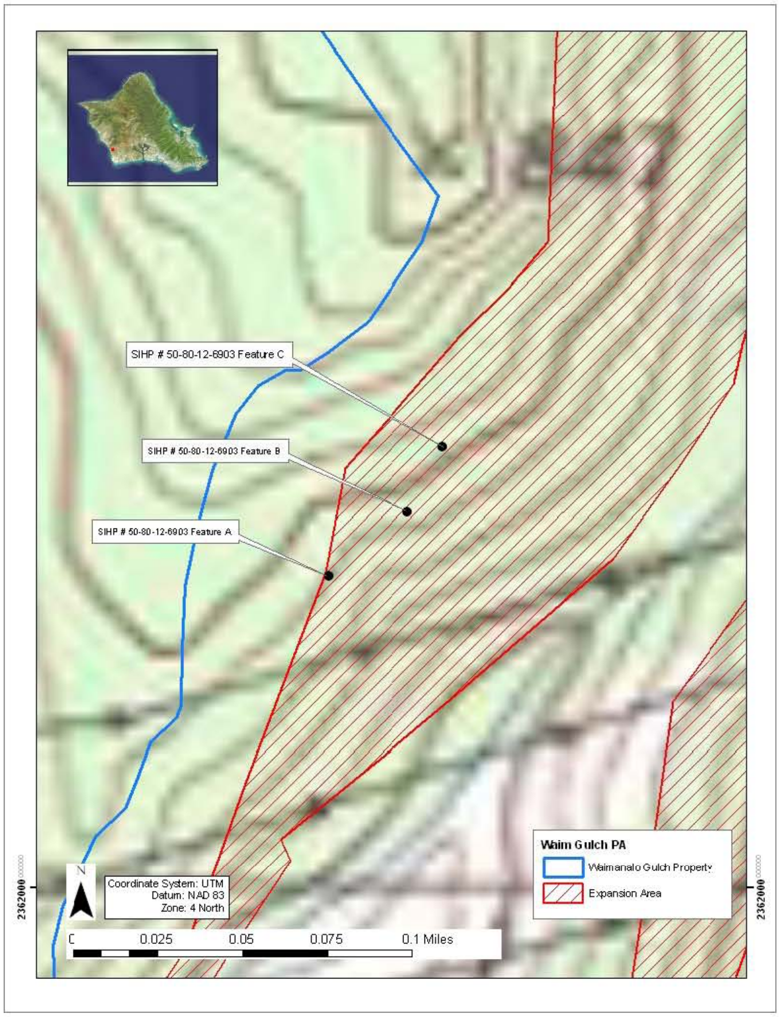


Figure 3. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing a close-up view of the location of historic property (SIHP # 50-80-12-6903)

1 May 2007

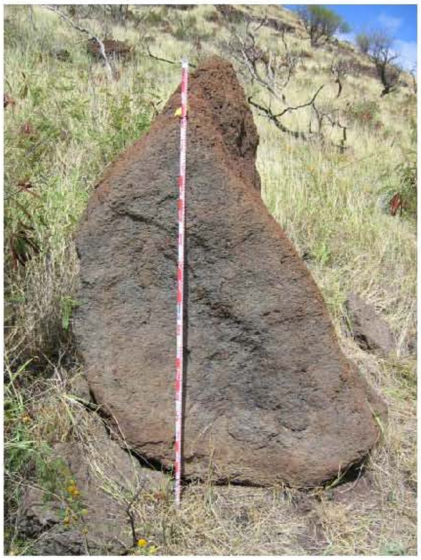


Figure 4. SIHP # 50-80-12-6903 Feature A, Photograph of face of rock upright, view to the north

Figure 5. SIHP # 50-80-12-6903 Feature A Photograph of side profile of rock upright, view to the south

1 May 2007

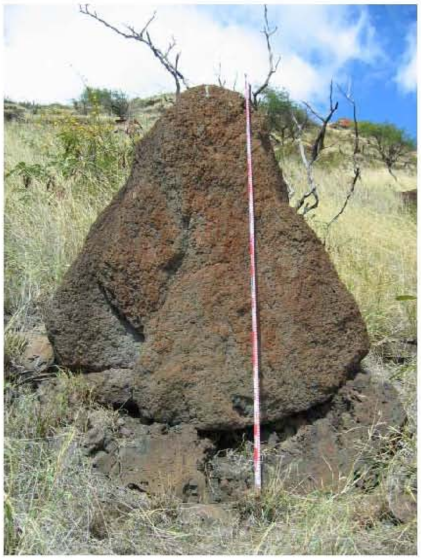


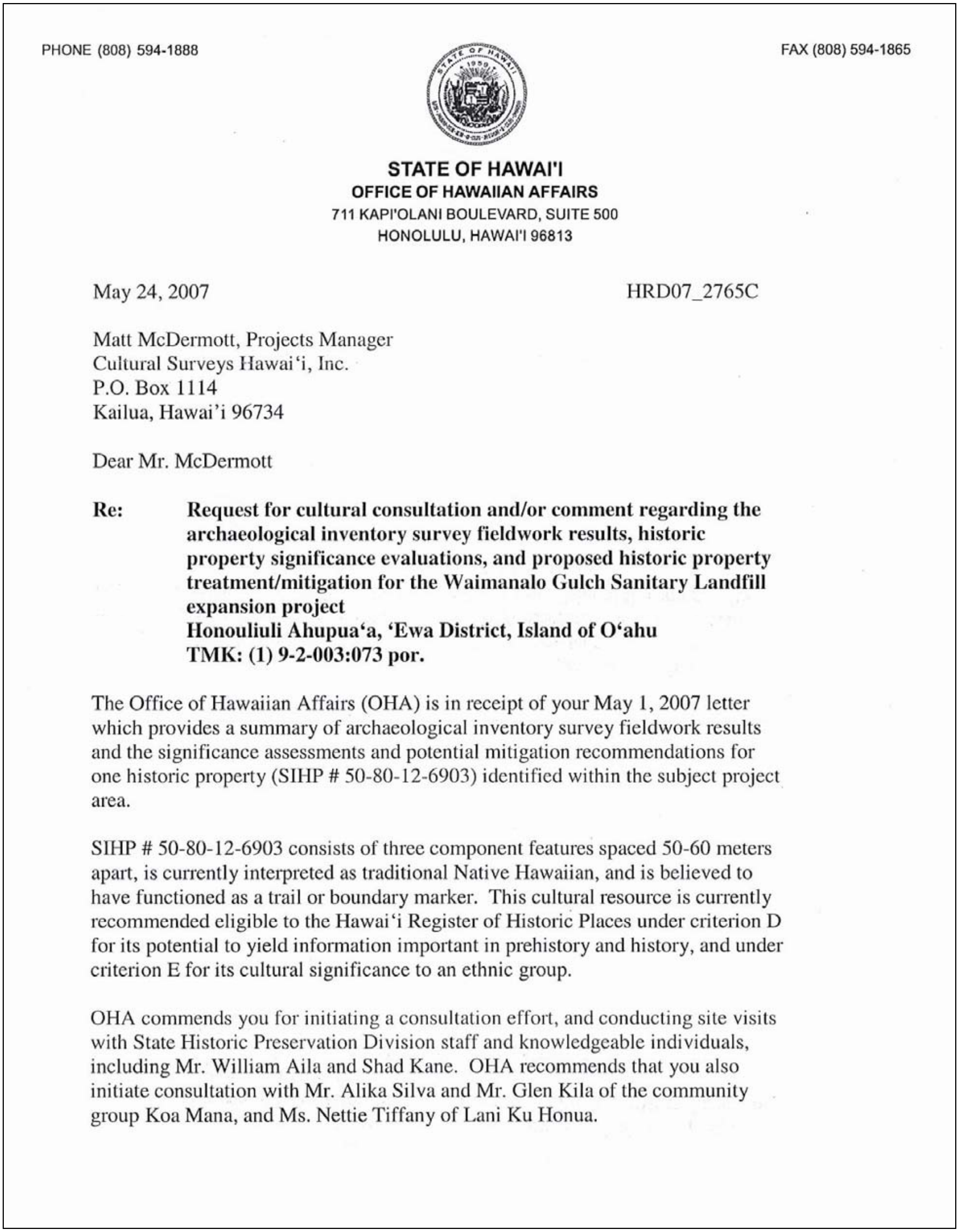
Figure 6. SIHP # 50-80-12-6903 Feature B, Photograph of face of rock upright, view to the northwest

Figure 7. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the south

Figure 8. SIHP # 50-80-12-6903 Feature C, Photograph of side profile of rock upright, view to the west

Figure 9. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the southwest

Appendix C OHA Response to CSH Request for Cultural Consultation



PHONE (808) 594-1888 FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

May 24, 2007 HRD07_2765C

Matt McDermott, Projects Manager
Cultural Surveys Hawaiʻi, Inc.
P.O. Box 1114
Kailua, Hawai'i 96734

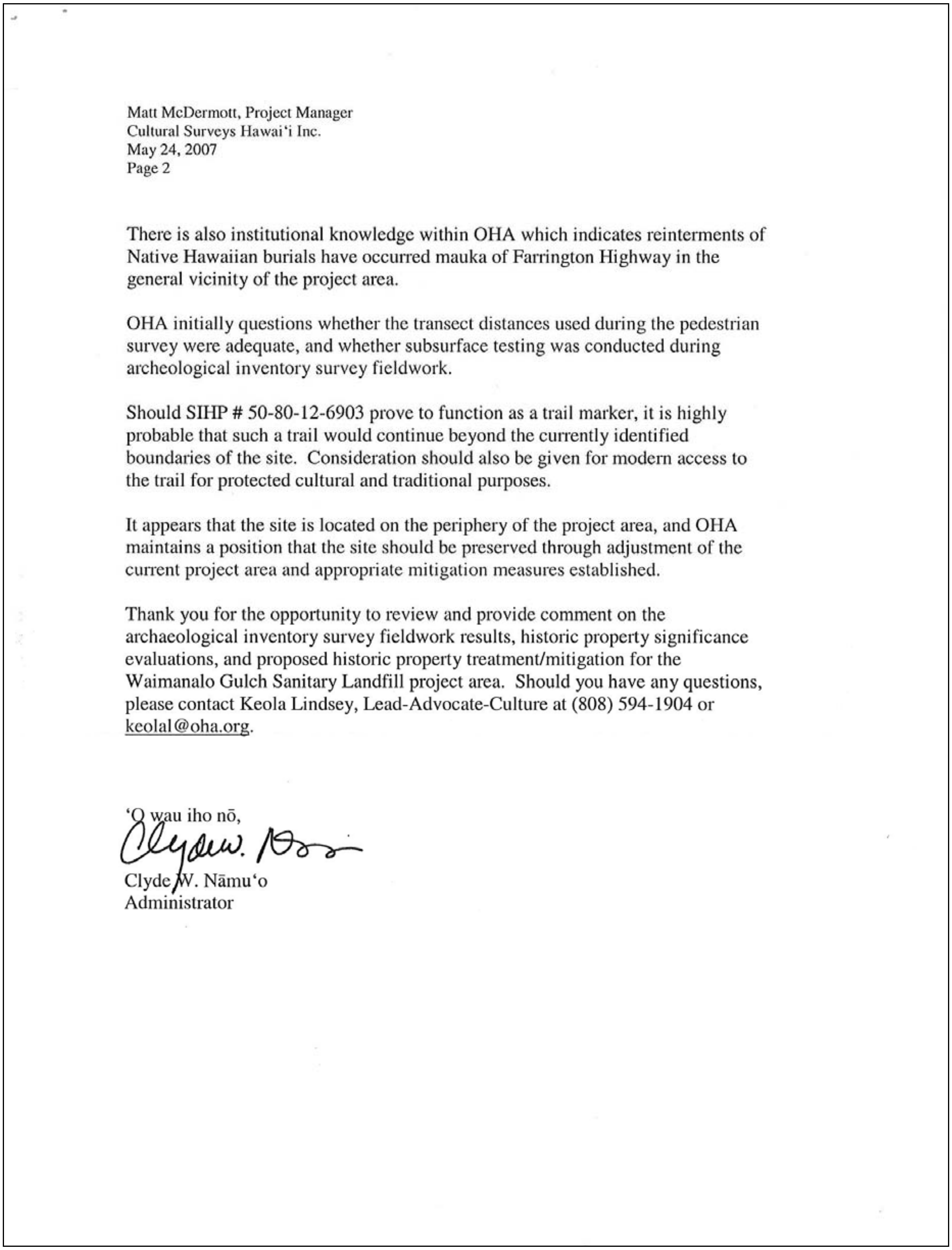
Dear Mr. McDermott

Re: Request for cultural consultation and/or comment regarding the archaeological inventory survey fieldwork results, historic property significance evaluations, and proposed historic property treatment/mitigation for the Waimanalo Gulch Sanitary Landfill expansion project
Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu
TMK: (1) 9-2-003:073 por.

The Office of Hawaiian Affairs (OHA) is in receipt of your May 1, 2007 letter which provides a summary of archaeological inventory survey fieldwork results and the significance assessments and potential mitigation recommendations for one historic property (SIHP # 50-80-12-6903) identified within the subject project area.

SIHP # 50-80-12-6903 consists of three component features spaced 50-60 meters apart, is currently interpreted as traditional Native Hawaiian, and is believed to have functioned as a trail or boundary marker. This cultural resource is currently recommended eligible to the Hawaiʻi Register of Historic Places under criterion D for its potential to yield information important in prehistory and history, and under criterion E for its cultural significance to an ethnic group.

OHA commends you for initiating a consultation effort, and conducting site visits with State Historic Preservation Division staff and knowledgeable individuals, including Mr. William Aila and Shad Kane. OHA recommends that you also initiate consultation with Mr. Alika Silva and Mr. Glen Kila of the community group Koa Mana, and Ms. Nettie Tiffany of Lani Ku Honua.



Matt McDermott, Project Manager
Cultural Surveys Hawai'i Inc.
May 24, 2007
Page 2

There is also institutional knowledge within OHA which indicates reinterments of Native Hawaiian burials have occurred mauka of Farrington Highway in the general vicinity of the project area.

OHA initially questions whether the transect distances used during the pedestrian survey were adequate, and whether subsurface testing was conducted during archeological inventory survey fieldwork.

Should SIHP # 50-80-12-6903 prove to function as a trail marker, it is highly probable that such a trail would continue beyond the currently identified boundaries of the site. Consideration should also be given for modern access to the trail for protected cultural and traditional purposes.

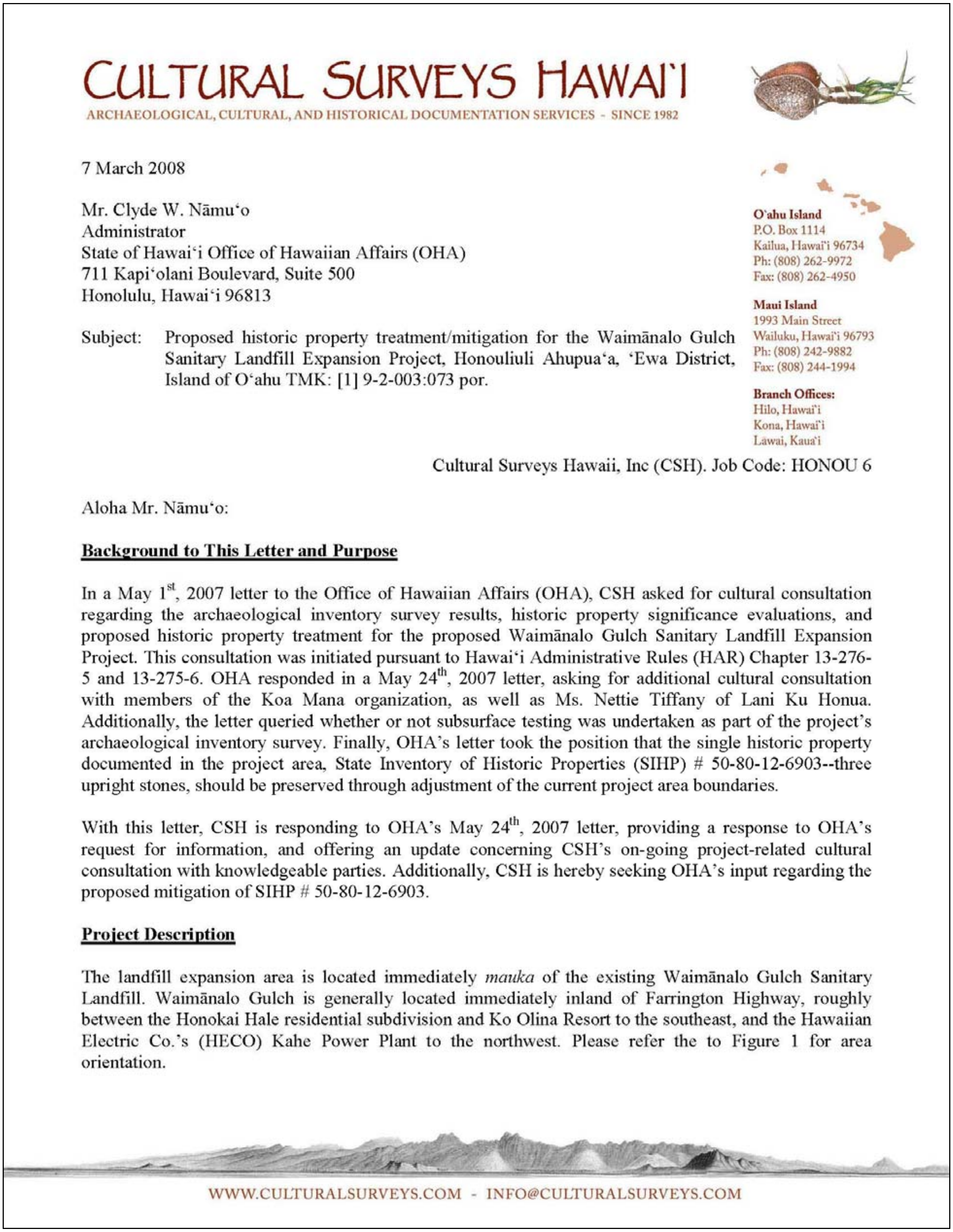
It appears that the site is located on the periphery of the project area, and OHA maintains a position that the site should be preserved through adjustment of the current project area and appropriate mitigation measures established.

Thank you for the opportunity to review and provide comment on the archaeological inventory survey fieldwork results, historic property significance evaluations, and proposed historic property treatment/mitigation for the Waimanalo Gulch Sanitary Landfill project area. Should you have any questions, please contact Keola Lindsey, Lead-Advocate-Culture at (808) 594-1904 or keolal@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

Appendix D CSH Response to OHA



CULTURAL SURVEYS HAWAIʻI
ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES - SINCE 1982

7 March 2008

Mr. Clyde W. Nāmuʻo
Administrator
State of Hawaiʻi Office of Hawaiian Affairs (OHA)
711 Kapiʻolani Boulevard, Suite 500
Honolulu, Hawaiʻi 96813

Subject: Proposed historic property treatment/mitigation for the Waimānalo Gulch Sanitary Landfill Expansion Project, Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu TMK: [1] 9-2-003:073 por.

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Kona, Hawaiʻi
Lāwai, Kauaʻi

Cultural Surveys Hawaii, Inc (CSH). Job Code: HONOU 6

Aloha Mr. Nāmuʻo:

Background to This Letter and Purpose

In a May 1st, 2007 letter to the Office of Hawaiian Affairs (OHA), CSH asked for cultural consultation regarding the archaeological inventory survey results, historic property significance evaluations, and proposed historic property treatment for the proposed Waimānalo Gulch Sanitary Landfill Expansion Project. This consultation was initiated pursuant to Hawaiʻi Administrative Rules (HAR) Chapter 13-276-5 and 13-275-6. OHA responded in a May 24th, 2007 letter, asking for additional cultural consultation with members of the Koa Mana organization, as well as Ms. Nettie Tiffany of Lani Ku Honua. Additionally, the letter queried whether or not subsurface testing was undertaken as part of the project's archaeological inventory survey. Finally, OHA's letter took the position that the single historic property documented in the project area, State Inventory of Historic Properties (SIHP) # 50-80-12-6903--three upright stones, should be preserved through adjustment of the current project area boundaries.

With this letter, CSH is responding to OHA's May 24th, 2007 letter, providing a response to OHA's request for information, and offering an update concerning CSH's on-going project-related cultural consultation with knowledgeable parties. Additionally, CSH is hereby seeking OHA's input regarding the proposed mitigation of SIHP # 50-80-12-6903.

Project Description

The landfill expansion area is located immediately *mauka* of the existing Waimānalo Gulch Sanitary Landfill. Waimānalo Gulch is generally located immediately inland of Farrington Highway, roughly between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Hawaiian Electric Co.'s (HECO) Kahe Power Plant to the northwest. Please refer the to Figure 1 for area orientation.

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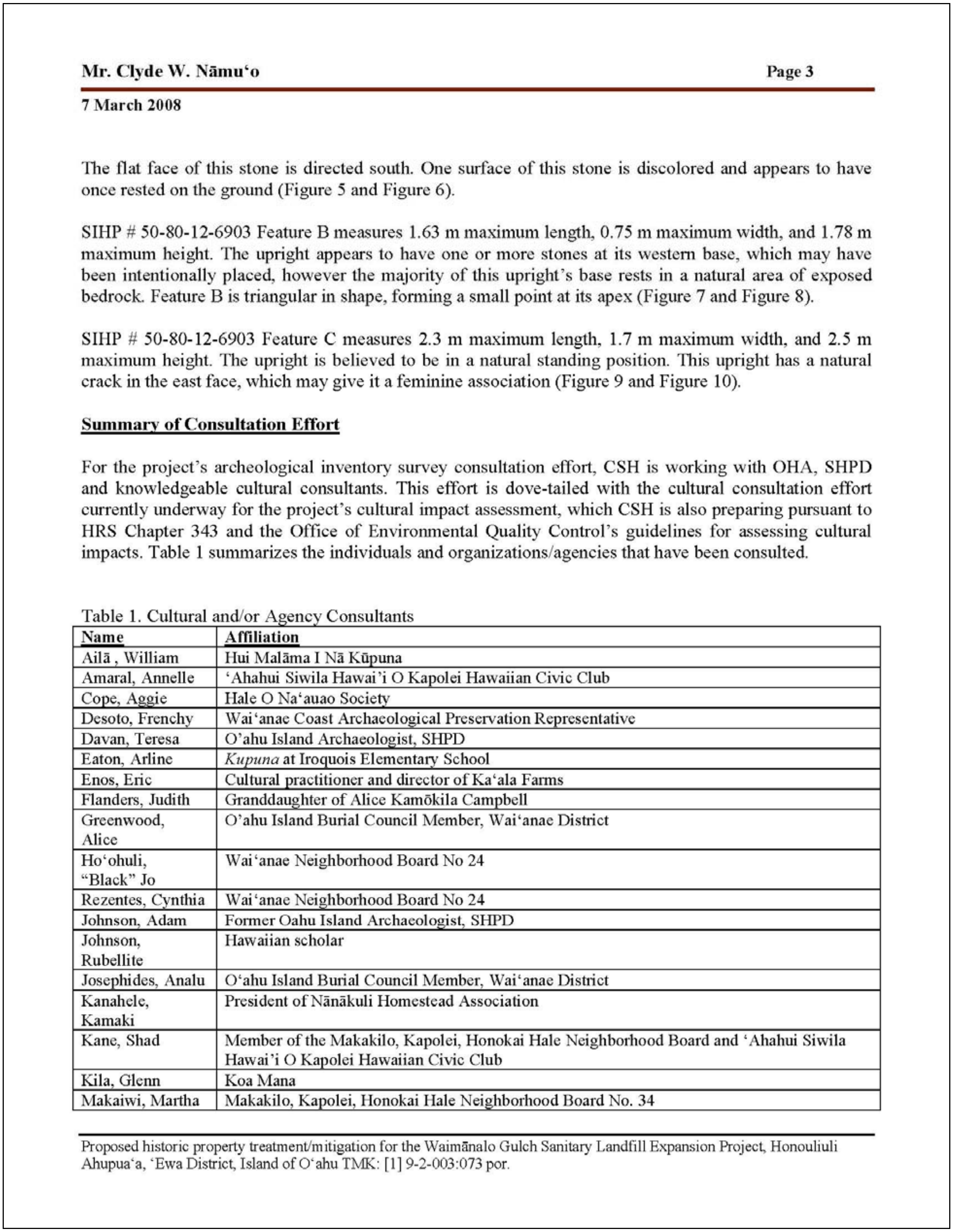
The proposed landfill expansion area is comprised of approximately 92.5-acres of undeveloped land within the Waimānalo Gulch Landfill property. The proposed landfill expansion area is to be used for the disposal of municipal refuse, H-POWER associated ash and residue, and operational activities associated with running the landfill. The landfill expansion is meant to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill. Minimally, land disturbing activities associated with the landfill expansion project would include: major grading, including blasting of exposed rock surfaces, and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; excavation for the installation of a storm water runoff control channel along the west side of the gulch; and filling of the expansion area with refuse material. The project's area of potential effect (APE) is defined as the entire proposed expansion area.

Archaeological Inventory Results and Description of SIHP # 50-80-12-6903

Background research confirmed that the 92.5-acre landfill expansion project area had been surveyed by CSH as part of an earlier archaeological inventory survey of Waimānalo Gulch (Hammatt and Shideler 1999). In early 2007, at the request of the project proponents, CSH completed additional archeological inventory survey investigation, including systematic pedestrian inspection and limited subsurface testing, of a 36-acre portion of the overall 92.5-acre APE that represents the core of the expansion area (refer to Figure 1 where the 36-acre survey area is shown in red and labeled the Expansion Area). For the investigation's pedestrian inspection there was a 10 to 15 meter interval between archaeologists (the general standard in Hawaii for archaeological inventory surveys). CSH's subsurface testing program for this project's archaeological inventory survey included the excavation of controlled test units in several natural rock shelters/overhangs that were noted in the project area. Although there were no surface indications of archaeological deposits in these natural features, this testing was carried out to determine if buried cultural deposits were present. No cultural deposits were found as a result of this subsurface testing.

The single historic property (SIHP # 50-80-12-6903) that was documented during the archaeological inventory survey was found near the southwest edge of the Waimānalo Gulch Sanitary Landfill expansion area (Figure 1). This resource is comprised of three rock uprights designated Features A-C, which, based on available information are naturally upright standing. These stone uprights rest on a steep southeast facing slope, are spaced 50-60 meters apart, and are situated on exposed outcrops (Figure 2). Feature A and Feature B are along the same outcrop, while Feature C is located on a higher outcrop upslope. This resource is interpreted as traditional Native Hawaiian, and may have functioned as trail or boundary markers. No additional feature components were observed near this location. In consultation with the State Historic Preservation Division (SHPD), this historic property is recommended eligible to the Hawai‘i Register of Historic Places (Hawai‘i Register) under criterion D, for its potential to yield information important in prehistory or history, and under criterion E, for its cultural significance to Native Hawaiians. This historic property is briefly described below and shown on the attached USGS topographic map and photograph (Figure 1 and Figure 2). Figures 3 and 4, a map and photograph respectively, show SIHP # 50-80-12-6903 as viewed from coastal Honouliuli.

SIHP # 50-80-12-6903 Feature A measures 1.20 m maximum length, 1.12 m maximum width, and 2.10 m maximum height. There appear to be no intentionally placed rocks surrounding the base of this upright.



The flat face of this stone is directed south. One surface of this stone is discolored and appears to have once rested on the ground (Figure 5 and Figure 6).

SIHP # 50-80-12-6903 Feature B measures 1.63 m maximum length, 0.75 m maximum width, and 1.78 m maximum height. The upright appears to have one or more stones at its western base, which may have been intentionally placed, however the majority of this upright's base rests in a natural area of exposed bedrock. Feature B is triangular in shape, forming a small point at its apex (Figure 7 and Figure 8).

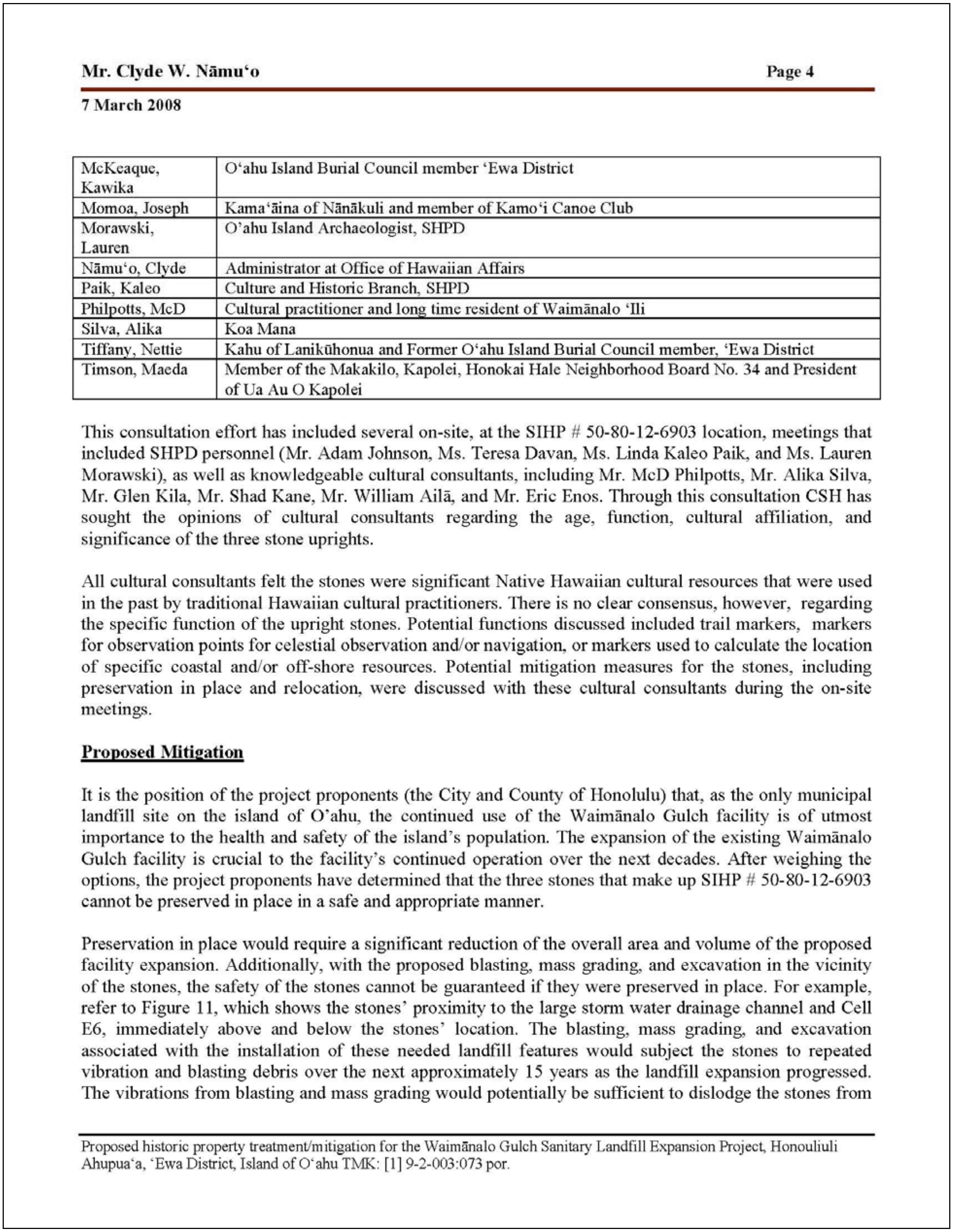
SIHP # 50-80-12-6903 Feature C measures 2.3 m maximum length, 1.7 m maximum width, and 2.5 m maximum height. The upright is believed to be in a natural standing position. This upright has a natural crack in the east face, which may give it a feminine association (Figure 9 and Figure 10).

Summary of Consultation Effort

For the project's archeological inventory survey consultation effort, CSH is working with OHA, SHPD and knowledgeable cultural consultants. This effort is dove-tailed with the cultural consultation effort currently underway for the project's cultural impact assessment, which CSH is also preparing pursuant to HRS Chapter 343 and the Office of Environmental Quality Control's guidelines for assessing cultural impacts. Table 1 summarizes the individuals and organizations/agencies that have been consulted.

Table 1. Cultural and/or Agency Consultants

Name	Affiliation
Ailā , William	Hui Malāma I Nā Kūpuna
Amaral, Annelle	'Ahahui Siwila Hawai'i O Kapolei Hawaiian Civic Club
Cope, Aggie	Hale O Na'auao Society
Desoto, Frenchy	Wai'anae Coast Archaeological Preservation Representative
Davan, Teresa	O'ahu Island Archaeologist, SHPD
Eaton, Arline	*Kupuna* at Iroquois Elementary School
Enos, Eric	Cultural practitioner and director of Ka'ala Farms
Flanders, Judith	Granddaughter of Alice Kamōkila Campbell
Greenwood, Alice	O'ahu Island Burial Council Member, Wai'anae District
Ho'ohuli, "Black" Jo	Wai'anae Neighborhood Board No 24
Rezentes, Cynthia	Wai'anae Neighborhood Board No 24
Johnson, Adam	Former Oahu Island Archaeologist, SHPD
Johnson, Rubellite	Hawaiian scholar
Josephides, Analu	O'ahu Island Burial Council Member, Wai'anae District
Kanahele, Kamaki	President of Nānākuli Homestead Association
Kane, Shad	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board and 'Ahahui Siwila Hawai'i O Kapolei Hawaiian Civic Club
Kila, Glenn	Koa Mana
Makaiwi, Martha	Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34



McKeaque, Kawika	Oʻahu Island Burial Council member ʻEwa District
Momoa, Joseph	Kamaʻāina of Nānākuli and member of Kamoʻi Canoe Club
Morawski, Lauren	O'ahu Island Archaeologist, SHPD
Nāmuʻo, Clyde	Administrator at Office of Hawaiian Affairs
Paik, Kaleo	Culture and Historic Branch, SHPD
Philpotts, McD	Cultural practitioner and long time resident of Waimānalo ʻIli
Silva, Alika	Koa Mana
Tiffany, Nettie	Kahu of Lanikūhonua and Former Oʻahu Island Burial Council member, ʻEwa District
Timson, Maeda	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34 and President of Ua Au O Kapolei

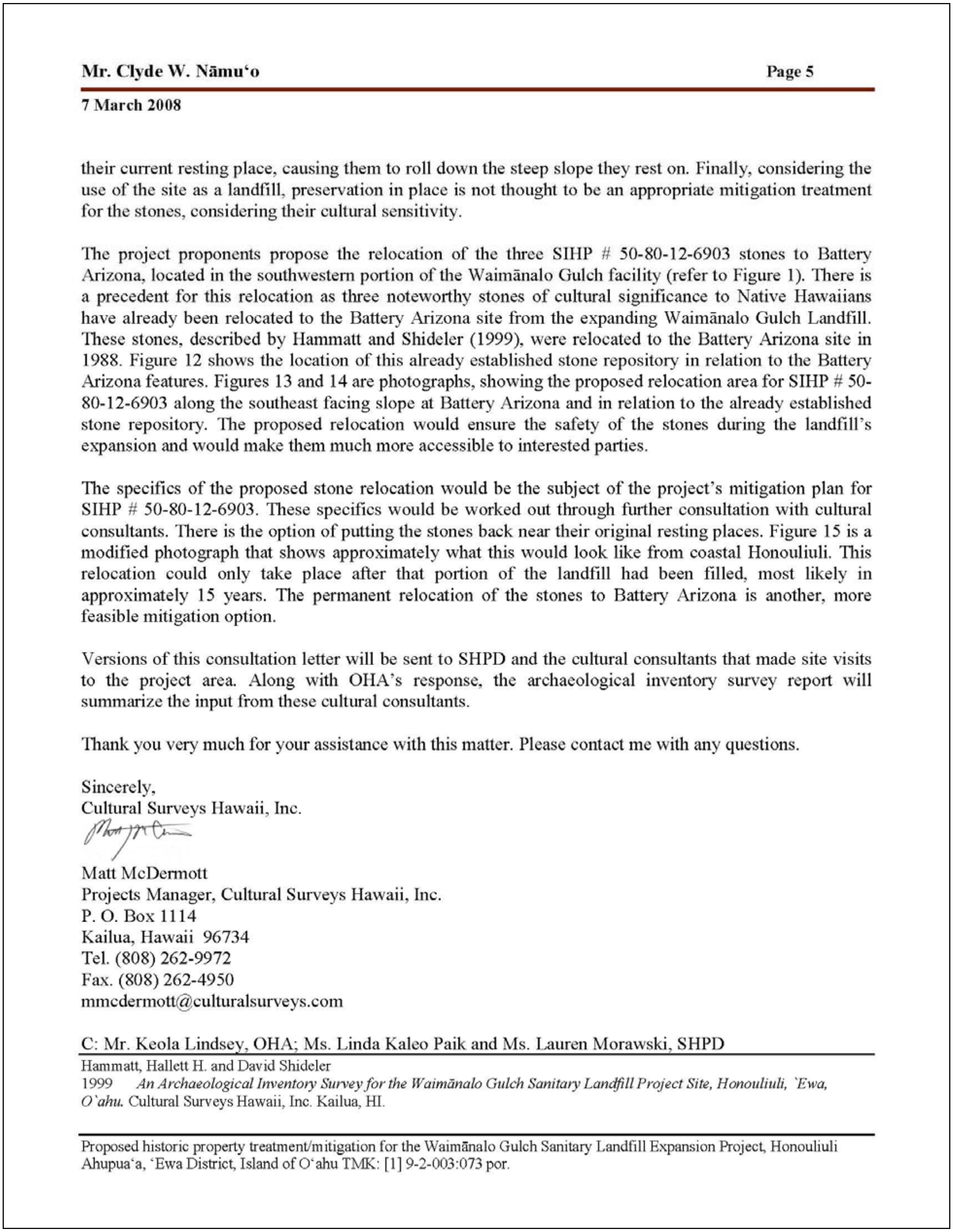
This consultation effort has included several on-site, at the SIHP # 50-80-12-6903 location, meetings that included SHPD personnel (Mr. Adam Johnson, Ms. Teresa Davan, Ms. Linda Kaleo Paik, and Ms. Lauren Morawski), as well as knowledgeable cultural consultants, including Mr. McD Philpotts, Mr. Alika Silva, Mr. Glen Kila, Mr. Shad Kane, Mr. William Ailā, and Mr. Eric Enos. Through this consultation CSH has sought the opinions of cultural consultants regarding the age, function, cultural affiliation, and significance of the three stone uprights.

All cultural consultants felt the stones were significant Native Hawaiian cultural resources that were used in the past by traditional Hawaiian cultural practitioners. There is no clear consensus, however, regarding the specific function of the upright stones. Potential functions discussed included trail markers, markers for observation points for celestial observation and/or navigation, or markers used to calculate the location of specific coastal and/or off-shore resources. Potential mitigation measures for the stones, including preservation in place and relocation, were discussed with these cultural consultants during the on-site meetings.

Proposed Mitigation

It is the position of the project proponents (the City and County of Honolulu) that, as the only municipal landfill site on the island of O'ahu, the continued use of the Waimānalo Gulch facility is of utmost importance to the health and safety of the island's population. The expansion of the existing Waimānalo Gulch facility is crucial to the facility's continued operation over the next decades. After weighing the options, the project proponents have determined that the three stones that make up SIHP # 50-80-12-6903 cannot be preserved in place in a safe and appropriate manner.

Preservation in place would require a significant reduction of the overall area and volume of the proposed facility expansion. Additionally, with the proposed blasting, mass grading, and excavation in the vicinity of the stones, the safety of the stones cannot be guaranteed if they were preserved in place. For example, refer to Figure 11, which shows the stones' proximity to the large storm water drainage channel and Cell E6, immediately above and below the stones' location. The blasting, mass grading, and excavation associated with the installation of these needed landfill features would subject the stones to repeated vibration and blasting debris over the next approximately 15 years as the landfill expansion progressed. The vibrations from blasting and mass grading would potentially be sufficient to dislodge the stones from



their current resting place, causing them to roll down the steep slope they rest on. Finally, considering the use of the site as a landfill, preservation in place is not thought to be an appropriate mitigation treatment for the stones, considering their cultural sensitivity.

The project proponents propose the relocation of the three SIHP # 50-80-12-6903 stones to Battery Arizona, located in the southwestern portion of the Waimānalo Gulch facility (refer to Figure 1). There is a precedent for this relocation as three noteworthy stones of cultural significance to Native Hawaiians have already been relocated to the Battery Arizona site from the expanding Waimānalo Gulch Landfill. These stones, described by Hammatt and Shideler (1999), were relocated to the Battery Arizona site in 1988. Figure 12 shows the location of this already established stone repository in relation to the Battery Arizona features. Figures 13 and 14 are photographs, showing the proposed relocation area for SIHP # 50-80-12-6903 along the southeast facing slope at Battery Arizona and in relation to the already established stone repository. The proposed relocation would ensure the safety of the stones during the landfill's expansion and would make them much more accessible to interested parties.

The specifics of the proposed stone relocation would be the subject of the project's mitigation plan for SIHP # 50-80-12-6903. These specifics would be worked out through further consultation with cultural consultants. There is the option of putting the stones back near their original resting places. Figure 15 is a modified photograph that shows approximately what this would look like from coastal Honouliuli. This relocation could only take place after that portion of the landfill had been filled, most likely in approximately 15 years. The permanent relocation of the stones to Battery Arizona is another, more feasible mitigation option.

Versions of this consultation letter will be sent to SHPD and the cultural consultants that made site visits to the project area. Along with OHA's response, the archaeological inventory survey report will summarize the input from these cultural consultants.

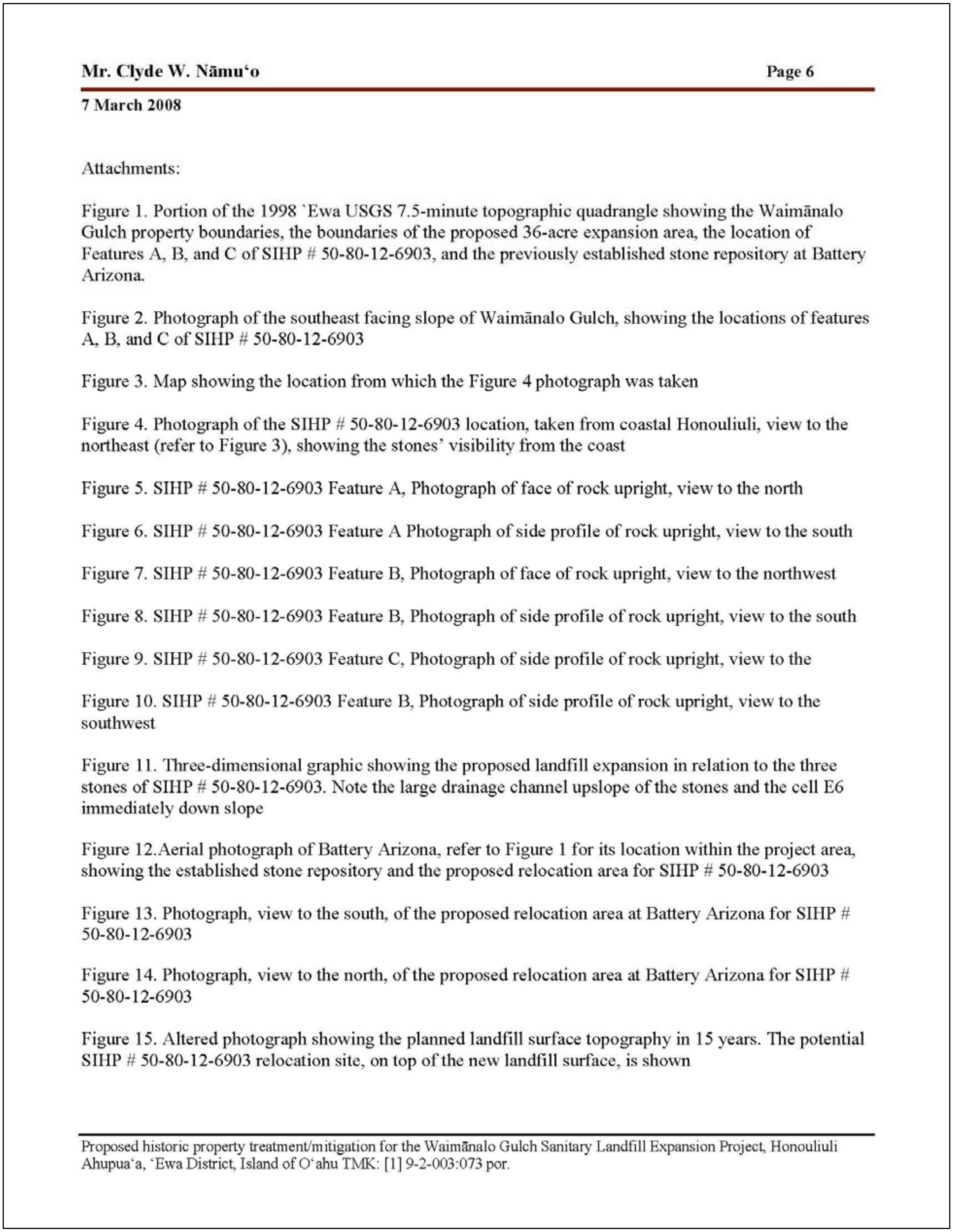
Thank you very much for your assistance with this matter. Please contact me with any questions.

Sincerely,
Cultural Surveys Hawaii, Inc.

Matt McDermott
Projects Manager, Cultural Surveys Hawaii, Inc.
P. O. Box 1114
Kailua, Hawaii 96734
Tel. (808) 262-9972
Fax. (808) 262-4950
mmcdermott@culturalsurveys.com

C: Mr. Keola Lindsey, OHA; Ms. Linda Kaleo Paik and Ms. Lauren Morawski, SHPD

Hammatt, Hallett H. and David Shideler
1999 *An Archaeological Inventory Survey for the Waimānalo Gulch Sanitary Landfill Project Site, Honouliuli, `Ewa, O`ahu.* Cultural Surveys Hawaii, Inc. Kailua, HI.



Attachments:

Figure 1. Portion of the 1998 `Ewa USGS 7.5-minute topographic quadrangle showing the Waimānalo Gulch property boundaries, the boundaries of the proposed 36-acre expansion area, the location of Features A, B, and C of SIHP # 50-80-12-6903, and the previously established stone repository at Battery Arizona.

Figure 2. Photograph of the southeast facing slope of Waimānalo Gulch, showing the locations of features A, B, and C of SIHP # 50-80-12-6903

Figure 3. Map showing the location from which the Figure 4 photograph was taken

Figure 4. Photograph of the SIHP # 50-80-12-6903 location, taken from coastal Honouliuli, view to the northeast (refer to Figure 3), showing the stones' visibility from the coast

Figure 5. SIHP # 50-80-12-6903 Feature A, Photograph of face of rock upright, view to the north

Figure 6. SIHP # 50-80-12-6903 Feature A Photograph of side profile of rock upright, view to the south

Figure 7. SIHP # 50-80-12-6903 Feature B, Photograph of face of rock upright, view to the northwest

Figure 8. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the south

Figure 9. SIHP # 50-80-12-6903 Feature C, Photograph of side profile of rock upright, view to the

Figure 10. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the southwest

Figure 11. Three-dimensional graphic showing the proposed landfill expansion in relation to the three stones of SIHP # 50-80-12-6903. Note the large drainage channel upslope of the stones and the cell E6 immediately down slope

Figure 12.Aerial photograph of Battery Arizona, refer to Figure 1 for its location within the project area, showing the established stone repository and the proposed relocation area for SIHP # 50-80-12-6903

Figure 13. Photograph, view to the south, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

Figure 14. Photograph, view to the north, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

Figure 15. Altered photograph showing the planned landfill surface topography in 15 years. The potential SIHP # 50-80-12-6903 relocation site, on top of the new landfill surface, is shown

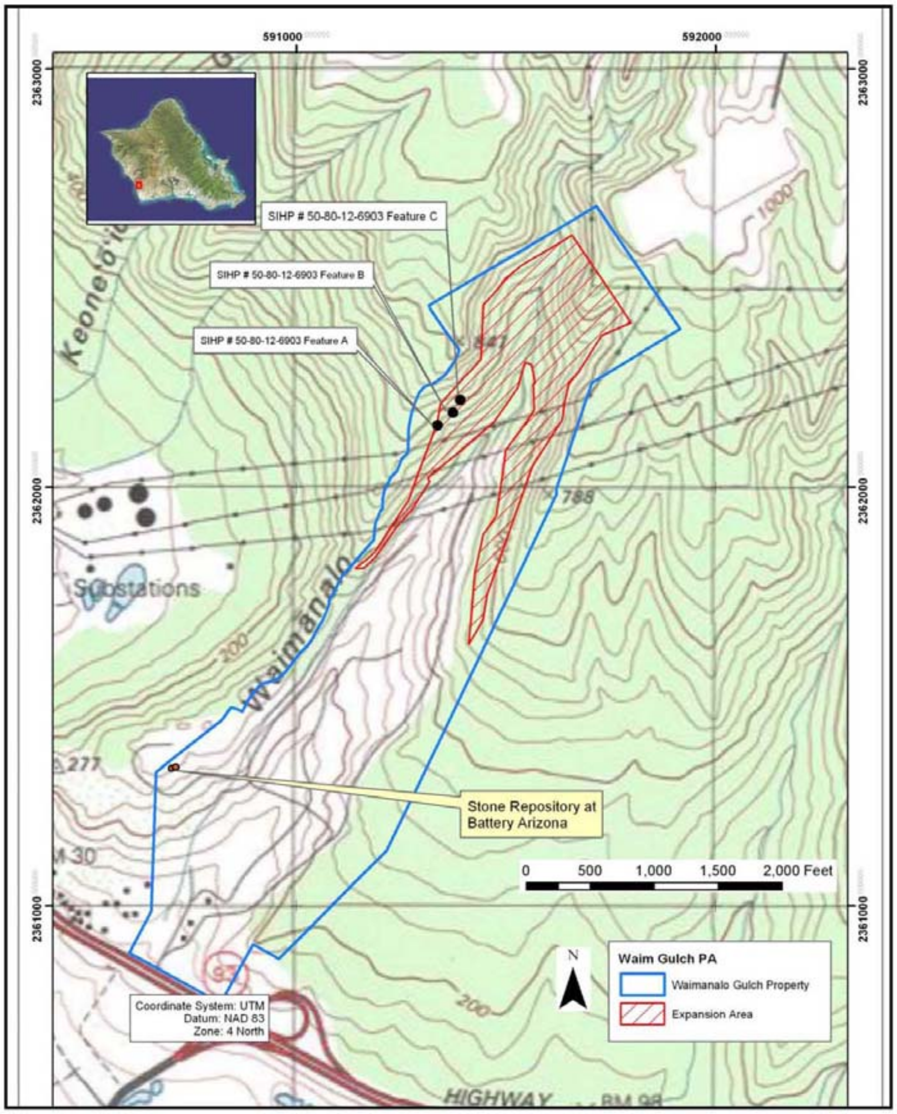


Figure 1. Portion of the 1998 `Ewa USGS 7.5-minute topographic quadrangle showing the Waimānalo Gulch property boundaries, the boundaries of the proposed 36-acre expansion area, the location of Features A, B, and C of SIHP # 50-80-12-6903, and the previously established stone repository at Battery Arizona.

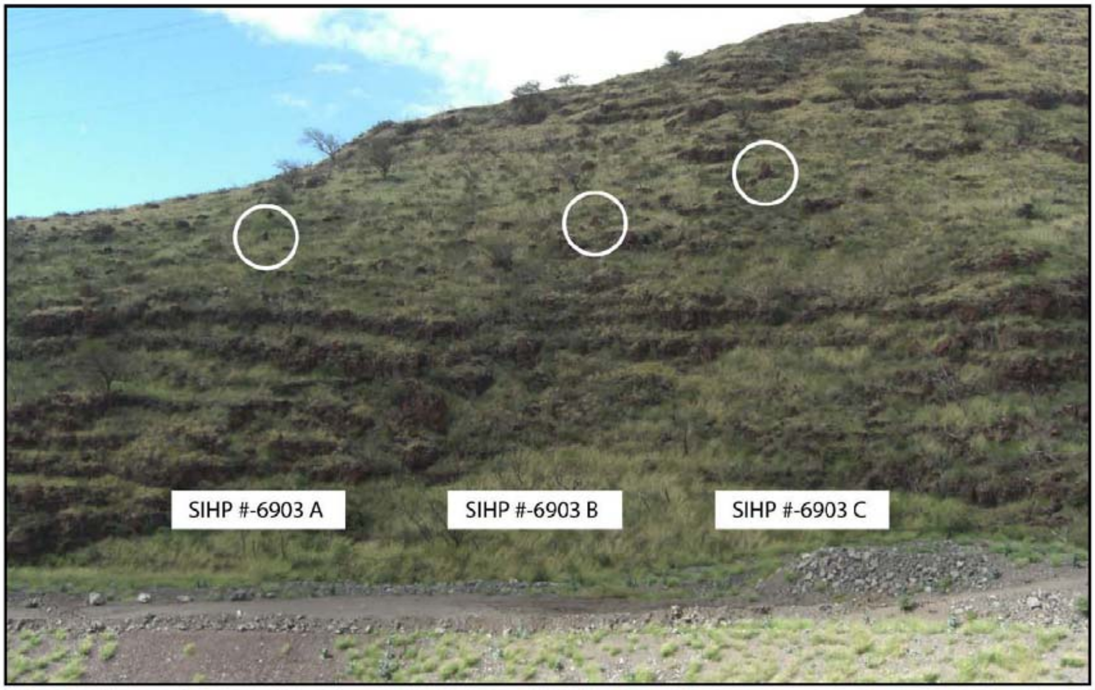


Figure 2. Photograph of the southeast facing slope of Waimānalo Gulch, showing the locations of features A, B, and C of SIHP # 50-80-12-6903

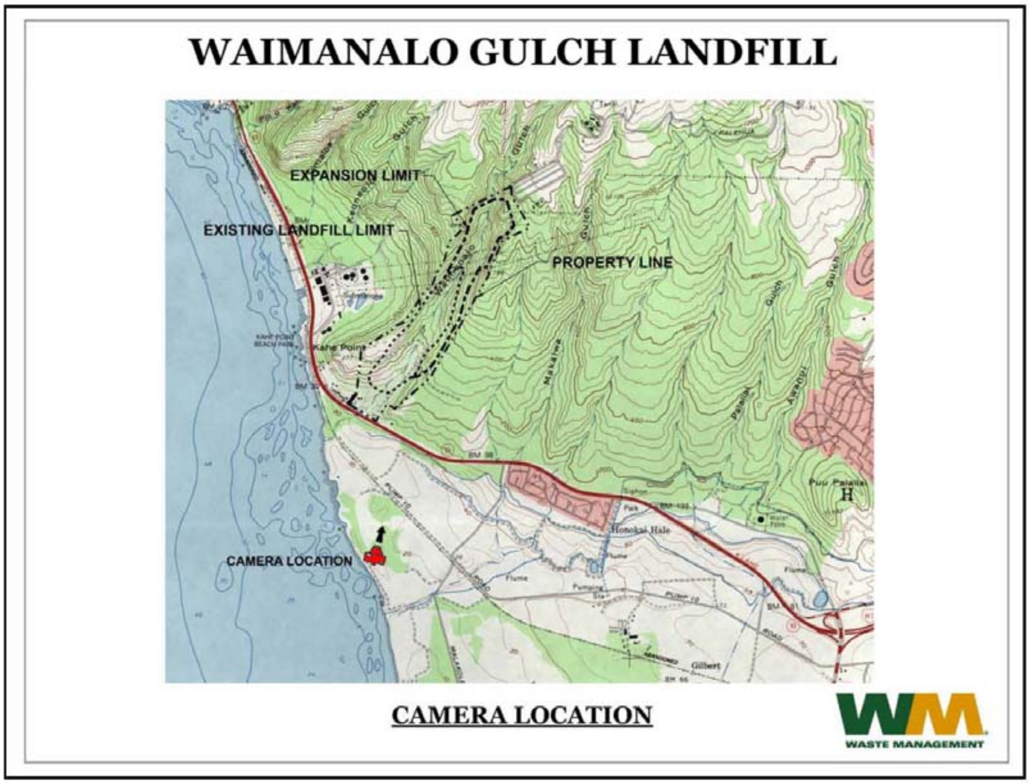


Figure 3. Map showing the location from which the Figure 4 photograph was taken

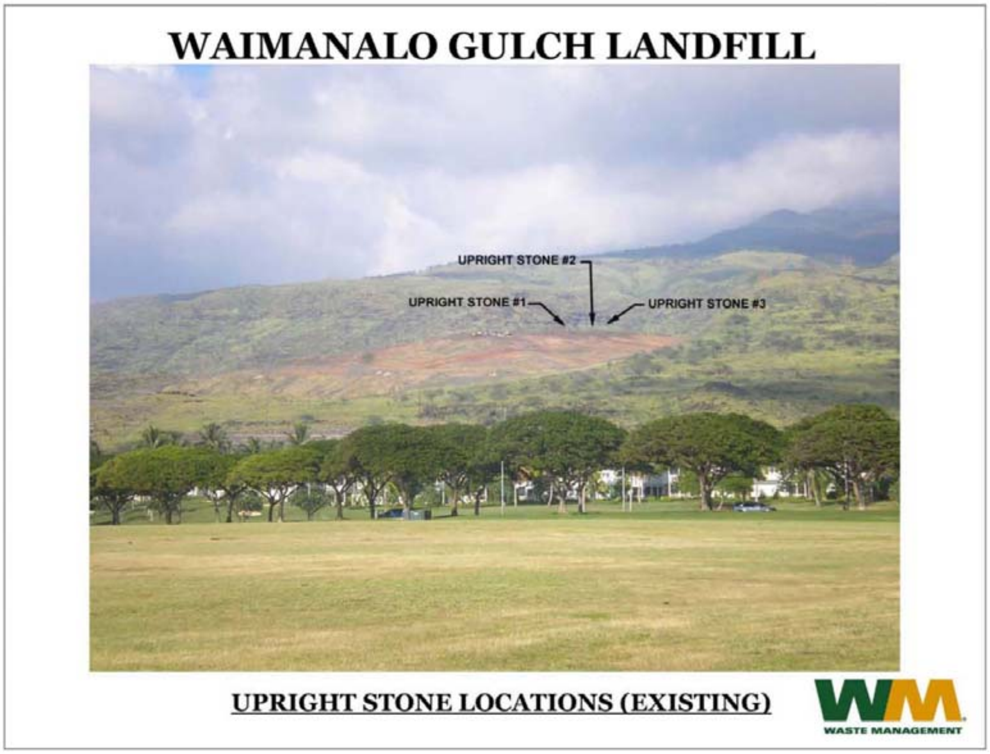


Figure 4. Photograph of the SIHP # 50-80-12-6903 location, taken from coastal Honouliuli, view to the northeast (refer to Figure 3), showing the stones’ visibility from the coast

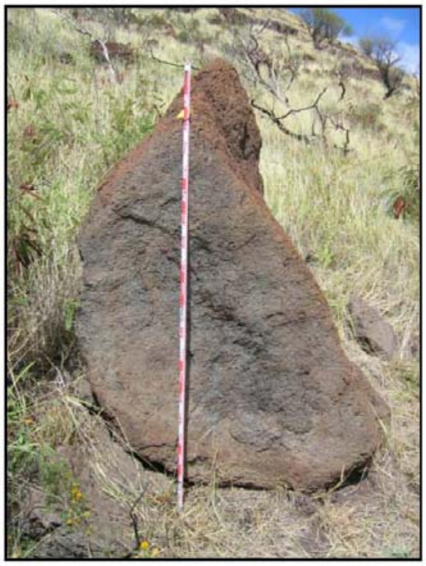


Figure 5. SIHP # 50-80-12-6903 Feature A, Photograph of face of rock upright, view to the north

Figure 6. SIHP # 50-80-12-6903 Feature A Photograph of side profile of rock upright, view to the south

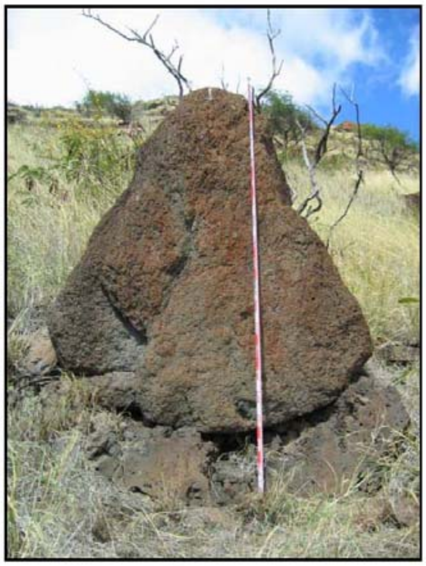


Figure 7. SIHP # 50-80-12-6903 Feature B, Photograph of face of rock upright, view to the northwest

Figure 8. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the south

Figure 9. SIHP # 50-80-12-6903 Feature C, Photograph of side profile of rock upright, view to the west

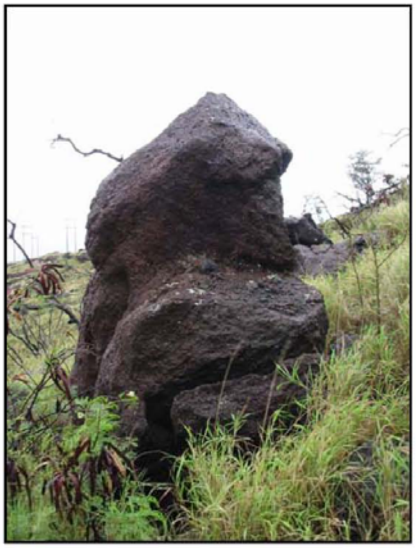


Figure 10. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the southwest

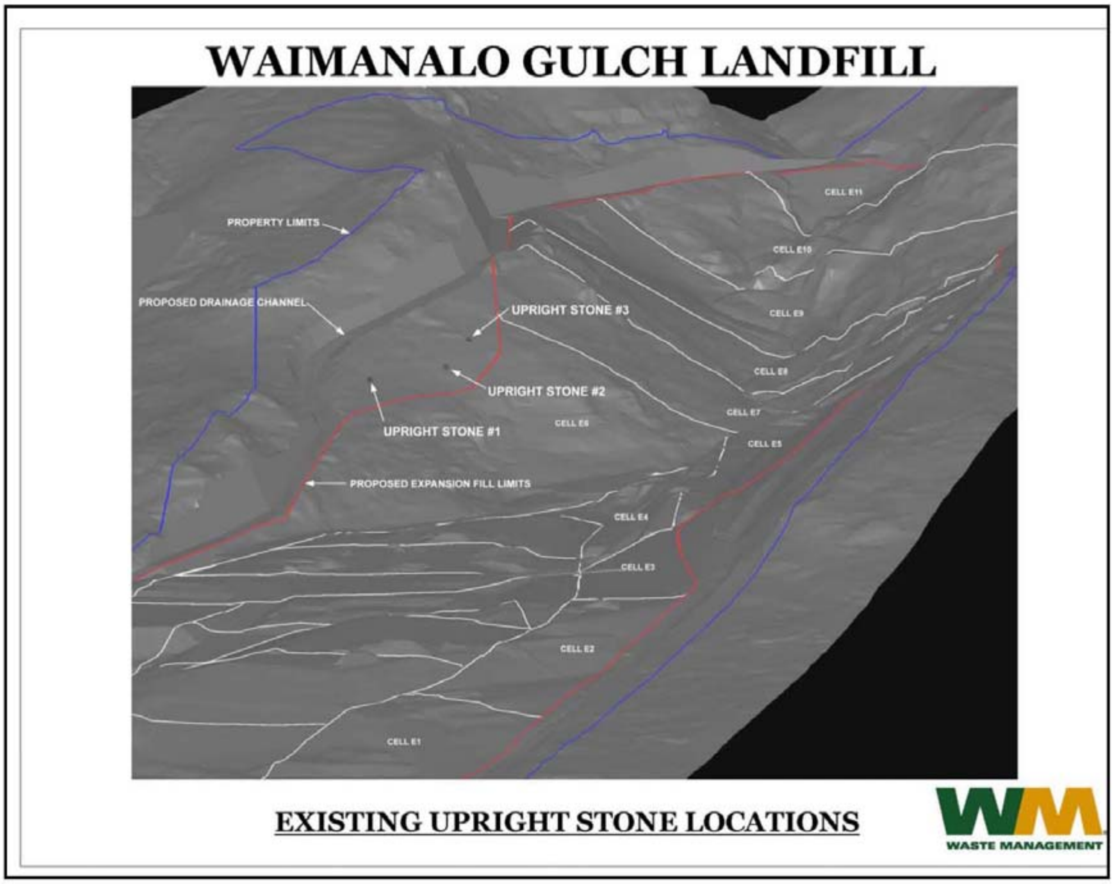


Figure 11. Three-dimensional graphic showing the proposed landfill expansion in relation to the three stones of SIHP # 50-80-12-6903. Note the large drainage channel upslope of the stones and the cell E6 immediately down slope

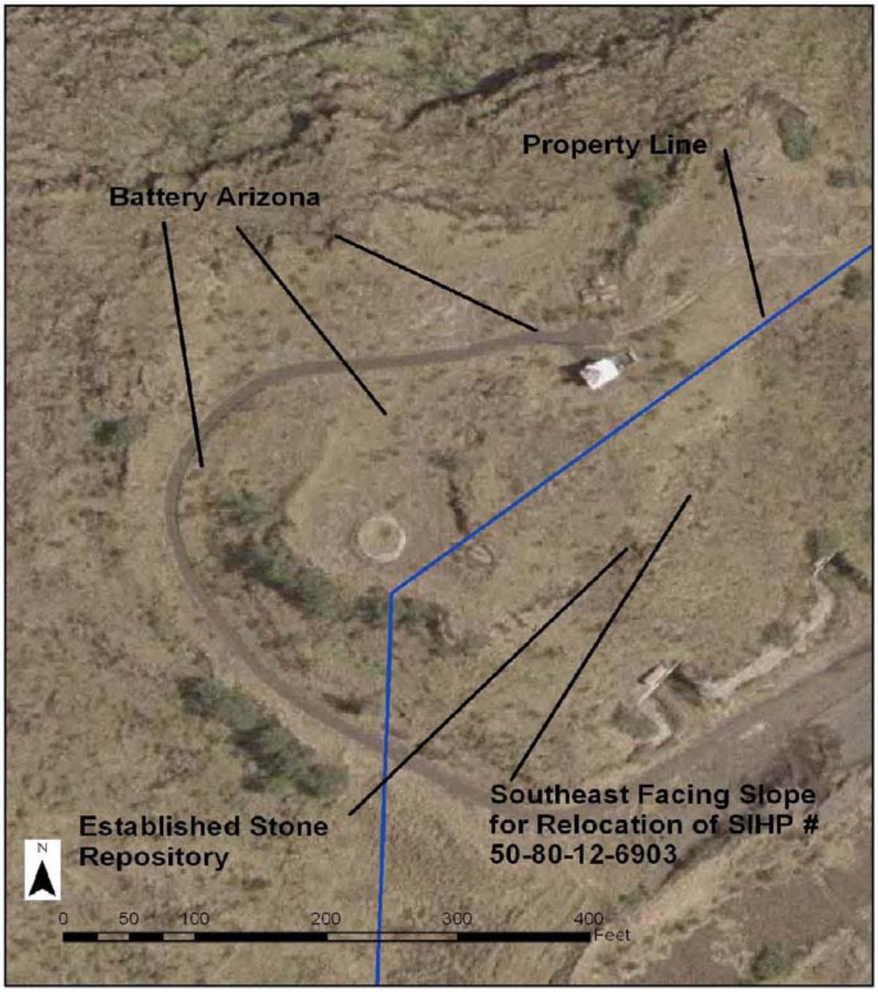


Figure 12. Aerial photograph of Battery Arizona, refer to Figure 1 for its location within the project area, showing the established stone repository and the proposed relocation area for SIHP # 50-80-12-6903

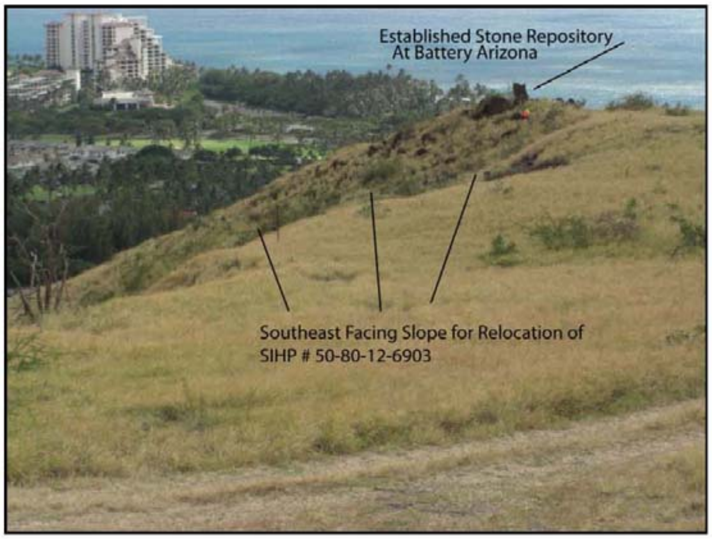


Figure 13. Photograph, view to the south, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

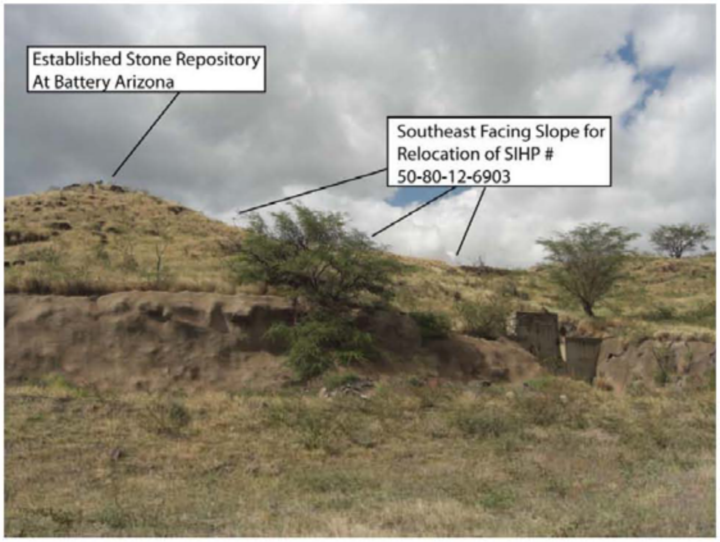


Figure 14. Photograph, view to the north, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

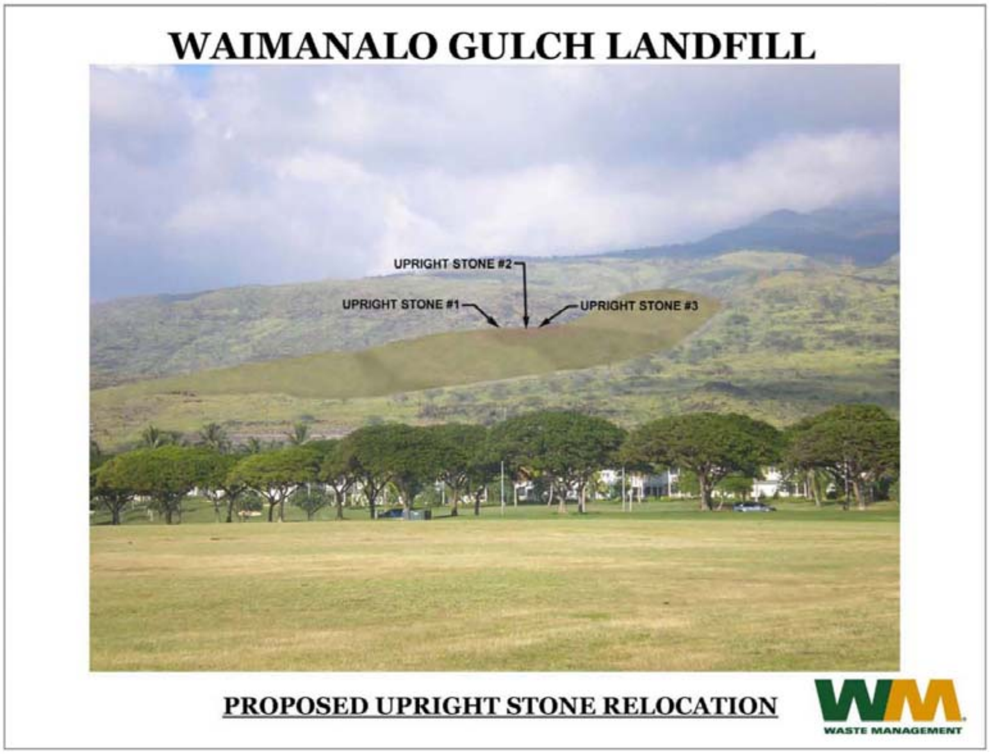


Figure 15. Altered photograph showing the planned landfill surface topography in 15 years. The potential SIHP # 50-80-12-6903 relocation site, on top of the new landfill surface, is shown

Appendix H

Cultural Impact Assessment
Waimānalo Gulch Landfill Expansion Project, 2008

A Cultural Impact Assessment for the Waimānalo Gulch Landfill Expansion Project Waimānalo ʻIli, Honoʻuliʻuli Ahupuaʻa, ʻEwa District TMK: [1] 9-2-003:073 por.

Prepared for
R. M. Towill Corporation

Prepared by
Kēhaulani E. Souza, B.A.
K. Lehuakeaopuna Uyeoka, B.A.
David Shideler, M.A.
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc.
Kailua, Hawaiʻi
(HONOU 7)

April 2008

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Management Summary

Reference	Cultural Impact Assessment for the Waimānalo Gulch Sanitary Landfill Expansion Project, Hono'uli'uli Ahupua'a, 'Ewa District, Island of O'ahu (TMK: [1] 9-2-003:073 por.) (Souza, Uyeoka, Shideler and Hammatt 2008)
Date	April 2008
Project Number(s)	HONOU 7 (and companion Archaeological Inventory Survey HONOU 6)
Project Location	The proposed project area is located *mauka* (inland) and northeast of the existing Waimānalo Gulch Sanitary Landfill, just inland of Farrington Highway; between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Kahe Power Plant to the northwest. This area is depicted on the 1998 'Ewa USGS 7.5 minute topographic quadrangle.
Land Jurisdiction	City and County of Honolulu
Agencies	City and County Department of Environmental Services, State Historic Preservation Division (SHPD)
Project Description	The proposed landfill expansion is meant to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill. Planned construction includes: major grading and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; and filling of the expansion area with refuse material.
Project Acreage	Approximately 90 acres, of which approximately 36 acres will be used as the actual foot print of the landfill cells used for refuse.
Document Purpose	This project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices. At the request of R.M. Towill Corporation, CSH undertook this Cultural Impact Assessment (CIA). Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawai'i Administrative Rules (HAR) Chapter 13-275.
Consultation Effort	Twenty-one (21) Hawaiian organizations, agencies and community members contributed specific knowledge of and / or concerns about the project area and vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the O'ahu Island Burial Council (OIBC), Wai'anae Neighborhood Board, The Cultural Learning Center at Ka'ala, Wai'anae Elders and Nānāikapono Hawaiian Civic Club. Site visits were conducted with McD Philpotts, Shad Kane, William Ailā and Eric Enos. Seventeen (17) individuals contributed specific information via formal interviews, informal "talk story" discussion and / or email. One person (McD Philpotts) was formally interviewed for this project (see Appendix B). One person (Shad Kane) was previously interviewed during a prior (2002) CIA for an earlier version of the subject project (see Appendix A, used with permission from Shad Kane).

Cultural Impact Results	Background research for this CIA yielded the following results: (1) The nearest main settlement areas in pre-Contact and early historic times were located *makai* (seaward) of the project area along the coast at Koʻolina and Kalaeloa. The project area is a transitional zone between the *mauka* (upland) resources of the mountains and the *makai* resources of the coast and ocean; and it also marks the boundary between Waiʻanae and ʻEwa Moku (traditional districts). The main trail from Puʻuloa (Pearl Harbor area) to Waiʻanae runs just below the project area near the existing Farrington Highway. Other trails followed the ridges defining either side of Waimānalo Gulch. (2) The subject project area is associated with numerous named *puʻu* (hills and mountains) in the general vicinity, all of which are associated with specific *moʻolelo.* (3) There are a few specific *moʻolelo* (oral histories) about Waimānalo ʻIli dealing with the marking of the boundary between Waiʻanae and ʻEwa at Pili o Kahe. (4) There are dozens of specific *moʻolelo* about Honoʻuliʻuli Ahupuaʻa dealing with gods and demi-gods such as Kāne, Kanaloa, Pele, Pele's sister Hiʻiaka, Pele's sister Kapo (as in Kapo-lei), Māui, Kamapuaʻa (pig god), Maunauna (shark deity), Kaʻahupāhau, and Palila; with chiefly lineages and references to the ruling chiefs Hilo-a-Lakapu, Kūaliʻi, and Kākuhihewa; and with connections to other parts of Oʻahu (e.g., Waiʻanae). Community consultation yielded the following results: (1) Many participants talked about the project area as a pathway for *huakaʻi pō* (the night marchers) as they move between the mountains and the sea; preservation of the view plane of this pathway from *mauka* to *makai* is important to many people. (2) Several participants made site visits to a group of several large *pōhaku* (stones) located in the project area (designated State Inventory of Historic Properties [SIHP] No. 50-80-12-6903); although no specific cultural information or associated *moʻolelo* was shared by participants about this site at this time, there is general agreement that the *pōhaku* should be protected from harm. (3) At least one participant is concerned about several caves and rock overhangs located in the northwest portion of the project area (documented in detail by Dalton and Hammatt 2008), although archaeological investigations of these by CSH indicated they contain no cultural materials, burials, or human remains. (4) Participants provided new *moʻolelo* about Waimānalo Gulch for which no previous written documentation has been found, including stories and legends about the Spirits *(ʻUhane)*, the "Legend of the Slain Girl," the "Legend of Two Giants," and associations with the Pueo ʻAumakua (Owl Family Deity).

Cultural Impact Recommendations	Based on the results of this CIA, CSH recommends the following actions in order to address the concerns raised by community members: (1) Should removal of the *pōhaku* designated SIHP # 50-80-12-6903 be necessary, it should be conducted in a culturally sensitive manner with a cultural monitor given the opportunity to carry out appropriate protocols. Several participants agree the *pōhaku* should be removed from their original locations during construction, then later reunited with their former locations and preserved in place. A preservation plan should guide all aspects of the movement of these *pōhaku*, as well as their temporary storage and care, and return to their original locations. Community members should be involved in this process. (2) The traditional view of the Hawaiian landscape as a continuum should be taken into consideration during the planning process. (3) Several community members believe it is important to keep the pathway of the *pōhaku* (night marchers) clear of visual and / or structural blockage from *mauka* to *makai* on the east ridge of Waimānalo Gulch. CSH recommends this topic should be addressed in greater detail through further consultation with the community. (4) Six caves and rock overhangs in the northwestern portion of the project area documented by CSH during archaeological inventory survey (Dalton and Hammatt 2008) yielded no significant cultural material. However, at least one community participant (see Table 2) has voiced concerns about possible disturbances to burials in these caves. CSH recommends cultural monitoring of any proposed disturbance to these caves by qualified native Hawaiians familiar with the project area. (5) Although the land has been dramatically altered, there remains a possibility that burials and other archaeological sites may be present in and around the proposed project area. Efforts need to be made to insure adequate archaeology and cultural monitoring are conducted at this project site. In addition to this cultural impact assessment, CSH is conducting an Archaeological Inventory Survey for this project area that was ongoing at the time of this report's completion (Dalton and Hammatt 2008); its findings and recommendations should be faithfully carried out in accordance with applicable laws and administrative rules governing historic preservation work in the State of Hawai'i. (6) CSH recommends that consultation with community members continue throughout the planning process. Addressing these cultural concerns is part of the City and County of Honolulu's "good faith" effort to minimize the impact of the proposed project on Hawaiian culture, its practices and traditions. (7) The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 will be contacted again with the new information about the larger project area.

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Section 1 Introduction

1.1 Project Background

At the request of R.M. Towill Corporation, on behalf of the City and County of Honolulu Department of Environmental Services/Refuse Division, Cultural Surveys Hawaiʻi Inc. (CSH) conducted a Cultural Impact Assessment (CIA) of the Waimānalo Gulch Sanitary Landfill Expansion Project, Waimānalo ʻIli, Honoʻuliʻuli Ahupuaʻa, ʻEwa District, Oʻahu (TMK: 9-2-003: 073). The purpose of the CIA is to assess potential impacts to cultural practices and resources resulting from the future development of the proposed Landfill Expansion Project, which is intended to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill.

The proposed landfill expansion area is located immediately *mauka* (inland) and northeast of the existing Waimānalo Gulch Sanitary Landfill (Figures 1-4). Waimānalo Gulch is generally located immediately inland of Farrington highway, roughly between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Hawaiian Electric Co.'s (HECO) Kahe Power Plant to the northwest. This area is depicted on the 1998 ʻEwa USGS 7.5 minute topographic quadrangle.

The Waimānalo Gulch Sanitary Landfill was established in 1989; is owned by the City and County of Honolulu under the jurisdiction of the Department of Environmental Services/Refuse Division, and operated by Waste Management of Hawaiʻi. The landfill currently takes in roughly 500,000 tons of waste per year.

The project area is comprised of approximately 90 acres of currently undeveloped land within the Waimānalo Gulch Landfill property. The proposed landfill expansion area—that is, the total area to be used for the disposal of municipal refuse—comprises an approxiamtly 36-acre portion of the total 90-acre area. Portions of the remaining area outside of the 36-acre landfill site proper will be modified for drainage improvements, roads, and stockpile areas needed for continued use of the landfill. Minimally, land disturbing activities associated with the landfill expansion project would include: major grading and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; and filling of the expansion area with refuse material.

When the expansion project's CIA consultation was initiated, communication with the project proponents indicated that the proposed expansion area would be 36 acres—the same 36 acres that the project proponents were having surveyed as part of the project's archaeological inventory survey of the expansion area. For this reason, the initial project consultation letters describe the expansion area as approximately 36 acres. It was only later that CSH learned that the expansion area was actually approximately 90 acres. The 36 acres corresponds with the actual foot print of the landfill cells that will be created and used for refuse. Portions of the remaining approximately 90-acre expansion area will be used for the aforementioned appurtenances. Therefore, although the foot print of the proposed area to be disturbed is larger than the 36 acres indicated in the initla CIA consultation, the actual portion of the gulch to be used specifically as a landfill (36 acres) has not changed. The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement, as described and discussed in Section 5 (Results of the Community Contact Process).

1.1.1 Archaeological Inventory Survey

An archaeological inventory survey including a 100% coverage pedestrian inspection of the project area and limited subsurface testing at select locations is being conducted for the project area. The results of the archaeological study will be presented in a companion report titled, "Archaeological Inventory Survey for the Waimānalo Gulch Sanitary Landfill Expansion Project, Hono'uli'uli Ahupua'a, 'Ewa District, Island of O'ahu, TMK: [1] 9-2-003:073 por." (Dalton and Hammatt 2008).

1.2 Document Purpose

The purpose of this CIA is to consider the effects the proposed expansion of the Waimānalo Gulch Sanitary Landfill may have on traditional cultural practices and resources. The Hawai'i State Constitution, Article XII, Section 7 protects "all rights" of native Hawaiians that are "customarily and traditionally exercised for subsistence, cultural and religious purposes".

In 1997, the Office of Environmental Quality Control (OEQC) issued Guidelines for Assessing Cultural Impacts. The Guidelines discuss the types of cultural practices and beliefs that might be assessed.

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man-made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

Most recently, H. B. No. 2895 was passed by the 20th Legislature, and approved by then Governor Cayetano as Act 50 on April 26, 2000. The bill acknowledges that:

> . . the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

This bill issues a directive that " . . . environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights." The process for evaluating cultural impacts is constantly evolving. There continue to be gray areas and unresolved issues pertaining to traditional access and gathering rights. Act 50 is an attempt to balance the scales between traditional lifestyles and development and economic growth.

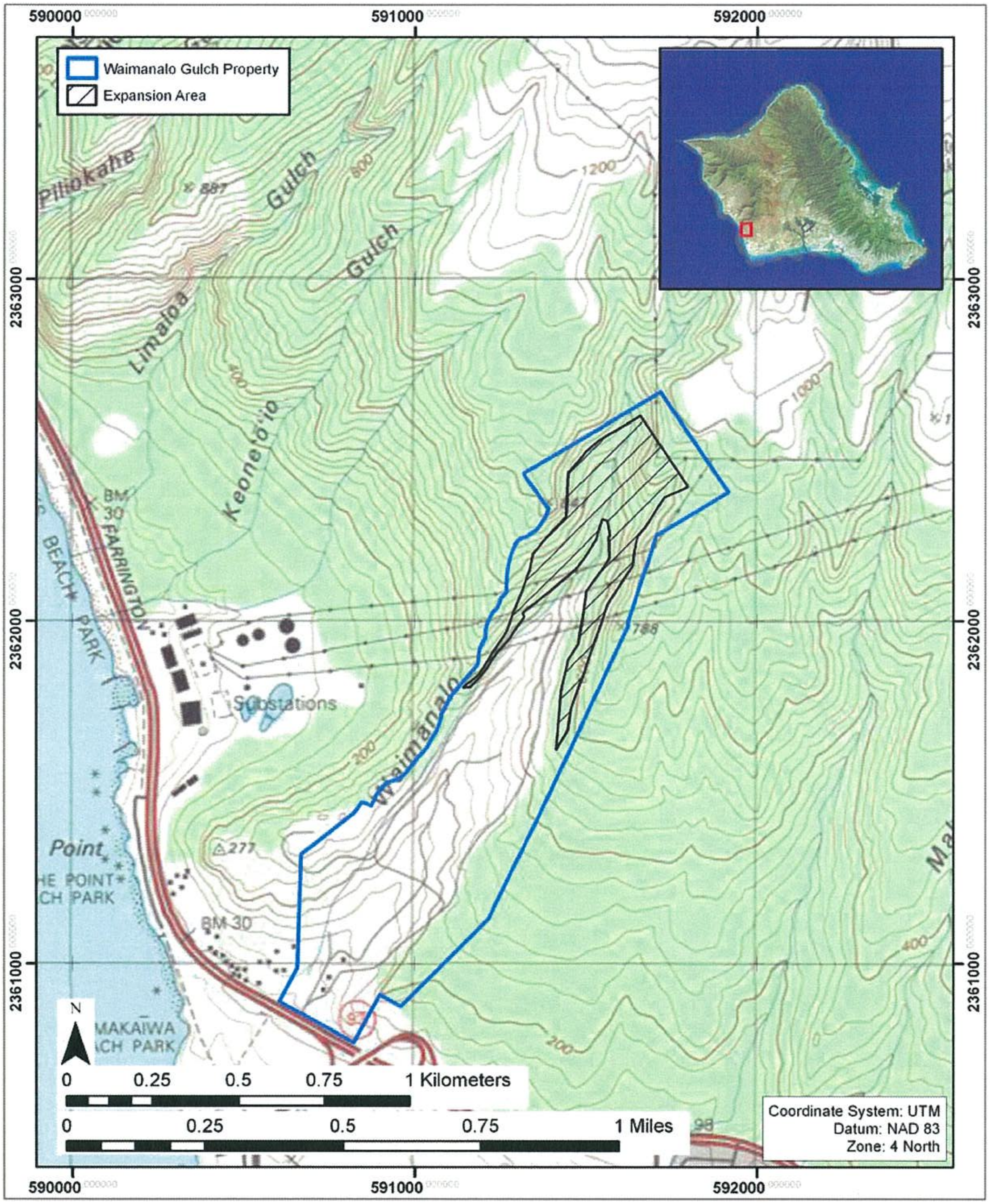

Figure 1. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area

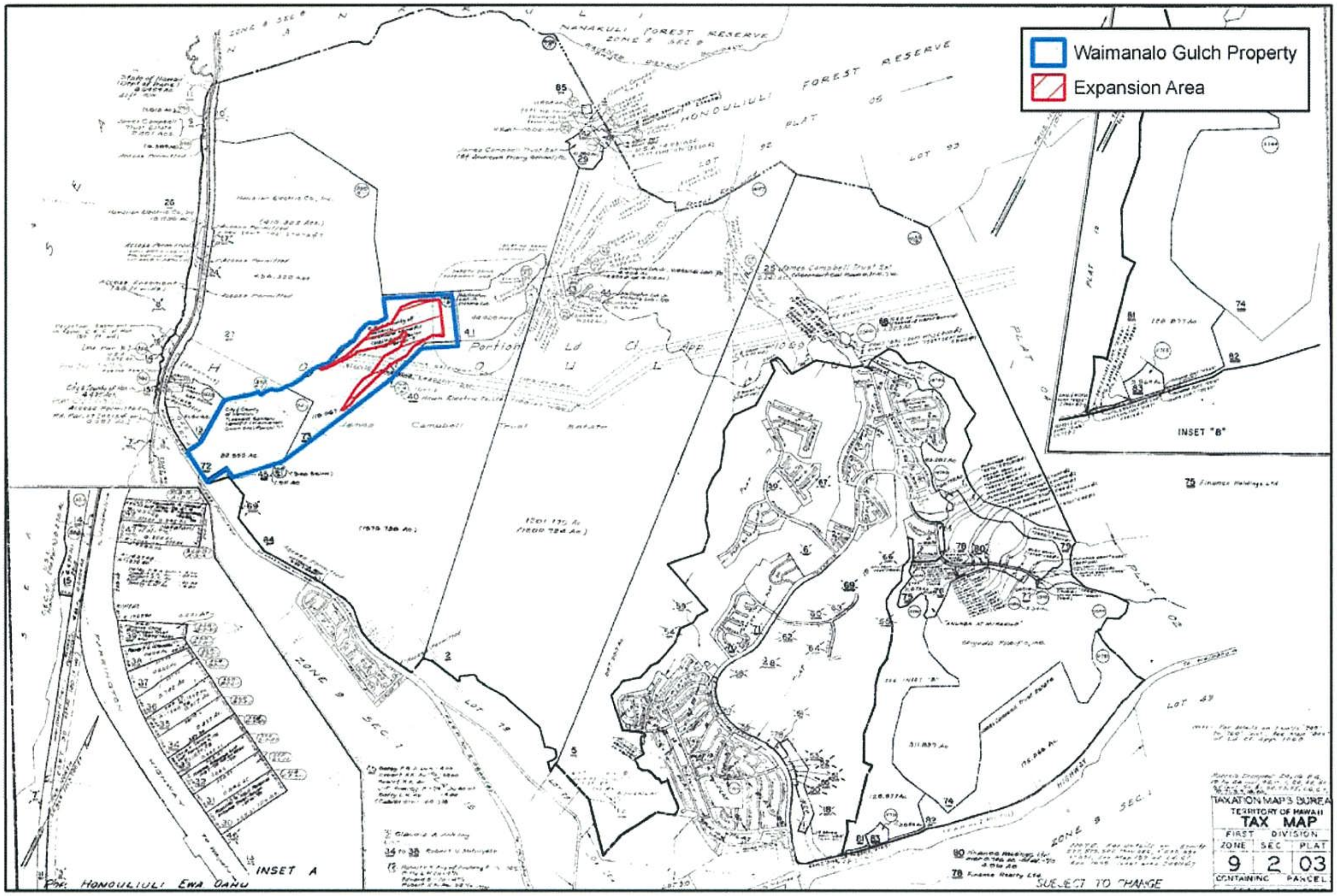

Figure 2. TMK 9-2-03 showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area

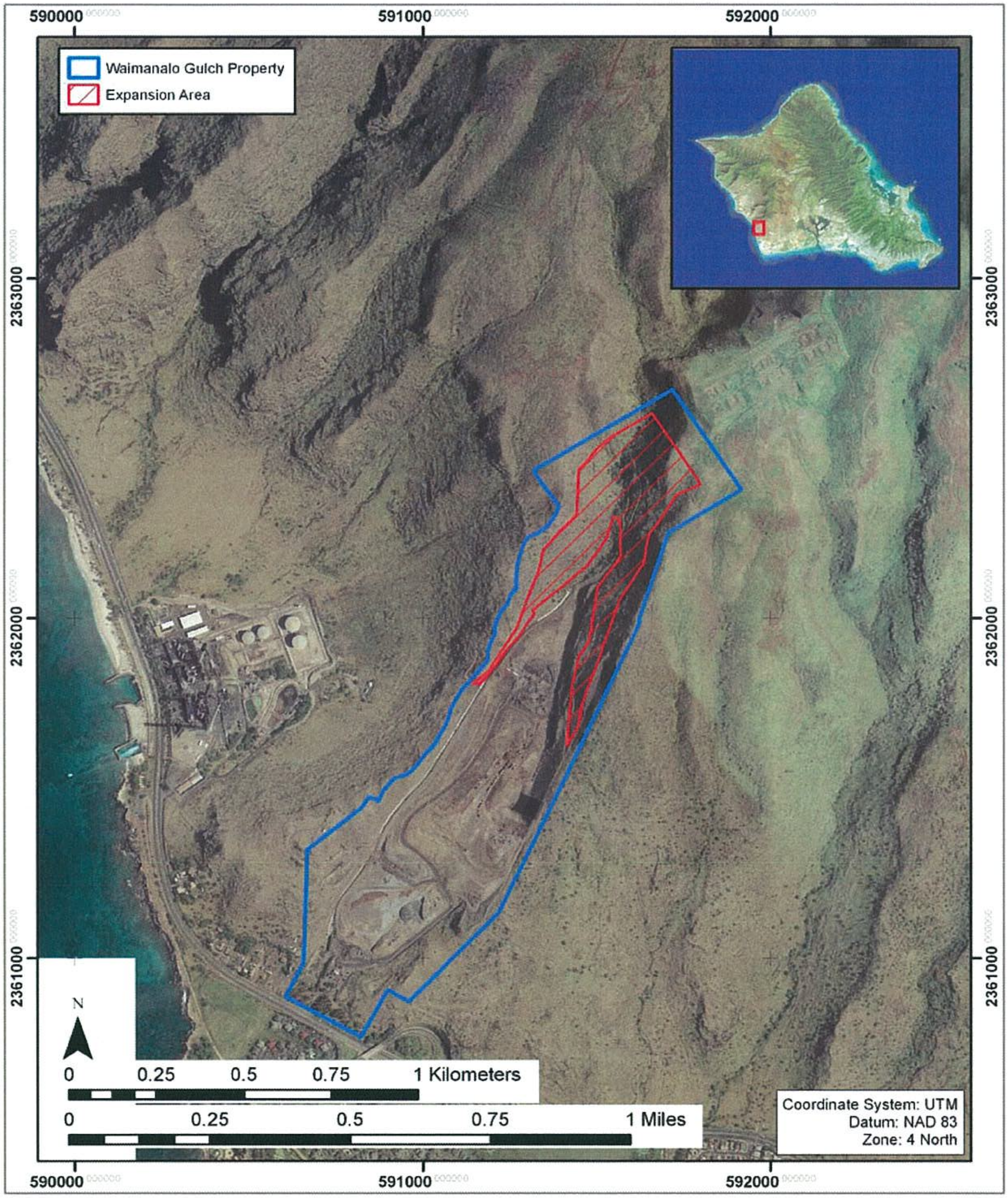

Figure 3. Aerial photograph showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area (USGS Orthoimagery 2005)

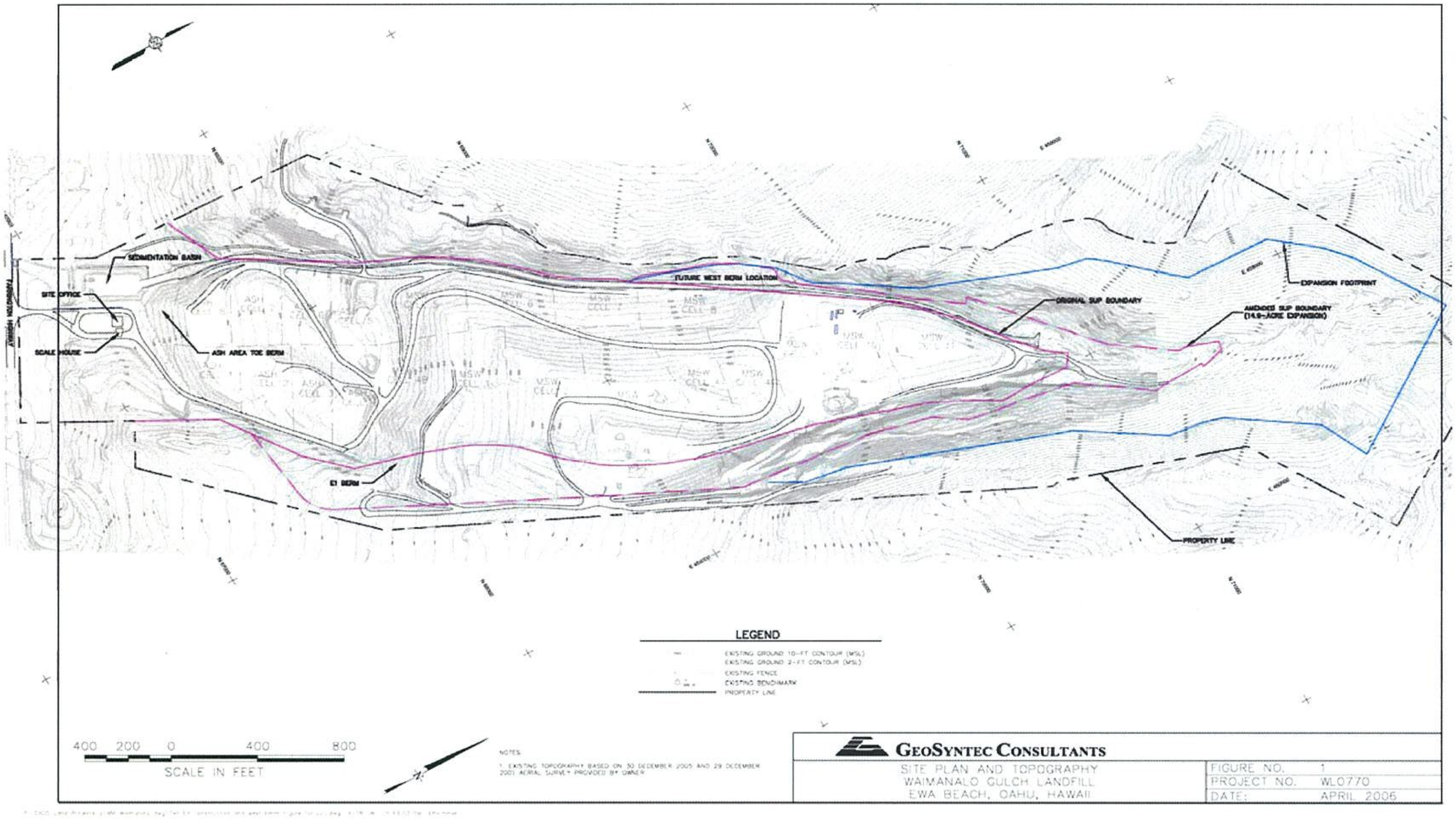

Figure 4. Site plan for the proposed Waimānalo Gulch Landfill Expansion project, showing the location of the existing landfill and proposed expansion area

This project requires compliance with the State of Hawaiʻi environmental review process [Hawaiʻi Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices. At the request of R.M. Towill Corporation, CSH undertook this CIA. Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawaiʻi Administrative Rules (HAR) Chapter 13-275.

1.3 Scope of Work

The scope for the CIA includes:

1. Examination of historical documents, Land Commission Awards, and historic maps with the specific purpose of identifying Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
2. A review of the existing archaeological information pertaining to the sites on the property as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
3. Oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region.
4. Preparation of a report on items 1-3 summarizing the information gathered related to traditional practices and land use. The report will assess the impact of the proposed action on the cultural practices and features identified.

1.4 Methods

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched at the State Historic Preservation Division library, the Cultural Surveys Hawaiʻi library, and the University of Hawaiʻi's Hamilton Library. The Office of Hawaiian Affairs, O'ahu Island Burial Council, and members of other community organizations were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the study area and the surrounding vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the researchers' familiarity with the families who live in the area. Some of the prospective community contacts were not available to be interviewed as part of this project. A discussion of the consultation process can be found in Section 5 (Results of the Community Contact Process). Please refer to Table 2 in Section 6 below for a complete list of individuals and organizations contacted.

Section 2 Project Area Description

2.1 Environmental Setting

2.1.1 Natural Environment

The proposed Waimānalo Gulch Landfill expansion area is located within the *mauka* portion of Waimānalo Gulch, in the southern foothills of the Wai'anae Mountain range. The project area is located 970 meters east of the coastline. Elevations within the proposed expansion area range from approximately 90-210 m (300-700 ft.) AMSL. Lands within the proposed expansion area generally consist of steep sloping gulch walls, with a dry stream channel at the base of the gulch. The stream channel is understood to only have running water during periods of heavy rainfall, which are relatively uncommon in the dry, leeward O'ahu. The proposed expansion area receives an average of approximately 600-700 mm (24-28 in.) of annual rainfall (Giambelluca et al. 1986).

Soils within the undeveloped portions of the Waimānalo Gulch Landfill property consist primarily of Rock Land (rRK), with a small area of Stony Steep Land (rSY) in the northeastern portion of the property. Soils within the proposed landfill expansion area consist entirely of Rock Land (rRK) (Foote et al. 1972) (Figure 5). Rock Land is described as "made up of areas where exposed rock covers 25 to 90 percent of the surface...rock outcrops and very shallow soils are the main characteristics" (Foote et al. 1972). Stony Steep Land is described as consisting of "a mass of boulders and stones deposited by water and gravity on side slopes of drainage-ways...stones and boulders cover 50 to 90 percent of the surface...there is a small amount of soil among the stones that provides a foothold for plants...rock outcrops occur in many places" (Foote et al. 1972).

With regards to the vegetation, Frierson (1972) suggests that prior to the introduction of exotic vegetation in 1790, the slopes of the Wai'anae Range extending down to about 150 m (500 ft.) elevation supported a dry forest of native trees and shrubs between an upper *'ōhi'a* wet forest and lower grassy savannah area. Frierson (1972:4) summarizes the following patterns suggested by J.F. Rock (1913) for the indigenous vegetation in the area prior to 1778:

a) Lowland zone - open grassland on the leeward side

b) Lower Forest - beginning about 1000 feet and richer in species than the rainforest: *kukui*, *'ōhi'a 'ai*, *koa*, *kalia*, sandalwood, *'ōhi'a lehua*, *hau*, *tī*, *ape*, *pia*, banana, ginger, birdnest fern and *honohono*, as well as grasses and cyperaceous plants.

c) Specifically leeward lower forest – *'ohe, wiliwili, maile, halapepe* and *alani*, with almost no undergrowth.

Historical accounts presented by Frierson (1972) describe these lower forest species as extending to 500 feet, with the presence of sandalwood observed down to as low as 300 feet. The lower forest then is hypothesized to have covered much of the current landfill expansion area. This was always a rain shadow slope and we may more accurately envisage a park land community rather than a thick forest in early Hawaiian times.

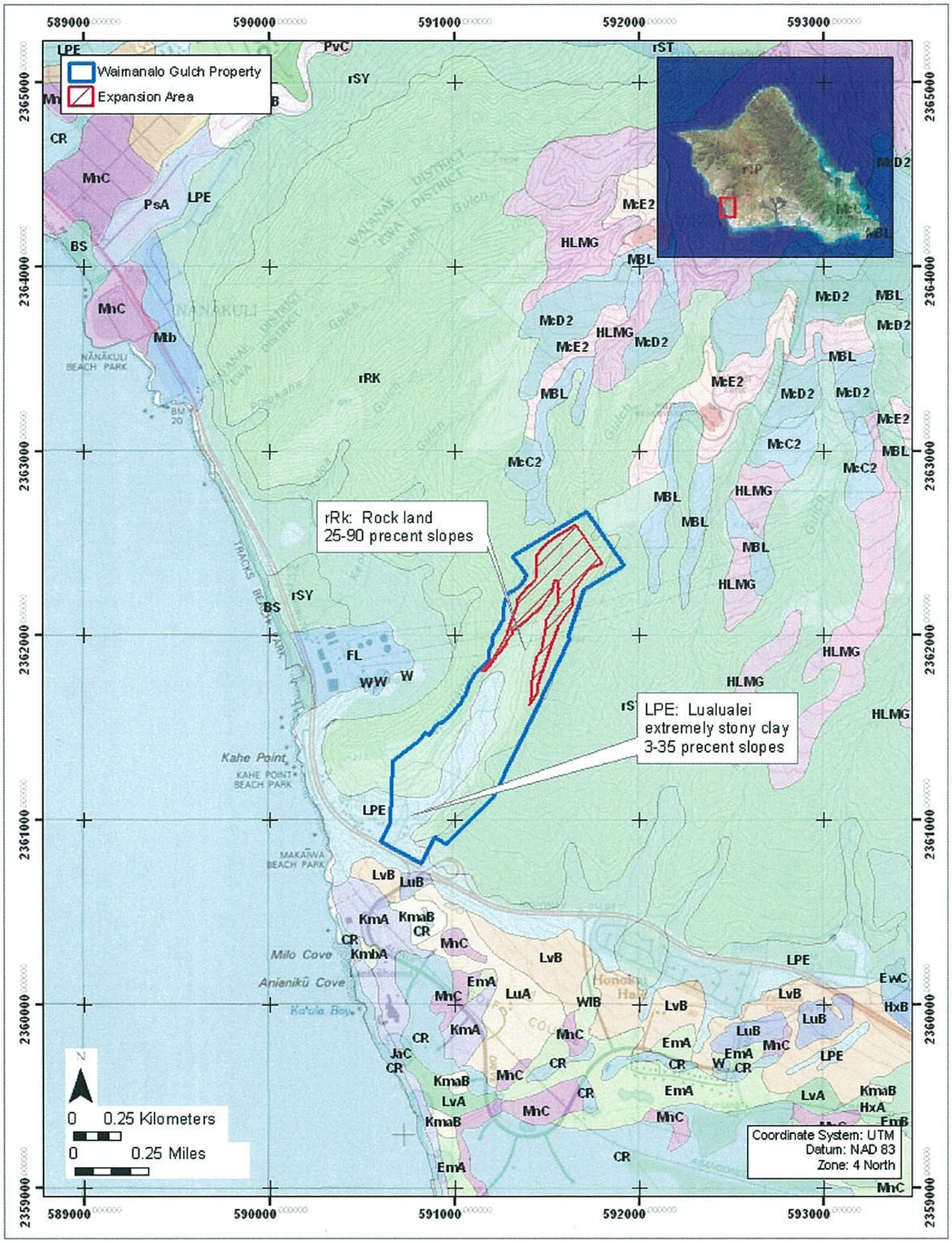

Figure 5. Waimānalo Gulch soils (http://soils.usda.gov/survey/printed_surveys/state.asp?state=Hawaii&abbr=HI)

The current vegetation in the project area is comprised mostly of scattered *koa haole* and various grasses. As a result of a relatively recent wildfire, the grasses within the project area have grown dense and thick, covering about 90% of the ground surface, making ground surface observation difficult throughout the project area.

2.1.2 Built Environment

Lands within the proposed landfill expansion area are currently undeveloped, with the exception of unpaved access roads. Lands within Waimānalo Gulch immediately *makai* (seaward) of the proposed expansion area consist of the active Waimānalo Gulch Sanitary Landfill, and include solid waste disposal sites and associated landfill infrastructure. *Makai* of the landfill site is the Ko Olina Resort, including a golf course and residential subdivision. West of the landfill site are the Kahe Point Homes residential subdivision and the HECO Kahe Power Plant. Lands to the east and north of the Waimānalo Gulch landfill are the undeveloped Makaīwa Hills and Pālehua areas.

Section 3 Traditional and Historic Background

3.1 Introduction to the Cultural Landscape

The project area is situated on the eastern side of the Wai'anae Mountains in Hono'uli'uli Ahupua'a (traditional land division) sub-divided into the *'ili* of Waimānalo in the *moku* or district of 'Ewa. Hono'uli'uli is the largest *ahupua'a* on the island of O'ahu. Hono'uli'uli includes all the land from the western boundary of Pearl Harbor (West Loch or Kaihuopala'ai) westward around the southwest corner of O'ahu to the 'Ewa/ Wai'anae District Boundary with the exception of the west side of the harbor entrance which is in the *ahupua'a* of Pu'uloa (the 'Ewa Beach/Iroquois Point area). Hono'uli'uli Ahupua'a includes approximately nineteen kilometers (twelve miles) of open coastline from One'ula westward to the boundary known as Pili o Kahe. The *ahupua'a* extends *mauka*, almost pie-shaped, from West Loch nearly to Schofield Barracks in Wahiawā; the western boundary is the Wai'anae Mountain crest running north as far as Pu'u Hapapa (or to the top of Ka'ala Mountain according to some).

Not only does Hono'uli'uli Ahupua'a include a long coastline fronting the normally calm waters of leeward O'ahu but there is also four miles of waterfront along the west side of West Loch. The land immediately *mauka* of the Pacific coast consists of a flat karstic raised limestone reef forming a level nearly featureless "desert" plain marked in pre-Contact times (previous to illuviation caused by sugar cultivation) by a thin or non-existent soil mantle. The micro-topography is notable in containing countless sinkholes caused by chemical weathering (dissolution) of the limestone shelf. Proceeding *mauka* from this limestone plain, this shelf is overlain by alluvium deposited through a series of gulches draining the Wai'anae Mountains. The largest of these is Hono'uli'uli Gulch towards the east side of the plain that drains into West Loch. To the west are fairly steep gradient gulches forming a more linear than dendritic drainage pattern. The major gulches are, from east to west: Awanui, Pālailai, Makaīwa, Waimānalo and Limaloa. These gulches are steep-sided in the uplands and generally of a high gradient until they emerge onto the flat 'Ewa plain. The alluvium they have carried has spread out in delta fashion over the *mauka* portions of the plain, which comprises a dramatic depositional environment at the stream gradient change. These gulches are generally dry, but seasonal Kona storms carry immense quantities of runoff onto the plain and into the ocean. As typical drainages in arid slopes they are either raging uncontrollably, or are dry and as such do not form stable water sources for traditional agriculture in their upper reaches. The Hono'uli'uli gulches, in contrast to those draining into Pearl Harbor to the east, do not have valleys suitable for extensive irrigated agriculture. However, the lack of suitable valleys is compensated for by the rich watered lowlands at the base of Hono'uli'uli Gulch (the *'ili* of Hono'uli'uli).

Hono'uli'uli Ahupua'a, as a traditional land unit, had tremendous and varied resources available for exploitation by early Hawaiians. The "karstic desert" and marginal characterization of the limestone plan, which is the most readably visible terrain, does not do justice to the *ahupua'a* as a whole. The richness of this land unit is marked by the following resources:

1) Twelve miles of coastline with continuous shallow fringing reef that offered rich marine resources.

2) Four miles of frontage on the waters of West Loch which offered extensive fisheries (mullet, *awa*, shellfish), as well as frontage suitable for development of fishponds (for example, Laulaunui)
3) The lower portion of Honoʻuliʻuli Valley in the ʻEwa plain offered rich level alluvial soils with plentiful water for irrigation from the stream as well as abundant springs. This land would have stretched well up the valley.
4) A broad limestone plain which because of innumerable limestone sink holes offered a nesting home for a large population of avifauna. This resource may have been one of the early attractions to human settlement.
5) An extensive upland forest zone extending as much as twelve miles inland from the edge of the coastal plain. As Handy and Handy have pointed out, the forest was much more distant from the lowlands here than it was on the windward side, but on the leeward side was more extensive (1972:469). Much of the upper reaches of the *ahupuaʻa* would have had species-diverse forest with *kukui*, *ʻōhiʻa*, sandalwood, *hau*, *kī*, banana, etc.
6) A network of trails giving access to Lualualei and Waiʻanae coastal reaches.

3.2 Main Areas of Settlement

Within this natural setting, cultural, archaeological, and historical sources show a general pattern of three main areas of settlement within the *ahupuaʻa*: a coastal zone, inland settlement at Puʻu Kuʻua and the Honoʻuliʻuli taro lands.

3.2.1 The Coastal Zone - Koʻolina and Kalaeloa (Barbers Point)

Koʻolina

There are three major studies on the Koʻolina project area (Davis et al. 1986a; Davis et al. 1986b; and Davis and Haun 1987). Davis documents around 180 component features at 48 sites and site complexes consisting of habitation sites, gardening areas, and human burials. Chronologically the occupation covers the entire span of Hawaiian settlement in what Davis and Haun describe as "one of the longest local sequences in Hawaiian prehistory" (Davis and Haun 1987:37). The earliest part of the sequence relates to the discovery of an inland marsh and early dates were also obtained for the beachfront site (Lanikūhonua) and an inland rock shelter.

Kalaeloa (Barbers Point)

Archaeological research at Barbers Point has focused on the areas in and around the newly constructed Deep Draft Harbor (Barrera 1975; Davis and Griffin 1978; Hammatt and Folk 1981, McDermott et al. 2000). Series of small clustered shelters, enclosures and platforms show limited but recurrent use at the shoreline zone for marine oriented exploitation. This settlement covers much of the shoreline with more concentrated features around small marshes and wet sinks. Immediately behind the shoreline under a linear dune deposit is a buried cultural layer believed to contain some of the earliest habitation evidence in the area.

A significant attraction of the area to early Hawaiians was the plentiful and easily exploited bird population. Particular evidence for taking of petrel occurs at Site -2763 (Hammatt and Folk 1981:13). Initial heavy exploitation of nesting seabirds and other species in conjunction with habitat destruction probably led to early extinction.

There is some indication of limited agriculture in mulched sink holes and limited soil areas. Considering the low rainfall, this activity would have been limited, but probably involved tree crops and roots (sweet potatoes). The archaeological content of the sites indicates a major focus on marine resources.

Davis and Griffin (1978) distinguish functional classes of sites, based on surface area size and argue that the Barbers Point settlement consists of functionally integrated multi-household residence groups. Density contours of midden (by weight) and artifacts (by numbers) plotted for residence sites by Hammatt and Folk (1981) generally indicate narrowly defined spatial foci of discard, possibly indicating continuous use, or at least with no refurbishing or additions to the structures through time (Hammatt and Folk 1981). The focus is small habitation sites, typically lacking the full range of features found in large permanent residence complexes such as high platforms, complex enclosures, and ceremonial sites.

3.2.2 Pu'uku'ua: Inland Settlement

It is mentioned in *mo'olelo* (oral history) that the area of Pu'uku'ua, on the east side of the Wai'anae Ridge, north east of the current project area, seven miles inland of the coast, was a Hawaiian place of great importance.

In 1899, the Hawaiian language Newspaper "*Ka Loea Kālai'āina*" relates a story of Pu'uku'ua as "a place where chiefs lived in ancient times" and a "battle field," "thickly populated." This area was well known by all O'ahu chiefs and customary for them to visit. The term Kauwā was first used here because of a one armed chiefess who was ashamed and ran when other chiefs would visit. She was not a Kauwā she only behaved as one. The article:

> The chiefs of old, who lived at that time, were of divine descent. The two gods [Kāne and Kanaloa] looked down on the hollow [vicinity of Pu'u Ku'ua] and saw how thickly populated it was. The mode of living here was so that chiefs and commoners mixed freely and they were so like the lowest of people (Kauwā). That is what these gods said and that was the time when the term kauwā was first used, and was used for many years afterwards. After the first generations of chiefs had passed away and there descendants succeeded them, a chiefess Oahu to visit this place to see the local chiefs. They did this always. When the time came in which a new chiefess ruled, an armless chiefess, she ran away to hide when other chiefs came to visit as usual because she was ashamed of her lack of an arm. Because she was always running away because of being ashamed the chiefs that visited her called her the low-born (kauwā). Thus the term remained in the thoughts down to this enlightened period. She was no truly a kauwā but was called that because she behaved like one. This was how they were made to be kauwā.... (Ka Loea Kālai'āina, July 8, 1899 in Sterling and Summers 1978:33).

McAllister recorded three sites in this area: two *heiau* (shrines) (sites 134 Pu'u Kuina and 137 Pu'uku'ua; both destroyed) and a series of enclosures in Kukuilua which he calls "*kuleana* sites" (McAllister, 1933). On the opposite side of the Wai'anae range along the trail to Pōhākea Pass, as Cordy (2002) states, "Kākuhihewa was said to have built (or rebuilt) Nīoi'ula, a *po'okanaka heiau* (1,300 sq. m.) in Hālona in upper Lualualei, along the trail to Pōhākea Pass leading into 'Ewa, ca. A.D. 1640-1660" (Cordy 2002:36). There is no direct archaeological evidence available to the authors' knowledge that intensive Hawaiian settlement occurred along the Pōhākea Pass trail but it is considered as a place of higher probability for traditional Hawaiian sites, based on the above indications. John Papa ʻĪʻī (1959) described a journey that Liholiho took which led him and an entourage through inland Honoʻuliʻuli and over Pōhākea Pass. Geographically, the area receives sufficient quantities of water and would have had abundant locally available forest resources.

3.2.3 Honoʻuliʻuli Taro Lands

Centered around the west side of Pearl Harbor at Honoʻuliʻuli Stream and its broad outlet into the West Loch are the rich irrigated lands of the *ʻili* of Honoʻuliʻuli which give the *ahupuaʻa* its name. The major archaeological reference to this area is Dicks, Haun and Rosendahl (1987) who documented remnants of a once-widespread wetland system (*loʻi* and fishponds) as well as dry land cultivation of the adjacent slopes.

The area bordering West Loch was clearly a major focus of population within the Hawaiian Islands and this was a logical response to the abundance of fish and shellfish resources in proximity to a wide expanse of well-irrigated bottomland suitable for wetland taro cultivation. The earliest detailed map (Malden 1825) shows all the roads of southwest Oʻahu coalescing and descending the *pali* as they funnel into the locality (i.e., Honoʻuliʻuli Village) which gave the *ahupuaʻa* of Honoʻuliʻuli its name. Dicks et al. (1987:78-79) conclude, on the basis of nineteen carbon isotope dates and three volcanic glass dates that "Agricultural use of the area spans over 1,000 years." Undoubtedly, Honoʻuliʻuli was a locus of habitation for thousands of Hawaiians. Prehistoric population estimates are a matter of some debate but it is worth pointing out that in the earliest mission census (Schmitt 1973:19) 1831-1832, the land (*ʻāina*) of Honoʻuliʻuli contained 1,026 men, women, and children. It is not clear whether this population relates to Honoʻuliʻuli Village or to the entire *ahupuaʻa* but the village probably contained the vast majority of the district's population at that time. The nature of the reported population structure for Honoʻuliʻuli (less than 20% children under twelve years of age) and the fact that the population decreased more than 15% in the next four years (Schmitt 1973:22) suggests that the prehistoric population of Honoʻuliʻuli Village may well have been significantly greater than it was in 1831-1832. A conservative estimate would be that tens of thousands of Hawaiians lived and died at Honoʻuliʻuli Village.

3.3 Traditional and Legendary Accounts of Honoʻuliʻuli

Honoʻuliʻuli, Oʻahu is associated with a number of legendary accounts. Many of these concern the actions of gods or demi-gods such as Kāne, Kanaloa, Māui, Kamapuaʻa, the pig god, Maunauna, the shark deity, Kaʻahupāhau, and the hero Palila. There are several references to chiefly lineages and references to the ruling chiefs Hilo-a-Lakapu and Kūaliʻi, (Ko ʻOlina is reported to have been a vacationing place for Kākuhihewa). Traditional and legendary accounts are presented below starting with the one's pertaining to Pōhākea Pass and then in a loose arrangement from more mythological accounts of gods and demi-gods to accounts of a more historical nature. There is no sharp distinction in this regard.

3.3.1 The Naming of Hono'uli'uli (Legend of Lepeamo'a)

In the legend of Lepeamoa, the chicken-girl of Pālama, Hono'uli'uli is the name of the husband of the chiefess Kapālama and grandfather of Lepeamoa (Thrum 1923:164-184). "Her grandfather gave his name, Hono'uli'uli to a land district west of Honolulu..." (Thrum 1923:170). Westervelt (1917:209) gives an almost identical account.

3.3.2 The Pele Family at Hono'uli'uli

Kapolei (beloved Kapo), specifically the 166-foot high cone of that name, is understood to have been named in reference to the volcano goddess Pele's sister Kapo (Pukui et al. 1974:89). Pōhākea Pass is understood as one of the resting places of Pele's sister Hi'iaka as she was returning from Kaua'i with Pele's lover Lohiau (Fornander 1919 Vol. V: 188 note 6). A considerable number of *mele* (songs) and *pule* (prayers) are ascribed to Hi'iaka as she stood at the summit of Pōhākea (*Aluna au a Pōhākea, Kū au, nānā ia Puna...*)(Emerson 1915:162-168). From this vantage point Hi'iaka could see, through her powers of vision, that her beloved *lehua* groves and friend Hopoe at Puna, Hawai'i Island had been blasted by her jealous sister Pele. She could also see that in her canoe, off the coast of Wai'anae, Lohiau was seducing her traveling companion Wahine'ōma'o! A spring located at Kualaka'i near Barbers Point was named Hoakalei (*lei* reflection) because Hi'iaka picked *lehua* flowers here to make a *lei* and saw her reflection in the water.

3.3.3 Keahumoa, Residence of Māui's Grandfather (Legend of Māui's Flying Expedition)

In the Legend of Māui's Flying Expedition (Thrum 1923:252-259) Māui-kupua looks toward Pōhākea Pass and sees his wife, Kumulama, being carried away by chief Pe'ape'amakawalu. After failing to recover her, Māui returns and tells his problems to his mother, Hina. Hina instructs her son to go to Keahumoa and visit his grandfather Kuolokele who lives there in a large hut. The hump-backed Kuolokele returns home with a load of potato leaves and Māui cures him by striking him in the back with a stone (which Kuolokele throws to Waipahu where it remains). Kuolokele has Māui gather *kī* leaves *'ie'ie* vines and bird feathers from which the old man fabricates a "bird-ship" (*moku-manu*) which Māui uses to defeat Pe'ape'amakawalu and recover his wife. They return to Kuolokele's house where they feast and Māui eats Pe'ape'amakawalu's eyeballs.

3.3.4 Kāne and Kanaloa and the Boundaries of 'Ewa (Simeon Nawaa account)

It seems likely the boundaries of the western-most *ahupua'a* of 'Ewa were and still are often contested between the Wai'anae and 'Ewa people:

> When Kāne and Kanaloa were surveying the islands they came to O'ahu and when they reached Red Hill saw below them the broad plains of what is now 'Ewa. To mark boundaries of land they would throw a stone and where the stone fell would be the boundary line...They hurled the stone as far as the Wai'anae Range and it landed somewhere in the Waimānalo section...Eventually the stone was found at Pili o Kahe. This is a spot where two small hills of the Wai'anae Range come down parallel on the boundary between Hono'uli'uli and Nānākuli ('Ewa and Wai'anae). The ancient Hawaiians said the hill on the 'Ewa side was

> the male and the hill on the Wai'anae side was female. The stone was found on the Waianae side hill and the place is known as Pili oKahe (Pili= to cling to, Kahe= to flow). The name refers, therefore, to the female or Waianae side hill. And that is where the boundary between the two districts runs. (Simeon Nawaa in Sterling and Summers 1978:1)

3.3.5 Kamapua'a, the pig god, is associated with Hono'uli'uli:

> Kamapua'a subsequently conquered most of the island of O'ahu, and, installing his grandmother [Kamaunuaniho] as queen, took her to Puuokapolei, the lesser of the two hillocks forming the southeastern spur of the Wai'anae Mountain Range, and made her establish her court there. This was to compel the people who were to pay tribute to bring all the necessities of life from a distance, to show his absolute power over all. (Nakuina 1904:50)

Emma Nakuina goes on to note: "A very short time ago [prior to 1904] the foundations of Kamaunuaniho's house could still be seen at Puuokapolei" (Nakuina 1904:50). Another account (*Ka Loea Kālai'āina* January 13, 1900) speaks of Kekeleaiku, the older brother of Kamapua'a, who also was said to have lived on Pu'uokapolei.

3.3.6 Home of the Shark-Goddess Ka'ahupāhau (Legend of Ka'ehuikimanōo Pu'uloa)

In the Legend of Ka'ehuikimanōo Pu'uloa (Thrum 1923:293-306) the Big Island shark god, Ka'ehuiki travels to visit the famous shark deity Ka'ahupāhau "reaching Hono'uli'uli, the royal residence." Ka'ahupāhau is said to have lived in a royal cave at Hono'uli'uli (Thrum 1923:302).

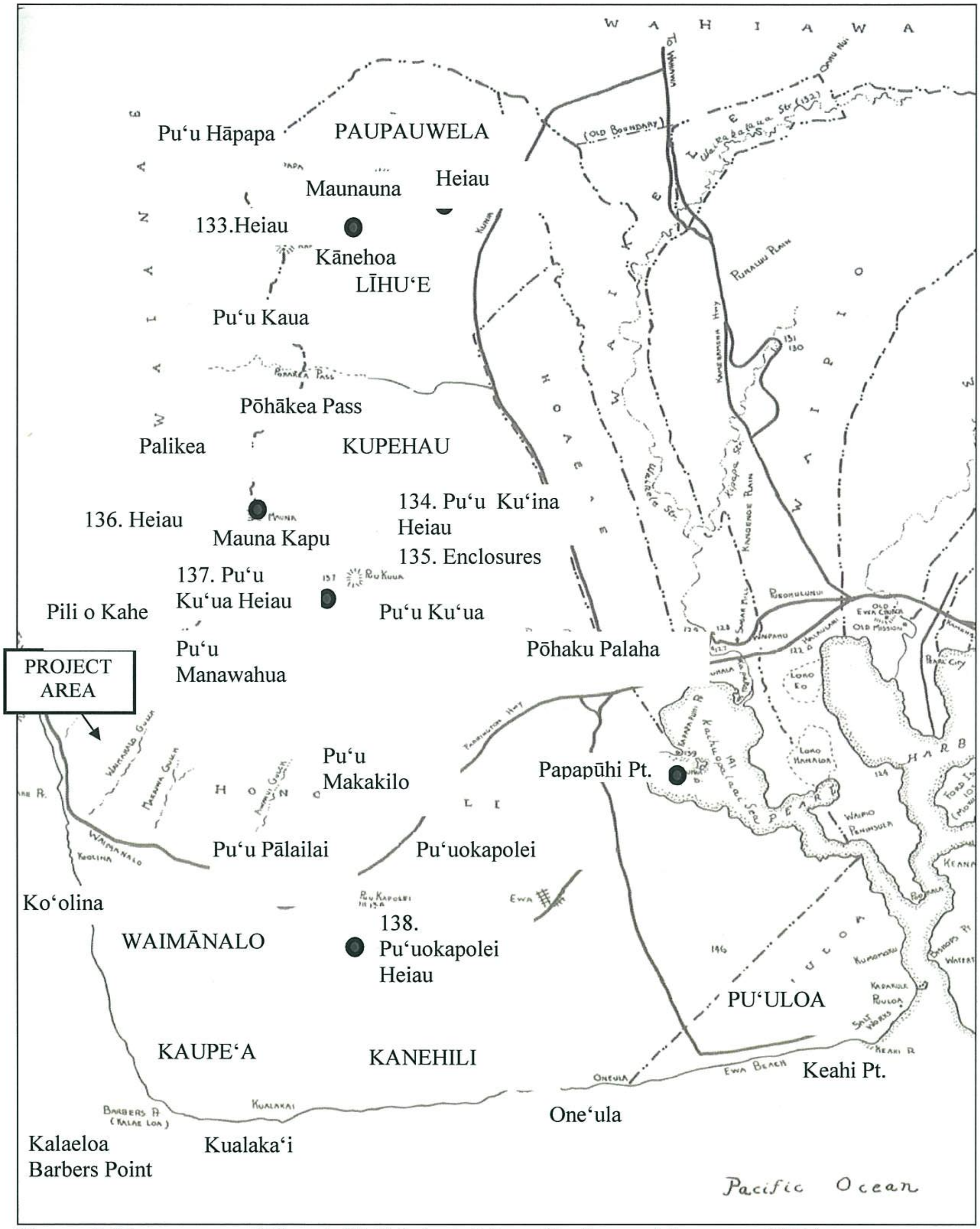

Figure 6. Place names of Hono'uli'uli (adapted from Sterling and Summers 1978)

3.3.7 The Frightened Populace of Hono'uli'uli *(He Ka'ao no Palila)*

In the Legend of Palila, the *kupua* or demigod hero of Kaua'i, he lands at Ka'ena point with his fabulous war club (*lā'au pālau*), which required eighty men to carry it, and crosses into Hono'uli'uli through the Pōhākea Pass. He descends to the plain of Keahumoa:

> Kū kēia i laila nānā i ke kū ka ea o ka lepo i nā kānaka, e pahu aku ana kēia i ka lā'au pālau aia nei i kai o Hono'uli'uli, kū ka ea o ka lepo o ka honua, me he ōla'i la, maka'u nā kānaka holo a hiki i Waikele...
>
> At this place he stood and looked at the dust as it ascended to the sky caused by the people who had gathered there; he then pushed his war club toward Hono'uli'uli. When the people heard something roar like an earthquake they were afraid and they all ran to Waikele ... (Fornander 1917 Vol. V 136-153)

3.3.8 Two Old Women Who Turned To Stone *(Ka Loea Kālai'āina)*

The Hawaiian language newspaper *Ka Loea Kālai'āina* relates that near Pu'uokapolei, on the plain of Pukaua, on the *mauka* side of the road, there was a large rock. The legend is as follows:

> There were two supernatural old women or rather peculiar women with strange powers and Pu'ukaua belonged to them. While they were down fishing at Kualaka'i [near Barbers Point] in the evening, they caught these things, 'a'ama crabs, pipipi shellfish, and whatever they could get with their hands. As they were returning to the plain from the shore and thinking of getting home while it was yet dark, they failed for they met a one-eyed person [bad omen]. It became light as they came near to the plain, so that passing people were distinguishable. They were still below the road and became frightened lest they be seen by men. They began to run - running, leaping, falling, sprawling, rising up and running on, without a thought of the 'a'ama crabs and seaweeds that dropped on the way, so long as they would reach the upper side of the road. They did not go far for by then it was broad daylight. One woman said to the other, "Let us hide lest people see us," and so they hid. Their bodies turned into stone and that is one of the famous things on this plain to this day, the stone body. This is the end of these strange women. When one visits the plain, it will do no harm to glance on the upper side of the road and see them standing on the plain. (Ka Loea Kālai'āina, January 13, 1900)

3.3.9 The Strife of Nāmakaokapāo'o and Puali'i (*Ka'ao no* Nāmakaokapāo'o)

In the Legend of Nāmakaokapāo'o the brave boy, Nāmakaokapāo'o, and his mother, Pōka'ī, appear to have been living near the coast but were quite destitute (*'ilihune loa*). His mother met Puali'i when he came from Līhu'e to fish at Hono'uli'uli and the family went to live on the plains of Keahumoa (*ke kula o Keahumoa*). Puali'i kept sweet potato patches (*māla 'uala*) and fished for *ulua*. Following a dispute over sweet potatoes, Nāmakaokapāo'o defeated his step-father, Puali'i and:

> Lālau aku la o Nāmakaokapāo'o i ke po'o o Puali'i a kiola aku la i kai o Waipouli, he ana ma kahakai o Hono'uli'uli, o kona loa, 'elima mile ka loa...
>
> Nāmakaokapāo'o picked up Puali'i's head and threw it towards Waipouli, a cave situated on the beach at Hono'uli'uli (a distance of about five miles)... (Fornander 1917 Vol. V 274-277)

3.3.10 The Story of Kaihuopala'ai Pond, Hono'uli'uli (*Ka'ao no Maikohā*)

In the Legend of Maikohā a sister of Maikohā (a deified hairy man who became the god of tapa makers) named Kaihuopala'ai, journeys to O'ahu:

> 'Ike aku la o Kaihuopala'ai i ka maikai o Kapapaapuhi, he kāne e noho ana ma Hono'uli'uli ma 'Ewa. Moe iho la lāua, a noho iho la o Kaihuopala'ai i laila a hiki i kēia lā. 'Oia kēlā loko kai e ho'opuni ia nei i ka 'anae, nona nā i'a he nui loa, a hiki i kēia kākau ana.
>
> Kaihuopala'ai saw a goodly man by the name of Kapapaapuhi who was living at Hono'uli'uli, 'Ewa; she fell in love with him and they were united, so Kaihuopala'ai has remained in 'Ewa to this day. She was changed into that fishpond in which mullet are kept and fattened, and that fishpond is used for that purpose to this day [1919]. (Fornander 1917 Vol. V 270-271)

3.3.11 The Traveling Mullet of Hono'uli'uli (Fish Stories)

The story of (Ka)Ihuopala'ai is also associated with the tradition of the *'anae-holo* or traveling mullet (Thrum 1907:270-272):

> The home of the 'anae-holo is at Hono'uli'uli, Pearl Harbor, at a place called Ihuopala'ai. They make periodical journeys around to the opposite side of the island, starting from Pu'uloa and going to windward, passing successively Kumumanu, Kalihi, Kou, Kālia, Waikīkī, Ka'alāwai, and so on, around to the Ko'olau side, ending at Lā'ie, and then returning by the same course to their starting point.(Thrum 1907:271)

In Thrum's account, Ihuopala'ai is a male who possesses a Kū'ula or fish god which supplied the large mullet known as *'anae*. His sister lived in Lā'ie and there came a time when there were no fish. She sent her husband to visit Ihuopala'ai who was kind enough to send the fish following his brother-in-law on his trip back to Lā'ie.

This story is associated with a poetical saying documented by Mark Pukui about Hono'uli'uli:

> Ka i'a hali a ka makani
>
> The fish fetched by the wind (Pukui 1983: # 1330)

Pukui explains "The *'anaeholo*, a fish that travels from Hono'uli'uli, where it breeds, to Kaipāpa'u on the windward side of O'ahu. It then turns about and returns to its original home. It is driven closer to shore when the wind is strong." Whether this saying was used in contexts other than in reference to mullet is unclear.

3.3.12 Hono'uli'uli and the Head of Hilo-a-Lakapu (Legend of the Sacred Spear-point)

In the Legend of the Sacred Spear-point (Kalākaua 1888:209-225) is a reference to the Hawai'i Island chief Hilo-a-Lakapu. Following his unsuccessful raid against O'ahu "he was slain at Waimano, and his head was placed upon a pole near Hono'uli'uli for the birds to feed upon"(Kalākaua 1888:224).

3.3.13 The Strife at Hono'uli'uli from which Kūali'i unites Hawai'i nei (Mo'olelo o Kūali'i)

The celebrated chief, Kūali'i, is said to have lead an army of twelve thousand *('ekolu mano)* against the chiefs of Ko'olauloa with an army of twelve hundred *('ekolu lau)* upon the plains of Keahumoa (Fornander 1917 Vol. IV 364-401). Perhaps because the odds were so skewed the battle was called off and the *ali'i* (chiefs) of Ko'olau ceded (*ha'awi a'e*) the districts of Ko'olauloa, Ko'olaupoko, Waialua and Wai'anae to Kūali'i. When the *ali'i* of Kaua'i heard of this victory at Hono'uli'uli they gave Kaua'i to Kūali'i as well and thus he became possessed of all the islands (*a lilo a'e la nā moku a pau ia Kūali'i mai Hawai'i a Ni'ihau*). The strife at Hono'uli'uli was the occasion of the recitation of a song for Kūali'i by a certain Kapa'ahulani (*Ka Pule Ana a Kapa'ahulani*) that makes passing reference in word play to the blue poi, which appeases the hunger of Hono'uli'uli (*Uliuli ka poi e piha nei - o Hono'uli'uli*).

3.3.14 The Last Days of Kahahana and Hono'uli'uli (The Land is the Sea's)

In the tradition of the prophecy of the *kahuna* Ka'opulupulu, Moke Manu relates that the deposed O'ahu chief Kahahana fled for his life:

> Upon the arrival here at O'ahu of Kahekili, Kahahana fled, with his wife Kekuapoi, and friend Alapa'i, and hid in the shrubbery of the hills. They went to Āliamanu, Moanalua, to a place called Kinimakalehua; then moved along to Keanapua'a, and Kepo'okala, at the lochs of Pu'uloa, and from there to upper Waipi'o; thence to Wahiawā, Helemano, and on to Līhu'e; thence they came to Po'ohilo, at Hono'uli'uli, where they first showed themselves to the people and submitted themselves to their care. (Thrum 1907:203-214)
>
> Through treachery, Kahahana was induced to leave Po'ohilo, Hono'uli'uli and was killed on the plains of Hō'ae'ae (Thrum 1907:213-214).

3.3.15 Pu'uokapolei and the Reckoning of the Seasons (Kamakau)

Samuel Kamakau relates:

> ...the people of O'ahu reckoned from the time when the sun set over Pu'uokapolei until it set in the hollow of Mahinaona and called this period Kau [summer], and when it moved south again from Pu'uokapolei and it grew cold and the time came when young sprouts started, the season was called from their germination ('ōilo) the season of Ho'oilo [winter, rainy, season]. (Mo'olelo Hawai'i Vol. I, Chap. 2, p. 23)

3.3.16 Hono'uli'uli in the Poetry of Halemano (Ka'ao no Halemano)

In the Legend of Halemano the romantic O'ahu anti-hero chants a love song with a reference to Hono'uli'uli:

> Huli a'e la Ka'ala kau i luna, Waiho wale kai o Pōka'ī, Nānā wale ke aloha i Hono'uli'uli, Kokolo kēhau he makani no Līhu'e...
>
> Search is made to the top of Ka'ala, The lower end of Pōka'ī is plainly seen. Love looks in from Hono'uli'uli, The dew comes creeping, it is like the wind of Līhu'e... (Fornander 1917 Vol. V 252)

3.4 Legends and Traditional Places in Upland Hono'uli'uli

3.4.1 Kahalaopuna at Pōhākea Pass

One of the most popular legends of O'ahu is that of Kahalaopuna (or Kaha) a young woman of Mānoa who is slandered by others and is then killed by her betrothed, Kauhi, a chief from Ko'olau, O'ahu. While the numerous accounts (Day 1906:1-11, Fornander 1919 Vol. V: 188-193, Kalākaua 1888:511-522, Nakuina 1904:41-45, Patton 1932:41-49, Skinner 1971:220-223, Thrum 1907:118-132, Westervelt 1907a 127-137, Westervelt 1907b 84-93) vary in details they typically have Kahalaopuna slain and then revived repeatedly with the aid of a protective owl spirit. Kauhi forces her to hike west from Mānoa through the uplands until they get to Pōhākea Pass through the southern Wai'anae Range in north Hono'uli'uli. At Pōhākea Pass, Kauhi beats her with a stick until she is very dead ("*Ia hahau ana a Kauhi i ka lā'au, make loa o Kahalaopuna*"). Her spirit (*'uhane*) flies up into a *lehua* tree and chants for someone to go notify her parents of her fate. Upon hearing the news her parents fetch Kahalaopuna back to Mānoa and she is restored to life.

3.4.2 *Mo'o* at Maunauna (*Kuokoa*)

Moses Manu in recounting the Legend of Keaomelemele makes a reference to a *mo'o* (fabulous lizard, dragon, serpent) named Maunauna who lived above Līhu'e (presumably at the landform of that name in extreme northern Hono'uli'uli) and who was regarded as a bad lizard (*Kuokoa* April 25, 1885).

3.4.3 Paupauwela and Līhu'e

Paupauwela, also spelled Popouwela (derivation unknown), is the name of the land area in the extreme *mauka* section of Hono'uli'uli Ahupua'a. The land area of Līhu'e is just *makai* of this land, and extends into the *ahupua'a* of Waipi'o (adjacent to the eastern border of Hono'uli'uli). Both place names are mentioned in a chant recorded by Abraham Fornander, which was composed as a *mele* for the O'ahu king, Kūali'i, as he was preparing to battle Kuiaia, the chief of Wai'anae:

Where? Where is the battle field	Ihea, ihea la ke kahua,
Where the warrior is to fight?	Paio ai o ke koa-a?

On the field of Kalena,	I kai i kahua i Kalena,
At Manini, at Hanini,	I Manini, i Hanini
Where was poured the water of the god	I ninia i ka wai akua,
By your work at Malamanui;	I ko hana i Malamanui
On the heights of Kapapa, at Paupauwela,	Ka luna o Kapapa, i Paupauwela,
Where they lean and rest;	I ka hilinai i ke kalele,
At the hala trees of indolent Halahalanui,	Ka hala o Halahalanui maauea,
At the ohia grove of Pule-e	E kula ohia ke Pule-e,
The god of Lono, of Makalii	Ke ‘kua o Lono o Makalii
Thr fragrant branch of the Ukulonoku,	Ka lala aalao Ukulonoku,
Mayhap from Kona, from Lihue,	No Kona paha, no Lihue.
For the day at Maunauna	No ka la i Maunauna,
For the water at Paupauwela.	No ka wai i Paupauwela.
Red is the water of Paupauwela,	Ula ka wai i Paupauwela,
From the slain at Malamani,	Ke kilau o Malamani,
The slain on the ridge at Kapapa.	Ka moo kilau I Kapapa.

(Fornander 1917, Vol. IV, Part 2:384-386).

The derivation of the place name Līhu‘e (meaning “cold chill”) is illustrated in the following poem; all other places names mentioned in this poem are in Waipi‘o:

The icy wind of Lihue plied its spurs,
Pulling up the bridle of Haleauau,
Speeding headlong over Kalena
And running over the plain of Kanoenoe
(Ka Loea Kālai‘āina, July 22, 1899, translated in Sterling and Summers 1978:21)

This explains the meaning of a Hawaiian saying “*Hao na kēpā o Līhu‘e i ke anu*” (The spurs of Līhu‘e dig in with cold) (Pukui 1983:#479).

The icy winds of Hono‘uli‘uli are also noted in a *mele* for the high king Kūali‘i. In this *mele*, the cold winds of Kumomoku and Leleiwe, near Pu‘uloa in Hono‘uli‘uli are compared unfavorably to the god Kū.

Not like these are thou, Ku	Aole i like Ku.
[Nor] the rain that brings the land breeze,	Ia ua hoohali kehau,
Like a vessel of water poured out.	Mehe ipu wai ninia la,

Nor to the mountain breeze of Kumomoku,	Na hau o Kumomoku;
[The] land breeze coming round to Leleiwi.	Kekee na hau o Leleiwi,
Truly, have you not known?	Oi ole ka oe i ike
The mountain breezes, that double up your back,	I ka hau kuapuu.
[That make you] sit crooked and cramped at Kaimohala,	Kekee noho kee, o Kaimohala,
The Kanehili at Kaupea?	O Kanehili i Kaupea-la
Not like these are thou, Ku.	Aole i like Ku.

(Fornander 1917, Vol. IV, Part II:390-391)

In the Legend of Halemano (Fornander 1919, Vol. V, Part II: 252), the romantic Oʻahu anti-hero chanted a love song with a reference to the winds of Līhuʻe:

Search is made to the top of Kaʻala,	Huli aʻe la Kaʻala kau i luna,
The lower end of Pōkaʻī is plainly seen.	Waiho wale kai o Pōkaʻī,
Love looks in from Honoʻuliʻuli,	Nānā wale ke aloha i Honoʻuliʻuli,
The dew comes creeping, it is like the wind of Līhuʻe...	Kokolo kēhau he makani no Līhuʻe.

The wind of Līhuʻe and others in the region are also named by Moses K. Nakuina, as follows:

Moaʻe-kū is of ʻEwaloa
Kēhau is of Waiopua
Waikōloa is of Līhuʻe
Kona is of Puʻuokapolei
Maunuunu is of Puʻuloa
(Nakuina 1992:43)

The *aliʻi* were closely associated with Līhuʻe, which had habitation areas and playing grounds set aside for their sports. ʻEwa

> Lolale was the father and Keleanohoapiapi the mother of Ka-lo-kaholi-a-Lale. He was born in the land of Lihue and there he was reared into manhood. He excelled in good looks and greatly resembled his mother.
>
> In the olden days the favorite occupation of Lihue chiefs was spear throwing and the best instructors hailed from this locality. (Ka Nūpepa Kūʻokoʻa, Aug. 26, 1865, translation in Sterling and Summers 1978:23)

Līhu'e was also the home of a famous cannibal king-man, Kaupe, who overthrew the ruling chiefs to become the paramount power between Nu'uanu and the sea. He had a home and a *heiau* in Līhu'e. Kaupe was a *kapua*, a supernatural being who could take the form of a man or a dog; this type of dog man was known as an *'ōlohe*. Although he left the O'ahu *ali'i* alone, he killed many commoners in the area, and eventually sailed to the island of Hawai'i on a raid, where he captured a chief's son; he planned to sacrifice this boy at his *heiau* in Līhu'e. The father came to O'ahu, and with the help of the priests of the Hawaiian hero, Kahanaiakeakua, was able to free his son, escape back to Hawai'i, and eventually kill the dog-man, Kaupe (Westervelt 1963:90-96).

3.4.4 Hill of Maunauna

The hill Maunauna lies between the lands Paupauwela and Līhu'e. One translation of Maunauna is "mountain sent [on errands]." Two servant *mo'o* who lived here had no keepers to supply their needs" (Pukui et al. 1974:149). It was at Maunauna, according to one tradition, that the forces of the chiefs Kūali'i and Kuiaia of Wai'anae met to do battle, which was averted when a *mele* honoring the god Kū was chanted (see previous section). (Fornander 1917, Vol IV, Part 2:348). In the Legend of Ke-ao-melemele, a woman named Paliuli traveled in this area.

> In a very short time she [Paliuli] walked over the plain of Ewa; Ewa that is known as the land of the silent fish [pearl oysters]...She went on to the plain of Punalu'u and turned to gaze at Maunauna point and the plain of Lihue. (Manu 1885, translation in Sterling and Summers 1978:21)

Certain place names in the uplands, including Maunauna, are also mentioned in the story of Lo-lae's Lament. The place of Lolale's residence is given in King Kalākaua's version of this story. According to him (Kalākaua 1990:232): "There lived there at that time in Lihue, in the district of 'Ewa, on the island of Oahu, a chief named Lo-lale, son of Kalona-iki, and brother of Piliwale, the *alii-nui*, or nominal sovereign, of the island, whose court was established at Waialua."

In this story, Lolale was a chief of O'ahu who asked his friend Kalamakua to find him a bride (Kalākaua 1990:228-246; Skinner 1971:217-219). Kalamakua traveled to Maui and chose Kelea, the chief's sister, and returned with her to O'ahu; during this time the two grew close. Kelea lived with Lolale for a while, but he was a silent type that was often away from home playing sports and walking in the woodlands. Longing for Kalamakua, Kelea decided to leave her husband, Lolale voiced no "spoken bitterness;" however, after she left, he sang this lament:

> Farewell, my partner of the lowland plains,
>
> On the waters of Pohakeo, above Kanehoa,
>
> On the dark mountain spur of Mauna-una!
>
> O, Lihue, she is gone!
>
> Sniff the sweet scent of the grass,
>
> The sweet scent of the wild vines
>
> That are twisted by Waikoloa,

By the winds of Waiopua,

My flower!

As if a mote were in my eye.

The pupil of my eye is troubled.

Dimness covers my eyes. Woe is me!

[Kalākaua 1990:244-245].

3.5 Prehistory and Early History

Various Hawaiian legends and early historical accounts indicate that the *ahupua'a* of Hono'uli'uli was once widely inhabited by pre-Contact populations. This would be attributable for the most part to the plentiful marine and estuarine resources available at the coast, along which several sites interpreted as permanent habitations and fishing shrines were located. Other attractive subsistence-related features of the *ahupua'a* include irrigated lowlands suitable for wetland taro cultivation (Hammatt and Shideler 1990), as well as the lower forest area of the mountain slopes for the procurement of forest resources.

Exploitation of the forest resources along the slopes of the Wai'anae Range - as suggested by E. S. and E.G. Handy - probably acted as a viable subsistence alternative during times of famine:

> ...The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *wao*, or upland jungle, than was the case on the windward coast. Yet the *wao* here was more extensive, giving greater opportunity to forage for wild foods during famine time. (Handy and Handy 1972:469)

These upper valley slopes may have also been a significant resource for sporadic quarrying of basalt for the manufacturing of stone tools. This is evidenced in part by the existence of a probable quarrying site (50-80-12-4322) in Makaīwa Gulch at 152 m. (500 ft.) a.m.s.l. (Hammatt et al. 1991).

The Hawaiian *ali'i* were also attracted to the region, which is steeped in myth.

> Ko 'Olina is in Waimānalo near the boundary of 'Ewa and Wai'anae. This was a vacationing place for chief Kākuhihewa and the priest Napuaikamao was the caretaker of the place. Remember reader, this Ko Olina is not situated in the Waimānalo on the Ko'olau side of the island but the Waimānalo in 'Ewa. It is a lovely and delightful place and the chief, Kākuhihewa loved this home of his. (Ke Au Hou July 13, 1910)

Other early historical accounts of the general region typically refer to the more populated areas of the 'Ewa district, where missions and schools were established and subsistence resources were perceived to be greater. However, the presence of archaeological sites along the barren coral plains and coast of southwest Hono'uli'uli Ahupua'a, indicate that prehistoric and early historic populations also adapted to less inviting areas, despite the environmental hardships.

Barbers Point is named after Captain Henry Barber whose vessel ran aground on October 31, 1796. Subsequent to western contact in the area, the landscape of the 'Ewa plains and Wai'anae slopes was adversely affected by the removal of the sandalwood forest, and the introduction of domesticated animals and new vegetation species. Domesticated animals including goats, sheep and cattle were brought to the Hawaiian Islands by Vancouver in the early 1790s, and allowed to graze freely about the land for some time after. It is unclear when the domesticated animals were brought to O'ahu; however, L.A. Henke reports the existence of a longhorn cattle ranch in Wai'anae prior to 1840 (in Frierson 1972:10). During this same time, perhaps as early as 1790, exotic vegetation species were introduced to the area. These typically included vegetation best suited to a terrain disturbed by the logging of sandalwood forest and eroded by animal grazing. The following dates of specific vegetation introduced to Hawai'i are given by R. Smith and outlined by Frierson:

1) "early", c. 1790:
Prickly pear cactus, *Opuntia tuna*
Haole koa, *Leucaena glauca*
Guava, *Psidium guajava*

2) 1835-1840
Burmuda [sic] grass, *Cynodon dactylon*
Wire grass, *Eleusine indica*

3) 1858
Lantana, *Lantana camara*

The *kiawe* tree (*Prosopis pallida*) was also introduced during this period, either in 1828 or 1837 (Frierson 1972:11).

Intensive sandalwood harvesting, according to H. St. John (in Frierson 1972:7) occurred in the Hawaiian Islands from 1815 to 1830. As it is likely that sandalwood forests once occupied the lower, dry slopes of the Wai'anae Range, the current project area was likely impacted by the cutting and burning of these forests.

3.5.1 Mid- to late-1800s

Associated with the Māhele of 1848, 99 individual land claims in the *ahupua'a* of Hono'uli'uli were registered and immediately awarded by King Kamehameha III. The vast majority of the Land Commission Awards (LCA) were located near the Pu'uloa salt works and the taro lands of the *'ili* of Hono'uli'uli. The present study area appears to have been included in the largest award (Royal Patent 6071, LCA 11216, 'Āpana 8) granted in Hono'uli'uli Ahupua'a to Miriam Ke'ahi-Kuni Kekau'ōnohi on January 1848 (Native Register). Kekau'ōnohi acquired a deed to all unclaimed land within the *ahupua'a,* including a total of 43,250 acres.

Kamaukau relates the following about Kekau'ōnohi as a child:

> Kamehameha's granddaughter, Ke-ahi-Kuni Kekau-'ōnohi...was also a tabu chiefess in whose presence the other chiefesses had to prostrate and uncover themselves, and Kamehameha would lie face upward while she sat on his chest. (In Hammatt and Shideler 1990:19-20)

Kekau'ōnohi was one of Liholiho's (Kamehameha II) wives, and after his death, she lived with her half-brother, Luanu'u Kahala'i'a, who was governor of Kaua'i (Hammatt and Shideler 1990:20). Subsequently, Kekau'ōnohi ran away with Queen Ka'ahumanu's stepson, Keli'i-ahonui, and then became the wife of Chief Levi Ha'alelea. Upon her death on June 2, 1851, all her property was passed on to her husband and his heirs. When Levi Ha'alelea died the property went to his surviving wife, who in turn leased it to James Dowsett and John Meek in 1871 for stock running and grazing.

In 1877, James Campbell purchased most of Hono'uli'uli Ahupua'a for a total of $95,000. He then drove off 32,347 head of cattle belonging to Dowsett, Meek and James Robinson and constructed a fence around the outer boundary of his property (Bordner and Silva 1983:C-12). In 1879, Campbell brought in a well driller from California to search the 'Ewa plains for water, and a "vast pure water reserve" was discovered (Armstrong and Bier 1983). Following this discovery, plantation developers and ranchers drilled numerous wells in search of the valuable resource. By 1881, the Campbell property of Hono'uli'uli prospered as a cattle ranch with "abundant pasturage of various kinds" (Briggs in Haun and Kelly 1984:45). Within 10 years of the first drilled well in 'Ewa, the addition of a series of artesian wells throughout the island was supplying most of Honolulu's water needs (Armstrong and Bier 1983).

In 1889, Campbell leased his property to Benjamin Dillingham, who subsequently formed the O'ahu Railway & Land Co. (O.R. & L) in 1890. To attract business to his new railroad system, Dillingham subleased all land below 200 feet elevation to William Castle who in turn sublet the area to the 'Ewa Plantation Company for sugar cane cultivation (Frierson 1972:15) (Figure 7). Dillingham's Hono'uli'uli lands above 200 feet elevation that were suitable for sugar cane cultivation were sublet to the O'ahu Sugar Co. Throughout this time and continuing into modern times, cattle ranching continued in the area, and Hono'uli'uli Ranch established by Dillingham was the "fattening" area for the other ranches (Frierson 1972:15).

'Ewa Plantation Co. was incorporated in 1890 and continued in full operation up into modern times (Figure 7). The plantation grew quickly with the abundant artesian water. As a means to generate soil deposition on the coral plain and increase arable land in the lowlands, the 'Ewa

Plantation Co. installed ditches running from the lower slopes of the mountain range to the lowlands and then plowed the slopes vertically just before the rainy season to induce erosion (Frierson 1972:17).

The O'ahu Sugar Co. was incorporated in 1897 and included lands in the foothills above the 'Ewa plain and Pearl Harbor. Prior to commercial sugar cultivation, the lands occupied by the O'ahu Sugar Co. were described as being "of near desert proportion until water was supplied from drilled artesian wells and the Waiāhole Water project" (Condé and Best 1973:313). The O'ahu Sugar Co. took control over the 'Ewa Plantation lands in 1970 and continued operations into the 1990s.

Dillingham's *mauka* lands in western Hono'uli'uli that were unsuitable for commercial sugar production remained pasture for grazing livestock. From 1890 to 1892, the Ranch Department of the O.R. & L. Co. desperately sought water for their herds of cattle by tapping plantation flumes and searching for alternative sources of water. Ida von Holt leaves this account of her husband Harry's (Superintendent of the O.R. & L Ranch Dept.) search for water in the foothills of the Wai'anae Range:

> One of those places is on the old trail to Palehua, and had evidently been a place of which the Hawaiians had known, for its name is Kaloi (the taro patch), and even in dry weather water would be standing in the holes made by the cattle, as they tried to get a drop or two. (Von Holt 1985:136)

A second account is given of the discovery of spring water in an area over the ridge on the north side of Kalo'i Gulch:

> Shouting to the men to come over with their picks and shovels, he [Harry von Holt] soon got them busy clearing away lots of small stones and earth. Almost at once they could see that there were evidences of a paved well, and at about three feet down they came upon a huge flat rock, as large around as two men could span with their arms. Digging the rock loose and lifting it to one side, what was their astonishment to find a clear bubbling spring! (Von Holt 1985:138)

Following the discovery, two old Hawaiians began to ask Von Holt about the spring:

> Finally he [Harry von Holt] got them to explain that the spring, called "Waihuna" (Hidden Spring) had been one of the principal sources of water for all that country, which was quite heavily populated before the smallpox epidemic of 1840...A powerful Kahuna living at the spring had hidden it before he died of the smallpox, and had put a curse on the one who disturbed the stone, that he or she would surely die before a year was out. (Von Holt 1985:138-140)

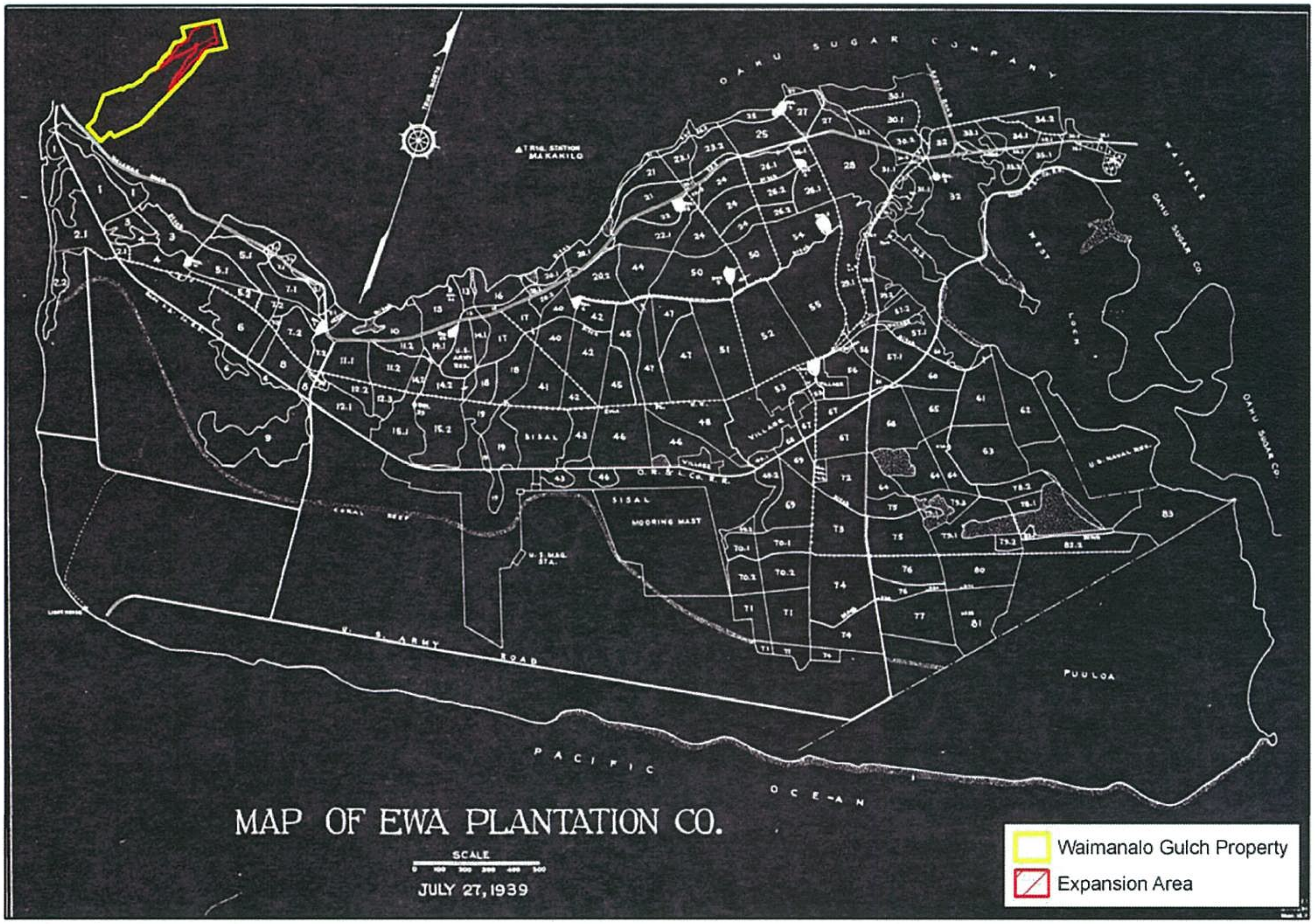

Figure 7. Map of 'Ewa Plantation Co. (Condé and Best 1973:285), showing the extent of sugar cane cultivation in the vicinity of the Waimānalo Gulch property.

3.5.2 1900s

By 1920, the lands of Honoʻuliʻuli were used primarily for commercial sugar cane cultivation and ranching (Frierson 1972:18). Much of the *mauka* lands in western Honoʻuliʻuli, including ridges and deep gulches, were unsuitable for commercial sugar cultivation and remained pasture for grazing livestock. Historic maps of the Waimānalo Gulch area indicate a lack of any significant development in the area into the 1940s (Figures 8-10). Modest constructions in the area included the realignment of the "Waianae Road" (present Farrington Hwy.) to run along the *makai* / southern edge of the Waimānalo Gulch property, and a road the top of the Kahe Point ridge, within the Waimānalo Gulch property.

In the late 1920s, the main residential communities were at the northeast edge of the ʻEwa Plain. The largest community was still at Honoʻuliʻuli village. ʻEwa was primarily a plantation town, focused around the sugar mill, with a public school as well as a Japanese School. Additional settlement was in Waipahu, centered around the Waipahu sugar mill, operated by the Oahu Sugar Company.

Major land use changes came to western Honoʻuliʻuli when the U.S. Military began development in the area. Long before the Japanese bombing of Pearl Harbor in December 1941, the U.S. military had initiated the Oahu Coast Defense Command, a series of coastal artillery batteries designed to assist in the defense of Pearl Harbor and to prevent invasion of Oʻahu. Military installations were constructed both near the coast, as well as in the foothills and upland areas. The following military installations were located in the general vicinity of the current Waimānalo Gulch project area. Barbers Point Military Reservation (a.k.a. Battery Barbers Point, 1937-1942), located at Barbers Point Beach, was used beginning in 1921 as a training area for firing 155 mm guns (Payette 2003). Camp Malakole Military Reservation (a.k.a. Honoʻuliʻuli Military Reservation until 1941), located south of Barbers Point Harbor, was used from 1939 as an anti-aircraft artillery training firing point (Payette 2003). Gilbert Military Reservation, located east of Barbers Point Harbor, was used from 1922-1944 as a railway battery firing position (Payette 2003). Brown's Camp Military Reservation (a.k.a. Brown's Camp Battery from 1937-1944 and Battery Awanui from 1940-1945), located near Kahe Point was a railway battery firing position (Payette 2003). Fort Barrette (a.k.a. Kapolei Military Reservation and Battery Hatch), located atop Puʻu Kapolei, was in use from 1931 to 1948 for housing four 3-inch anti-aircraft batteries (Payette 2003).

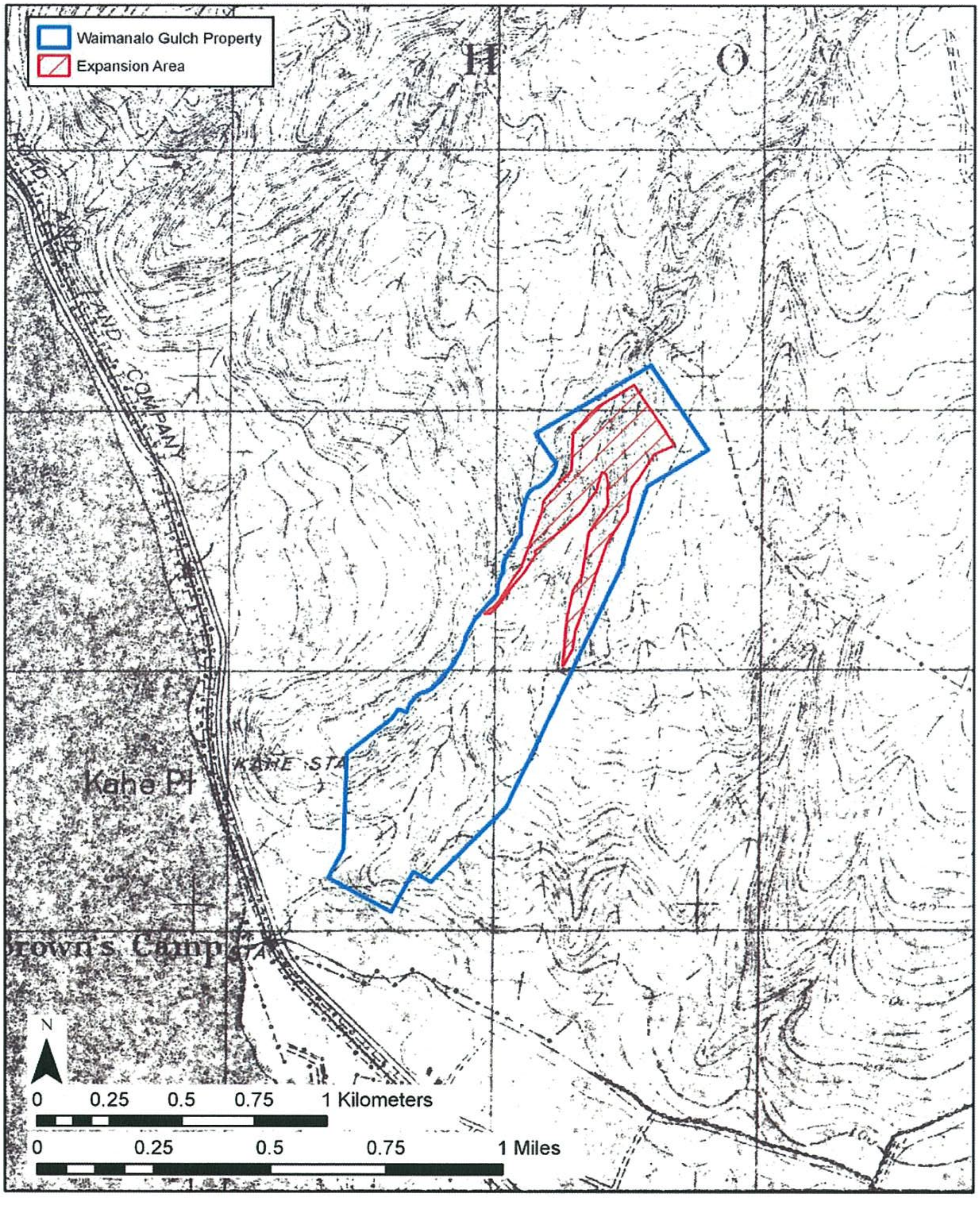

Figure 8. 1918 Fire Control Map, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

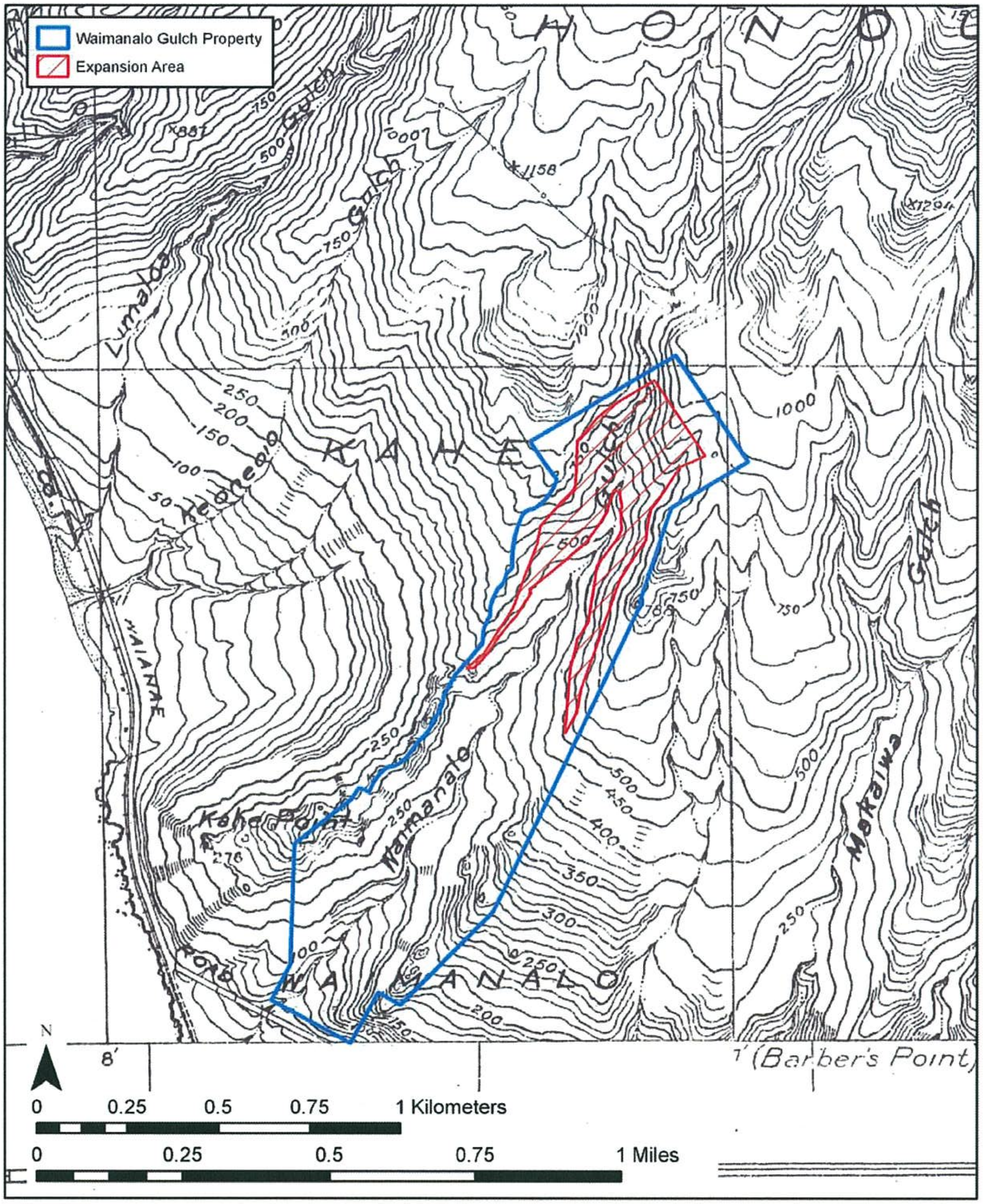

Figure 9. 1928 USGS Topographic Map, Wai'anae Quad, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

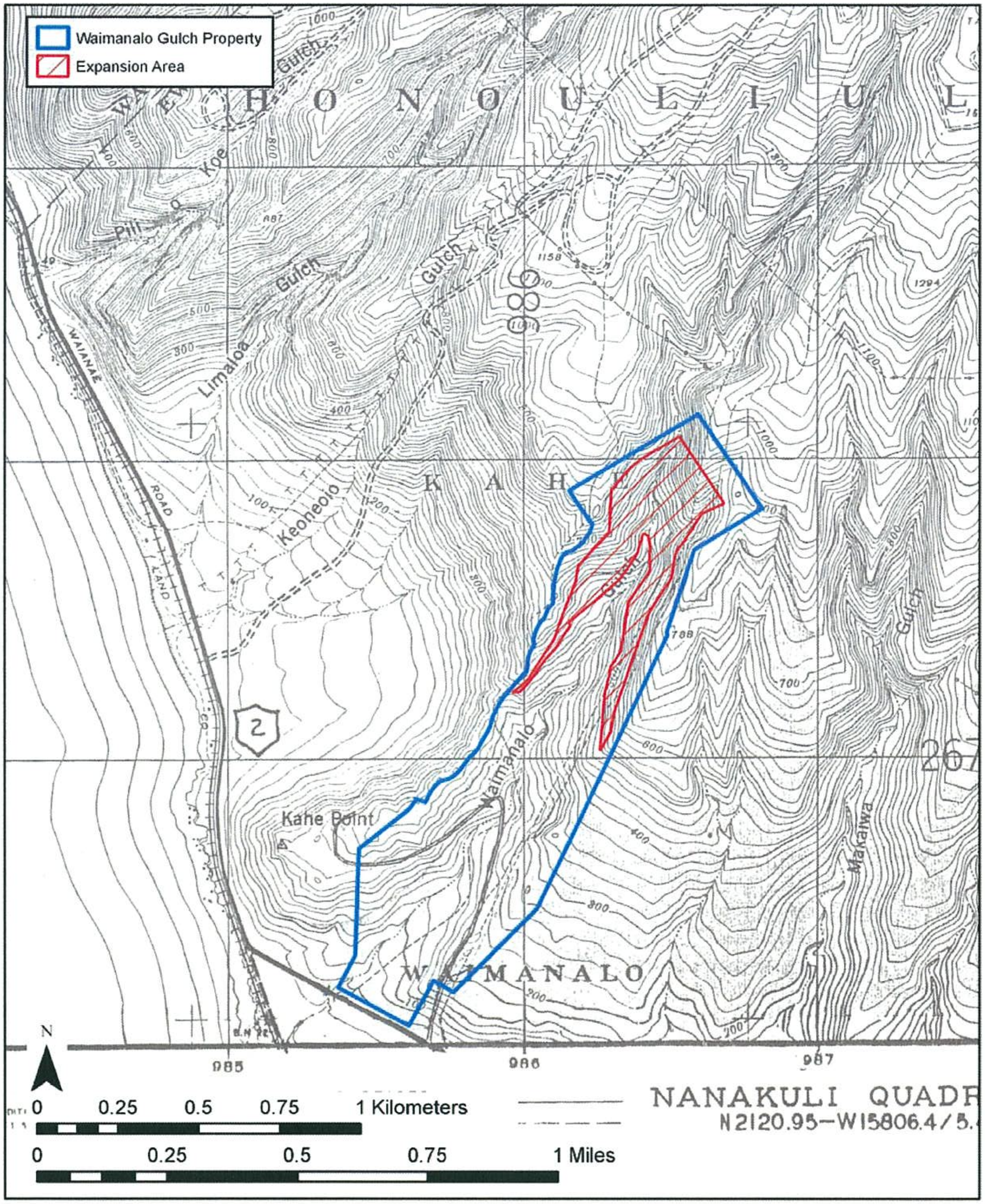

Figure 10. 1928 USGS Topographic Map, Wai'anae Quad, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

In the 1950s, the site was used as a NIKE missile base. Palailai Military Reservation (a.k.a. Battery Palailai from 1942-1944), located atop Pu'u Palailai, was used from the 1920s and included Fire Control Station "B" (Payette 2003). Barbers Point NAS, in operation from 1942 into the 1990s, was the largest and most significant base built in the area. It housed numerous naval and defense organizations, including maritime surveillance and anti-submarine warfare aircraft squadrons, a U.S. Coast Guard Air Station, and the U.S. Pacific Fleet.

3.5.3 Battery Arizona

On the southwest ridge above Waimānalo Gulch are the subterranean remnants of Battery Arizona, an ambitious World War II military project. The attack of December 7, 1941 impelled the construction of further defensive armament for portions of the O'ahu coastline not protected by the existing batteries. Even the sunken ships at Pearl Harbor would be enlisted in O'ahu's defense. When, early in 1942, it was discovered that the two rear three-gun turrets of the U.S.S. Arizona were salvageable, an ambitious plan to mount them at two land installations on O'ahu was set into motion. The two sites chosen were the tip of Mōkapu Peninsula at Kāne'ohe Bay, designated Battery Pennsylvania, and Kahe Point above the Wai'anae Coast, designated Battery Arizona.

Construction of Batteries Pennsylvania and Arizona commenced in April 1943. A formidable subterranean complex was contrived to house the turrets at the two sites. According to a U.S. Army Corps of Engineers report prepared in 1946:

> The design that was eventually produced consists of a central barbette well of concrete set in rock, having an overall depth of about 60 ft. and an inside diameter of about 24 ft., with three levels below the bottom of the turret connected by stairways. Two tunnels radiate from this well to house projectiles and powder magazines immediately adjacent to the well. Beyond and in line with the projectile magazine is a large power room for three 125 KW generators, all miscellaneous switchgear, air conditioning, and ventilating equipment. In a separate tunnel off the main tunnel in the vicinity of the powder room is a 10,000 gallon emergency water tank to maintain the battery for several days in case of siege. Beyond the power room in a separate leg of the tunnel are the operations rooms. Because during prolonged action it might be necessary for the entire battery personnel to remain in the battery and be self sustaining, these gas proofed and air conditioned operations rooms normally comprised of radio and switchboard, plotting, and radar rooms included latrines for officers and enlisted men, a galley, first aid room, offices, and storerooms.

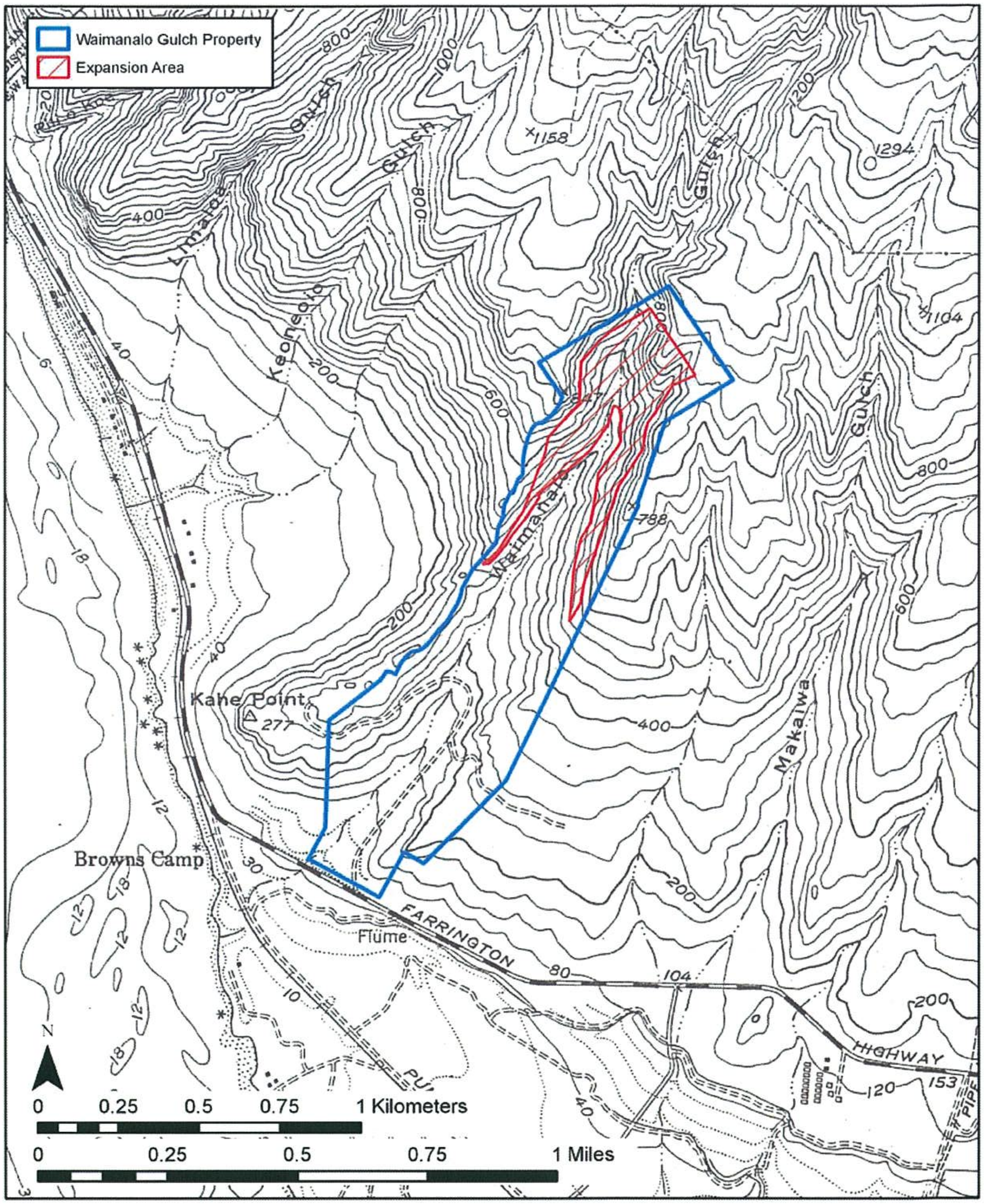

Figure 11. 1953 USGS Topographic Map, 'Ewa Quad., showing the location of the Waimānalo Gulch property and proposed landfill expansion area

The salvaged turrets were stored at a facility on Pearl City Peninsula. Refurbishing of the turrets proved to be a formidable task:

> An immediate complication arose from the fact that removal of the turrets from the Arizona was begun prior to any thought of their reuse; hence, much of the cutting was done rapidly and crudely with no consideration for future reassembly. As a result, the reconstruction frequently was held up by the painstaking realignment and joining of turret segments. Other difficulties arose from the initial damage and subsequent immersion suffered by the armament components. (Kirchner and Lewis 1967:432)

Records in the archives of the U.S. Army Museum at Ft. DeRussy reveal the months-long search across the Mainland for replacement parts, especially motors, and for parts to adapt the turrets to installation on land. It was finally determined that, because they had been so long under water, every part of the turrets' operating systems had to be repaired or replaced.

Perhaps appropriately for the former battleship armaments, the turrets were transported to their respective battery sites by sea. According to the 1946 Army Corps of Engineers report:

> The heavy section of the turrets comprising three 14-inch guns were moved by barge from Pearl Harbor to beaches near the battery sites. Here they were cleaned, painted, and put into condition for installation in the barbette. Special equipment was designed at each site for raising the parts from the ground and lowering to their correct position in the barbette.

Construction of the two batteries continued through all of 1944 and into two-thirds of 1945. Problems--associated with wartime conditions and the unique engineering feat of adapting shipboard weaponry to land installation--dogged the two projects over the many months:

> This work involving repair, replacement, or remanufacture of thousands of separate parts placed great demands upon the Army and Navy ordnance facilities and workers. Often, drawings were not available for damaged or missing items, and a particular stage of reconstruction had to be awaited before such parts could be reproduced...In one instance, well over a year was required to procure a single turret turning gear worm and pinion.
>
> ...The various problems were further complicated by the sheer mass of the armament and the size of the battery structures...Special heavy equipment...had to be erected at each installation for raising the turret members from the shore and for assembling the armament at the site. Some segments had to be moved on rollers along specially constructed roads, while the 71-ton gun tubes were lifted by parkbuckles from the beaches to the emplacements high above.
>
> ...Site peculiarities placed severe restrictions upon the battery layouts. The fire-control radars, for example, because of their sensitivity to concussion, could not be near the turrets; yet the ideal positions for the radars both technically and topographically were but a few yards away...

> During late 1944, the battery construction reached a bottleneck stage when progress depended upon a few highly skilled technicians and the closely timed arrival of a few critical armament components. By Christmas, 1944, the number of personnel that could effectively work at the two installations was limited to about 35 specialists. At this time, Battery Pennsylvania's turret was roughly half assembled, while Battery Arizona was even further behind. (Kirchner and Lewis 1967:432-433)

The slow pace of construction of the two batteries reflected a diminishing urgency for defense of O'ahu and its military installations. The war front was moving west across the Pacific as successive defeats impelled Japan's retreat. Battery Pennsylvania at Mōkapu Point was near completion in August 1945 when its guns were test fired around the same time of Japan's surrender. Battery Arizona had not been completed by the war's end; its guns, though installed, were never fired.

Neither of the two batteries was ever placed in operation during the post-war years. The batteries had been rendered obsolete "due to the development of air power, new assault techniques and nuclear weapons. The guns were scrapped in 1949..." (Bouthillier 1995:12).

A 1943 War Department map indicates a road was constructed within the *makai* / southern portion of Waimānalo Gulch, ascending the western slope to the top of the Kahe Point ridge. This road, along with several other roads and trails indicated on the map, were likely constructed in association with the Battery Arizona complex and other military installations and training areas in the vicinity.

3.5.4 1950s to Present

Waimānalo would once again play a role in the O'ahu defense system when, sometime after 1959, the United States Army purchased or exchanged land with the Campbell Estate for the construction of a Nike-Hercules anti-aircraft missile base located at the head of Waimānalo Gulch. The Nike complex, in used between 1961 and 1968 consisted of two control sites and one double-sized launcher site (Murdock 2003). The tunnel complex of Battery Arizona was also used for civil defense circa 1960.

Development in the uplands of western Hono'uli'uli have generally been limited to ranch related housing and infrastructure, military training and NIKE missile stations, as well as the construction of military and commercial communication and atmospheric observation stations on the ridges near Pālehua. In 1975, the U.S. Air Force constructed the Pālehua Solar Observatory with five solar optical telescopes. A circa 1980s aerial photograph (Figure 13) shows limited development in the vicinity of the Waimānalo Gulch landfill property.

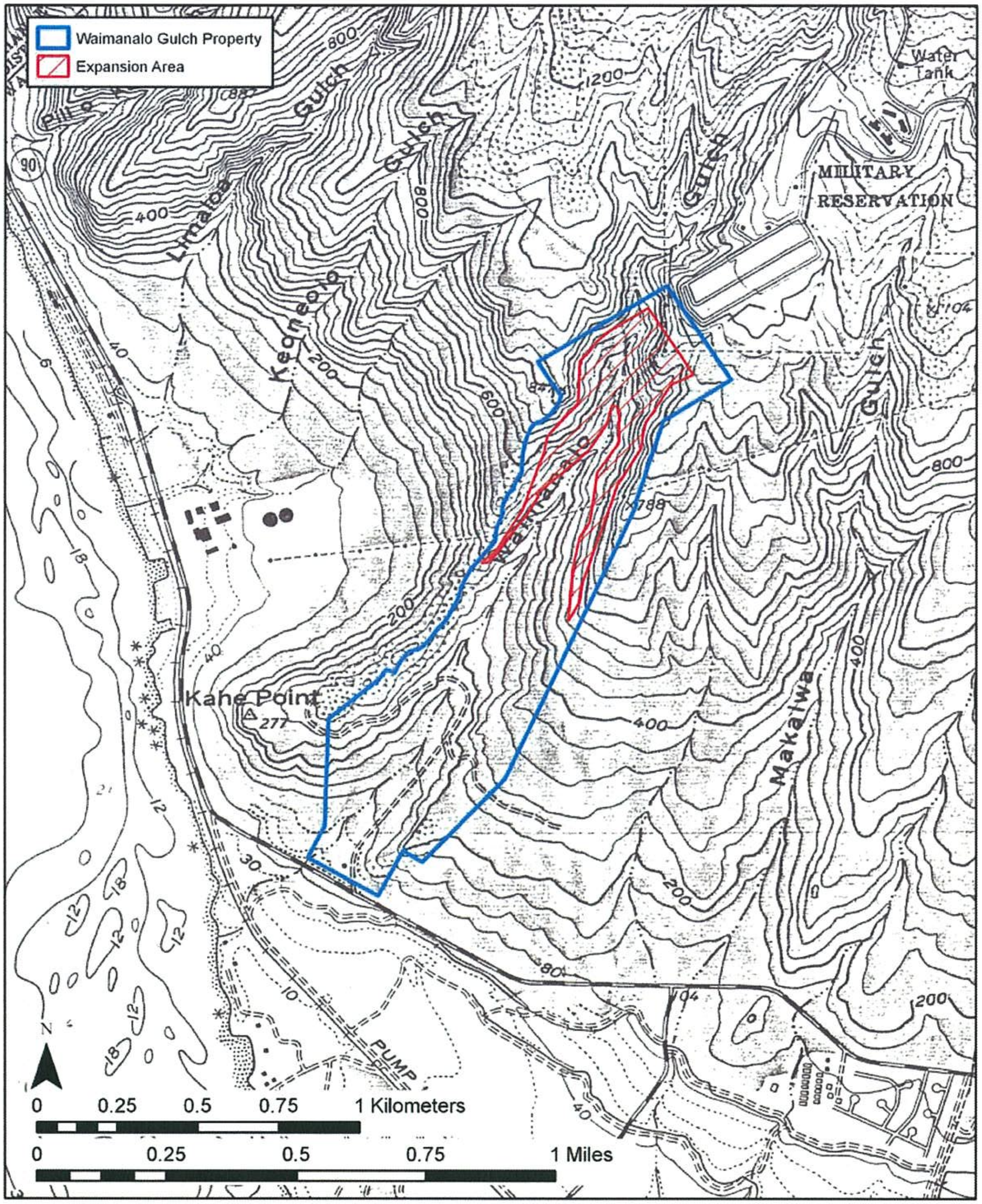

Figure 12. 1962 USGS Topographic Map, 'Ewa Quad., showing the location of the Waimānalo Gulch property and proposed landfill expansion area

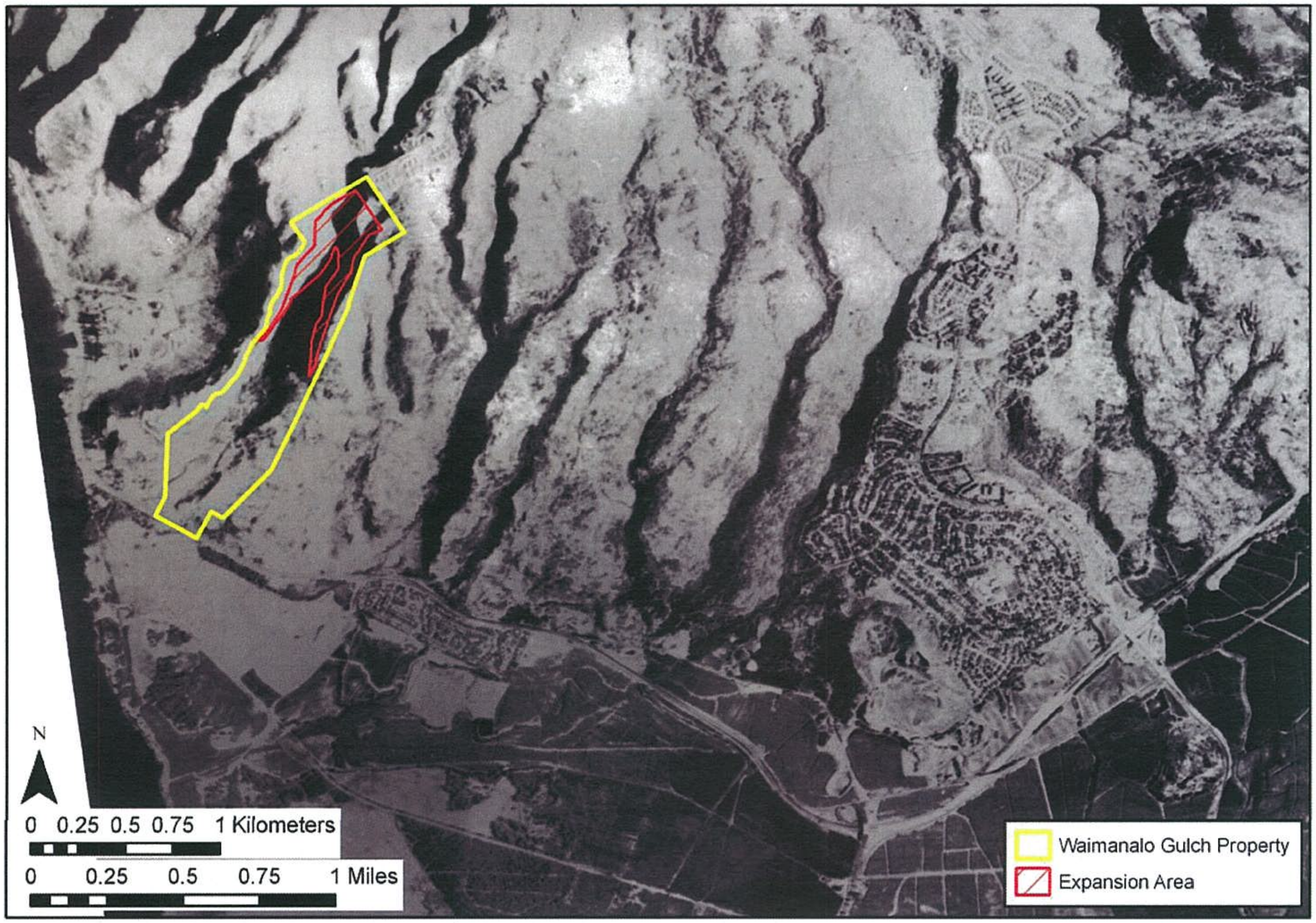

Figure 13. Circa 1980s aerial photograph of western Hono'uli'uli, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

In 1985, the City and County of Honolulu condemned 81.5 acres of agricultural land in Waimānalo Gulch for use as a landfill to dispose of municipal refuse and ash from the H-POWER incinerator to be built nearby at Campbell Industrial Park. Work on the landfill began in 1987. In 1988, workers constructing the Waimānalo Gulch landfill were reporting strange incidents at the site. According to a newspaper article by Bob Krauss:

> "We've been having funny things happen," said one of the men on the site. "Unnatural things. In one case, a man was standing on a flat rock and the thing threw him over. All of a sudden, it just flipped over."
>
> Another time a backhoe was knocking down kiawe trees. The trees have shallow roots systems so they usually just fall down. But one of the trees jumped up and did a somersault...
>
> Then there was the payloader filling in a huge hole where a $17,000 fiberglass fuel tank had been placed. The story is that the driver put his machine in reverse but it jumped forward and leaped into the hole, smashing the tank. (Honolulu Advertiser, 6/20/88:A-1, A-4)

Other incidents reported to Krauss were a truck that had flipped over, tools that had vanished, and a huge stone that had disappeared. The workers called in:

> ...a woman recommended for lifting curses and banishing evil spirits. She said the trouble was caused by a certain stone, the "chief of the valley," which was lying on its side.
>
> The men quickly set the stone upright. But they got it upside down. Things went from bad to worse. The woman came out again and recommended they place the stone on the hill where it will not be covered by rubbish when the landfill opens.(Honolulu Advertiser, 6/20/88:A-1, A-4)

According to Krauss, in April 1988, the stone was moved to a "nest of boulders so that it faces east," at the "end of a Hawaiian Electric Co. Road to one of its relay stations on top of [a] hill." This site lies close to the Battery Arizona bunkers in the southwest portion of the Waimānalo Gulch landfill property.

Section 4 Previous Archaeological Research

The coral plains of 'Ewa have been the focus of more than 50 archaeological studies over the last two decades, largely as the result of required compliance with county, state, and federal legislation. The Kalaeloa (Barbers Point) area, in particular, has been intensively studied. In contrast, relatively little research has been conducted in the uplands of Hono'uli'uli, along the southern slopes of the Wai'anae Range. This discussion of previous archaeological research will focus on the results of this prior archaeological work at the southern end of the Wai'anae range.

Recent archaeological investigations in the southern Wai'anae Range have generally been focused on deep gulch areas for potential landfill locations, lower slopes for residential development, and mountain peaks for antennae or satellite tracking infrastructure (Table 1 and Figure 14).

Table 1. Previous archaeological investigations in the uplands of Hono'uli'uli Ahupua'a

Reference	**Type of Investigation**	**General Location**	**Findings**
Bordner 1977a	Archaeological Reconnaissance	Proposed Makaīwa Gulch Landfill Site	No archaeological sites identified
Bordner 1977b	Archaeological Reconnaissance	Proposed Kalo'i Gulch Landfill Site	3 sites (-2600, -2601, -2602), low stacked boulder walls
Bordner and Silva 1983	Archaeological Reconnaissance and Historical Documentation	Proposed Waimānalo Gulch Landfill Site	No archaeological sites identified
Sinoto 1988	Archaeological Reconnaissance	Makakilo Golf Course	Low stacked boulder wall (-1975)
Bath 1989	Petroglyph Documentation	Waimānalo Gulch	3 petroglyphs (-4110)
Hammatt et al. 1991	Archaeological Inventory Survey	Makaīwa Hills Project Site	34 sites, including prehistoric habitation and agricultural features, rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure
Hammatt 1992	Archaeological Inventory Survey	KAIM Radio Tower, Pālehua	No archaeological sites identified

Reference	Type of Investigation	General Location	Findings
Nakamura et al. 1993	Archaeological Inventory Survey	Makakilo D and D-1 Development Parcels	Cement irrigation flume (-4664)
Borthwick 1997	Archaeological Assessment	Satellite Multi-Ranging Station, Pālehua	No archaeological sites identified
Dega et al. 1998	Archaeological Inventory Survey	UH West O'ahu	Two historic site complexes, (50-80-08-5593 historic irrigation system and 50-80-09-2268 Waiahole Ditch System)
Hammatt and Shideler 1998	Archaeological Inventory Survey and Assessment	Waimānalo Gulch Sanitary Landfill Project Site	Battery Arizona Complex and modern "shrine" site

The earliest attempt to record archaeological remains in Hono'uli'uli Ahupua'a was made by Thrum (1906). He reports the existence of a *heiau* located on Pu'u Kapolei, southeast of the current project area. Pu'u Kapolei Heiau was described as "Ewa-size and class unknown. Its walls thrown down for fencing" (Thrum 1906:46).

In his surface survey of 1930, archaeologist J. Gilbert McAllister recorded the specific locations of important sites, and the general locations of less important sites (at least at Hono'uli'uli). Archaeological investigations by McAllister along the southern slopes of the Wai'anae Range identified a number of sites, which are of interest (Figure 15).

McAllister documents Pu'u Kapolei Heiau as Site 138 and notes:

> The stones from the heiau supplied the rock crusher which was located on the side of this elevation, which is about 100 feet away on the sea side. There was formerly a large rock shelter on the sea side where Kamapuaa (the pig-god) is said to have lived with his grandmother (Kamaunuahihio). (McAllister 1933:108)

McAllister's Site 136 is located near Mauna Kapu, northeast of the current project area, and is described as a small platform on the ridge dividing the 'Ewa and Wai'anae districts. The 4 to 6 square foot platform was constructed of coral and basalt stones, and was believed to be an altar (McAllister 1933:107). It is noted to have been destroyed by the time of Sterling and Summers' work in the late 1950's (Sterling and Summers 1978:32).

McAllister's Site 137 is located at Pu'u Ku'ua, a prominent landmark northeast of the current project area. Pu'u Ku'ua Heiau was described by McAllister as:

> (Destroyed) The heiau was located on the ridge overlooking Nanakuli as well as Hono'uli'uli at the approximate height of 1800 feet. Most of the stones of the heiau were used for a cattle pen located on the sea side of the site. The portion of

> the heiau which has not been cleared for pineapple has been planted in ironwoods. (McAllister 1933:32)

The presence of Pu'u Ku'ua Heiau provides some archaeological evidence of the Pu'u Ku'ua settlement described in the Hawaiian Newspaper "*Ka Loea Kalaiaina*" (see Section V: Background Research).

Makaīwa Gulch, the next major gulch east of Waimānalo Gulch was surveyed as a potential landfill location (Bordner 1977a). The reconnaissance survey included lands within Makaīwa Gulch from Farrington Highway *mauka* to the approximately 1000 ft (305 m) elevation. One archaeological feature was identified, a complex of three concrete platforms that was interpreted to be a military related structure.

An archaeological inventory survey of the "Makaīwa Hills" development project located several traditional as well as post-contact archaeological sites (Hammatt et al. 1991). The project area included a 1,915-acre parcel in Hono'uli'uli Ahupua'a, located between the town of Makakilo and Waimānalo Gulch, and bounded to the south by Farrington Highway and to the north by Pālehua Road (immediately east of the current project area). 34 sites were located, including prehistoric habitation structures (temporary and permanent), agricultural features (terrace and mounds), rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure (Figure 16).

Within the "Makaīwa Hills" project area, habitation sites were found to be clustered in higher elevations above 1000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991). The higher elevations would contain ample forest subsistence resources for gathering on both a continual basis, as well as during times of famine and drought. The lower elevations would be in close proximity to the shoreline and bountiful coastal resources.

> In sum, this site type and patterning sample suggests that prehistoric and historic Hawaiian populations utilized the present study area as a recurrent and temporary habitation area focused mainly on the gathering of specialized goods, such as wild forest plants from the upper elevations and the quarrying of lithic material within the lower elevations. (Hammatt et al. 1991:106)

Kalo'i Gulch, which borders the northern portion of the current project area, was also surveyed as a potential landfill location (Bordner 1977b). The survey included lands within Kalo'i Gulch and its smaller tributaries from the *makai* end of the gulch up to the 1,400 ft elevation. It was noted that bulldozing extensively modified lands at the base of the gulch, *makai* of an historic quarry. In the *mauka* portions of the project area, three sites, possibly prehistoric, were identified. The three sites (50-80-12-2600, -2601, -2602) consisted of low-stacked basalt boulder walls located along the north side of the Kalo'i Stream channel.

During the initial archaeological survey of the lower portions of Waimānalo Gulch (the future site of the Waimānalo Gulch Sanitary Landfill), up to the 430-foot elevation, no archaeological sites were identified (Bordner and Silva 1983). In 1989, three petroglyph units (Site 50-80-12-4110) were located within the previously surveyed parcel (Bath 1989). Site -4110 is located in the southwest corner of Waimānalo Gulch, at approximately 80 ft. elevation.

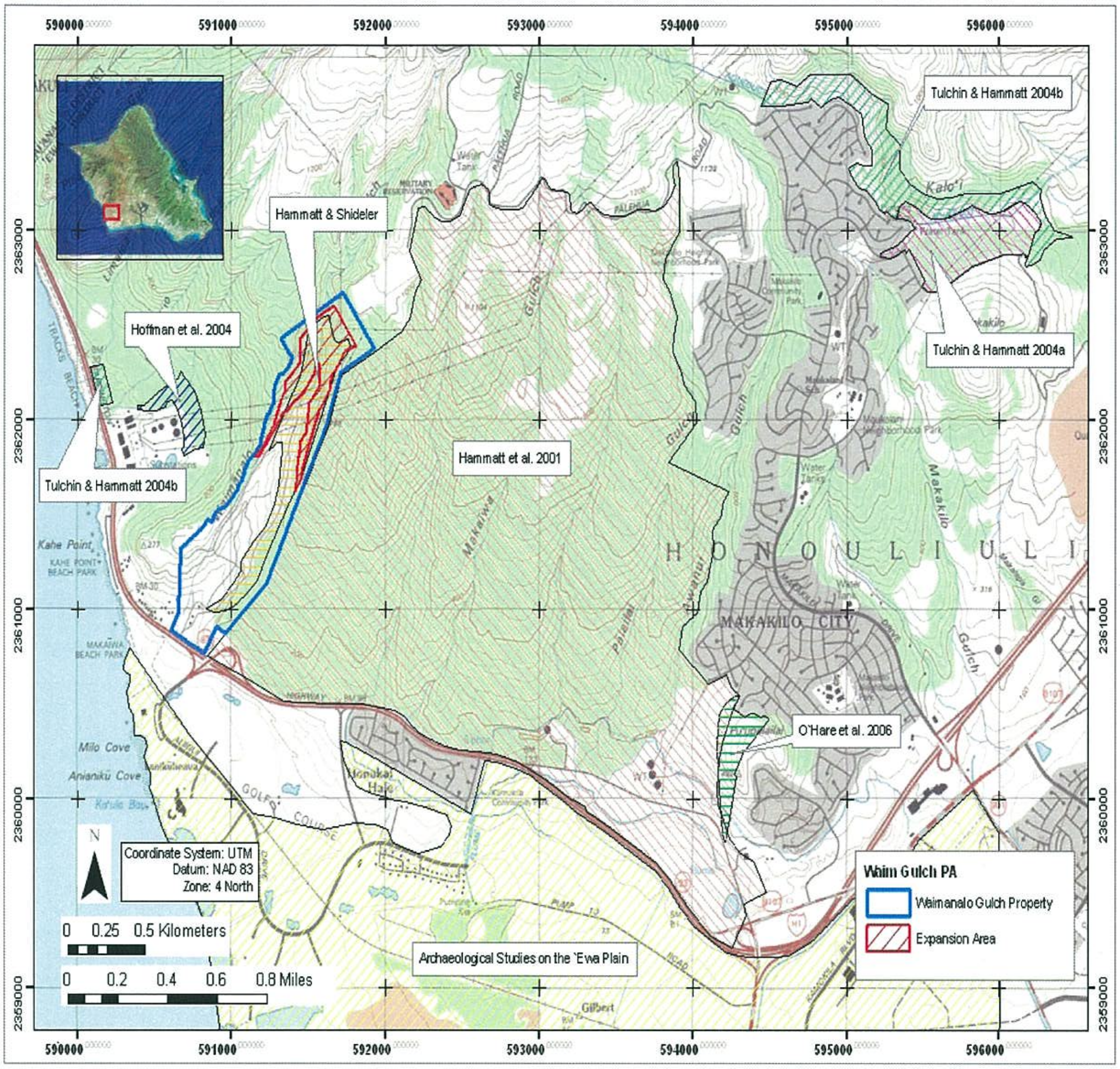

Figure 14. Previous archaeology work for the Waimānalo 'Ili

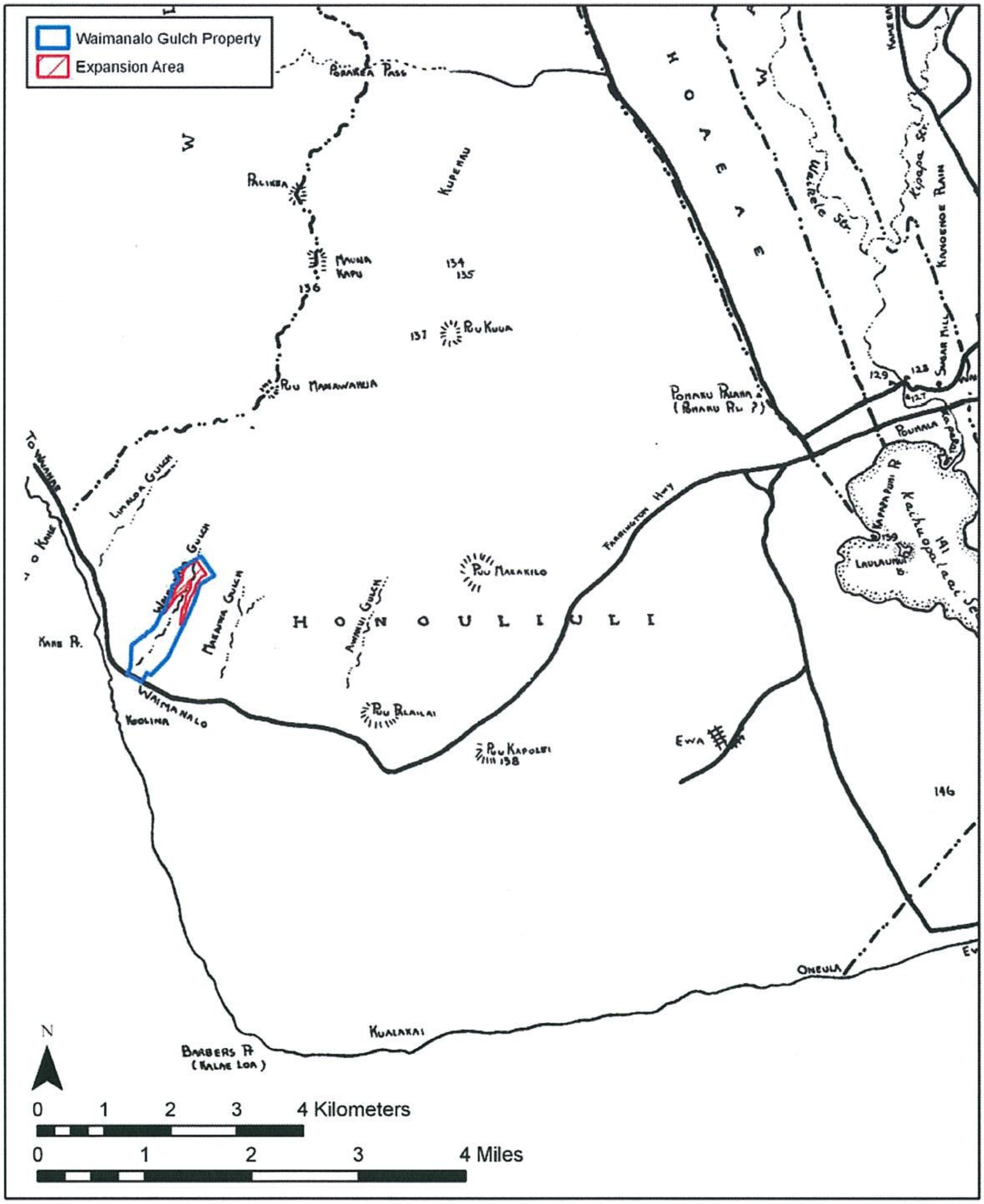

Figure 15. Portion of a 1930 map by archaeologist J. Gilbert McAllister showing Waimānalo Gulch property in relation to archaeological sites discussed in the text (base map from Sterling and Summers 1978)

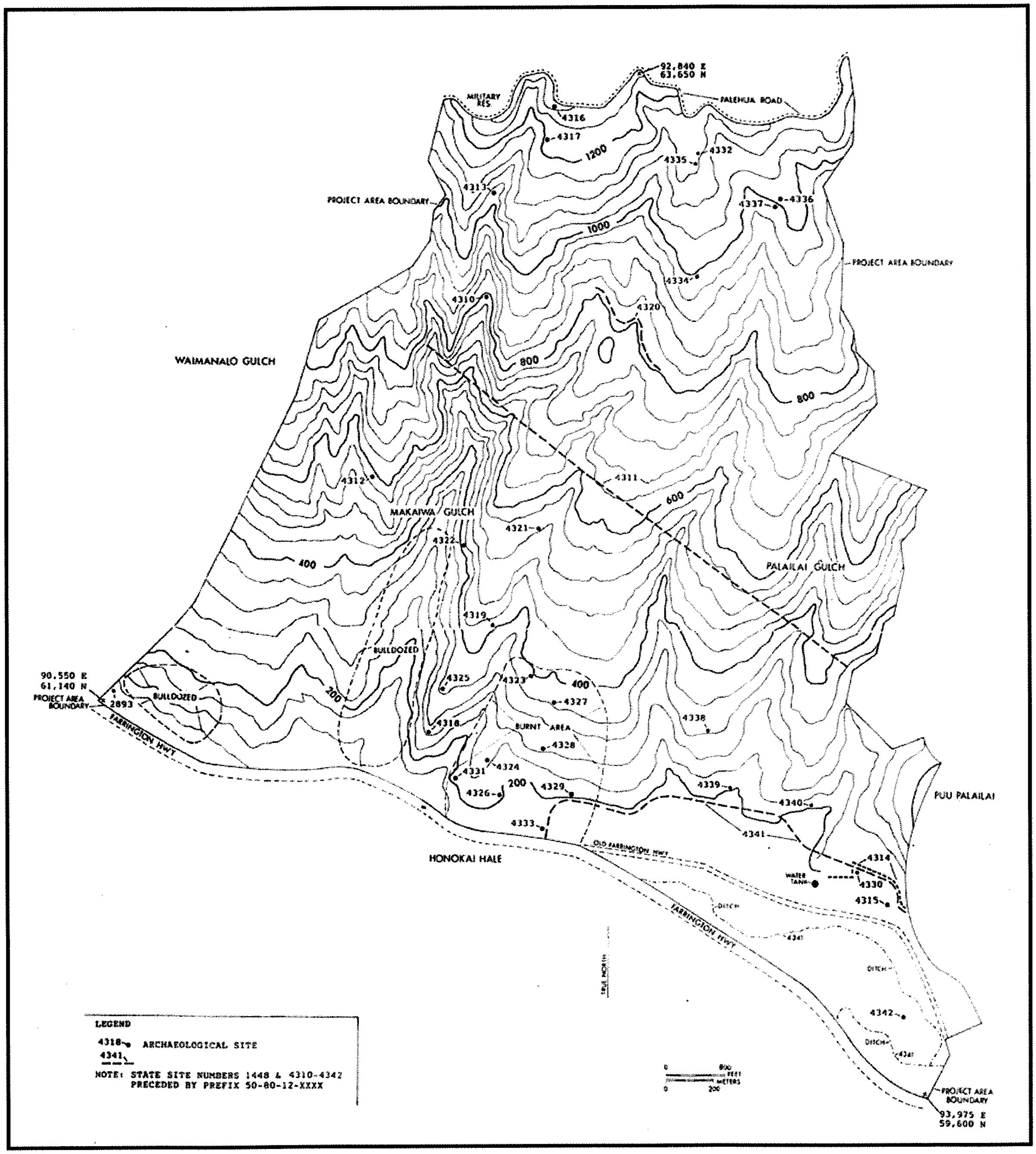

Figure 16. Makaīwa Hills project area showing the location of identified archaeological sites (Hammatt et al. 1991:7)

Further archaeological study within Waimānalo Gulch was conducted for the expansion of the sanitary landfill (Hammatt and Shideler 1998). No archaeological sites were located with the project area; however two sites, the Battery Arizona bunker complex and a modern "shrine" site, were observed along the northern ridge that separates Waimānalo Gulch from the HECO Kahe Power Plant property. The stones of the "shrine" site were believed to have been previously relocated from the central portion of Waimānalo Gulch circa 1988.

An archaeological inventory survey for the proposed University of Hawai'i-West O'ahu campus was conducted by Dega et al. (1998). The survey area included 991 acres in the vicinity of Pu'u Kapu'ai, northeast of the current project area. No traditional Hawaiian sites were located. The project area was noted to have undergone extensive land modification associated with commercial agriculture. Two historic site complexes (50-80-08-5593 historic irrigation system, 50-80-09-2268 Waiahole Ditch System) were documented. Identified features included flumes, aqueducts, ditches, pumps, and other irrigation infrastructure.

Two archaeological studies were made in the Pālehua area, *mauka* of Makakilo. An archaeological inventory survey of the proposed KAIM radio tower (Hammatt 1992), located northwest of the current project area identified no archaeological remains. An archaeological assessment for the proposed Ministry of Transportation Satellite Multi-Ranging Station project site (Borthwick 1997), which abuts the western perimeter of the Air Force Solar Observatory facility, identified no archaeological remains. In 2002, an informal survey conducted by SHPD/DLNR identified an enclosure site (50-80-08-6402) just off of Pālehua Road (SHPD personal communication 2004). The site consisted of two enclosures; one enclosure was determined to be of prehistoric origin, while the other was historic.

Archaeological studies associated with the proposed Makakilo Golf Course (Sinoto 1988) and the Makakilo D and D-1 Development Parcels (Nakamura et al. 1993) were conducted in the immediate vicinity of the current project area. Archaeological reconnaissance of the Makakilo Golf Course property included lands along the southern and eastern slopes of Pu'u Makakilo. Severe erosion was noted throughout the property. A single archaeological feature, a low stacked basalt boulder wall (50-80-12-1975), was identified (Sinoto 1988). Archaeological inventory survey of the Makakilo D and D-1 Development Parcels included lands on the southern and western slopes of Pu'u Makakilo, adjacent to the golf course property. A single historic property, a cement irrigation flume (50-80-12-4664), was located in the southern portion of the project area near the H-1 Freeway (Nakamura et al. 1993). No sites were located in the vicinity of Pu'u Makakilo.

Section 5 Results of the Community Contact Process

Throughout the course of this study, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the Waimānalo Gulch. This effort was made by letter, e-mail, telephone or in-person contact. In the majority of cases, letters – along with a map of the project area – were mailed with the following text:

> In collaboration with Waste Management of Hawaiʻi and the City & County of Honolulu Department of Environmental Services, Cultural Surveys Hawaiʻi is conducting a Cultural Impact Assessment for the expansion of approximately of the approximately 36-acre Waimānalo Gulch Sanitary Landfill Expansion Project, (TMK [1] 9-2-003:073 por) in Honoʻuliʻuli Ahupuaʻa, ʻEwa District, Oʻahu. An overview of the historical and cultural literature background is provided for your convenience.
>
> The purpose of this assessment is to identify any traditional cultural practices associated with the project area, past or present. We are seeking your kōkua and guidance regarding the following aspects of our study:
>
> - General history and present and past land use of the study area.
> - Knowledge of cultural sites which may be impacted by the project – for example, historic sites, archaeological sites, and burials.
> - Knowledge of traditional gathering practices in the study area–both past and on-going.
> - Cultural associations with the study area through legends, traditional use or otherwise.
> - Referrals of kūpuna or anyone else who might be willing to share their general cultural knowledge of the study area.
> - Any other cultural concerns the community might have related to cultural practices in the Waimānalo area.

A total of twenty-one (21) individuals, organizations, and agencies were consulted for this CIA (Table 2). Four of these referred CSH to other individuals who were included in the study. Seventeen (17) individuals contributed specific and relevant information via formal interviews, informal "talk story" discussion and / or email. One person (Douglas McDonald Philpotts) was formally interviewed for this project (see transcription in Appendix B). One person (Shad Kane) was previously interviewed during a prior (2002) CIA for an earlier version of the subject project (see Appendix A for a transcription of the interview, used with permission from Shad Kane).

Table 2. Summary of consultation efforts

Name	Affiliation	Comments
Ailā , William	Hui Mālama I Nā Kūpuna o Hawai‘i Nei	Mr. Ailā feels it is very important to preserve the sites of this area. See Section 6 below for response.
Amaral, Annelle	‘Ahahui Siwila Hawai‘i O Kapolei Hawaiian Civic Club	Made referral to Shad Kane.
Cope, Aggie	Hale O Na‘auao Society	Mrs. Cope mentioned that that area was known for the night marchers trail from *mauka* to *makai*. See Section 6 below for response.
Desoto, Frenchy	Wai‘anae Coast Archaeological Preservation Representative	Made referral to Gary Omori, William Ailā .
Eaton, Arline	*Kupuna* at Iroquois Elementary School	See Section 6 below for response.
Enos, Eric	Cultural practitioner and director of Ka‘ala Farms	Mr. Enos visited Site 6903 to view *pōhaku* within the project area. He is concerned about the protection of this site.
Flanders, Judith	Granddaughter of Alice Kamōkila Campbell	See Section 6 below for response.
Greenwood, Alice	O‘ahu Island Burial Council Member, Wai‘anae District	Ms. Greenwood spoke of a village at Makaīwa. She recalls a story about a ceremony in the area that mentioned possible burials. She remembers the *mo‘olelo* had the names of the unknown gulches. She also spoke about the *huaka‘i pō* (procession of the night marchers) and *akua lele* (flying god, usually a poison god sent to destroy, sometimes in the form of fireballs). See Section 6 below for response.
Ho‘ohuli, "Black" Jo	Wai‘anae Neighborhood Board No. 24	Mr. Ho‘ohuli is concerned about caves in the *mauka* area that may contain burials.
Rezentes, Cynthia	Wai‘anae Neighborhood Board No. 24	Mrs. Rezentes suggested contacting Frenchy Desoto. She is very concerned about the view plane.
Johnson, Rubellite	Hawaiian scholar	Ms. Johnson recommended consulting people who are from the project area.
Josephides, Analu	O‘ahu Island Burial Council Member, Wai‘anae District	See Section 6 below for response.
Kanahele, Kamaki	President of Nānākuli Homestead	See Section 6 below for response.
Kane, Shad	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board and ‘Ahahui Siwila Hawai‘i O Kapolei Hawaiian Civic Club	Mr. Kane made two site visits with CSH to the project area. Mr. Kane is very concerned about the cultural sites within the project area and wants to be involved in the preservation process. He is also concerned about the view plane. See Appendix A for complete interview conducted in 2002 in association with a previous CIA of portions of the project area (cf. Souza and Hammatt 2002)

Name	Affiliation	Comments
Makaiwi, Martha	Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34	Made referral to Maeda Timson and Shad Kane.
McKeague, Kawika	Oʻahu Island Burial Council member ʻEwa District	See Section 6 below for response.
Momoa, Joseph	Kamaʻāina of Nānākuli and member of Kamoʻi Canoe Club	Mr. Momoa mentioned the night marcher path in Waimānalo area and he feels the path needs to be kept clear of visual blockage.
Nāmuʻo, Clyde	Administrator at Office of Hawaiian Affairs	OHA recommended: (1) Consultation with seven specifc individuals, all of whom CSH attempted to contact. (2) The project area be considered a portion of a larger traditional cultural landscape, and that the possible presence of one or more Traditional Cultural Properties be considered (See Appendix C for OHA letter).
Philpotts, Douglas McDonald	Cultural practitioner and long time resident of Waimānalo ʻIli	Mr. Philpotts made a site visit to view the uprights within the projet area. See Section 6 below for response and Appendix B for complete interview.
Tiffany, Nettie	Kahu of Lanikūhonua and Former Oʻahu Island Burial Council member, ʻEwa District	See Section 6 below for response.
Timson, Maeda	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34 and President of Ua Au O Kapolei	Mrs. Timson shared two stories told to her by her Tutu Defreitas. Her *tutu* would bless the *hale* with *tī* (or *kī*) leaf and Hawaiian salt because all the *keiki* would get *makaʻu* (scared). They also had *tī* leaf on all four corners of the house for protection.

As described in Section 1(Introduction), when the expansion project's CIA consultation was initiated, communication with the project proponents indicated that the proposed expansion area would be 36 acres—the same 36 acres that the project proponents were having surveyed as part of the project's archaeological inventory survey of the expansion area. For this reason, the initial project consultation letters describe the expansion area as approximately 36 acres. It was only later that CSH learned that the expansion area was actually approximately 90 acres. The 36 acres corresponds with the actual foot print of the landfill cells that will be created and used for refuse. Portions of the remaining approximately 90-acre expansion area will be used for the aforementioned appurtenances. Therefore, although the foot print of the proposed area to be disturbed is larger than the 36 acres indicated in the initla CIA consultation, the actual portion of the gulch to be used specifically as a landfill (36 acres) has not changed.

The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 will be contacted again with the new information about the larger project area.

Section 6 Cultural Resources and Traditional Practices

The areas of Waimānalo Gulch, Makaīwa Gulch, Koʻolina, Lanikūhonua and the uplands of Pālehua and Puʻukuʻua are within the *ʻili* of Waimānalo located in the *ahupuaʻa* of Honoʻuliʻuli, ʻEwa District (see Figure 11). ʻIli is defined as "a land section, next in importance to *ahupuaʻa* and usually a subdivision of an *ahupuaʻa*" (Pukui and Elbert 1971:91).

The current project area was a zone of less intensive land use between resource rich areas *mauka* and *makai.* The *makai* area has marine resources, a canoe landing, *koʻa* (fishing grounds) and *loʻi* (pondfield) that sustained a fishing village. The *mauka* area is considered a sacred place with many *heiau*, myths and legends.

Although this area has been placed in the district of ʻEwa and the *ahupuaʻa* of Honoʻuliʻuli, some Waiʻanae community members feel a strong connection with this place as many traverse this area fequently to get in and out of Waiʻanae. Participants also mentioned the many natural and cultural resources of the region.

Specific aspects of traditional Hawaiian culture mentioned during information gathering interviews and "talk story" sessions are incorporated throughout this section as they relate to the project area. Some interview material is excerpted from past CIAs conducted by CSH. Interviewees for the current project gave their permission for past interviews to be included in this report. Participants also provided new stories for Waimānalo Gulch for which we have found no previous written documentation. Some of these stories include Spirits *(ʻUhane*), the "Legend of the Slain Girl", the "Legend of Two Giants", and associations with the Pueo ʻAumakua.

Concerns for sacred sites in the area focused on the Pueo Stone which was relocated around 1988 for preservation. Nana Veary, a respected *kupuna*, relocated the *pōhaku.* Gary Omori asserts that after the Pueo Stone was moved to safe ground "the strange events stopped." Another concern of the area surrounds the tradition of "Night Marchers" (*huakaʻi pō*); in particular, the passage in the *makai* region close to human habitation at Lanikūhonua. The *huakaʻi pō* inland route is somewhat vague but appears to be up the southern ridge of Waimānalo Gulch.

6.1 Traditional Hawaiian Beliefs

A number of *kūpuna* and other community members spoke of beliefs associated with Waimānalo ʻIli of Honoʻuliʻuli and the surrounding valleys. While these beliefs and traditions are interrelated, they are discussed below in terms of the presence of *ʻuhane* (soul, spirit, ghost), traditions of *huakaʻi pō* (procession of the night marchers), a legend of a slain girl, a legend of two giants, and a tradition of owl *ʻaumakua* (ancestor gods), in addition to accounts of other mysterious and strange incidents.

Association with *ʻUhane*

Several people familiar with the area mentioned that Waimānalo Gulch and Makaīwa Gulch are associated with *ʻuhane*. In *Nānā i Ke Kumu,* a source book on Hawaiian cultural practices, concepts and beliefs, *ʻuhane* are introduced as follows:

> Says Mary Kawena Pukui of certain of her ancestral beliefs, "Some things are 'e'epa. Unexplainable. "Accept that, and it becomes easier to know about 'uhane. For in Hawai'i's religious mystic tenets, 'uhane was:
>
> The animating force which, present in the body, distinguished the quick from the dead. And so 'uhane can be called "spirit."
>
> The vital spark, that departed from the flesh, lived on through eternity, rewarded for virtue or punished for transgressions in life. Thus 'uhane is "spirit" in the immortal sense, and the "soul" of Christian concept.
>
> Or, as immortal spirit or soul, the 'uhane might return to visit the living and so be termed a "ghost". (Pukui et al. Vol. I, 1972:193)

The presence of *'uhane* at Waimānalo Gulch was mentioned previously in a CIA for Waimānalo Gulch Landfill by Black Ho'ohuli, who is a cultural practitioner and Nānākuli Hawaiian Homestead resource person; Gary Omori, who was the consultant for Ko Olina Resort at the time the Waimānalo Gulch landfill was proposed; Maylene Keamo, who is the Wai'anae Ahupua'a Council President; and Alice Greenwood a *kupuna* in the Wai'anae area (Souza and Hammatt 2002).

Often the perception seems to be more a matter of the person feeling the presence of the *'uhane* in the area rather than knowledge of transmitted lore. Mrs. Keamo also talked about the wandering spirits. Wandering *('auana)* spirits were particularly associated with desolate places in 'Ewa District. Samuel Kamakau (Mo'olelo Hawai'i, Vol. II, Chap. 12, p 23) associates them with the plain of Kama'oma'o, the rough country of Kaupe'a and Leilono - all in 'Ewa District. The belief was that these wandering souls were friendless and wandered in desolate places like the plain of Kaupe'a catching night moths (*pulelehua*) and spiders (*nanana*) for food (*Ke Au Hou*, July 12, 1911; *Ka Po'e Kahiko* 1964:49).

6.1.1 Huaka'i Pō or 'Oi'o (Procession of the Night Marchers)

There are Hawaiian beliefs regarding the presence of what are commonly known as "night marchers" and the *huaka'i pō* or the, "night procession or parade, especially the night procession of ghosts that is sometimes called *'oi'o*" (Pukui and Elbert 1986:84). The night marchers are the souls of those who have passed on. An *'ōlelo no'eau* (proverb) makes reference to this tradition: "*He pō Kāne kēia, he mā'au nei nā 'e'epa o ka pō.*" (This is the night of Kāne, for supernatural beings are wandering about in the night) (Pukui 1983:98).

> Family ties in the afterworld remain unbroken, and all Hawaiians believe in the power of sprits to return to the scenes they know on earth in the form in which they appeared while they were alive. Especially is this true of the processions of gods and spirits who come on certain sacred nights to visit the sacred places, or to welcome a dying relative and conduct him to the 'aumakua world. "Marchers of the night" (Hauaka'ipo) or "Spirit ranks" (Oi'o) they are called. Many Hawaiians and even some person of foreign blood have seen this spirit march or heard the "chanting voices, the high notes of the flute, and drummi8ng so loud as to seem beaten upon the side of the house." Always, if seen, the marchers are dressed according to ancient usage in the costume of chiefs or of gods. If the procession

> is one of gods, the marchers move five abreast, with five torches burning red between the ranks, and without music save that of the voice raised in chant. Processions of chiefs are accompanied by ʻaumakua and march in silence, or to the accompaniment of drum, nose-flute, and chanting. They are seen on the sacred nights of Ku, Lono, Kane, or Kanaloa, or they may be seen by day if it is a procession to welcome the soul of a dying relative. To meet such a procession is very dangerous. "O-ia" (Let him be pierced) is the cry of the leader and if no relative among the dead or none of his ʻaumakua is present to protect him, a ghostly spearsman will strike him dead. The wise thing to do is to "remove all clotting and turn face up and feign sleep." (Beckwith 1970:164).

Several of the participants in this cultural study talked about night marchers. Aunty Arline Eaton commented that there is a pathway for the night marchers that travel from the *mauka* area of Waimānalo ʻIli down to the special place of Lanikūhonua. She feels strongly that this pathway must be kept clear for them to continue their traditional passage.

Aunty Aggie Cope and Kamaki Kanahele both mentioned that the *ʻili* of Waimānalo was well known for the pathway of the night marchers and they both feel it is of great importance to keep that pathway clear of visual impact.

Judith Flanders mentioned that her grandmother Kamōkila Campbell spoke about the night marchers' trail that came from the uplands to the ponds at Lanikūhonua.

Mrs. Nettie Armitage-Lapilio related a tradition that at certain times of the year night marchers would come down from the uplands to the vicinity of Kamōkila Campbell's place on the coast (Lanikūhonua). The procession route indicated was on the east ridge of Waimānalo Gulch which is the west ridge of Makaīwa Gulch (Souza and Hammatt 2002).

Analu Josephides recalls *moʻoleo* told to him by his *kūpuna*:

> I grew up knowing about the land area known as Makaīwa. My mother, my Tutu Wahine, as well as, *kūpuna* within my *ʻohana* had shared various stories about this area. One of the many stories shared and landscapes pointed out is both the path of the night marchers and of the night marchers themselves. One of the stories that Tutu Wahine related was that in the old days no homes were built in this particular area except for the *mauka* area of Makaīwa to the west, the *mauka* area to the east known as Makakilo, and the *makai* area below where in ancient time was the dwelling place of the Kamapuaʻa *ʻohana*.
>
> We were told as children that one of the reasons that homes were not built on the path of the night marchers were that the night marchers and those who leaped from this world and taken to be with these clans were said to carry the burning *kapu* of Pihenakalani. This was a *kapu* that descends from Kauaʻi from the ancient days of the Mū and the Menehune people. It was also known as the prostrating *kapu* of Kalanikauleleiaiwi.
>
> Tutu went on to state that if a *hale* was built upon the path of the night marchers that it would be destroyed by fire. A similar life story occurred in Opihali, South Kona, Hawaii where a grand-uncle of my Tutu Wahine named Ioane Kuahiwinui

> was said to have warned his brother not to build his home in a certain area in Opihali or else the night marchers would take it; and sure enough when the *hale* was finished, on the night of the night marchers, the new *hale* was burned to the ground. Not long after this home was built and burned did they build another home in a location off and away from the path of the marchers and till today that home is standing, *makai* of Mamalahoa highway near the 95 mile marker.
>
> Tutu spoke of how nothing should be on the path of the night marchers as when they came through they would destroy anything and everything in their way. It is also believed that if a person was on the path of the night marchers they would prostrate themselves and keep their face hidden lest they are succumbed to the marchers and join them in their realm. The story continues, that if the night marcher came upon you and you were not family nor the chief of the particular area they would take your soul and you would continue your spiritual life marching with them forever. It is believed that in this particular area called Makaīwa that Hiʻiakaikapoliopele, the sister of Pele, would be the last one in the night marchers' line because of her back having been placed under *kapu*; therefore no one was allowed to walk behind her.
>
> For these historical reasons the path of the night marchers should be preserved so that the marchers who are the ancestors of many of our Kānaka Maoli [native born] can continue to travel.

Mrs. Nettie Tiffany discussed her childhood memories about what her aunty called the "bird catchers." They would come down from the Waimānalo and Makaīwa Gulch area through a trail that was marked by a large *pōhaku* (stone). The bird catchers would come down from the gulch to take a bath in the waters fronting Lanikūhonua.

The following excerpt is from the ʻAhahui Siwila Hawaiʻi O Kapolei letter regarding the Makaīwa Gulch project. They gave permission to reprint that letter for this project:

> There were many stories associated with night marchers walking from the area of Lanikuhonua mauka crossing Farrington Hwy in the area *makai* of Honokai Hale and walking mauka by way of Makaiwa Gulch. When Kamōkila Campbell lived at Lanikuhonua she had always left an opening in the Naupaka hedge that separated the beach from her property. This opening in the hedge was cut to allow night marchers to pass through the area on their way *mauka*. Members of the Campbell family have shared this story. There are many unexplained accidents that have occurred on Farrington Highway between Honokai Hale and the entrance to Ko Olina when drivers turned off the road in an effort to avoid something that they saw, or thought they saw, ahead of them.

The excerpt below is taken from an interview with the late Uncle Walter Kamanā (WK) who shared his *manaʻo* (concerns) with CSH on the Pō Kāne (Souza and Hammatt 2003):

WK: Ok there is no such thing that *menehune* (legendary little people of old) and night marchers are different people. They are the same. Some people use the *menehune* to tell old stories the *menehune* get power like they translate the word from Kona you know! On that side that they when build the big stones to put in the water outside. But through the *menehune* lazy work before they never complete that *loko* the pond. So here when they say night marchers the *menehune* coming down go *holoholo* [taking a walk] down the beach.

CSH: You said get one from here to there (looking on map)

WK: Yeah that's a trail way but now get houses. But now today many of the secret path are gone. So the night walkers they come out certain times, like pō kane night or certain Hawaiian nights they going march through. The nightwalkers got to come down to the ocean. There is something between the ocean and them and the mountain, you know! That's why when you see long trail like over here over here Waimānalo, Puko, (Ko'olina).

CSH: Yeah. I heard there is one over there too!

WK: Yeah goes from Ko'olina, goes to Nanikono come out I the only guy who knows the trail. Before certain time they use to come down you know where the red trail come over into Nānākuli, before they improve that road it come right from there come down. Where the guy call it Pahe or Kihei because it is house of the wind. Same like here they name it Ilimapapa the name of this place was called Hualilili house of the wind, same like here they name 'em Ilimapapa because of all the flat land. The twin sisters start from in here. The twin sisters was a whirlwind, that certain time of the year they like go down the beach and bath. So when they come they going come right through come spinning right down through Poku and come up. You know they bang this wall come over in Lualualei go down cross over you know that get Hakimo and Pa'akea and go down inside into Leihōkū area into Wai'anae into where Pōka'ī Bay and head out the ocean. So when it use to come in here it use to develop an air pocket. There were no coincidences except the rock in Kolekole Pass. The guy that bulldozed that he was living and he died. The son must remember, his name was David Kilikahua. The father was the one who pushed the rock over Kolekole Pass. He told the story and some old timers who died, they said had three of them who pushed the rock over the Pali. The next morning the rock was standing right back up there. So when their boss saw he said go move 'em again. He said how can a big boulder come back up? They figure the *menehune* when bring 'em up but nobody saw 'em they only saw the rock back. Later part of the year they made heads to tails to the rock in Nānākuli.

6.1.2 Legend of Two Giants

A legend told by Alice Greenwood mentions two giants who live in the Waimānalo and Makaīwa area. The legend indicates that when one giant opens his eyes it means the giant will take someone's life. There is concern that these legends may be connected with unexplained car accidents that have occurred on Farrington Highway in front of the two gulches. Few details of this legend were provided.

There are also several accounts of giants in the vicinity. The Hawaiian gods Kāne and Kanaloa, who are sometimes understood to attain supernatural size, are associated with the area of Piliokahe where stones they hurled from red hill landed (Simeon Nawa'a 1954 in Sterling and Summers 1978:1). Simeon Nawa'a related another account of Piliokahe associating two hills with a male and a female - seemingly of fabulous size. The demi-god Māui is associated with the southern Wai'anae area (particularly Lualualei) and is often thought of as a giant in his superhuman efforts to snare the sun.

6.1.3 Legend of the Slain Girl

These *'uhane* may be explained by a few legends concerning the Waimānalo Gulch area. Mr. Omori tells about one legend of two lovers (Souza and Hammatt 2003):

> …the girl is hunted down and killed in the Waimānalo Gulch. People say that the girl's 'uhane lingers in this gulch and an image of a white lady appears at times and strange things happen in the area. For example, unexplained car accidents happen on Farrington Highway.

This account has strong similarities with the famous legend of Kahalaopuna, the young woman of Mānoa who is murdered repeatedly (she revives repeatedly) by Kauhi, her jealous lover from Ko'olau. Enraged at accounts of her sleeping with various lovers, Kauhi leads Kahalaopuna through the uplands of south O'ahu traveling west from Mānoa Valley (with Kahala being slain repeatedly). While the many accounts differ in detail a common setting for the last of the beatings is Pōhākea Pass in Hono'uli'uli north of the project area. After being put to death, her *'uhane* flies up into an *'ōhi'a lehua* tree and calls out to travelers passing along the road asking them to inform her parents of her death. An interesting aspect of the story is:

> Kū iho lā ka huakai e ho'olohe, i kēia leo, e kanaka paha, he makani paha, he 'uwī lā'au paha. 'Elua oli ana o Kahalaopuna, maopopo ia lākou, he 'uhane ua make.

Translation:

> The travelers stood and listened, to this voice, was it a person or perhaps the wind, or the rubbing together of trees. The travelers are at first uncertain but when she cries a second time they know it is a spirit that has died. (Fornander 1919: Vol. V 192-193)

While it is certainly possible that Mr. Omori's account is unrelated, similarities include: a woman who is slain by her lover in the uplands of Hono'uli'uli, that the slain woman's spirit lingers in the vicinity of her death, and that the spirit causes unexpected events to travelers. The nature of the legend of Kahalaopuna, with events happening in many different places, lends itself to becoming incorporated in other settings - particularly desolate areas in which the wind or creaking trees might sound like a human voice.

6.1.4 'Aumakua Pueo of the 'Ili of Waimānalo

Many people consulted for this project mentioned the frequent sighting of *pueo* (owl) in the area. Gary Omori and William Ailā mentioned that the *pueo* was the *'aumakua* of the *'ohana* in the area (Souza and Hammatt 2002). In *Nānā i Ke Kumu*, a source book on Hawaiian cultural practices, concepts and beliefs, the concept of *'aumakua* is introduced as: "ancestor gods; the god spirits of those who were in life forebears of those now living; spiritual ancestors" (Vol. I, 1972:35). *'Aumakua* fall into the English category of totems and were typically animal or plant species. *'Aumakua* could be inherited bilaterally, from both the father's and mother's kin groups (*'ohana*). Each individual had the opportunity to retain multiple *'aumakua.* Mary Kawena

Pukui's childhood education included memorizing the names of fifty of her family *'aumakua* (Nānā i Ke Kumu Vol. I, 1972:356). Aunty Aggie Cope mentioned that there was a rock in Waimānalo Gulch that resembles a *pueo.* The presence of the Pueo Rock connects the traditions and beliefs directly to this area. The Waimānalo and Makaīwa Gulches are typical habitat for *pueo* and they are often seen hunting in the grasslands.

6.2 Burials

Most Hawaiians in the pre-Contact period belonged to the *maka'āinana* or commoner class and their bones were usually buried in their particular *'ili.* Burials are commonly reported from clean, consolidated sand deposits, which was clearly a common method of internment practiced by Hawaiians (Cleghorn 1987:42).

Commenting on the nature of burial areas and body positions used in burial, William Ellis (1827: 361-363) says: "The common people committed their dead to the earth in a most singular manner." The body was flexed, bound with cord, wrapped in a coarse mat, and buried one or two days after death. Graves were "...either simply pits dug in the earth, or large enclosures... Occasionally they buried their dead in sequestered places at a short distance from their habitations, but frequently in their gardens and sometimes in their houses. Their graves were not deep and the bodies were usually placed in them in a sitting posture.". Hawaiians placed significance on the *iwi* that were regarded as a lasting physical manifestation of the departed person and spirit. "The bones of the dead were guarded, respected, treasured, venerated, loved or even deified by relatives; coveted and despoiled by enemies" (Pukui et al. 1972:107).

No burials or *iwi kūpuna* (ancestral human remains) have been documented in two archaeological inventory surveys of the project area (Hammatt and Shideler 1998; Dalton and Hammatt 2008). The closest known burials were found in the Ko'olina and Lanikūhonua in caves, sand dunes and sinkholes. However, Dalton and Hammatt's (2008) report states it is possible that burials may be discovered during proposed construction activities; in particular, several small caves and overhangs in the northwest portion of the current project area may contain such evidence. Some participants strongly recommend that the project does not extend any further into the *mauka* region, which may contain burials.

Mrs. Nettie Tiffany urged caution in regards to burials in the project area; she feels although the land has been heavily altered by ranching and other activities there is still a possibility of finding *iwi kūpuna.* She also strongly suggests that there be a plan of action if there are burials found during the project.

Aunty Arline also mentioned that if people lived in the project area, there might be a possibility of finding burials:

> My only thought is that for every person that lives in that area, that's where they bury their people... We never said anything if people died, we'd go over there and they'd bury them right there where the house is. We'd never go four-hundred-million-miles away, it's right there. All your *'ohana* stay right in the same area. We never went afar, not in the rural areas.

6.3 Trails

Trails connected the settlements throughout the District of ʻEwa and Waiʻanae. Based on nineteenth and twentieth century maps, the primary transportation routes correlated closely to the existing major roadways. John Papa ʻIʻī describes a network of Leeward Oʻahu trails that in later historic times encircled and crossed the Waiʻanae Range, allowing passage from West Loch to the Honoʻuliʻuli lowlands, past Pu'uokapolei and Waimānalo Gulch to the Waiʻanae coast and onward, circumscribing the shoreline of Oʻahu (ʻĪʻī 1959:96-98). Following ʻIʻī's description, a portion of this trail network passed close to the current Farrington Highway.

It seems clear that a major east/west artery from ʻEwa and Kona Oʻahu to Waiʻanae ran just south of Makaīwa Gulch roughly along the Farrington Highway alignment. "As mentioned before, there were three trails to Waiʻanae, one by way of Puʻu o Kapolei, another by way of Pōhākea, and the third by way of Kolekole" (ʻĪʻī 1959:97).

ʻĪʻī, who was born about 1800, also recounts an incident at Waimānalo that occurred when he was eight or nine years old. While the young ʻĪʻī was staying at Nānākuli, he learned:

> ...of the burning of the houses in Waimānalo. The overseer in charge of the burning told [ʻĪʻī and his relatives] that it was so ordered by the royal court because the people there had given shelter to the chiefess, Kuwahine, who ran away from her husband Kalanimoku after associating wrongfully with someone. Kuwahine was the daughter of the Kaikioewa who reared Kamehameha III in his infancy. She had run away because she had been beaten for her offense and for other reasons, too, perhaps. She had remained hidden for about four or five days before she was found. Here we see the sadness that befell the people through the fault of the chiefs. The punishment fell on others, though they were not to blame. (ʻĪʻī 1959:29)

Īʻī's sad account reveals that the coastal Waimānalo portion of Honoʻuliʻuli Ahupuaʻa continued to be inhabited into the early 19th century.

The following on ancient trails is from the ʻAhahui Siwila Hawaiʻi O Kapolei letter:

> There may have once existed an intersection of 2 trails in the approximate location where the present entrance to Ko Olina exist today. In ancient times there were 3 ways to get to Waiʻanae. One was by way of Kolekole, one was by way of Pohakea and the 3rd was by way of Puʻuokapolei. Farrington Highway follows the path of the ancient trail that passed Puʻuokapolei.
>
> Generally, petroglyphs are found on the high ground between Waimānalo and Makaiwa Gulches indicating that a trail may have once existed in this area, again confirming a *mauka-makai* path. The existence of this trail is supported by numerous amounts of cultural resources and structures built along this lineal *mauka-makai* relationship that follows the path of Waimānalo and Makaiwa Gulches.

Shad Kane has also expressed his knowledge in regards to the many trails in Hono'uli'uli. Below is an excerpt from a previous interview with Mr. Kane (Souza and Hammatt 2002):

> One of the most elementary relationships in ancient times was the *mauka-makai* relationship. And the reason why I bring this one up is because it plays a very important role in having an understanding of the area surrounding Waimānalo Gulch. It's not to say that it wasn't important elsewhere. It may have been. Or I would say it was important all over, that *mauka-makai* relationship. But what makes this area unique is the fact that we have evidence, we have structures that support that *mauka-makai* relationship. Most places most of these kinds of structures – stone walls, habitation structures, cultural resources – most places they've largely been disturbed or destroyed. But in this respect, this particular *mauka-makai* relationship, there's, I think, sufficient structures that still exist today that you and I can look, see, feel and touch, that supports that *mauka-makai* relationship. And I think if we had a map, if you were to draw a line from the approximate area that may today identify as Ko'olina – If we were to draw a straight line from Ko'olina to Mauna Kapu you'd find that that passes along the northern ridge of Waimānalo Gulch, goes straight up to the ridgeline at Pu'u Manawahua, and follows pretty much a straight line to Mauna Kapu.
>
> Okay, a lot of the information that I shared too are things that you can actually find from different resources. And this is one. In ancient times there were several trails that people would take to come from Honolulu to come to this side of the island. I think there were three ways to get to Wai'anae. One was by way of Kolekole Pass. One was by way of Pōhākea. Another was by way of Pu'u Kapolei. Three trails. Obviously, another one along the shoreline which was the longest way to travel. Farrington Highway is very obviously a trail. Now, in the context of Waimānalo Gulch, what makes this extremely interesting is the fact that there's a series of petroglyphs that was preserved by the developer of Ko'olina or West Beach Estates. When they first started developing – There were a number of archaeological surveys that were done early on. And one of the key persons was Aki Sinoto. I've read a lot of Aki's work. Very interesting cultural information that he found – that whole area over there. And several other people. The interesting thing is that the first archaeological survey that was done was 1930 by Gilbert MacAllister. Between 1930 up until the '70s nothing was done. So 1970 was the start of all this discussion in regards to building in this whole region. And because of the requirements for the EIS and doing a cultural assessment – All of a sudden, since the 1970s until now, and the development of the Campbell Industrial Park and Kapolei and the resort area, we had all these archaeological surveys that came up. So Aki Sinoto is one of them, amongst others. But one of the things they discovered is the fact, in addition to all the information in the lower plains, in addition to the sinkholes and the bird bones, they also found what I think they refer to as the alluvial level or the higher elevation up above the coral plains. And what they found, they found habitation structures, they found burials, and some petroglyphs. I think they actually found

> two. I think they found one that's actually inside Waimānalo Gulch, up on the higher ridge. I've never seen it.
>
> Another one they found that was preserved at the entrance to Ko'olina. Now the interesting thing about petroglyphs is that most of them are built identifying trails. And you find them along ancient trails. And the significance of these particular petroglyphs here is that it actually defines the intersection of two trails – Farrington Highway and the *mauka-makai* trail. That *mauka-makai* trail is supported by everything else that I've shared with you in respect to the cultural sites up above. We need to understand the significance of that *mauka-makai* relationship because that was one of the relationships in ancient times. In ancient times, it was matter of life-or-death resources. It was food. So it was establishing that relationship between the people up above and the people at the ocean. So these were your closest friends. These were the people – So you don't have to go dive for fish. You just go down and you take what you got to share. You get fish from people down below. So these were your neighbors. So obviously there would be *mauka-makai* trails all over the islands. The significance of this one is the fact that you have structures that supports that idea, that's still intact today. And the petroglyphs along Farrington Highway is one of those supporting pieces of information.

The petroglyph site mentioned above (State Inventory of Historic Properties [SIHP] # 50-80-12-2893) is located outside the southeast corner of the current project area (see Previous Archaeological Research section above). The *mauka/makai* trail mentioned above is probably the one depicted on the 1914 Fire Control Map (Figure 17). The trail starts at the area of the petroglyphs (SIHP # 2893) and goes up between the east end of Waimānalo Gulch and the west end of Makaīwa Gulch. This trail is most likely a pathway to the former village of Pu'u Ku'ua and the *heiau* in the *mauka* region of Hono'uli'uli. This *mauka/makai* trail would have also intersected the well known trails of upper Hono'uli'uli, Pōhākea Pass, Kolekole and Palikea which all lead to Kūkaniloko, the center or *piko* of the Island of O'ahu.

Douglas McDonald Philpotts also spoke about trails in the *'ili* of Waimānalo:

> The main trails from this community to *makai* were in both Waimānalo and Makaīwa. These trails had water and springs there and were probably used more for uphill travel. The ridge between them was faster but there was no water so it was more than likely used for downhill travel. Another was down by Awanui just west of Pu'u Palailai and another was on the up side of Kaloi. The main trails had a spring or two along the way and if there was enough water something was grown there.

Another *mauka/makai* trail is depicted on the 1873 Alexander map (Figure 18) of Hono'uli'uli. The trail went from the uplands of Pu'umanawahua, Palikea (shown on map as "wooded hill"), Kapuai and Pu'ukuua passing Pu'umakakilo straight to Pu'u Pālailai, then to the coast of Ko'olina where there was once a village.

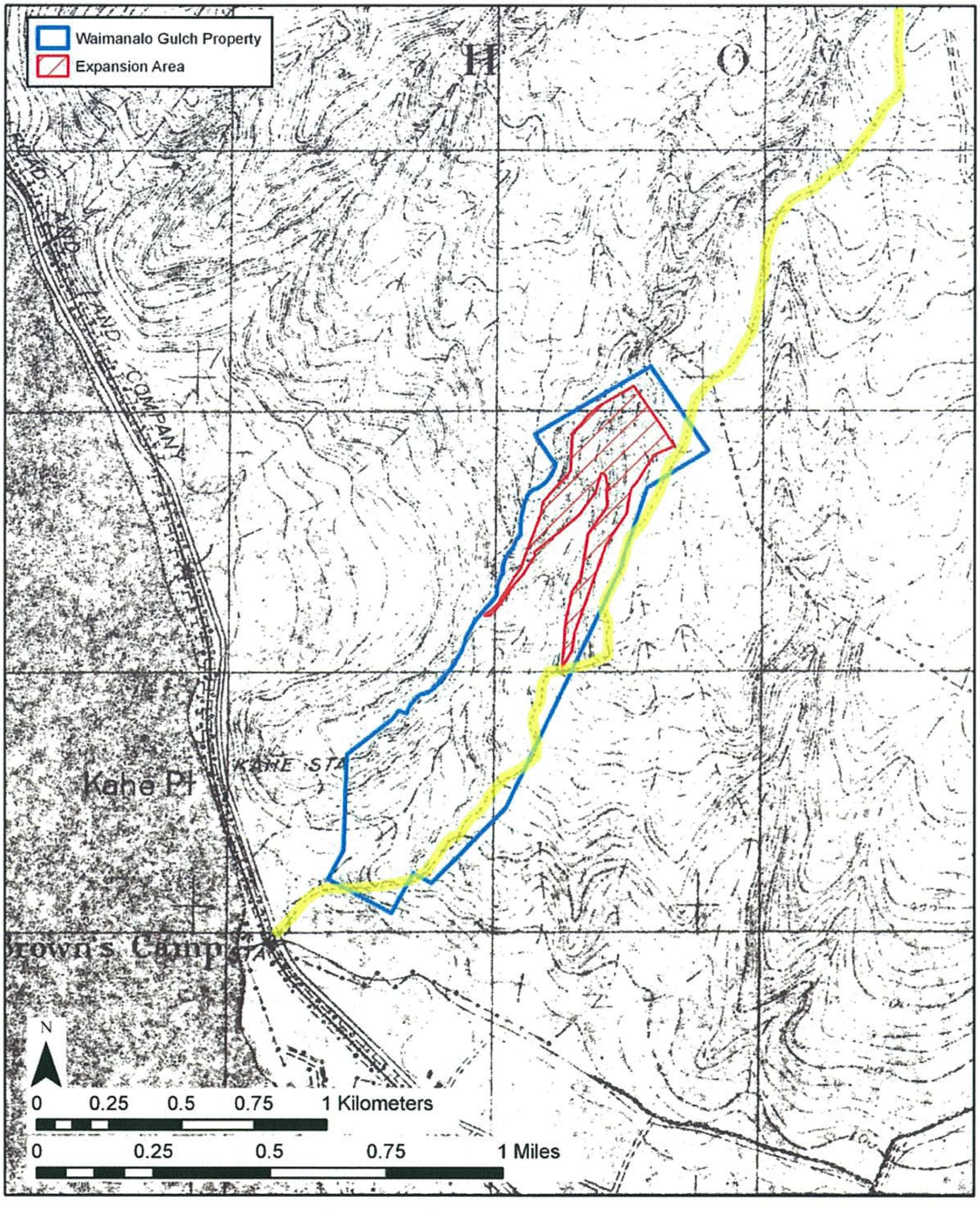

Figure 17. 1914 Fire control map showing *mauka/makai* trail from Brown's camp up to the *mauka* region of Hono'uli'uli

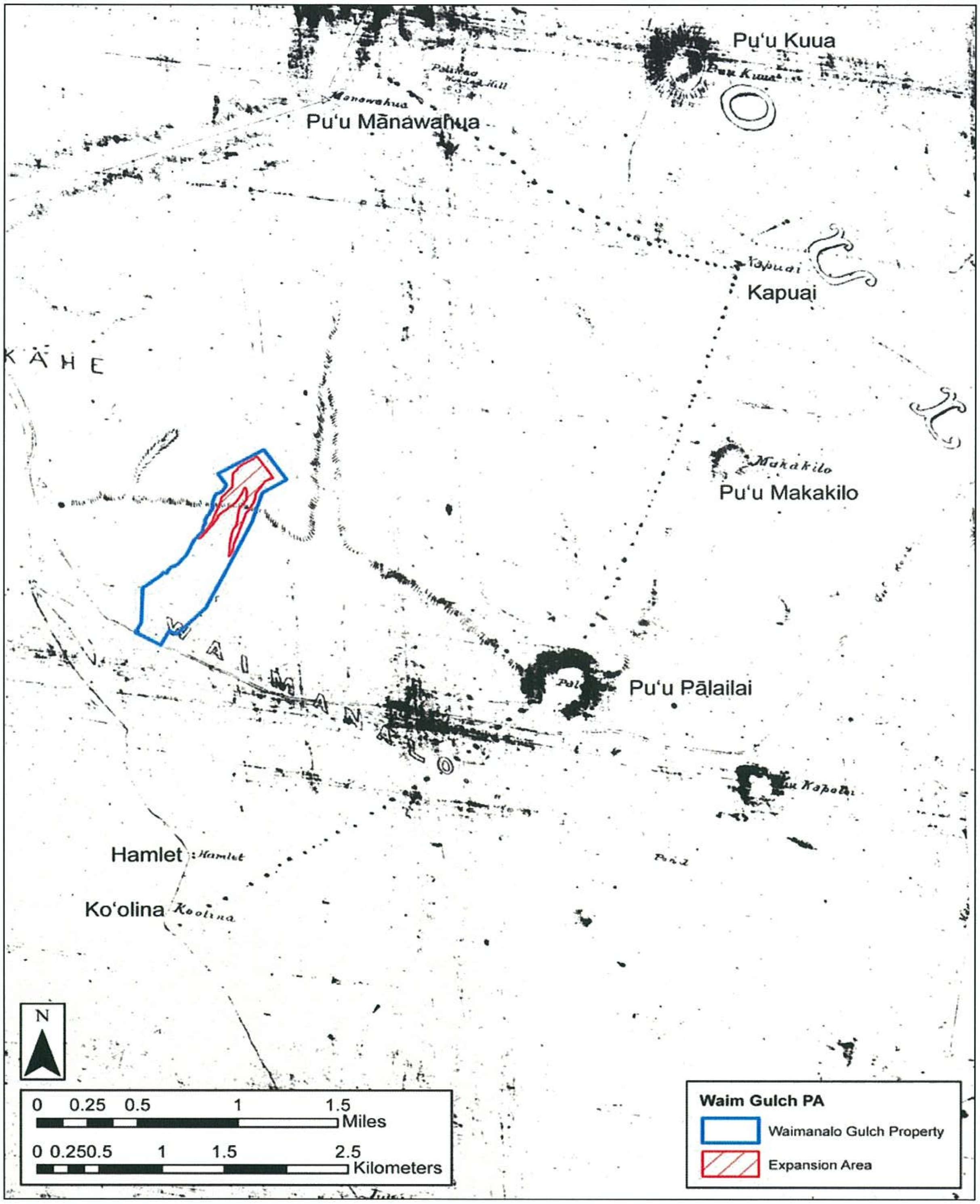

Figure 18. 1873 Alexander map showing *mauka/makai* trail from Pu'umanawahua to Ko'olina and a "Hamlet" (village)

6.4 Gathering of Plant Resources

Given the ecosystem diversity of coastal lowland, transition and upland forest zones in Hono'uli'uli Ahupua'a, it is likely that one of the primary traditional cultural practices associated with the present project area would have been the gathering of native plant resources. Table 3 lists Hono'uli'uli lowland plants and uses with columns for "common/Hawaiian name", "scientific name" and "use" based on research conducted by Barbara Frierson (1973) on native plant species present in Hono'uli'uli before 1790, in addition to plant use recorded by Isabella Abbott (1992).

Table 3. Native plants in Hono'uli'uli

Hawaiian/Common Name	**Scientific Name**	**Use**
Hala, pandanus	*Pandanus odoratissimus*	Weaving
Hau, hibiscus	*Hibiscus tiliaceus*	Cordage
Milo	*Thespesia paradisiaca*	Wood used for bowls
Neneleau, Sumac	*Rhus sandwicensis* *Rhus chinensis*	Unknown
'Ilima	*Sida cordifolia*	Leis, medicine
Kou	*Cordia subcordata*	Bowls
Makaloa, sedge	*Cyperus laevigatus*	Mats (Abbott)
Pili, grass	*Heteropogon contortus*	Thatch
Kakonakona, grass	*Panicum torridum*	Unknown
Honohonowai	*Commelina nudiflora*	Unknown
Ma'o, cotton	*Gossypium tomentosum* *Abutilon incanum*	Flowers used as dye for kapa (Abbott)
'Ūlei	*Osteomeles anthyllidifolia*	Branches used for fishing nets (Abbott)
'Uhaloa	*Waltheria americana*	Medicine (Abbott)
Koali'ai	*Ipomoea cairica*	Cordage (Abbott)
Pā'ū o Hiiaka	*Jacquemontia sandwicensis*	Unknown
Ko'oko'olau	*Bidens* sp.	Use as tea (Abbott)
'Ulu, breadfruit	*Artocarpus incisus*	Food
Kalo, taro	*Colocasia esculenta*	Food
Niu, coconut	*Cocos nucifera*	Food, liquid

The accessibility of Hono'uli'uli lands, including the present project area, to Hawaiians for gathering or other cultural purposes was radically curtailed during the second half of the nineteenth century. As noted above, by the 1870s, herds of cattle grazing across the 'Ewa Plain likely denuded the landscape of much of the native vegetation. Subsequently, during the last decade of the nineteenth century, the traditional Hawaiian landscape was further distorted by the introduction and rapid development of commercial sugar cane cultivation. Throughout the twentieth century sugar cane cultivation was the dominating land use activity within the project area. Cane cultivation – and the sense that the project area was private property – restricted access inside the project area to employees of Ewa Plantation.

6.5 Native Gathering Practices for Plant Resources

Mr. Hiram Kamanā indicated that he used to gather ingredients for a cleansing *lā'au lapa'au* (botanical medicine), including "*Kī Māmaki*" (*Māmaki, Pipturus* sp.), in the uplands. The bark, fruit and young leaves of the Māmaki were used medicinally (Wagner et al. 1990:1307). It is definitely understood that this was picked well *mauka* of the landfill (no *Māmaki* is known to grow in the immediate vicinity of the landfill). Mr. Kamanā also spoke of gathering Ha'uōwī (also known as Ha'uoi, Oī and Ōwī, *Verbena litoralis*) and Pānini (Prickly Pear cactus, *Pāpipi*; *Opuntia ficus-indica* aka *Opuntia megacantha*). Parts of the *Ha'uōwī* plant would be soaked in alcohol and the liniment would be used for arthritis. *Verbena litoralis* has been used medicinally as a mash applied to cuts and bruises and also to sprained and fractured areas (Wagner et al. 1990:1325). This exotic species is widely naturalized in Hawai'i (first documented in 1837) occurring in dry to wet habitats on all the major islands. The red fruit of the *Pānini* was used for sore stomachs. This exotic species was probably introduced to Hawai'i prior to 1809 and is naturalized in dry, disturbed habitats on the major islands (Wagner et al. 1990:420).

Ms. Nettie Armitage-Lapilio spoke of gathering plants for both medicine and ornament in the uplands. She spoke of gathering *Ēkoa* (also known as *Koa-haole* and *Lilikoa*; *Leucaena leucocephala* aka *Leucaena glauca*) seeds and or seedpods for *lei* which the *'ohana* would wear while performing *hula* and also sell to make extra money. She indicated the seeds/seedpods were gathered where the landfill is now. This exotic species (first collected on O'ahu in 1837) is very common, often forming the dominant element of the vegetation in low elevation, dry, disturbed habitats of all the major islands (Wagner et al. 1990:680).

Ms. Armitage-Lapilio mentioned gathering two species for *lā'au lapa'au*: *'Uhaloa* (*Waltheria indica* var. *americana*) and *Kīnehe* (Spanish Needle, *Bidens* spp.). According to Wagner et al. 1990:1280, '*Uhaloa*, which is known by many alternative names (e.g., *'Ala'ala, Pū loa, Hala uhaloa, Hi'aloa*, and *Kanakaloa*), is an indigenous pan-tropical plant, occurring in dry, often disturbed sites on all the major islands; it has been widely used medicinally by the Hawaiians as a painkiller especially for sore throat. *Kīnehe* (aka *Kī, Kī pipili* and *Nehe*) is a pan-tropical exotic weed widespread in disturbed areas (Wagner et al. 1990:279). Pukui and Elbert (1986:152) note for "*Kīnehe*" that: "The Spanish needle (*Bidens pilosa*) is a lowland weed; young fresh plants are still brewed for tea."

We are confident that *Māmaki* has not grown near the landfill in recent times as it prefers wetter environments found at higher elevations. *Ha'uōwī, Pānini, Ēkoa, Uhaloa*, and *Kīnehe* are all quite ubiquitous in similar dry, lowland areas. It is interesting to note in passing that four of the six plant species used (*Ha'uōwī, Pānini, Ēkoa, Kīnehe*) are exotic species. We perceive no adverse impact on Hawaiian utilization of these species by the proposed landfill expansion action.

6.6 Taro in Hawaiian Culture

Taro cultivation was mentioned in two of the LCA testimonies for individual *kuleana* claims in the *'ili* of Waimānalo of Hono'uli'uli Ahupua'a. The testimonies indicated that these LCA's contained at least two *lo'i* as well as house lots, sweet potato, *kula*-at Pu'ukuua, ponds, streams and fishery. The taro cultivation here was not as intensive as the well known "Hono'uli'uli Taro Lands" near the mouth of Pear Harbor and the Hono'uli'uli Stream. Apparently Waimānalo 'Ili had sufficient water along with backshore swampy areas to provide personal *lo'i* on a small scale. Although these claims were not awarded they provide a wealth of information.

The area of Lanikūhonua south of the project area, once a marshy wetland fed by a natural springs, was an ideal place to cultivate taro. Davis et al. (1986) mapped the natural marshy area and spring (Figure 19). Many maps show water filtering down from the Waimānalo and Makaīwa Gulches as well as the unnamed gulches that could have also feed the *lo'i* of this area (Figure 20). There is no mention of taro grown in the project area but there were natural springs that could sustain a small patch. Aunty Nettie Tiffany, Aunty Arline Eaton and Douglas McDonald Philpotts all mentioned that the area of Waimānalo, Makaīwa, and Lanikūhonua had sources of fresh water.

Taro has an intimate connection to the Hawaiian culture. Taro (*kalo*; *Colocassia esculenta*) was probably brought to Hawai'i by the earliest Polynesian voyagers and has been a staple crop on the islands ever since. Taro is intimately connected through myth to the origins of Hawaiians as a people. There are different versions of this myth, but all of them make the connection between the first-born Hawaiian and the taro plant, according to Mary Kawena Pukui:

> The first Hāloa, born to Wākea and Ho'ohoku-ka-lani, became a taro plant. His younger brother, also named Hāloa, became the ancestor of the people. In this way, taro was the elder brother and man the younger-both being children of the same parents. (Pukui in Handy and Handy 1972:80)

The physical attributes, the growth patterns, and the propagation of taro all reflect the structure of Hawaiian kinship and an obvious relationship to the human body. The main plant in the center is the *makua* (parent), the smaller plants budding out of the *makua* are the *'ohā* (offspring). The center of the leaf where it connects to the stem is the growth center of the veins of the leaf and is called the *piko* (belly button). The stem is called *ha*, which is also a word for breath, the basis of life. The cycle of planting is a reflection of the human life cycle. When the taro is harvested the corm is cut right below the green top, the cut top is called the *huli* (turning, returning or transforming). The *huli* is replanted and the family of taro once again continues its growth cycle. The generations of taro are thought of interchangeably with the generations of Hawaiians as reflected in the saying "*Kalo kanu o ka 'āina*"-literally "taro planted on the land" but figuratively referring to successive generations of natives (Pukui 1983:157). Both the *'ohā* and the *makua* can be used as *huli,* but as in a family, the '*oha* (child) must be separated to become independent of the parent and – to become a parent itself. If it is not, it remains a dependent attachment, overshadowed by the leaves of the *makua*. Another saying, *I makika'i kekalo i ka 'ohā*-"the goodness of the taro is judged by the young plant it produces" (Pukui 1983:133), is a metaphor for the parents being judged by the behavior of their children.

All parts of the taro plant are used for food: the corm is cooked and eaten as table taro or steamed and pounded into *poi*; the stem can be steamed and used in various soup and stew dishes; the young leaves are used for *laulau* and *lū'au* dishes mixed with fish, squid, pork, chicken or beef. Generally, the leaves are not harvested from the plants designated for corm production because continuous cutting makes the corms soft and tasteless (*loli*). Taro growers who grow leaf for home use or commercial purpose always have specially designated *lū'au* patches. It is traditional Hawaiian practice to use all the coarse green cuttings that are the by-product of the harvesting of the corms as food for the pigs. This green material, when cooked and fed to the animals, is highly nutritious. For this reason, raising pigs is traditionally is symbiotic relationship to taro production. In a traditional taro field, no space is wasted. The *lo'i* are used for the taro and any extra space on the banks is used for subsistence, utilitarian and medicinal plants, such as bananas, *noni*, and *tī* (also *kī*).

The practice of taro cultivation most resembles gardening in its scale and methods. Much of the work is undertaken by an individual or family, and is performed by hand. The *lo'i* and banks are beautifully manicured, and the result is aesthetically like a garden. Yet, taro production remains viable even on this small scale because of its high per-acre productivity.

Nowhere else in the world was taro cultivation more developed than in Hawai'i (Kirch 1985:215). It was the staple for the hundreds of thousands of Hawaiians before European contact. It was grown in areas with sufficient rainfall (above 30-50 inches per annum) or under dryland management. In areas of suitable water sources extensive and sophisticated irrigated systems were developed for its cultivation. The social requirement for the planning, development, and maintenance of theses irrigated systems was a stable political system and community cooperation. Although the cultivation and maintenance of individual fields could be the purview of single families or individuals, the maintenance of the water supply system, on which the entire system depended, had to be organized on a community level.

Although less than 100 varieties of taro survive today, there may have been, at one time, as many as 300 varieties in the islands, distinguished by leaf shape, corm, morphology, color and use. The labels of wetland and dryland taro do not refer to different taro varieties, but only to different cultivation practices. All varieties of taro can be grown in dryland fields and all but a few in *lo'i* (flooded fields). Today there are only a few widely grown commercial varieties. Mechanical devices are used, such as tillers and small tractors; in some cases PVC pipes have replaced earthen or stone lined '*auwai* or waterways, and commercial fertilizers are routinely used. A typical taro crop will take from 10 to 14 months to mature. With modern farming methods taro is one of the most productive per-acre staple crops in the world. However, in spite of these modern overlays, the bulk of the labor is done by hand in the context of the family and the essence of a traditional taro growing community. Cooperation in management of water and land resources remains an integral part of this lifestyle.

In pre-Contact Hawai'i, during the late prehistoric era, as documented by archaeological studies, taro cultivation was practiced in virtually every suitable locality, including floodplains in windward valleys with perennial streams, open lava and beach flats near stream systems, and moist leeward slopes. Taro was such an important crop it was even grown in artificial microenvironments created by mulching pits in lava fields.

Since European contact there has been a slow but steady decline in taro cultivation. In the late nineteenth and early twentieth centuries, many of the large taro growing areas were given over to rice planting. Taro cultivation returned on a smaller scale to these areas after development of the California rice industry. Today, commercial Hawaiian taro cultivation is confined to a few areas in the islands: Hānalei/Waioli, Hanapēpē and Waimea on Kaua'i, Waikāne/Waiāhole and Haleiwa on O'ahu, Honokohau, Ke'anae/Wailuanui on Maui, and Waipi'o Valley on the island of Hawai'i. Although taro is not grown anymore near the project area there is documents that prove there once was taro cultivation west of Hono'uli'uli.

'Ewa was well known for its rare *kai* variety of taro that was very flavorful as well as the ability to reproduce itself over a ten year span. The *Kai O 'Ewa* was grown in mounds in marshy locations. The cultivation of this prized and delicious taro led to the saying:

> Ua 'ai i ke kāī-koi o 'Ewa.
>
> He has eaten the Kāī-koi taro of 'Ewa.
>
> Kāī is O'ahu's best eating taro; one who has eaten it will always like it. Said of a youth of a maiden of 'Ewa, who, like the Kāī taro, is not easily forgotten (Pukui 1983: #2770).

The taro of 'Ewa was poetically referred to a man's love for a 'Ewa women that was so strong he would never leave:

> The *kai* was native to 'Ewa and was often referred to as *kai o 'Ewa*. . . . An 'Ewa *kama'āina* described this in 1899: "When planted, it sends up shoots, more shoots and still more shoots. Again and again it will send up new shoots, filling the mounds until they mixed with the taro of other mounds." This description (*Ka Loea Kalani'āina*, June 3, 1899) indicates that in the flat, wet lowlands of 'Ewa this famous taro was grown in mounds (*pu'epu'e*) as in marshy localities. The article quoted above says that "*kai koi* multiplies itself over and over with one planting and often lasts as long as ten years." No other variety or locality can equal this. This fragrant taro was likened to a woman with whom a man falls in love. And it was said that anyone who married a native of 'Ewa would come and settle there and would never leave, because of the *kai koi* of 'Ewa. Our Hawaiian writer describes two other varieties of *kai*. *Kai 'ele'ele*, black *kai*, has a black stalk, with dark skin on stems and leaves; its corm was tough and hard to pound. *Kai kea*, white *kai*, had a light-colored stem and leaves; the skin (of the corm) was red, but the flesh was dark like that of black *kai,* the corm likewise tough. In 1931 we collected four varieties of *kai*: *kai koi*, whose corm was white, vase of stalk pink, petiole pink, with a pink edge on the leaf; *kai kea* or *keokeo* with white corm, white base, whitish stalk with red margin, and a leaf with white edge and white center and pinkish veins; *kai 'ula'ula* (red *kai*) with corm flesh purplish white, and cortex of corm reddish purple, base red, stalk green with black streaks becoming light green and pink above, and finally, *kai-uliuli* (dark-*kai*) with white

> corm and lavender cortex, red to pink base, whitish and dusky green petiole with red and white margin, and leaf with a slightly reddish center. It was the *kai keokeo* which was described as being fragrant (*'ala*). From this was made the poi reserved for the chiefs (*poi ali'i*). (Handy and Handy 1972:471)

Due to the dry conditions on the leeward side of O'ahu, taro wasn't as abundant in Waimānalo 'Ili as it was in some of the surrounding marshy areas. Though, there was a fair amount of water sources in the area if you knew where to find them. Douglas McDonald Pilpotts elaborates on the water sources in Waimānalo 'Ili and expalians why water was such a commodity here:

> By far the most important resource is always *wai*, freshwater, and with no year-round streams here it was definitely not an abundant resource. As you know *makai* there were sink holes with freshwater on the 'Ewa plane. Near Lanikuhonua, fresh water comes out right in the sand, between the rocks there. You can turn a gourd upside down in the ocean and get fresh water if you know where. Knowing where is the key, it's the same thing up *mauka*, there are no streams. There is what geologists call perched water. Places were water flows to the surface on top of impermeable layers of soil covered by a layer of fractured rock. A few of these at lower elevations still produced water today even in the driest times of the year. The greatest number of these springs are found between 1,200 and 1,800 foot elevations. However due to the reforestation efforts in the 1920s these springs no longer produce water year-round. This is also the elevation with the greatest concentration of archaeological sites. Most of these springs still have terraces and *lo'i* walls around them. The forests above also held substantial resources, but the ocean below by far had the most substantial resources and the leeward exposure provided the best conditions to exploit them. I believe when compared to other *ahupua'a* in ancient times this area was not seen as desirable for its abundant resources. With the commanding view from this place and the limited water resources on the 'Ewa plane this community was highly defendable.
>
> Many old maps show historic water tunnels and reforestation efforts also help to understand the water resources that were here to support pre-Contact populations.

6.7 Significant Cultural Sites within the Project Area

CSH previously performed an inventory survey of the project area in 1998 (Hammatt and Shideler 1998) and an additional assessment was conducted in 2007 (Dalton and Hammatt 2008). During the 2007 companion archaeological inventory survey, CSH identified one historic property within the project area: SIHP # 50-80-12-6903, three rock uprights, which were recommended eligible for the Hawai'i Register under Criteria D and E.

A culturally significant Pueo Stone was identified by Bath in 1989. This "Pueo Stone" eventually had to be relocated to the northwest ridge of the gulch. Due to the signifigance of this cultural site, it has been protected and cared for in a safe area by a cultural practitioner.

Douglas McDonald Philpotts has spent years hiking around Waimānalo 'Ili and he recalls coming across many Hawaiian cultural sites:

> So when hiking up here and going through the grass I feel things and I just turn right or left, or just open the grass in front of me and there's a huge *ahu* or a cave sometimes I think they led me right to it. So that's been the path, the journey about knowing, and learning and seeing different things and getting chicken skin many times. When I was younger I spent a lot of time out there in the woods at night just cruising, checking it out. I got spooked every so often out there, but then I get used to it.
>
> There are so many cultural sites here and all of these sites and their relationships between each other is what's valuable. It is in the collective relationship between all the sites. Studying this area gives us the opportunity to have a deeper understanding of those who lived here because it's still pretty clear. Their footprints are still right there. I think this place has revealed how much potential it has, and the value of how much it has yet to share. I really want to make sure that the cultural sites and what they tell us doesn't get erased.
>
> This area has great value in the collective because there is a window into the life of our culture pre-Contact. It's not just about how they built their house sites, what's important is where they built their houses in relationship to where the water was located. They built their houses out there, in the wind, with the risk of it blowing away in a big storm, because they wanted the view. The five brothers, the watchers, their house sites are still there. It's all about the view. How can we relate to these stories if the house sites are gone, or if you don't know where the spring is, or if you don't know where their food was? This is the whole picture, like that beautiful *ahupua'a* poster that Kamehameha Schools has, and it is right here you can walk on it! Due to the land use being limited to forestry, watershed and ranching, the area's pre-Contact archaeological sites have been preserved. For those who have an interest in really understanding or trying to step back in time, just for a moment, for a visit, they can. You can walk from the fishing *ko'a* to the *lo'i* or you can stop at the spring or the shelter cave or the *ahu*, the *heiau*, the *pā*. You can go a to the forest for lapaau and you can watch the sunset from the front of their *hale* and if you employ the right senses you can do all this with them, they are still here, that is why this place is so special.

Another signifigant site that Douglas McDonald spoke about was the *pā* (stone enclosure) that is located in the uplands of Waimānalo 'Ili:

> The center of this *mauka* community was here above Waimānalo and Makaīwa. Ida Von Holt writes that they were told the area was quite heavily populated before the smallpox epidemic of 1840 and that there was a school for over 40 children where the *pā* is now. This appears to be the case when compared to the size and number of structures in the area. Some of the adjacent pastors were cleared for pineapple years ago these pastors more than likely contained many sites and now they are lost forever.

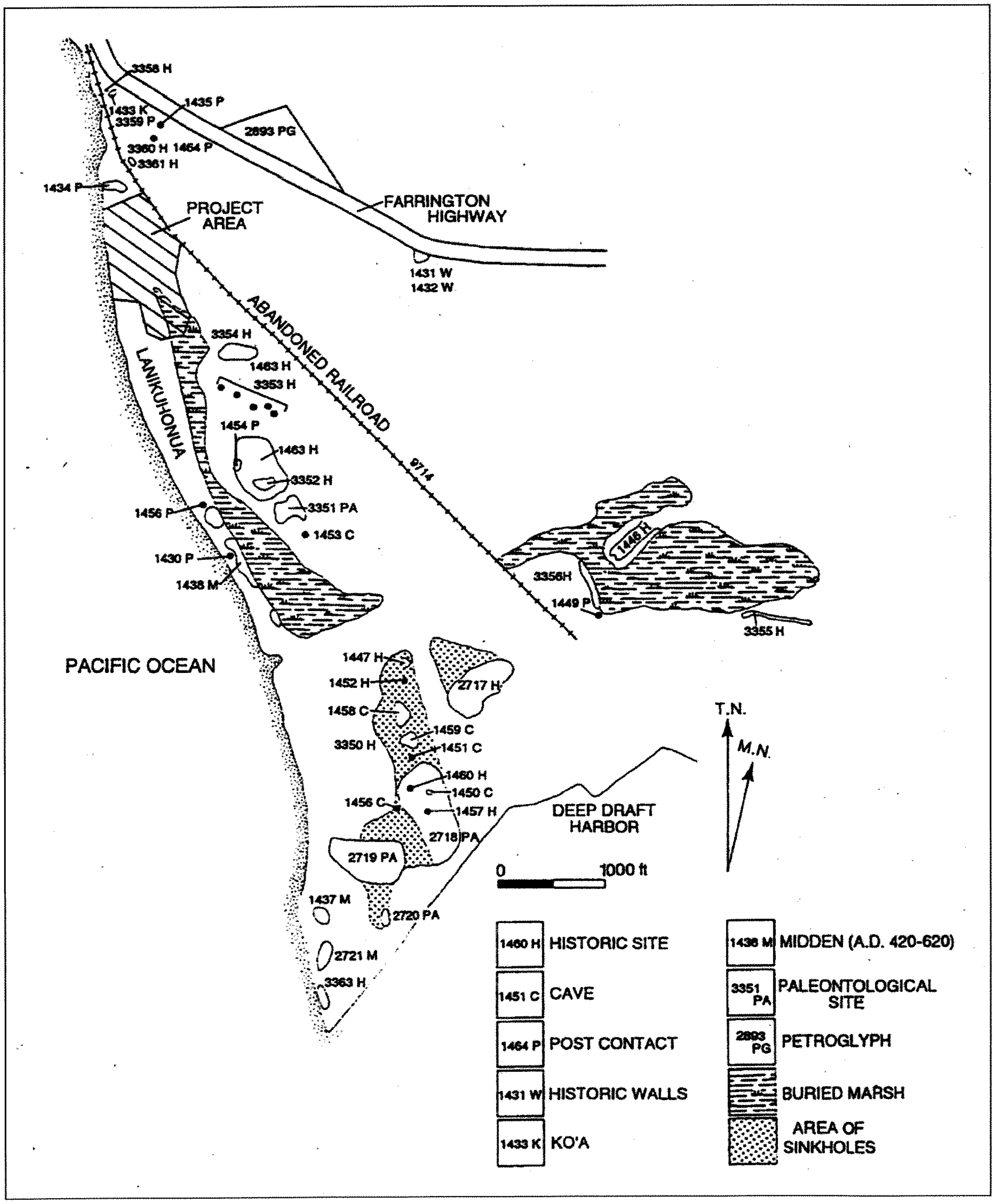

Figure 19. Pre-and post-Contact archaeological sites previously identified in Davis et al. (1986); south of the current project area (Lanikūhonua-Koʻolina-Waimānalo-Paradise Cove)

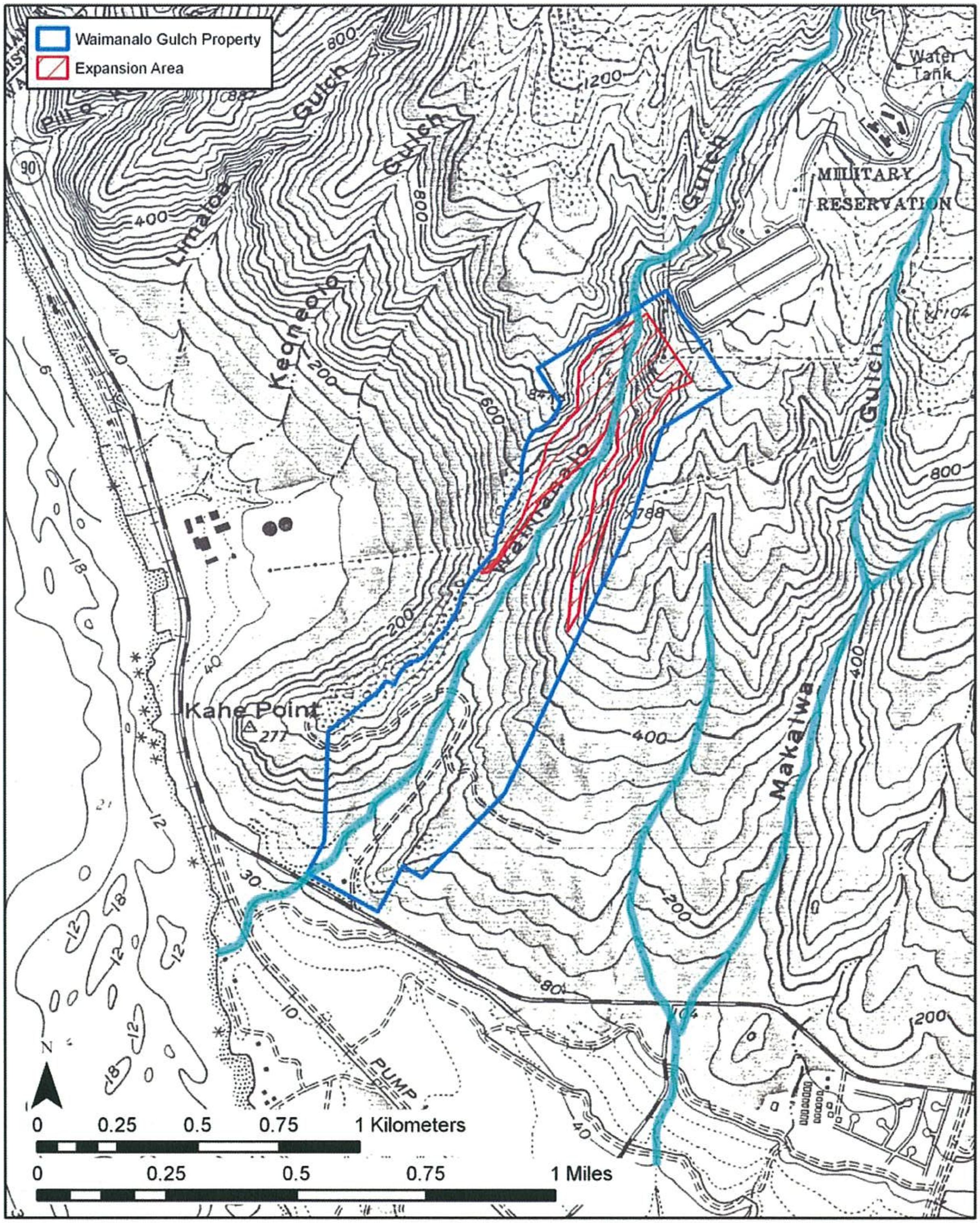

Figure 20. 1962 USGS Map showing seasonal streams

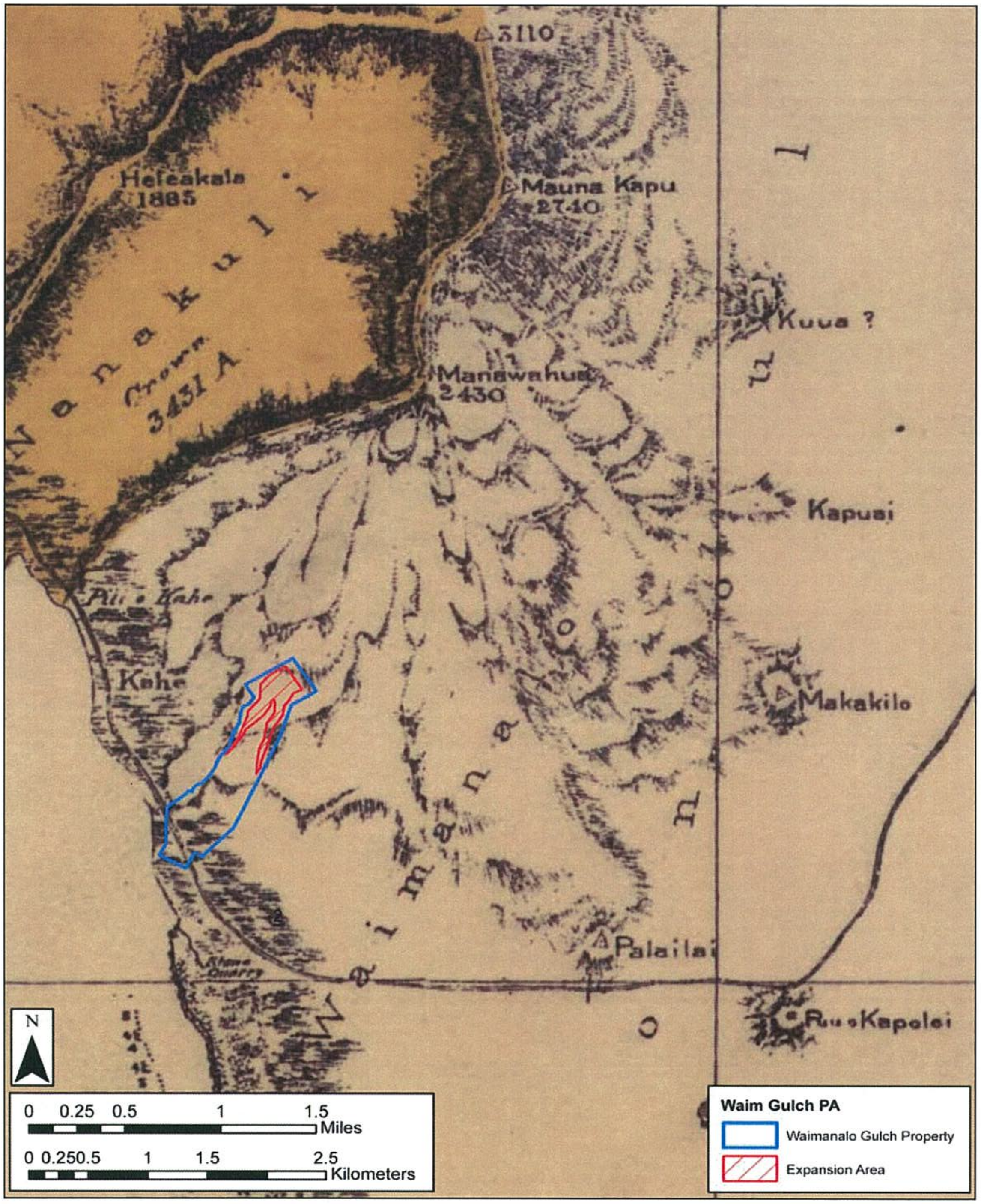

Figure 21. 1881 Hawaii Government Survey Map showing project area and the *'ili* of Waimānalo. Ko'olina is depicted south of the project area as well as a quarry. Also showing east/west trail

6.8 Marine Resources

The sea is a rich resource and the Hawaiian people were traditionally expert fishermen. Fish of all types supplied the Hawaiian diet with a rich source of protein. This source of food is a supplement to the things grown in the uplands. The LCA documents provide information that the people of Waimānalo area were utilizing the ocean resources as a fishery as well as the upland forest area for subsistence. This is a good example of the *ahupuaʻa* system that was once used.

Through the interview process, people mentioned a *koʻa* when asked about fishing south of the project area at Lanikūhonua. A *koʻa* is defined as "Fishing grounds, usually identified by lining up with marks on shore or shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams" (Pukui and Elbert 1971:144). Kamaki Kanahele is a *kamaʻāina* to the area and recalls his childhood memories of fishing the Waiʻanae coast and using the many *koʻa* in the area to line up the fishing spots. Eddie Kaʻanana was an avid fisherman and frequently fished for *ʻōpelu* along the Waiʻanae coast. He mentioned that he would fish using traditional methods on a canoe for *ʻōpelu* as well as on a boat. Other types of fish that were caught were *uʻu, akule*, and mullet. When asked about a *koʻa* he mentioned that he is aware of a *koʻa* along the Waiʻanae coast and there was abundant fish in that area, which suggests that there may be a *koʻa* near by (Souza and Hammatt 2002). William Ailā also mentioned a *koʻa* and great *akule* fishing offshore fronting the project area. Nettie Tiffany also recalls the *koʻa* and her childhood memories of the shore fronting Lanikūhonua as having abundant fish such as mullet and reef fish.

Mr. George Kaʻeliwai mentioned in a telephone interview in a recent report (Souza and Hammatt 2002):

> We all knew how to survive through our culture by the age of thirteen. The older boys would go up mountain and I had to know how to make the *palu* (bait) for fishing. You are not allowed to talk about fishing. You just get up early and go. I knew Tūtū (grandmother) Campbell on the ranch. She liked me and favored me. She gave me fishing rights as long as I gave her some fish.

Additionally Mr. Kaʻeliwai confirms that there were activities related to early Hawaiian gathering practices from rich marine resources at Lanikūhonua. Mr. Kaʻeiliwai spoke about the different types of fish that he and his uncle would gather; *manini, aweoweo, uhu*, and *menpachi.* This area was a great place for diving and throw net fishing.

Douglas McDonald Philpotts also refered to the plentiful marine resources at Lanikūhonua where he once lived, fished and threw net. He mentioned that Lanikūhonua was once a thriving fishing village, with a canoe landing and a fishing shrine.

> Our house was actually next to Lanikuhonua near the big banyan tree at Paradise Cove. Then there was my grandfather's coconut plantation where he had young coconut trees everywhere. The place was absolutely beautiful, and some of it still is. Some old maps have labeled hamlet on that spot and I'm sure there was a lot of *waʻa* on the beach there, this is the *makai* part of that *ahupuaʻa* poster. The fishing was great, and like I said earlier freshwater comes right out of the sand there.

> It really starts way back with Lanikuhonua and fishing. Uncle Sunny, Netty's father, kind of clued me in on throw netting. My Dad taught me how to get the net to open up but Uncle Sunny was the one that taught me how to use my senses to know where fish were. One night I was running out with my pole to set lines and he goes, "where's your throw net?" and I go, "it's dark now, you can't see the fish now." Then he said, "Go get your throw net." So I came back with my throw net and he said, "now where's your favorite spots?" And I said, "well its over there and over there and over there, but you can't see the fish" and he goes, "just go back to your favorite spots, you know every rock underneath there, you don't need to see the place to be able to know your way around." And I said, "yeah I can do that" and he said, "Just go to your favorite spot and stand there and wait until you feel the fish. When you feel the fish, you'll know, you'll feel them."

Hawaiians were very conservative when it came to marine resources. They set *kapu* on certain fish during their time of spawning and made sure that these fish had time to repopulate. The following exert is a passage from Hawaiian Fishing Traditions which talks about the *kapu* on *'ōpelu*:

> An important fishing *kapu* concerned the *'ōpelu* (mackerel) and the *aku* (bonito), two highly prized fish caught in great numbers in Hawaiian waters. *'Ōpelu* was netted from July through January. Walter Paulo and Eddie Ka'anana, two *'ōpelu* fishermen from Miloli'i, told me the best time for catching this fish is in October. 'Ōpelu was placed under *kapu* in February, until the end its spawning season, around July (Moku Manu and Others 1992:xii).

6.9 Wahi Pana (Storied Places)

The concept of *wahi pana*, a place with a story or legend attached to it, is very important in Hawaiian culture because it is a connection to the past and the ancestors. From place names, one can know intimate details about people who lived there, the environment, cultural practices and historical events that took occured. In Hawaiian culture, if a particular spot is given a name, it is because an event took place there that had meaning for the people of that time. Because Hawaiian culture was based on oral traditions, place names and their associated stories were an important way of remembering these traditions and ensuring these stories would be passed on to future generations. In Hawaiian thinking, the fact that a place has a name deems it important. Often, spiritual power or *mana* is attached to a place, which increases its importance. On the subject of *wahi pana*, Edward Kanahele writes:

> As a native Hawaiian, a place tells me who I am and who my extended family is. A place gives me my history, the history of my clan, and the history of my people. I am able to look at a place and tie in human events that affect me and my loved ones. A place gives me a feeling of stability and of belonging to my family, those living and dead. A place gives me a sense of well-being and of acceptance of all who have experienced that place. (Kanahele in James 1995:6)

Analu Kameeiamoku Josephides mentions a *mo'olelo* passed down to him by his *kūpuna* regarding some names of the Waimānalo 'Ili. The area was referred to as five brothers who protected and cared for the island of O'ahu; they were the "Eyes" of O'ahu:

> Another concern that I may have is the place names of this particular area. A story that has been passed down to me from my *kupuna* is that there were five brothers who were the watchers. Their names were Makaīwa, Maka'ike, Makaloa, Maka-Io, and Makakilo. It was known that Makaīwa was to the farthest west and that Makakilo was to the farthest east. That these five brothers were the eyes of the O'ahu people and were their protectors. They would watch for enemy intruders and relay messages to their *makulu* (runners). If enemy canoes were seen the *makulu* would run to the various districts and warn the chief and his/her people. This is why O'ahu was a hard island to conquer in the ancient times. By the time the war canoes of the enemies would reach the shores they would be greeted by the warriors of O'ahu, thus the enemies were never allowed to land upon the shores of O'ahu.

Douglas McDonald Philpotts also spoke about a connection between this area and the other islands through the path of the sun:

> Whether you're a spiritual person or not you will be impressed by the sheer beauty of this place, and the spectacular views from here. But many who come here are surprised by the sense of *mana* here. The view is special here, from the top of Pālehua between Pu'u Manawahua and Mauna Kapu you can see all the islands and all of the mountain tops on those islands, this is the only place in all the islands you can do this. Hermann von Holt showed me the trench that still remains on the Honolulu ridge of Mauna Kapu and said another one in the south was taken out when the road was put in. It was right where the big blockhouse is now. Herman said they were told by the Hawaiians in the ranch camp at Hono'uli'uli this was a most sacred place, and the place of great *mana*, and that is why I think the Hawaiians lived here and their spirits never left. This could be part of the meaning in the name Pālehua. In addition to the unique view of the islands I have observed the annual journey of *lā* (sun) from here. It starts on the first day of the celestial year on the winter solstice. At sunrise the sun can be seen rising from its house Haleakala as it begins its journey northward it rises from the west Maui Mountains and then from East Moloka'i. Reaching O'ahu it rises from Koko Head and moves from peak to valley north through the Ko'olau's reaching its destination Mokumanamana in exactly half a year. Then on June 21st, the summer solstice, the sun sets behind Kaua'i and starts its journey back home. On this solstice line connecting Haleakala, Pālehua and Mokumanamana are also several *heiau*. Twice a year on the equinox the sun sets over Pu'u Heleakala. To me these and many other things seem to be more than coincidence.
>
> I am just starting to understand that there is no other place like this when you add the layer of the winter and summer solstice; there is no other place that lines up like that. So I think the real resource is the view, and the power that comes from that.

6.9.1 Place Names

All place name translations were taken from Place Names of Hawai'i (Pukui et al. 1974) and the Hawaiian Dictionary (Pukui and Elbert 1986), in addition to being supplemented by other sources as well as community members (see Figure 6):

Aimea	Name of fishpond in Hono'uli'uli (LCA 9037); Claimant, Kahakai claimed a right to *kalā* (fish) at this pond. The exact location of the pond is unknown.
Anianikū	A small cove between Milo and Ka'ula at Lanikūhonua. *Lit.*, stand beckoning (Pukui et al. 1974:12).
Awanui Gulch	Name of a gulch just west of Makakilo. The gulch name may pertain to the large *awa* or milkfish (*Chanos chanos*) or may be a reference to the impressive size of the *'awa* (kava) plants (*Piper methysticum*) growing at that location. Kawika McKeague gives another meaning "could reference the 'large passage,' indicative of birthing passage or 'outburst' (alluding to Papahanaumoku/Haumea's birth of the island- geologically one of the main outvents of Wai'anae volcanic eruption)."
Hapanui	Name of a pond in Waimānalo, 'Ewa in which *kuleana* were claimed (LCA 9037 Kahakai); *Lit.,* greatest or largest portion.
Kalaipuawa	Place name in Waimānalo, 'Ewa in which a taro patch was claimed (LCA 9037 Kahakai)
Kapua'i	A high point in the uplands of Hono'uli'uli. Kapua'i is part of a traditional *mauka-makai* trail extending from near Pu'u Manawahua in the Hono'uli'uli uplands through Kapua'i and down to the coast at Kō'olina (1873 Alexander map). One meaning of *kapua'i* is footstep or footprint (Pukui and Elbert 1986: 133), a direct connection to the old trail. An alternative is suggested as "the flow (of water)" (Pukui et al. 1974:12:89) perhaps the source of spring water.
Ka'ula	A small bay at Lanikūhonua. 'Ula suggests the sacred red color or perhaps, ghost or spirit (Pukui and Elbert 1986: 367).
Keone'ō'io	Gulch in Nānākuli, O'ahu. *Lit.,* the sandy [place with] bonefish (Pukui et al. 1974:108).
Ko'olina	Beaches, lagoons. *Lit.*, delightful, lovely; Ko'olina (Clark 2002:198) Ko'olina is also noted as a favorite vacationing spot of Kākuhihewa, with its sacred pools (Clark 1977:76). These pools are located near Kamokila's Lanikūhonua and are natural coves and limestone shelves.
Lanikūhonua	An ocean retreat developed by Alice Kamokila Campbell in 1939. She named the spot after the beautiful sunsets, 'where heaven meets the earth' (Clark 2002:210). The rocky shoreline fronting this area is known for the *moi* (*Polydactus sexfilis*) fishing grounds (Clark 1977:76)

Limaloa	Gulch in Hono'uli'uli, west of and adjacent to Waimānalo Gulch; *Lit.*, long arm (Pukui et al. 1974:133). Limaloa appears in legends of Kamapua'a as a star-crossed lover (Pukui et al. 1974:133). Known as the God of mirages (Pukui and Elbert 1986:207),. Limaloa appears in a chant offered by Maui's grandfather, Kuolokele, in Maui's attempt to rescue his wife who had been kidnapped by Pe'ape'amakawalu (eight-eyed bat) (Fornander v.5:458-463).
Makaike	*Wahi pana* shared by Analu Kameeiamoku Josephides who told the story of five "Maka" brothers, the protectors who watched for enemy canoes from their high perches on the ridges above 'Ewa plains. As inferred by Analu's story, Makaike is assumed to be one of the ridges in between Makaīwa and Makakilo. Maka'ike: *Lit.*, seeing eye (Pukui and Elbert 1986:225). This type of observation is described as having the gift of "second sight" (Pukui and Elbert 1986:225).
Makaio	One of the five "Maka" brothers, protectors of O'ahu, who watched for enemy canoes from the ridges above Hono'uli'uli (Personal communication Analu Kameeiamoku Josephides *in* Souza and Hammatt 2006). As inferred by Mr. Josephides' story, Makaio is assumed to be one of the ridges in between Makaīwa and Makakilo. May refer to the *'io*, the Hawaiian hawk (*Buteo solitarius*) (Pukui and Elbert 1986:102). Maka'io: *Lit.*, eyes of the hawk.
Makaīwa	Gulch in Hono'uli'uli, east of and adjacent to Waimānalo Gulch; *Lit.*, mother-of-pearl eyes (as in an image) (Pukui et al. 1974:140). The westernmost of the five "Maka" brothers who helped protect O'ahu by serving as lookouts for enemy canoes (Analu Kameeiamoku Josephides). Makaīwa is inferred to be the westernmost ridge of the five ridges. Kawika McKeague gives alternate meaning "I think it's a shortened version of-Maka a aiwa, as in the face (essence) of complete mystery, incomprehensible (as in caught in a wake between two worlds- again transitional, balancing between two worlds)."
Makakilo	Crater, land area, gulch, Wai'anae quad., O'ahu. *Lit.*, observing eyes (Pukui et al. 1974:140). Also *Pu'u Makakilo.* Hill above Kapolei; *Lit.*, observing eyes hill (Pukui et al. 1974:201).The easternmost of the five "Maka" brothers noted for their skill as lookouts for enemy invaders to O'ahu (Analu Kameeiamoku Josephides). Makakilo is inferred as the easternmost ridge of the five. Kilo is translated as "stargazer, reader of omens, astrologer; to watch closely, examine, spy" (Pukui and Elbert 1986:151). Kawika McKeague gives alternate meaning "any term with *kilo-* indicative of being able to read *ho'ailona*, second sighters, if you will."
Makaloa	One of the five "Maka" brothers, shared in a story by (Analu Kameeiamoku Josephides). The Maka brothers were five brothers who were the watchers and protectors of O'ahu. They warned chiefs of

	approaching enemy canoes and kept Oʻahu's people safe. Makaloa is assumed to be one of the ridges in between Makaīwa and Makakilo. Makaloa suggests seeing great distances (*loa*).
Mauna Kapu	Mountain at the border of Honoʻuliʻuli Reserve boundary; *Lit.*, sacred mountain (Pukui et al. 1974:148). Kawika McKeague gives alternate meaning "I know some say this is regards to Kakuhihewa's *kapu.* Could be- my *manaʻo* is that this point clearly defines what is Wakea and what is Papa, my *manaʻo* only...Papa giving birth- woman giving birth-probably the strongest period where Haumea thrives and is more "powerful" or omniscient than Wakea- *kapu* had to be established to protect both male/female sources of identity."
Milo	Cove at Lanikūhonua. *Lit* to curl, twist or to whirl, as water; abortion. Possible reference to a common coastal shade tree, *milo* (*Thespesia populnea*).
Pālailai	Gulch and hill above Kapolei to the east of Waimānalo Gulch; *Lit.*, the young *lai* fish (*Scomberoides spp.*) (Pukui et al. 1974:176). Kawika McKeague gives alternate meaning "I disagree with Pukui; I don't believe it's the "young of the lai fish"- my *hale* is on the northeast corner of its *kahua*- I believe it's to "experience or be in a state of being calm and clear"- again sensory; having clear vision or thought as something is born in thought through experience."
Pālehua	Land division, hill and road in the Waiʻanae area; "Lit., *lehua* flower enclosure" (Pukui et al. 1974:177). Kawika McKeague gives alternate meaning "I disagree with Pukui; I don't believe it's only meaning is the *lehua* enclosure; I see two other words prominent- *pale* and *hua*, the idea that this place is where the *hua* is protected or perhaps in another meaning one is protected by *hua*, by jealousy."
Palikea	Peak above Lualualei in the Waiʻanae mountains, Oʻahu; *Lit.*, White cliff (Pukui et al. 1974:177). Kawika McKeague gives alternate meaning "- the cliff of Kea (Wakea)- he is detached from the processes of the childbearing activities that are evident with the form of these *puʻu*- this distinguished "setting aside" of place for Kea further support that the mountainscape down to Pu'uokapolei is female, is lifebearing, is transcending between this life and others yet to be or that have passed before."
Puʻukuua	Hill in the uplands of Waimānalo; "*Lit.*, relinquished hill"; In legend, Puʻukuʻua is famed for Kapo, Pele's sister, who once left her flying vagina here (Pukui et al. 1974:200); Māhele claimant and former *konohiki*, Kahakai, claims Puukuua as part of his *kula* land (LCA 9037).
Puʻu Manawahua	Hill in upland of Honoʻuliʻuli. *Lit.*, swollen stomach (Pukui and Elbert 1986:237). Can also be a place to grieve summoning the deep emotions

	that arise from the gut (Pukui and Elbert 1986:237). An 1873 map depicts a *mauka-makai* trail commencing near Pu'u Manawahua, extending through Kapua'i and ending at Ko'olina (1873 Alexander Map)
Waimānalo	Name of land division, road and gulch in Hono'uli'uli, 'Ewa meaning "potable water"; also a famous resting place of Kākuhihewa (Pukui et al. 1974:225).
Wai-wanana	Name of a place in Hono'uli'uli, 'Ewa in which *kuleana* were claimed (LCA 902); *wai* often pertains to water, though it may also refer to other liquids including liquids discharged from the body (Pukui and Elbert 1986:377). Wanana is indicative of a prophesy or foretelling (Pukui and Elbert 1986:382). The many references by interviewees to fresh water springs in the area, including springs used for family worship suggest a connection between the name and the place.

Kawika McKeague, a member of the O'ahu Island Burial Council and resident of Hono'uli'uli, shares his *mana'o* on the meaning of *wahi pana* and how Hawaiian culture is strongly rooted to their ancestors and *'āina*:

> 1) Spiritual transcendence imbued into physical landscape- there is a fine line of existence and being within the worlds of the ethereal and "reality" within the entire Hono'uli'uli Ahupua'a. This fine line between two worlds of knowing, perceiving, and attaining life essence creates a cultural/spiritual foundation for this area to provide the means for moments of revelation through various sensories. These *ho'ike* reveal themselves through *'ike papalua*, secondary sight/knowledge, *hihi'o, akaku*, and *ho'ike na ka po*.
>
> Even the name of the *ahupua'a* is suggestive of the deep well of knowledge and understanding that comes from the time of Po. Some of the supporting elements to this line of thought of extrasensory "enlightenment" to delve into different plains of being and existence include:
>
> a) Kapo'ulakina'u- (Kapo of the red streaked with dark) the female *akua* that provides inspiration and insight only through one's dreams- her presence demarked by the *ula* rays of the setting sun, which also belongs to Hina/Papa/Haumea;
>
> b) The area of Kaupe'a- the plains of the *ao auana*, where unsettled souls wander and dwell.
>
> c) Hoakalei- area near White Plains Beach- where it is said that Hi'iaka receives vision of the death of Hopoe and the burning groves of *lehua* on Hawai'i Island.
>
> e) Mo'olelo of Kamapua'a- foretells or gives Kamaunaaniho the *ho'ailona* that will reveal his death at Pu'uokapolei- the smelling burning bristles.

2) Sensory exploits of the female persona- you look at the natural landscape and you begin to understand some of the place names are related to physical, emotional, and spiritual cycles that are a natural part of a wahine's passage through and during childbirth. There's multiple loaded *kaona* [hidden meaning] in these place names but there is commonality again in sensory experiences that sustain the cyclic nature between life and death, ignorance and enlightenment, *pō* to *ao*.

c) Pu'umo'opuna- grandchild; offspring; relative or descendant two generations later.

e) Pu'upoulihale- again the reference to *uli*- any dark color, richness of vegetation, of seed banks; also female *akua* of certain sorcery; short for *'ouli*-study of omens; also the name for the developmental stage of a fetus, as the body begins to form. Pouli can mean darkness, sometimes ignorance (modern mental ascription to the night but a more traditional line of thinking could be that of Po, of knowledge beyond the sensory experiences of ao, of being awake, in the light; the knowledge that stems from such a time of antiquity).

f) Akupu- to sprout; germinate; supernatural.

Section 7 Summary and Conclusions

The Waimānalo Gulch Sanitary Landfill was established in 1987. The importation of landfill material over the past fifteen years has most likely eliminated any historic properties and plant resources related to Hawaiian cultural practices and beliefs that may have been present within the bounds of the landfill property. Additionally, the presence of the landfill over the last fifteen years has already precluded any traditionally established access to *mauka* areas through Waimānalo Gulch.

The accessibility of Honoʻuliʻuli lands, including the present project area, to the Hawaiians for gathering or other cultural purposes would be radically curtailed during the second half of the nineteenth century. As noted above in this evaluation, by the 1870s, herds of cattle grazing across the ʻEwa Plain likely denuded the landscape of much of the native vegetation. Subsequently, during the last decade of the nineteenth century, the traditional Hawaiian landscape was further distorted by the introduction and rapid development of commercial sugar cane cultivation. Throughout the twentieth century sugar cane cultivation was the dominating land use activity within the project area. Cane cultivation – and the sense that the project area was private property – restricted access inside the project area to employees of Ewa Plantation.

The *ʻili* of Waimānalo including (Makaīwa, Lanikūhonua, Koʻolina, and the uplands) has been described by community participants in this assessment process as a sacred area of great cultural importance. Many of the individuals contacted or interviewed for this study have expressed concerns about cultural impacts within and beyond the boundaries of the proposed project area. These concerns are based on a traditional view of the Hawaiian landscape as a continuum, in which the *ʻili* of Waimānalo is perceived in unbroken relationship between *mauka* and *makai* lands and to the ocean beyond. This relationship is reflected in the oral traditions mentioned by the people of this land, the sites documented within the project area, as well as the many sites *mauka* and *makai*. The current project area is located along an ancient pathway between the *mauka* and the *makai,* i.e., the uplands and the coast. Both of these two general areas contain diverse and abundant resources. This pathway is traversed by Hawaiian ancestors in both the physical and the spiritual form. The *makai* area was rich in estuarine and marine resources including a canoe landing, a *koʻa, kiʻi pōhaku* as well as *loʻi* that sustained a thriving fishing village. The *mauka* area is covered with numerous religious cultural sites.

Community particpants have expressed great concern about the Huakaʻi Pō Kāne, also known as the Night Marchers, a monthly procession of the spirits of the dead. According to *kūpuna*, the trail of the Night Marchers in this area runs from *mauka* to *makai*. Hawaiian cultural belief is that these trails are significant and must not be impeded for fear of retribution from spirits of the departed. This type of cultural tradition often goes unacknowledged because it is not an accepted part of the dominant Western culture; however it is very real for many people in Native Hawaiian communities. Hawaiian culture acknowledges a spiritual aspect to nature and interprets it in a way that has made certain Kānaka Maoli (native born) very sensitive to natural phenomena.

According to the state OEQC's guidelines for preparation of cultural impact studies, analysis must take into account culturally significant physical and natural features of the landscape. For example:

> Certain landmarks and physical features are used by Hawaiian navigators for sailing and the lines of sight from landmarks to the coast by fisherman to locate certain fishing spots. Blocking these features by the construction of buildings or tanks may constitute an adverse cultural impact. (Office of Environmental Quality Control 2004:47)

Based on the information gathered during the course of this study and presented in this report, the evidence indicates that the proposed project will affect traditional Native Hawaiian stone uprights (SIHP # 50-80-12-6903).

As described in Section 1(Introduction), when the expansion project's CIA consultation was initiated, communication with the project proponents indicated that the proposed expansion area would be 36 acres—the same 36 acres that the project proponents were having surveyed as part of the project's archaeological inventory survey of the expansion area. For this reason, the initial project consultation letters describe the expansion area as approximately 36 acres. It was only later that CSH learned that the expansion area was actually approximately 90 acres. The 36 acres corresponds with the actual foot print of the landfill cells that will be created and used for refuse. Portions of the remaining approximately 90-acre expansion area will be used for the aforementioned appurtenances. Therefore, although the foot print of the proposed area to be disturbed is larger than the 36 acres indicated in the initla CIA consultation, the actual portion of the gulch to be used specifically as a landfill (36 acres) has not changed.

The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 will be contacted again with the new information about the larger project area.

7.1 Recommendations

The following is a list of community concerns and recommendations based on the community consultation process for this CIA for the proposed Waimānalo Expansion Project:

1. If cultural site SIHP # 50-80-12-6903 needs to be removed, a cultural monitor should respectfully care it for. Douglas McDonald Philpotts, Shad Kane, William Ailā, and Eric Enos all agree that the upright *pōhaku* should be removed from its original place during construction, then reunited with its former space and preserved in place. The removal of the *pōhaku* should be conducted in a cultural manner with a cultural monitor and the proper protocols. There should be a preservation plan in place for future cultural access and these community members should be involved in the mitigation process.
2. The traditional view of the Hawaiian landscape as a continuum should be taken into consideration during the planning process. Waimānalo Gulch is perceived as an unbroken relationship between *mauka* and *makai* lands. This relationship is reflected in the traditions of the Waimānalo area mentioned by the community contacts. In this view, any future activity within the landfill property will further distort and diminish the traditional landscape.
3. The *huaka'i pō* (procession of the night marchers) view plane should be taken into account in the planning process. Several community participants in this study stated that

it is very important to keep the pathway clear of visual and structural blockage from *mauka* to *makai* on the east ridge of Waimānalo Gulch and the west ridge of Makaīwa Gulch, in order to allow the *huaka'i pō* to continue. Several participants in this study cited the establishment of visual and physical buffer zones to protect the *huaka'i pō.* CSH recommends this topic should be addressed in greater detail through further consultation with the community.

4. A series of six natural caves and rock overhangs located in the northwestern portion of the project area were examined and documented by CSH during archaeological inventory survey (Dalton and Hammatt 2008). Subsurface testing (excavation) was conducted at two of these features; most do not contain substantial sedimentary deposits. No significant cultural material was observed or discovered at any of these six caves and overhangs; thus, they have not been designated historic properties. However, at least one community participant (see Table 2) has voiced concerns about possible disturbances to burials in these caves. CSH recommends cultural monitoring of any proposed disturbance to these caves by qualified native Hawaiians familiar with the project area.
5. Although the land has been dramatically altered, there remains a possibility that burials and other archaeological sites may be present in and around the proposed project area Efforts need to be made to insure adequate archaeology and cultural monitoring are conducted at this project site. In addition to this cultural impact assessment, CSH is conducting an Archaeological Inventory Survey for this project area that was ongoing at the time of this report's completion (Dalton and Hammatt 2008); its findings and recommendations should be faithfully carried out in accordance with applicable laws and administrative rules governing historic preservation work in the State of Hawai'i.
6. CSH recommends that community members be further consulted about these and other concerns throughout the planning process. Addressing these cultural concerns is part of the City and County of Honolulu's "good faith" effort to minimize the impact of the proposed project on Hawaiian culture, its practices and traditions.
7. CSH recommends that the consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 (Section 5) will be contacted again with the new information about the larger project area.

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Appendix A Shad Kane

Mr. Shad Kane (SK) was interviewed by Cultural Surveys Hawai‘i (CSH) at his residence on December 6, 2002. Mr. Kane has agreed to re-use his interview for this project.

CSH: Today is December 6th, 2002. Can you state your name and where you were born and what year?

SK: The name is Shad Kane and I was born on the island of O‘ahu and my birth date is February 23rd, 1945. At that time my parents, Hattie Kane and Tazoni Crowningberg Kane, were living at Pearl City Peninsula. I think my mom gave birth to me at Kapi‘olani Maternity Hospital in Honolulu.

CSH: We're going to talk about Waimānalo Gulch. What in your opinion is significant about the gulch?

SK: I think what you need to understand, anytime you have a discussion in regards to Hawaiian culture and trying to get an understanding of some of the things we talk about, their significance and the role that they play, one of the most elementary things you need to understand is that our history is a fragmented history. And it's unique in that sense. Our history is a fragmented one and in order to understand that, you need to understand that the ancient Hawaiian history was an oral one. It was a history that was passed on from generation to generation, from families to families. And so a lot of this information was memorized, almost held by certain individuals, whether it was someone important within that community or whether it's someone within a family structure whose responsibility was to preserve the genealogy of a family. But we need to remember that it was an oral history. When Cook first came there were a lot of people living here. And in a short amount of time, by 1920, I think there were only some 20,000 Hawaiians in the islands. The significance of that, the purpose of that, is that so many people died for different reasons. We know a lot of them simply died from smallpox. That's the situation in this area we're talking about – Waimānalo, Palehua, Kaupea, Ko‘olina – this whole area. There were significant numbers of people who lived in this area that died for a number of reasons. The challenges they could not deal with, the western challenges. Plus a lot of them died as a result of invasions from outside islands – Kahekili, Kamehameha. So O'ahu's history is one that's almost totally annihilated.

The interesting thing about the O‘ahu history is its close ties to Tahiti. Because of the many Tahitian associations with the island of O‘ahu. Especially this area, the area we're talking about. After having said that, anytime there's a discussion in regards to the things we're going to talk about, in ancient Hawai‘i a lot of things were explained in terms of relationships and that there's many different kinds of relationships. One, the most elementary relationship is the *mauka-makai* relationship. There's relationships between us living today, our relationship with our ancestors. Our relationship with the people, our children who are unborn. Today we don't think about these things but these things were important in ancient history. So, when things were done, when structures were built, or events were played out in ancient culture, it was done with an understanding of these many different relationships.

One of the most elementary relationships in ancient times was the *mauka-makai* relationship. And the reason why I bring this one up is because it plays a very important role in having an understanding of the area surrounding Waimānalo Gulch. It's not to say that it wasn't important elsewhere. It may have been. Or I would say it was important all over, that *mauka-makai* relationship. But what makes this area unique is the fact that we have evidence, we have structures that support that *mauka-makai* relationship. Most places most of these kinds of structures – stonewalls, habitation structures, cultural resources – most places they've largely been disturbed or destroyed. But in this respect, this particular *mauka-makai* relationship, there's, I think, sufficient structures that still exist today that you and I can look, see, feel and touch, that supports that *mauka-makai* relationship. And I think if we had a map, if you were to draw a line from the approximate area that may today identify as Ko'olina – If we were to draw a straight line from Ko'olina to Mauna Kapu you'd find that that passes along the northern ridge of Waimānalo Gulch, goes straight up to the ridgeline at Pu'u Manawahua, and follows pretty much a straight line to Mauna Kapu.

There's several events in ancient history that makes this discussion important. One was, with an understanding of the significance of the *mauka-makai* relationship. Some of the information I'm going to share with you, you've probably heard before from other people that you've come to, other informants. And one of this is Waimānalo o Ko'olina was considered one of Kākuhihewa's favorite vacation places. It's a place where he enjoyed coming to and spent a lot of time there. I think he also had a kahuna by the name of Napuaikamau who served as caretaker of Ko'olina. Now, he liked this place so much that he placed a *kapu* on it. And that's documented. We know that he did this. He placed a *kapu* on this place. Today we have difficulty understanding this kind of cultural information. And we've lost the ability to appreciate ancient Hawaiian thought. But the significance of what he did there is that during this period of time, when one places a *kapu* on a shoreline that *kapu* extends out into the ocean and that *kapu* extends up to the tallest mountain in that lineal relationship.

CSH: The whole *ahupua'a*.

SK: The whole *ahupua'a*, that lineal relationship. So the *kapu* is not one spot. We think of it in terms of this one beach but no, in ancient Hawai'i it was not just the beach. Because the ancient understood that all the things up above and everything out in the ocean, surrounding area, impacts this particular site. So when he placed the *kapu* on it that *kapu* preserves the landscape. So he did this. Don't hold me to dates but I think Kākuhihewa lived around the 1600s, around that time. So this particular *kapu* is that old. Now the *kapu* extends up to the tallest mountain in that area. The tallest mountain in this lineal relationship is Mauna Kapu. Now there was another documented site that myself and Nature Conservancy and a bunch of other people tried looking for a particular site or small *heiau* that was built on the slopes of Mauna Kapu. It's in Sterling and Summers' *Sites of O'ahu*. I think it's McAllister's – It's referred to as a *heiau* but it was a small one. I think it was four feet by six feet so it must have been something small, a small little platform. But perhaps they may have had a koa on it or a shrine. But the significance of this particular structure is not so much its size but the location that it was built, and when it was built, when it was laid out. This particular *heiau* which is one of the few – and the only one that I know of – I don't know about any other this particular small little platform was built of both basalt and also coral. Which is unusual. Now to most of us today, that will go right by us. But the significance of the coral is the fact that it ties Ko'olina to this place. So what it does, it provides supporting evidence for the idea of the *mauka-makai* relationship in ancient Hawaiian times. Now, this lineal relationship, there's a number of documented sites and there's a whole bunch of undocumented sites within this lineal relationship between Mauna Kapu and Ko'olina. There's one undocumented *heiau* that's maybe a hundred feet by hundred feet. And its walls are probably, if you take into consideration the amount of erosion and the amount of soil that's been deposited within the *heiau*, it's about four feet – the walls sticking up above the surface. So depending on where the cultural layer may be within this structure, we suspect within this whole one hundred by hundred feet, the cultural layer may vary from perhaps just a few inches below the surface to maybe a foot to two feet below. That being the case, the walls and inner walls would be perhaps, it's probably like around five or six feet. So it's a substantial structure that exists today.

The only documented information up here is Mauna Kapu. Now between Mauna Kapu and Pu'u Manawahua there's a whole bunch of undocumented sites. But before we get to that, let me just share the information on this particular structure. It's about a hundred feet by hundred feet. The walls perhaps four to five, maybe six feet. The interesting thing about this particular structure is that it has enclosures on four of the corners. And there's also shrines. That's very obvious, even to someone who doesn't know anything about Hawaiian cultural resources. There's a central stone in this particular structure. The stone is facing almost due north. So, some of the people that I've shown this site to, there's several opinions about it. And the thing about Hawaiian stuff is that I don't think anybody can really say with certainty today what we're looking at. So what we try to do is to share the information. And we try to get each other's opinion in regards to what we may be looking at. And we try to come to some kind of consensus amongst ourselves where we can agree on with respect to what we're looking at. With respect to this particular *heiau* I think most of us agree on it serving two purposes. One, it may have been a navigational *heiau* because of the central stone. And there seems to be a lineal relationship, the way it's set up, in the rising and the setting sun. Now, in addition to that, that supports the fact that it may have been a navigational *heiau* is the fact that, when we think of all major islands, there's places on the south side that is referred to as a point of departure. For example, on the Big Island, South Point, Ka'ū, the shoreline and the rocks. Kaho'olawe. Kealaikahiki Channel. It's all on the south side. So, likewise, this is basically the same kind of location with respect to the other islands, when you compare all the other islands. Now what makes it interesting is the fact, again, is the Tahitian connection with the island of O'ahu. Kūkaniloko is built here, the island of O'ahu. I think Marion Kelly refers to 'Ewa as the celebrated land of our ancestors. And other people too make references to 'Ewa as the land of the ancestors. And when they use that term ancestors, they refer to our Tahitian ancestors. There's a lot of Tahitian associations, Tahitian stories that's associated with this region. There's also structures associated with this region. I'm just trying to give you some understanding of the connection with this *heiau*, what it may be, and that it may have been a navigational *heiau*. In terms of pointing the way home. There's a number of structures in Kalaeloa, the former Naval Air Station Barbers Point, an area that we know had the ancient name Kanehili. But the interesting thing about all the structures in the former Naval Air Station is the fact that not only is it made entirely out of coral, but when you take a look at some of the structures – For example when you take a look at the habitation structures and you take a look at one particular *heiau*, you find differences in the construction. Most Hawaiian stone masonry, dry stone masonry, the stones are laid flat and they tend to lock in the corners. Tahitian stone masonry, what they simply do is they take upright stones and they stand them up on the outside and they fill them up. And this particular *heiau* and some of the structures in Kalaeloa, what you find is an integration of Hawaiian stone masonry and Tahitian stone masonry. So it supports the Tahitian idea that they're associated with this region. There's a number of *mo'olelo* that ties us to Tahiti. One that really makes it clear is the story about – Kahai is one of the Tahitian chiefs who's credited for bringing the first *ulu* tree to the island of O'ahu. There's different stories, different places where he may have planted. But nevertheless the stories are real stories. And there's one particular story that refers to – It's a story about Nāmakaokapāo'o, who's the son of Kahai. You also need to understand that Kahai is also the son of Mo'ikeha. And Mo'ikeha is the brother of Olopana, who was killed by Kamapua'a. So you got to feel of how everything fits together. So, in this particular story, apparently Nāmakaokapāo'o and his father Kahai were somehow separated when he was young, as a boy. And he goes off and he lives his own life. And the story is that Kahai takes his *'ahu'ula*, his feather cape, and some other items and buries it beneath the *ulu* tree somewhere in this particular area. And the story is, if Nāmakaokapāo'o wanted to know his father, he would need to seek out an ulu tree and look for the father's *'ahu'ula*. And if he finds it, then he would know who he is. Okay, Kahai's name is – Hawaiians in ancient times, their names were long. So Kahai is also referred to as Ka'ulu o Kahai, the ulu tree of Kahai. If you say that name quick enough it almost sounds like Kualaka'i. So Kualaka'i may be a corruption of the word Ka'ulu o Kahai. So Kahai is credited for going to Tahiti or to Samoa and getting that ulu tree and coming by way of Tahiti and planting it at a place called Kualaka'i in Barbers Point Naval Air Station, which we know of today as Nimitz Beach. Now the significance of this story is that Nāmakaokapāo'o needs to find out who he is. And the deeper meaning to this is not just Nāmakaokapāo'o to find out who he is, it's for all of us to find out who we are. The story is, he did not go to Tahiti to get the *ulu* tree. He went to Samoa to get the *ulu* tree. Now this story is not unique to just Hawai'i. It's a story you find all over the Pacific. The story may vary a little-bit. But the significance of the *ulu* is the fact that it's viewed as, it's symbolic of rebirth or renewal. That's the significance of this story. The significance of the story is that we may have come from Tahiti but if we go back farther, we came by way of Samoa. I think only recently are we beginning to realize that the migrations of the people into this region came by way of Samoa. There's actually two migrations I think. One from this region and one from further up north.

Getting back to the *heiau*, because of our oral tradition it's so important that our children – If we take ourselves back– three, four hundred years ago – it's so important that our children know where you came from. So we need to know – if you got to go home – where home is. So that's the significance of navigational *heiau(s)*. This particular *heiau*, like others in our islands, is pointing the way back home. Within this *heiau*, in addition to enclosures of the four corners and the central stone, on one side there's a lot of stones that we feel we're looking at just the top of them. If you look at this particular *heiau*, at least for me and my friends who are close to me and who look at this kind of cultural resources, we try to look through what has been disturbed and look for undisturbed sections of the *heiau*. So, if the cultural layer is about a foot down, and we got a stone that's buried within a major portion of this *heiau*, and it's buried in that cultural layer, the first thing that comes to mind is it was put there. If it's on the surface, our best guess is that it doesn't belong there. It just somehow ended up there. But there's a whole row of stones. And they kind of run *mauka-makai* and they run, as you're standing from the top stone and you're looking *makai* at these stepping stones in the *heiau*, you're looking southwest, that general direction. Not that it may be accurate but in a symbolic term it's important. Because, if in fact these stones were placed there, they were placed there for a reason. Because everything else in this *heiau* is cleared with the exception of the central stone. But, if in fact, the central stone and you got this series of stones on one side, in a row – If it's a navigational *heiau* there would be a map there. So we were searching for a map. And one particular stone, initially we thought had represented the island of O'ahu but it would be an excellent stone to represent all of the islands because of similarities with all the islands. Similarity – Not so much Kaua'i, because Kaua'i is an older island. It's been further eroded. However, when you take a look at O'ahu, Maui, the Big Island –

Much of what I'm sharing with you I realize it's hard for you to get a picture of what I'm saying. There's one particular stone that's maybe two and a half feet by two and a half feet. And it's shaped like the island of O'ahu in a sense that what you have, you have two high points in the stone and you got a saddle in the middle. One high point, in our opinion, represents the Ko'olaus. The other high point represents Wai'anae. The saddle represents the central plains of O'ahu. You use the same thinking, the other islands. Maui – West Maui mountains and Haleakala. The central plains representing the center of the island. Same stone can represent the Big Island, representing Mauna Kea, Mauna Loa, Hualalai and the saddle. In a sense it could also be representative of Moloka'i, but perhaps maybe not as clear. Likewise, Kaua'i because Kaua'i has been much more eroded. But our opinion is we're looking at the best representation of the islands, of all the islands. And this if this is a navigational *heiau* a map would be important. Now, when we look at this particular stone, and we're standing on the island of O'ahu and we're looking south, behind us is several stones embedded in the cultural layer. As we're looking at the other stones in the cultural layer, the first thing comes to mind – And every one is interesting, when you look at it. One has a big hole in the center and, in our opinion, it perhaps represents an atoll somewhere south of us. And then there's other stones, in our opinion, represent way finders or voyagers that they used, places to pick up on their travels. In addition to using the stars, these were stops that they would use to find their way around. So, in our opinion, because of all of this – the stones, the central stone, and everything else – we feel this may be a navigational *heiau*. One of the other things that we think that this *heiau* was used for – as a place of sharing information, because of the enclosures, four enclosures on the outside corners. On these enclosures we have four walls, elevated platform with upright stones that's a part of the elevated platform.

CSH: Did you say the walls were four feet high?

SK: The main structure – about a hundred feet by hundred feet – it's almost a perfect square. That particular wall, in some areas right now it's about four feet. But our thinking is that a couple hundred years of erosion – Our thinking is that some of that the walls are buried. So our best guess is that maybe this structure is about four feet from the inside. But the corners is what makes it extremely interesting because in the corners we have enclosures that's built onto the outside corner. And it's a very obvious enclosure. It's not a habitation structure. There's an elevated portion on it. We suspect if were to clean it out we'd probably find smaller stones on the top. There's very obvious shrines and *koas* that's associated with elevated platforms. But one of the other things we feel it may have been used for was a place for passing on information. Whatever that may be. That may simply be somebody sharing navigational information. Or it may be somebody sharing medicinal information. Or it may be somebody sharing religious or genealogical information. Whatever that might be. But it's very obvious that it's a place for sharing important information. Elevated platform, the *koas*. In our opinion the *koas* obviously serve as a podium. The *koas*, in our opinion, because it's oral history, it's very important that when you speak, you're heard. So you want the people you're talking to, you want their attention. If you're going to say something, they need to hear what you're saying and they're going to have to remember it because you're not going to say it again. These structures were built in a manner to get one's attention. So, in other words, when that person, whoever he is, who's standing on this elevated platform and speaking, is not speaking alone. He has others with him. He has a *koa*. He has his ancestors and everyone else. People know that in ancient time. We don't understand this kind of thinking today. We're getting lost but our *kupunas* knew this. So they understand how important it is to remember, how important it is to speak that's what the Niho Palaoa is. It gives one the authority to speak. Something so simple yet we don't understand how important it is to speak and be heard. These simple things was so important to our *kupunas*. So when they built these kinds of places, unless you have that kind of understanding you don't know what you're looking at. If you look at it in scientific terms, it's just a bunch of stones sitting there. And if you can understand the thinking three hundred years ago, all of a sudden the bunch of stones become – Oh, it's very interesting, all of a sudden. And you see that if you have that kind of understanding and you go to this place. And you look at these stone structures. It shouts out to you what these are. So these four enclosures, in our opinion – It's not Shad Kane's but a bunch of other people who've sat down and talked about – It's very obvious it was a place of sharing information. What makes it very special and this ties it to Waimānalo Gulch – If you take a look at this map, take a look at this photograph, all these gulches here, you think of this place as a barren region. As a matter of fact, one of the reasons why they chose Waimānalo Gulch is because of water. Right? Today the most obvious thing when I look at this is that there was water here. In order to gouge this thing out, there had to be substantial amount of water. Okay, getting back to the *heiau*, there's many – You read *Sites of O'ahu* or you read a lot of the other stories with respect to this region, you find out there's a lot of stories with respect to water, a lot of stories with respect to springs. This *heiau* – Two of the *makai* – This structure is kind of – It's not perfect flat. One portion, the *mauka* portion, there's an entrance on the *mauka* portion and there's an entrance on the *makai* portion. The two enclosures on the *makai* portion, they have *tī* leaves growing in them, full-grown *tī* leaves. So we know they've been there for a long time. Another thing about *tī* leaves, the significance of *tī* leaves, is the fact that we know it's difficult to propagate from seeds. So somebody had to stick them in the ground. And we know it wasn't a cowboy. And we know it wasn't anybody recent who did that. So we suspect it had to be one of the *kūpuna* that planted it. Now, on one of them, the one on the Wai‘anae side, there's the full-grown *tī* leaf and there's a whole series of boulders on the *makai* side of this enclosure. Now, most people, most of our *kupunas* in ancient times, when they built structures, from our experience in looking at them, they were basically geometrically shaped. We find them like square, rectangle, or triangle sometimes. They were basically geometrically shaped. In some cases you might find something that's round. But not very often. Normally square, rectangular kind of stuff. But not very often you're going to find an irregularly shaped one. Amongst those boulders, where this old-grown *tī* leaf is, there's an irregular-shaped wall. And we've had several people come up and take a look and try to figure out what the heck is this irregular-shaped wall. Because we know they don't generally build something like this. And one of the people that came up was a lady by the name of Mikilani Ho. She's a Hawaiian archaeologist and she has a number of publications out. But she's considered an expert in petroglyphs. So she came up and took a look at it. But she was there to look at petroglyphs. Because our thinking was, this *heiau* is on a trail, *mauka-makai*, so we're looking for petroglyphs to support the trail idea. So she came up there and she came up with something totally different. And when she brought this up, everybody seemed to understand exactly what she said. And when she took a look at this irregular shape wall, she said it was used to contain water. It was not necessarily used to stop it, but it was used to slow it down. But she was saying that was the beginning of a spring. And when you walk through the grass below the spring, this wall, was a riverbed. It's a riverbed that went all the way down and dropped off on the side of the wall that drops down into the valley. Not to say that's the only spring. There may have been hundreds. But what she said is that this *heiau* was built on a series of springs. And we tried to understand – When we first started looking at the amount of effort – It took apparently a lot of effort to build this one structure. We can't imagine people putting in that amount of effort and not having water. So the feeling is that this particular place is built on several springs. On the opposite side, the other enclosure on the Honolulu side, similar situation. Series of boulders, no wall, old-grown *tī*. But when we started walking through the grass there's a dry riverbed that goes all the way down. Stones all over. On the sides it's dirt but as you come into the lower area depression it's all stones – river-worn stones. So, the feeling is that this particular area was built on water, built on several springs which supports the fact that at one time there might have been a substantial amount of water that actually created Waimānalo Gulch. I've shared a whole lot of information on only one structure. I don't know how much time you have but that's only one. There's some other *heiaus* up there. Now you might be wondering how come it's not documented. We don't know. We don't know why it's been hidden. But what we do know is that it has been hidden for a long time and it's only been recently that it's been found. And it's buried under California grass and weeds for the longest time. There's a whole story on how we found this but that's another whole story, how it was found. Now the big question mark is what happened? Why is this a place that was totally disappeared.

And what makes this whole place up above the landfill important is the fact that nowhere else can you find a place in all the islands where you find so much cultural structures that supports that *mauka-makai* relationship. Below this *heiau* there's other enclosures. Marion Kelly referred to one as a *heiau* – two of them she referred to as a *heiau*. They're small. One I would say is about thirty by thirty feet. It's a terraced structure – a lower portion, upper portion. The lower portion is all paved with stones. The upper portion is paved with small stones, *'ili'ili* stones. And the lower portion, there's an upright stone that's actually laying on its side but we suspect it may have been standing up at one time. There's another *heiau* further down the valley, directly in line with Waimānalo Gulch that's set up – This particular structure – We got the opinion of *kumu hula* John Kaimikaua because John Kaimikaua – He's not too familiar with the O'ahu tradition but he's very familiar with the Moloka'i tradition. So when he speaks, he speaks in terms of what he knows of Moloka'i. But our thinking is that there may have been similarities here. Now, Moloka'i, they have several *hula heiaus* that are still in place up there. And, in any case, the *hula heiau* is built on a slope. It's built on a hill. So there is one *heiau* that's up above Waimānalo Gulch that's built on a slope. And I would say it's about fifty feet long and then it goes into the hillside, because it's a slope. So it has a high wall. In one portion the wall, I would say, is maybe about twelve, fifteen feet, on the slope side. Then the paved portion actually disappears into the hill. We suspect that because of the amount of erosion, we suspect that the paved area may be a little bit bigger. The actual exposed portion of this paved area is maybe about twelve feet. Maybe a little bit more than that. But we suspect it may go further in. The actual length of this particular structure is about forty, fifty feet long. And what makes it interesting is it looks like they gave up building it because we can see a portion of it that they did not finish. So we're actually looking at the inside, not the finished wall. Which makes it interesting because I can't think of anyplace else where you actually have a *heiau* that stopped being built while it was under construction. They decided to stop. Why they stopped, we don't know. But John Kaimikaua's opinion is that this is a *hula heiau* we're looking at. And Marion Kelly said the same thing. Marion Kelly looked at it. She supported that it's a *hula heiau*. Simply because it's on a slope. And both Marion and *kumu* said that in ancient times what they used to do, is that so that everybody has an unobstructed view, they go on a hill. And you watch across the hill to watch the performance, whatever the performance might be. So it's that kind of place. That's one. And there's a whole bunch of other structures in this particular area. And anyway, is that enough? This is just supporting information with respect to that *mauka-makai* relationship. And these are structures that are there today, to be seen. I'm sure that in time more people will be able to have a chance to take a look at it.

CSH: Can we talk about the trail that goes from here to the ridge?

SK: Okay, a lot of the information that I shared too are things that you can actually find from different resources. And this is one. In ancient times there were several trails that people would take to come from Honolulu to come to this side of the island. I think there were three ways to get to Wai'anae. One was by way of Kolekole Pass. One was by way of Pohakea. Another was by way of Pu'u Kapolei. Three trails. Obviously, another one along the shoreline which was the longest way to travel. Farrington Highway is very obviously a trail. Now, in the context of Waimānalo Gulch, what makes this extremely interesting is the fact that there's a series of petroglyphs that was preserved by the developer of Koʻolina or West Beach Estates. When they first started developing – There were a number of archaeological surveys that were done early on. And one of the key persons was Aki Sinoto. I've read a lot of Aki's work. Very interesting cultural information that he found – that whole area over there. And several other people. The interesting thing is that the first archaeological survey that was done was 1930 by Gilbert MacAllister. Between 1930 up until the '70s nothing was done. So 1970 was the start of all this discussion in regards to building in this whole region. And because of the requirements for the EIS and doing a cultural assessment – All of a sudden, since the 1970s until now, and the development of the Campbell Industrial Park and Kapolei and the resort area, we had all these archaeological surveys that came up. So Aki Sinoto is one of them, amongst others. But one of the things they discovered is the fact, in addition to all the information in the lower plains, in addition to the sinkholes and the bird bones, they also found what I think they refer to as the alluvial level or the higher elevation up above the coral plains. And what they found, they found habitation structures, they found burials, and some petroglyphs. I think they actually found two. I think they found one that's actually inside Waimānalo Gulch, up on the higher ridge. I've never seen it. Another one they found that was preserved at the entrance to Koʻolina. Now the interesting thing about petroglyphs is that most of them are built identifying trails. And you find them along ancient trails. And the significance of these particular petroglyphs here is that it actually defines the intersection of two trails – Farrington Highway and the *mauka-makai* trail. That *mauka-makai* trail is supported by everything else that I've shared with you in respect to the cultural sites up above. We need to understand the significance of that *mauka-makai* relationship because that was one of the relationships in ancient times. In ancient times, it was matter of life-or-death resources. It was food. So it was establishing that relationship between the people up above and the people at the ocean. So these were your closest friends. These were the people – So you don't have to go dive for fish. You just go down and you take what you got to share. You get fish from people down below. So these were your neighbors. So obviously there would be *mauka-makai* trails all over the islands. The significance of this one is the fact that you have structures that supports that idea, that's still intact today. And the petroglyphs along Farrington Highway is one of those supporting pieces of information.

CSH: We need to document access. So when you guys go up there, which way do you guys go?

SK: In terms of gathering resources today?

CSH: Or to go up to these places up here, up to the *heiau* that are undocumented?

SK: We go through Palehua. That's why I say I've hiked most of it. The only area I haven't hiked was actually the stretch from Farrington Highway up to the Timberline intersection – of the Palehua and Timberline.

Sometimes when you've seen a lot of different structures, and you have something to compare it to, a lot of time all you need is two or three stones to get an idea of what might have been there, that might still be intact. So a lot of times we just look at the surrounding area. If we find two or three stones that seems to be aligned and then we look down slope and we start seeing stones scattered all over the place down below – And if it looks like a place that may have stopped some erosion or it may have been a place where soil might have come down and then hit an obstruction that caused soil to deposit, then there may be cultural information buried there. But then when you look at a slope, you look at an area, you can tell whether the soil passed over it and went further down. Or may have stopped up against an obstruction. But you can only get a feeling for this by actually walking up and looking around.

CSH: Did night marchers come up in any of the stories?

SK: No. I know a lot of stories associated with that. Especially this area right here. And the significance of this area in terms of night marchers – You want me to share a little bit about that? One of the things we've done and we're still trying to do, we're trying to get support for restoring the ancient Hawaiian names. And I think that's happening all over the place right now. We've been able to restore one name so far. We've been able to change the name of Barbers Point to Kalaeloa. We did that. We changed that. But there's other names we want to change, to restore. There's a lot of them in this area. The significance of ancient names is the fact that – There's a lot of stories, mo'olelo, there's a lot of resources, legends, all these stories refer to different places by name. When you read these stories you don't know what they're talking about unless you know where the places are. So the thing is that we do have a history but it's hidden in ancient names. So in order to get people to understand that every area of this island, of all the islands, there are stories and histories of that place. But it's hidden. So one of the names of this region is Kaupea. And there's actually two ways of defining Kaupea. In order to understand the significance of Kaupea is kind of understanding how ancient Hawaiians thought in terms of life, death and sleep. Our *kupunas*, the ancient Hawaiians, believed that life, death and sleep overlap. The thing is, trying to explain this in western terms is hard because there's no real word to explain it. The words may be confusing so try to see through the words. In ancient Hawaiian there's two energies in all of us. One was defined in terms of the dream spirit. So when you go to sleep, when you dream, our *kupunas* felt that that dream was something real. In other words, you had actually visited – Your dream spirit would leave your body and travel. And you had an opportunity to visit different people. You may have an opportunity to visit a departed loved one, a grandmother. So if you were a pregnant lady and you woke up in the morning and you had a dream about your grandmother or your great-grandmother and she shared a name with you, you took that seriously. You actually visited her. She's telling you this is what you should name your child. And, likewise, if you were a *kahuna la'au lapa'au* and you dreamt about someone sharing thought with you in regards to using a particular plant to serve a particular purpose, you took that seriously. That was real to you. Somebody's giving you good information. Now, in order for you to wake up from your sleep, that dream spirit got to come back. Because the other energy within you is the energy that supports all your life functions – your breathing, your heart, your circulation. Without that dream spirit coming back – That simply defines death. You die. So that's why in ancient times when the first sailors came over here, they would come across a family, they would be chanting over the body. What they're doing, they're trying to get the spirit to come back. We refer to it as spirit but it could also be – We could also look at it in terms of one's spirituality. In a

Christian sense – I hate comparing Christian with Hawaiian thought but sometimes in order to help some of us today to understand, sometimes we need to do this. But we all as Christians today know that we all got souls. Is this what they're talking about? Now, what they also believe is – Say your dream spirit would not come back and you're basically dead, the ancient Hawaiians felt that if you were respectful of your *'aumakua*, you were respectful of your parents, you were basically a good Hawaiian, you had the benefit of your *'aumakua* to carry you somewhere. Take you to a place that is referred to as Laina Kauhane. Every island has it. On this island, the one that I know of for sure is the leina stone of Ka'ena Point leinaaka'uhane. The interesting thing about that stone is that it follows the ridge line of the Wai'anae Mountains. If you look at the map and you follow the ridge, the peaks all the way, and you come down Ka'ena Point, right down the slope, you land right on the *leina* stone. Now if you follow that same ridge line back up the mountain range and you come all the way across these mountains over here, you come straight down, you come right down to Kaupea. Pu'u o Kapolei sits right at the bottom of this hill. Kekuapo'i, when she wrote a kanikau with her husband Kahahana, one of the things she said in this very lengthy kanikau, she said that her husband's spirit entered that *milo* by way of Pu'u o Kapolei. Us trying to understand what she said, and having talked to a number of different people, she was saying that perhaps Pu'u o Kapolei is a conduit to another world, right in the middle of Kaupea. Okay, so on one end you got the leina stone and on the other end you got Pu'u o Kapolei that may have served as a conduit also, surrounded by Kaupea. Now, if you're respectful of your *'aumakua*, you will have the benefit of them taking you to a *leinaaka'uhane* and helping you leap into the next realm, a better place. If however, you were not respectful of your *'aumakua*, you were not a good person, you were a sinful person, you would not have that advantage. So our *kūpuna* felt that in that case you would be banned to barren and deserted places such as an Aokuewa . Aokuewa is a place of wandering spirits. Aokuewa is Kaupea. So, if you did not have the advantage of getting to the next realm, you would be doomed to live at Kaupea right back here. In a Christian sense, you got heaven, hell – You got one more place. The third place is purgatory. Okay, in Christian thought, purgatory is somewhere else. We don't know where but somewhere else. Our *kūpuna* said purgatory is here. Kaupea. Is Kaupea purgatory? So a lot of the stories that's associated with night marchers, most of them are associated with Aokuewa. These are the places that these kinds of things happen. To make it more real for you, in the context of what we're talking about here, I just retired from the police department a couple of years ago. So I've read all the police reports. That was my job – reading all these kinds of police reports. More than anyplace else on the island of O'ahu, the police reports over here were the accidents. We had so many unexplained accidents right along this intersection, passing through Kaupea, where we can't explain why the guy decided to make a ninety degree turn – No alcohol, the guy's okay, not a wacko, an average citizen, he just decides to make a right turn and drive off and hit the telephone pole and kill himself. So many. In addition to that, some of the recent information is that when they first started building the Kapolei Middle School, they spent I don't know how much money – Because the Kapolei Middle School is a high-tech school, it's all air conditioned, and every classroom has computers. So they spent a lot of money on a security alarm system in certain rooms because of the amount of computers, the amount of stuff in there. They got audio, they got video monitors in the rooms. Not just sensors. Not just motion detectors. Not just that. But they also got audio that triggers, and they got video monitors that kick on in certain rooms. When they first opened up they had an incident – one o'clock, two o'clock in the morning – where it's monitored by somebody at the main office in Sand Island. This particular lady was watching this monitor. All of a sudden this red light comes on and she checks and it's an indication that someone is breaking into a room at Kapolei Middle School. She puts on some equipment and then video comes on. And then audio comes on. And she hears kids having a good time in the room. Lot of noise of kids yelling and screaming. And when she puts the video on she sees figures moving around. It's dark in the room but she can see little figures moving around. So she calls the principal. She calls 911. She calls everybody, the custodian. The principal lives in Kailua, drives all the way out there. The custodian gets there. They go in the room. They open the door. Nothing in that room. Everybody's upset. Check with the lady. The lady says "I got the video." They go into town. She switches everything on. Guess what? Nothing. That's typical of these kinds of places. Now, when they first shut down Barbers Point Naval Air Station they had to hire private security guards. And they had a hard time keeping them. Because the security guards – When the Navy moved out, they had a lot of abandoned buildings. The security guards were chasing children around in these abandoned buildings. And then the kids would disappear in the locked room. They go in the room, open them up, nothing. I mean, these guys were so scared, upset about it, that they actually called the police department. Most people, when that happens to you, you just – and don't call the cops. But these guys took it so seriously, that they were certain the kids were there that they called the police department up. Similar stories happened at the water park. The new building they just built, Kapolei Hale, they must have blessed it two or three times already. There are stories about that place – about drawers being left open and stuff like that. But, anyway, these stories that I've shared with you are recent stories that go way back. But they're typical of Aokuewa's around the island. That's what Kaupea is.

The next thing about Kaupea. The name Kaupea, if you take it literally, refers to the Southern Cross. One of the constellations that the Polynesian voyagers used in their travels, both north and south, is the Southern Cross. The Southern Cross is a very important constellation. It didn't necessarily tell them what to look for but it told them if they're going in the same general direction. So, in other words, the higher latitude you go, the Southern Cross is lower on the horizon. The farther south you go, the Southern Cross is higher up above you. So it basically tells you whether you're moving in the right direction. If you're going south, then you should see the Southern Cross. It should get higher up in the heavens. So, the ancient Hawaiians, when they did things they lined everything up. Not only did they line up heiaus, the *mauka-makai* relationship, the rising sun, the setting sun, structures – They're all connected. And what they also did, the *ahupua'a* lines, the *'ili* lines, also had a significance. We suspect – and not just me but I think I talked to Marion Kelly and a bunch of other people – These are things that we lost. Agriculture came in and they started bulldozing they destroyed all the boundary markers and things like that. So we have no idea where Kaupea may have been. But because of the name, because of the name Kaupea, we suspect that it may have been a marker pointing to the Southern Cross. So these are the places that surround Waimānalo

Gulch. So I'm talking about this because it's important to us. It's important to us as Hawaiians. And it's important for us to have a sense of direction in our lives. And it's important to us in terms of connecting with our *kupunas* and being able to share this information with our children. It's not about us. It's not about you and me. It's about everybody after us.

CSH: Thank you.

Appendix B Douglas McDonald Philpotts

Interview took place on August 12, 2007 at Douglas McDonald Phillpott's *hale* in the *ahupua‘a* of Hono‘uli‘uli and the *‘ili* of Waimānalo. Interview conducted by CSH staff Kēhaulani Souza and K. Lehuakeaopuna Uyeoka.

CSH: Can you please tell us your full name and your connection to this area?

McD: My name is Douglas McDonald Philipotts, but I go by McD. I live in Pālehua and I've been here since 1970, July 1st, which happens to be my 12th birthday. Prior to that we lived at what's now Paradise Cove next to Lanikuhonua. This is where I learned to swim and took my first steps. Lanikuhonua was my great grandmother Kamakila's house; her parents James and Abigail also had their ranch house in Hono‘uli‘uli so my children are now the sixth generation here. I also believe are Hawaiian genealogy from Kauai comes back here many generations earlier.

CSH: What are some of the sources or who are some of the people that have shared knowledge with you about this place?

McD: I've gotten most of what I know from just being here, and having an intense interest in the place and its history. I think compared to most places very little has been written about this area. Ida Von Holt's *Stories of Long Ago* is probably the best historic material I've read about this area. *Sites of Oahu* contains some material on this specific area - however it's also self-contradictory and very fractured. Kehau, the land claims you have provided me along with *mo'olelo* from Kupuna like Analu's, stories of the five brothers and the night marchers are also very insightful. Many old maps showing historic water tunnels and reforestation efforts also help to understand the water resources that were here to support pre-Contact populations. Ida's son Herman Von Holt also shared many stories of this place with me; he also spent most of his life on this land and like his father became manager of the Campbell estate for some years. Jimmy Greenwell who was the manager for Hawaii Meat Company, the ranch here in the 1930s and 40s, also had lots of good information as well as building its ranch house that we live in. But by far the greatest resource to share with me has been this place and to have the great fortune to spend a lifetime and now raise my children here.

CSH: Can you share with us your *mana‘o* about why this place is so special?

McD: Whether you're a spiritual person or not you will be impressed by the sheer beauty of this place, and the spectacular views from here. But many who come here are surprised by the sense of mana here. The view is special here, from the top of Pālehua between Pu‘u Manawahua and Mauna Kapu you can see all the islands and all of the mountain tops on those islands, this is the only place in all the islands you can do this. Hermann von Holt showed me the trench that still remains on the Honolulu ridge of Mauna Kapu and said another one in the south was taken out when the road was put in. It was right where the big blockhouse is now. Herman said they were told by the Hawaiians in the ranch camp at Hono'uli'uli this was a most sacred place, and the place of great mana, and that is why I think the Hawaiians lived here and their spirits never left. This could be part of the meaning in the name Pālehua. In addition to the unique view of the islands I have observed the annual journey of *lā* from here. It starts on the first day of the celestial year on the winter solstice. At sunrise the sun can be seen rising from its house Haleakala as it begins its journey northward it rises from the west Maui Mountains and then from East Moloka'i. Reaching O'ahu it rises from Koko Head and moves from peak to valley north through the Ko'olau's reaching its destination Mokumanamana in exactly half a year. Then on June 21st, the summer solstice, the sun sets behind Kaua'i and starts its journey back home. On this solstice line connecting Haleakala, Pālehua and Mokumanamana are also several *heiau*. Twice a year on the equinox the sun sets over Pu'u Heleakala. To me these and many other things seem to be more than coincidence.

This area has great value in the collective because there is a window into the life of our culture pre-Contact. It's not just about how they built their house sites, what's important is where they built their houses in relationship to where the water was located. They built their houses out there, in the wind, with the risk of it blowing away in a big storm, because they wanted the view. The five brothers, the watchers, their house sites are still there. It's all about the view. How can we relate to these stories if the house sites are gone, or if you don't know where the spring is, or if you don't know where their food was? This is the whole picture, like that beautiful *ahupua'a* poster that Kamehameha Schools has, and it is right here you can walk on it! Due to the land use being limited to forestry, watershed and ranching, the area's pre-Contact archaeological sites have been preserved. For those who have an interest in really understanding or trying to step back in time, just for a moment, for a visit, they can. You can walk from the fishing ko'a to the lo'i or you can stop at the spring or the shelter cave or the ahu the *heiau* the *pā*. You can go a to the forest for lapaau and you can watch the sunset from the front of their hale and if you employ the right senses you can do all this with them, they are still here, that is why this place is so special.

CSH: Can you talk about when you were younger and some of the things you learned from the people and the resources here?

McD: It really starts way back with Lanikuhonua and fishing. Uncle Sunny, Netty's father, kind of clued me in on throw netting. My Dad taught me how to get the net to open up but Uncle Sunny was the one that taught me how to use my senses to know where fish were. One night I was running out with my pole to set lines and he goes, "where's your throw net?" and I go, "it's dark now, you can't see the fish now." Then he said, "Go get your throw net." So I came back with my throw net and he said, "now where's your favorite spots?" And I said, "well its over there and over there and over there, but you can't see the fish" and he goes, "just go back to your favorite spots, you know every rock underneath there, you don't need to see the place to be able to know your way around." And I said, "yeah I can do that" and he said, "Just go to your favorite spot and stand there and wait until you feel the fish. When you feel the fish, you'll know, you'll feel them."

So I think that was the first thing that clued me into knowing that we have this other sense. So when hiking up here and going through the grass I feel things and I just turn right or left, or just open the grass in front of me and there's a huge ahu or a cave sometimes I think they led me right to it. So that's been the path, the journey about knowing, and learning and seeing different things and getting chicken skin many times. When I was younger I spent a lot of time out there in the woods at night just cruising, checking it out. I got spooked every so often out there, but then I get used to it.

CSH: What were some of the most abundant and important resources for this area?

McD: By far the most important resource is always wai, freshwater, and with no year-round streams here it was definitely not an abundant resource. As you know *makai* there were sink holes with freshwater on the 'Ewa plane. Near Lanikuhonua, fresh water comes out right in the sand, between the rocks there. You can turn a gourd upside down in the ocean and get fresh water if you know where. Knowing where is the key, it's the same thing up *mauka,* there are no streams. There is what geologists call perched water. Places were water flows to the surface on top of impermeable layers of soil covered by a layer of fractured rock. A few of these at lower elevations still produced water today even in the driest times of the year. The greatest number of these springs are found between 1,200 and 1,800 foot elevations. However due to the reforestation efforts in the 1920s these springs no longer produce water year-round. This is also the elevation with the greatest concentration of archaeological sites. Most of these springs still have terraces and loi' walls around them. The forests above also held substantial resources, but the ocean below by far had the most substantial resources and the leeward exposure provided the best conditions to exploit them. I believe when compared to other ahupua'a in ancient times this area was not seen as desirable for its abundant resources. With the commanding view from this place and the limited water resources on the 'Ewa plane this community was highly defendable.

I am just starting to understand that there is no other place like this when you add the layer of the winter and summer solstice; there is no other place that lines up like that. So I think the real resource is the view, and the power that comes from that.

CSH: Can you share any of your knowledge about cultural sites you have come across or heard about in this area?

McD: There are so many cultural sites here and all of these sites and their relationships between each other is what's valuable. It is in the collective relationship between all the sites. Studying this area gives us the opportunity to have a deeper understanding of those who lived here because it's still pretty clear. Their footprints are still right there. I think this place has revealed how much potential it has, and the value of how much it has yet to share. I really want to make sure that the cultural sites and what they tell us doesn't get erased.

CSH: Can you talk about the sights and trails above Waimānalo gulch?

McD: The center of this *mauka* community was here above Waimānalo and Makaiwa. Ida Von Holt writes that they were told the area was quite heavily populated before the smallpox epidemic of 1840 and that there was a school for over 40 children where the pā is now. This appears to be the case when compared to the size and number of structures in the area. Some of the adjacent pastors were cleared for pineapple years ago these pastors more than likely contained many sites and now they are lost forever. The main trails from this community to *makai* were in both Waimānalo and Makaiwa. These trails had water and springs there and were probably used more for uphill travel. The ridge between them was faster but there was no water so it was more than likely used for downhill travel. Another was down by Awanui just west of Pu'u Palailai and another was on the up side of Kaloi. The main trails had a spring or two along the way and if there was enough water something was grown there.

CSH: Can you talk about your house at Lanikuhonua?

McD: Our house was actually next to Lanikuhonua near the big banyan tree at Paradise Cove. The house was surrounded by a big field which is basically the whole area that is now Paradise Cove. Then there was my grandfather's coconut plantation where he had young coconut trees everywhere. We were hidden from the view of Farrington Highway by sugarcane fields. The place was absolutely beautiful, and some of it still is. Some old maps have labeled hamlet on that spot and I'm sure there was a lot of wa'a on the beach there, this is the *makai* part of that ahupua'a poster. The fishing was great, and like I said earlier freshwater comes right out of the sand there.

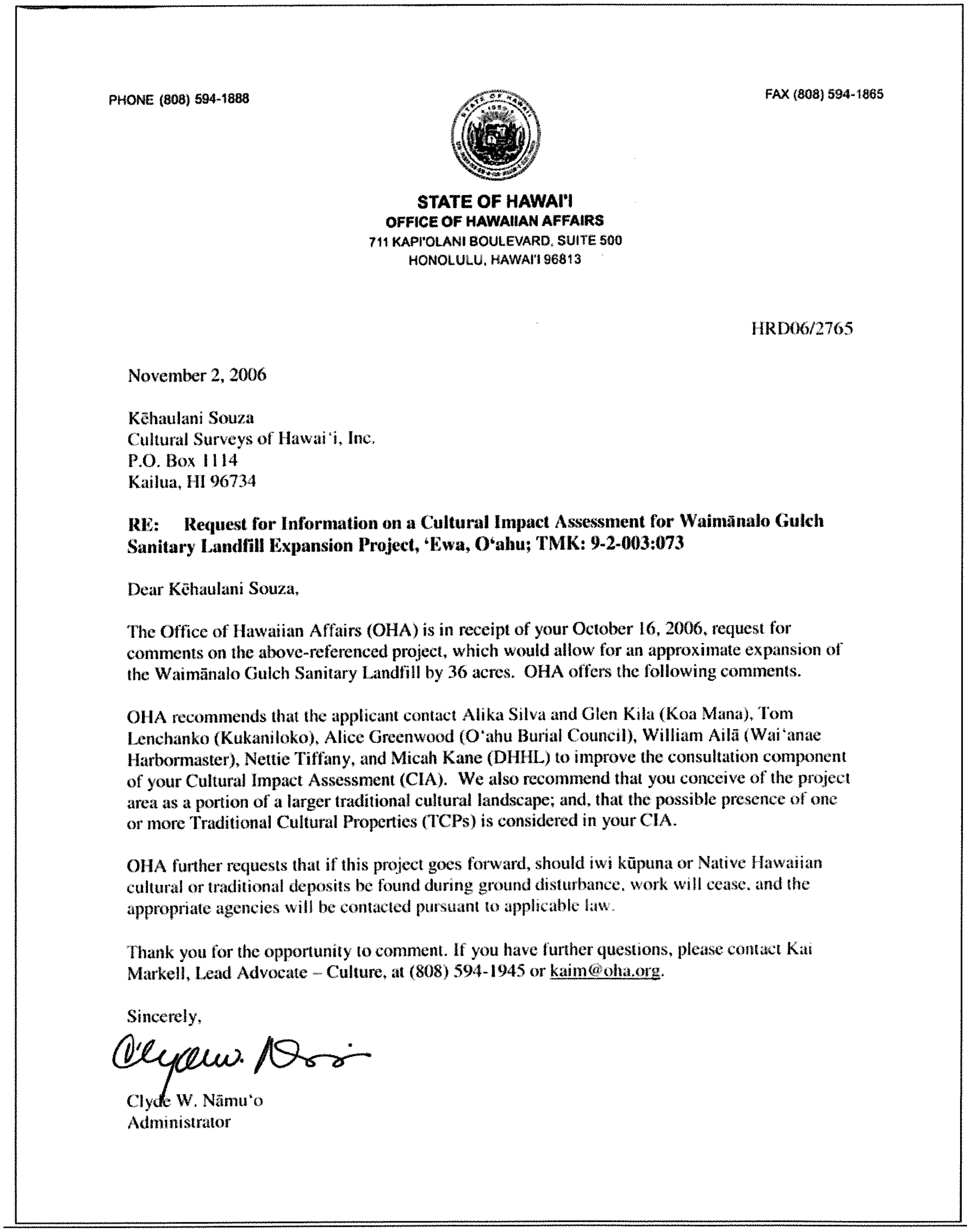
CSH: Do you know of any *mo'olelo* or *wahi pana* about this area?

McD: You have the *mo'olelo* about the night marchers and I've heard several people say they've heard children or at least their voices in the forest in the *pā* area where the school was. Observing all of the house sites and everything that I know collectively, I have an opinion about how these people left this place and how it went down, and a lot of it is supported by historical records. Ida wrote that the *pā* was a school and you know we'll never know because she's not here nor the people that told her this. I think that when you give the collective, cooperative existence to the community up here, you understand that they all had to participate. 'Ōlelo supports this by hinting that there really wasn't a strong caste system of *ali'i* hierarchy up here. Everybody had to have a specialty here, everybody had to contribute here to exist and they all did it because this place had the *mana* that kept everybody in line. We had two systems, we had a spiritual system and we had an *ali'i* system. So these people all had to be close together and once some started to perish from the plagues, small pox and all the others, their system collapsed. The farmer was gone, the *kahuna lapa'au* was tending to so many people, he got it. This community was pretty much erased, and those who survived probably left, but the spirits of those who didn't along with all those who came before the Lehua, are still here, the watchers, in the watching place, Pālehua the place of *mana*... look at all the clues they left in the place names here, and those you see from here. Do you feel *mana*? Are you a watcher too?

Place names of the area given by Douglas McDonald Philpotts:

Pa lehua
Mauna Kapu
Puu Manawahua
Puu Moopuna
Puu Heleakala
Puu Hapapa
Puu Kaua
Puu Kuua
Puu Poulihali
Puu Makakilo
Puu Kapolei
Makaiwa
Waiwanana
Moku Manamana
Mauna Loa
Mauna Kea
Hualalai
Haleakala
Puu Kukui
Kamakou
Puu Konahuanui
Kukaniloko
Kaala
Waialeale
Niihau
Kaula
Lehua

Appendix C Office of Hawaiian Affairs



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HONOLULU, HAWAI'I 96813

HRD06/2765

November 2, 2006

Kēhaulani Souza
Cultural Surveys of Hawai'i, Inc.
P.O. Box 1114
Kailua, HI 96734

RE: Request for Information on a Cultural Impact Assessment for Waimānalo Gulch Sanitary Landfill Expansion Project, 'Ewa, O'ahu; TMK: 9-2-003:073

Dear Kēhaulani Souza,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 16, 2006, request for comments on the above-referenced project, which would allow for an approximate expansion of the Waimānalo Gulch Sanitary Landfill by 36 acres. OHA offers the following comments.

OHA recommends that the applicant contact Alika Silva and Glen Kila (Koa Mana), Tom Lenchanko (Kukaniloko), Alice Greenwood (O'ahu Burial Council), William Ailā (Wai'anae Harbormaster), Nettie Tiffany, and Micah Kane (DHHL) to improve the consultation component of your Cultural Impact Assessment (CIA). We also recommend that you conceive of the project area as a portion of a larger traditional cultural landscape; and, that the possible presence of one or more Traditional Cultural Properties (TCPs) is considered in your CIA.

OHA further requests that if this project goes forward, should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions, please contact Kai Markell, Lead Advocate – Culture, at (808) 594-1945 or kaim@oha.org.

Sincerely,

Clyde W. Nāmu'o
Administrator

Volume 3 of 3

Final Environmental Impact Statement
Prepared in Accordance with Chapter 343, Hawaii Revised Statutes and
Title 11, Chapter 200, Hawaii Administrative Rules

Appendices
Waimānalo Gulch Sanitary Landfill Lateral Expansion

Waimānalo Gulch, O‘ahu, Hawai‘i
TMKs: (1) 9-2-003: 072 and 073

October 2008

City and County of Honolulu
Department of Environmental Services
1000 Uluohia Street, 3rd Floor
Kapolei, Hawai‘i 96707

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2024 North King Street, Suite 200
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1-21149-00

Volume 3 of 3

Final Environmental Impact Statement

Appendices
Waimānalo Gulch Sanitary Landfill Lateral Expansion
Waimānalo Gulch, O‘ahu, Hawai‘i
TMKs: (1) 9-2-003: 072 and 073

October 2008

Prepared Pursuant to
Chapter 343, Hawai‘i Revised Statutes, and
Title 11, Chapter 200, Hawai‘i Administrative Rules

Prepared for:
City and County of Honolulu
Department of Environmental Services
Kapolei, Hawai‘i 96707

Prepared by:
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Honolulu, Hawai‘i 96819-3494

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Appendix I

Traffic Impact Report
Waimānalo Gulch Sanitary Landfill Expansion, 2007

TRAFFIC IMPACT REPORT
FOR THE
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

Prepared for:

R.M. Towill Corporation
420 Waiakamilo Rd., Suite 411
Honolulu, HI 96817

Prepared by:

Wilson Okamoto Corporation
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Honolulu, HI 96826
WOC Ref# 7618-01

March 2007

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I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the expansion of the Waimanalo Gulch Sanitary Landfill located near Koolina on the island of Oahu. The project entails the expansion of the existing landfill site to include an additional 92.5acres.

B. Scope of Study

This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

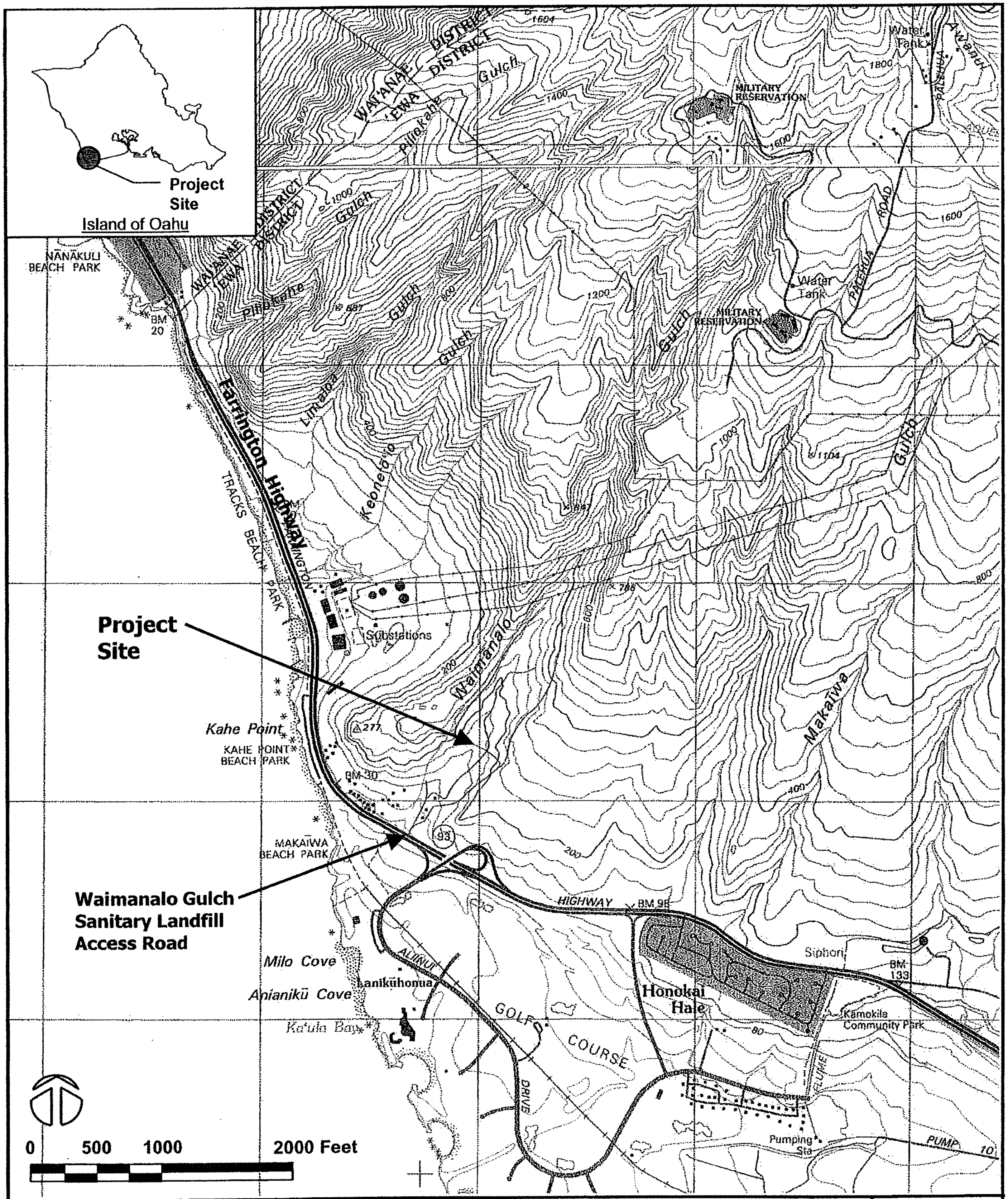
II. PROJECT DESCRIPTION

A. Location

The existing Waimanalo Gulch Sanitary Landfill is located adjacent to Farrington Highway northwest of Ko Olina on the island of Oahu (See Figure 1) and is further identified as Tax Map Keys: 9-2-3: 72 and 73. Access to the landfill is currently provided via an access road off Farrington Highway.

B. Project Characteristics

The existing Waimanalo Gulch Sanitary Landfill is located on an approximately 200-acre site along the north side of Farrington Highway just east of the westbound off-ramp to Ko Olina Resort. Currently, only 107.5 acres of the



WILSON OKAMOTO CORPORATION
ENGINEERS - PLANNERS

WAIMANALO GULCH SANITARY LANDFILL EXPANSION

LOCATION MAP AND VICINITY MAP

FIGURE
1

existing site is used for landfill operations. However, 60.5 acres of the existing landfill is scheduled for closure in the near future and, as such, an expansion of the existing facilities is proposed to increase the capacity and lifespan of the landfill. The proposed project would result in a net increase in space used for landfill of 32 acres. Access to the landfill would continue to be provided via the existing access road off Farrington Highway. Figure 2 shows the project site plan.

III. EXISTING TRAFFIC CONDITIONS

A. Area Roadway System

The existing Waimanalo Gulch Sanitary Landfill is located adjacent to Farrington Highway. In the vicinity of the landfill, Farrington Highway is a predominantly four-lane, two-way divided State of Hawaii roadway generally oriented in the east-west direction that serves as the primary access road along the southwest coastline of Oahu. At the unsignalized intersection of the highway with the access road to the landfill, the eastbound approach of Farrington Highway has an exclusive, left-turn lane and two through lanes. There is also an additional lane along the south side of the highway that serves as the eastbound off-ramp to Ko Olina Resort. The westbound approach of the highway has an exclusive right-turn lane and two through lanes. In addition, a median storage lane has been provided along Farrington Highway for vehicles turning left from the landfill access road.

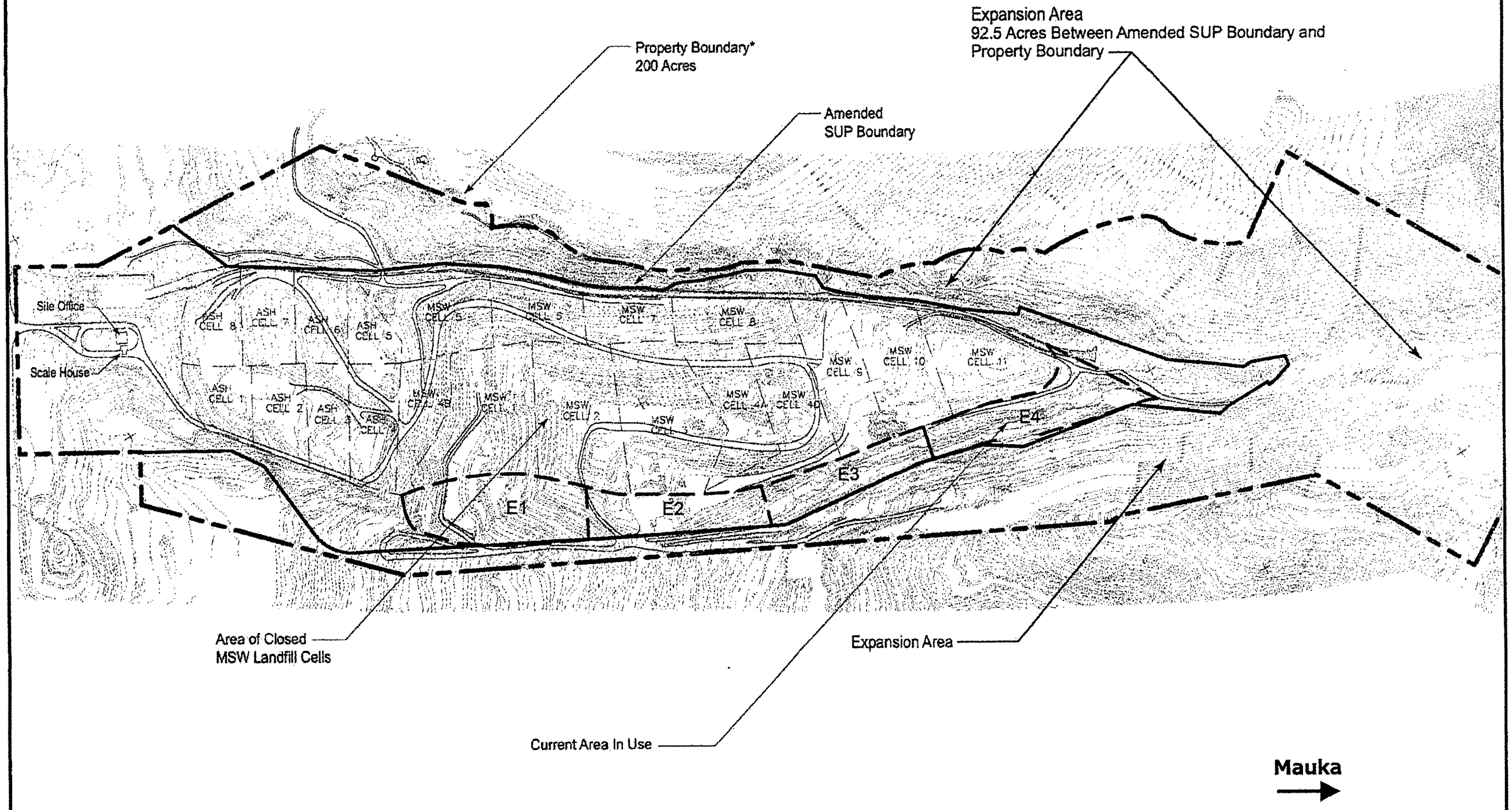
The Waimanalo Gulch Sanitary Landfill access road approach of the intersection has one channelized lane that serves left-turn and right-turn traffic movements. Vehicles turning left from the access road are channelized into the median storage lane along Farrington Highway.

B. Traffic Volumes and Conditions

1. General

a. Field Investigation

The field investigation was conducted on January 17, 2007 and consisted of manual turning movement count surveys and traffic flow assessments at the intersection of Farrington Highway with the access



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PROPOSED SITE PLAN

FIGURE
2

road to the Waimanalo Gulch Sanitary Landfill. The turning movement count surveys were conducted during the morning commuter traffic peak hours of 6:00 AM and 8:00 AM, and the afternoon commuter traffic peak hours of 3:00 PM and 6:00 PM. Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

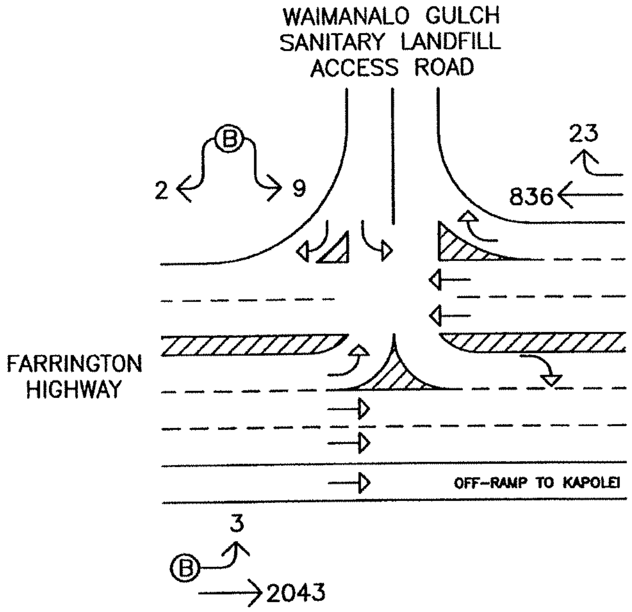
The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak hours of traffic.

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions.

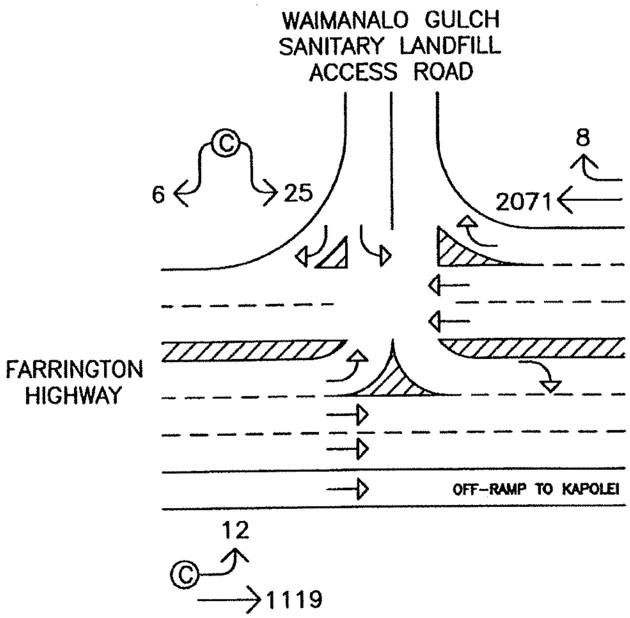
"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that the traffic demand exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

2. Existing Peak Hour Traffic

Figure 3 shows the existing AM and PM peak hour traffic volumes and operating traffic conditions. The AM peak hour of traffic generally occurs between 6:15 AM and 7:15 AM in the vicinity of the existing landfill. In the afternoon, the PM peak hour of traffic generally occurs between the hours of 3:45 PM and 4:45 PM. The analysis is based on these peak hour time periods



AM PEAK



PM PEAK

LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

DATE OF COUNT: January 17, 2007

NOT TO SCALE

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WAIMANALO GULCH SANITARY LANDFILL EXPANSION

EXISTING PEAK HOURS OF TRAFFIC

FIGURE 3

to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.

At the intersection with the existing landfill access road, Farrington Highway carries 2,046 vehicles eastbound and 859 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 1,131 vehicles traveling eastbound and 2,079 vehicles traveling westbound. The critical movement on the Farrington Highway approaches of the intersection is the eastbound left-turn traffic movement which operates at LOS "B" during both peak periods.

The Waimanalo Gulch Sanitary Landfill access road approach of the intersection carries 11 vehicles southbound during the AM peak hour of traffic. During the PM peak hour of traffic, the traffic volume is slightly higher with 31 vehicles traveling southbound. The access road approach of the intersection operates at LOS "C" during both peak periods. Traffic queues occasionally formed on this approach of the intersection with average queue lengths of 2-3 vehicles observed during both peak periods.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The expansion of the Waimanalo Gulch Sanitary Landfill is being proposed to increase the capacity and extend the current lifespan of the landfill. As such, the expansion itself is not expected to generate additional trips to and from the facility. However, increased development throughout Oahu may result in an increase in site-generated trips to the landfill since additional refuse vehicles may be required to service these areas. As such, additional trips were conservatively assumed to be generated by the proposed landfill expansion.

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 7th Edition," 2003. The trip generation rates were developed empirically by correlating the existing vehicle trip generation data with the acres of development. These rates were then utilized to determine the number of additional vehicle trips that would be generated by the expansion of the existing landfill. Table 1 summarizes the trip generation characteristics applied to the AM and PM peak hours of traffic to measure the impact resulting from the proposed Waimanalo Gulch Sanitary Landfill expansion.

Table 1: Peak Hour Trip Generation

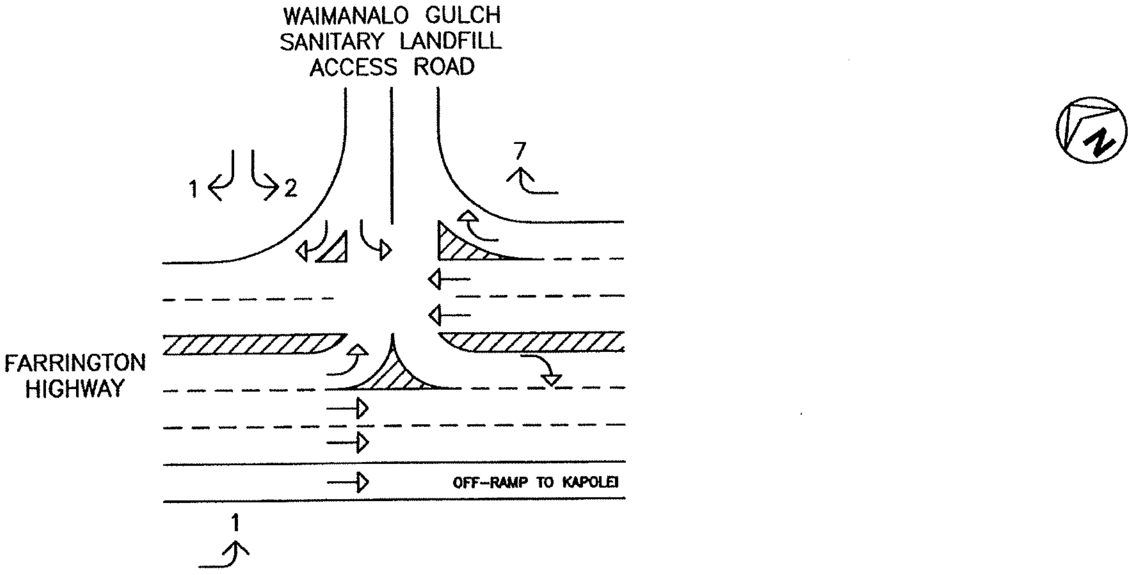
SANITARY LANDFILL INDEPENDENT VARIABLE: Net Increase in Acres of Dev = 32			
		RATE	PROJECTED TRIP ENDS
AM PEAK	ENTER	0.242	8
	EXIT	0.102	3
	TOTAL	0.344	11
PM PEAK	ENTER	0.186	6
	EXIT	0.288	9
	TOTAL	0.474	15

2. Trip Distribution

Figure 4 shows the distribution of site-generated traffic during the AM and PM peak hours of traffic. Access to the Waimanalo Gulch Sanitary Landfill will continue to be provided by the existing access road off Farrington Highway. The directional distribution of site-generated traffic at the intersection of Farrington Highway with the access road was assumed to remain similar to existing conditions.

B. Traffic Signal Warrant

As a result of the proposed expansion of the Waimanalo Gulch Sanitary Landfill, a traffic signal system may be warranted at the intersection of Farrington Highway and the Waimanalo Gulch Sanitary Landfill access road. The installation of a traffic signal at an intersection may be justified by one or more of the eight warrants outlined in the "Manual on Uniform Traffic Control Devices for Streets and Highways," 2003 Edition (MUTCD). These warrants take into account factors such

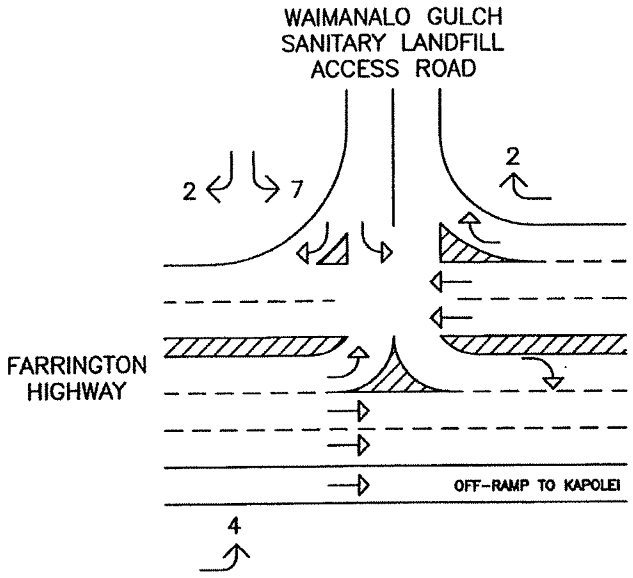


AM PEAK

LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE



PM PEAK

NOT TO SCALE

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WAIMANALO GULCH SANITARY LANDFILL EXPANSION

DISTRIBUTION OF ADDITIONAL SITE-GENERATED VEHICLES

FIGURE
4

as eight-hour vehicular volumes (Warrant 1), four-hour vehicular volumes (Warrant 2), peak hour volumes (Warrant 3), pedestrian volumes (Warrant 4), the presence of a school crossing or coordinated signal system (Warrants 5 and 6), crash experience (Warrant 7), and other characteristics of the roadway network (Warrant 8). Since traffic data was collected at the subject intersection during the peak periods of traffic and the traffic projections do not extend beyond these periods, only Warrant 3 was applied to the intersection to determine whether or not a traffic signal system might be justified.

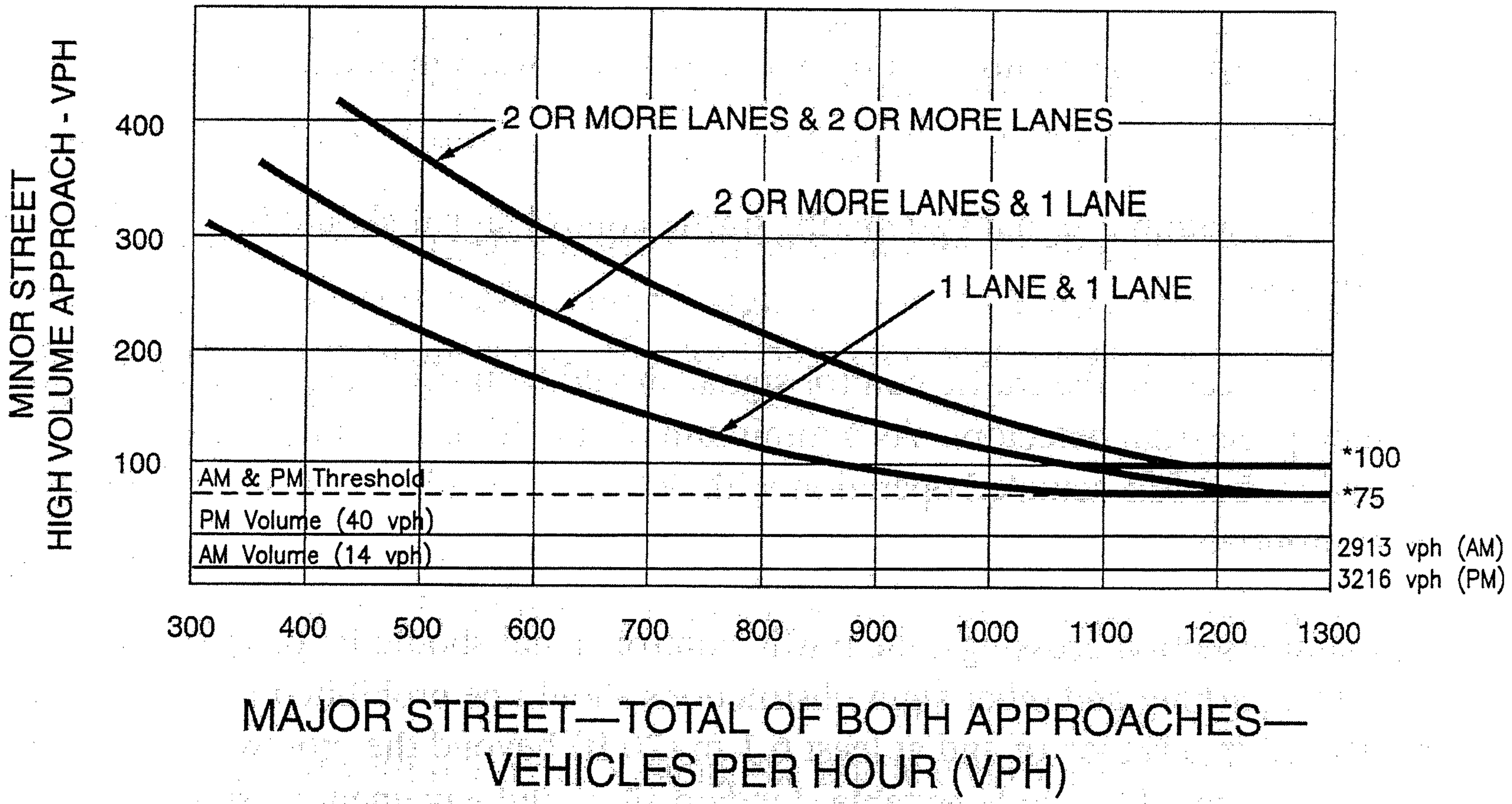
Warrant 3, the "Peak Hour Warrant," consists of several conditions that may justify the installation of a traffic signal at an intersection where vehicles experience high traffic delay due to large volumes of intersecting traffic during the peak hour periods. One of the conditions is based upon the relationship between the traffic volumes along the major and minor street. If the traffic volumes along the minor street exceed the thresholds shown in the MUTCD, a traffic signal system may be warranted. Since the intersection lies within an isolated community with a population less than 10,000, Figure 4C-4 "Warrant 3, Peak Hour (70% Factor)" was used to determine if a traffic signal system is warranted at this intersection. Under with project conditions, the traffic volumes entering the subject intersection are below the thresholds during both peak hours of traffic and, as such, do not satisfy Warrant 3 for minor street approaches with one lane for high traffic volumes on the major street (see Figure 5). Therefore, the intersection of Farrington Highway and the Waimanalo Gulch Sanitary Landfill access road is assumed to remain unsignalized.

C. Total Traffic Volumes With Project

The projected AM and PM peak period traffic volumes and operating conditions with the proposed expansion of the existing Waimanalo Gulch Sanitary Landfill are shown in Figure 6. The cumulative volumes consist of additional site-generated traffic superimposed over existing traffic demands. The traffic impacts resulting from the proposed expansion are addressed in the following section.

Figure 4C-4. *Warrant 3, Peak Hour (70% Factor)*

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: MUTCD

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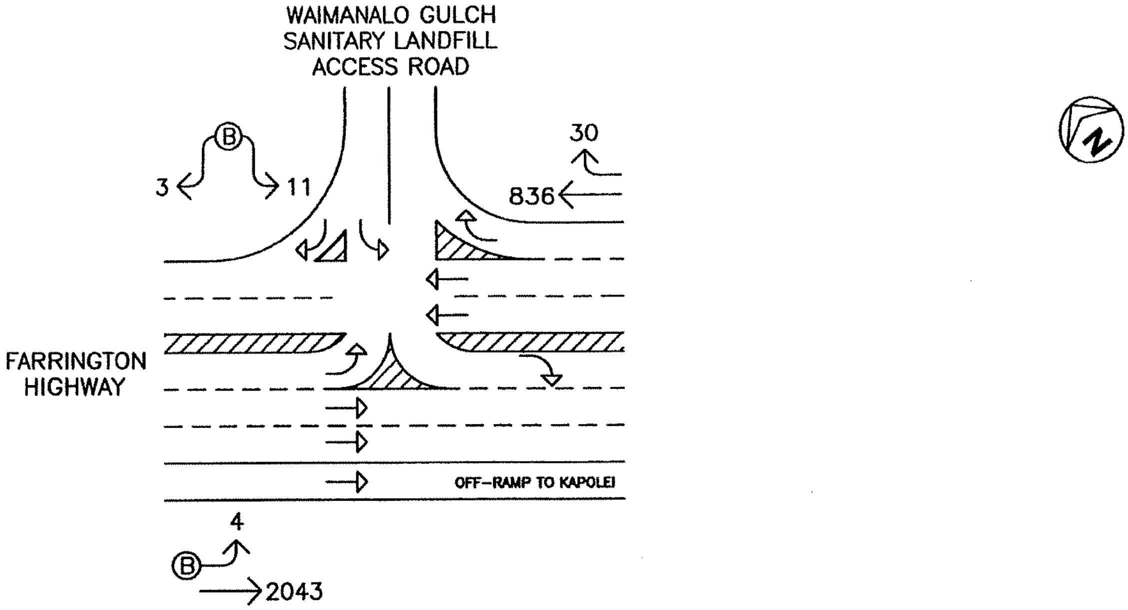
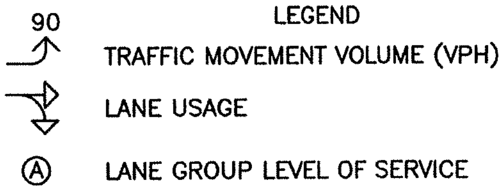
WAIMANALO GULCH SANITARY LANDFILL EXPANSION

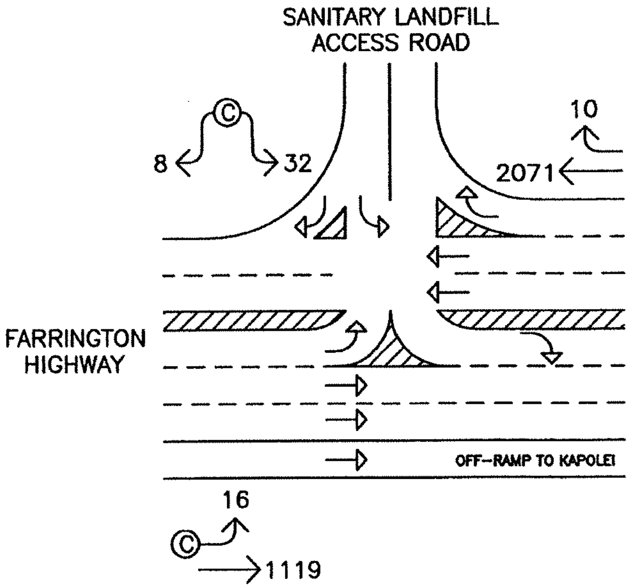
TRAFFIC SIGNAL WARRANT NO. 3
FARRINGTON HIGHWAY AND LANDFILL ACCESS ROAD

FIGURE
5



AM PEAK





PM PEAK

NOT TO SCALE

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WAIMANALO GULCH SANITARY LANDFILL EXPANSION

PROJECTED PEAK HOURS OF TRAFFIC WITH PROJECT

FIGURE 6

V. TRAFFIC IMPACT ANALYSIS

The cumulative AM and PM peak hour traffic conditions with the proposed expansion of the existing Waimanalo Gulch Sanitary Landfill are summarized in Table 2. The existing operating conditions are provided for comparison purposes. LOS calculations are included in Appendix D.

Table 2: Existing and Projected With Project LOS Traffic Operating Conditions

Intersection	Critical Movement		AM		PM	
			Exist	w/ Proj	Exist	w/ Proj
Farrington Hwy/ Waimanalo Gulch Sanitary Landfill Access Rd	Eastbound	LT	B	B	C	C
	Southbound	LT-RT	B	B	C	C

Traffic operations in the vicinity of the landfill are expected to remain similar to existing conditions during both peak hours of traffic despite the anticipated increases in traffic along Farrington Highway due to the proposed expansion. The critical traffic movements at the intersection of Farrington Highway with the Waimanalo Gulch Sanitary Landfill access road are expected to continue operating at LOS "B" and LOS "C" during the AM and PM peak periods, respectively. The total traffic volumes entering the intersection are expected to increase by less than 1% during both peak hours of traffic with proposed expansion. These increases in the total traffic volumes are in the range of daily volume fluctuations along Farrington Highway and represent a minimal increase in the overall traffic volumes.

VI. RECOMMENDATIONS

Based on the analysis of the traffic data and projected traffic conditions, the following are the recommendations of the study:

1. Maintain sufficient roadway width to accommodate safe vehicle ingress and egress.
2. Maintain adequate turning radii at all project roadways to avoid or minimize vehicle encroachments to oncoming traffic lanes.
3. Maintain adequate sight distances for motorists to safely enter and exit all project roadways.

4. Maintain adequate on-site loading and off-loading service areas to ensure that vehicular queues do not extend onto the highway.

VII. CONCLUSION

The proposed expansion of the existing Waimanalo Gulch Sanitary Landfill is not expected to have a significant impact on traffic operations in the vicinity. Although the expansion of the Waimanalo Gulch Sanitary Landfill is not expected to generate additional trips to and from the facility, additional trips were conservatively assumed to be generated by the proposed expansion to account for additional refuse vehicles generated by on-going development throughout Oahu. However, traffic operations in the vicinity of the landfill are expected to remain similar to existing conditions during both peak hours of traffic despite the anticipated increases in traffic. The critical traffic movements at the intersection of Farrington Highway with the Waimanalo Gulch Sanitary Landfill access road are expected to continue operating at levels of service similar to existing conditions. In addition, the total traffic volumes entering the intersection are expected to increase by less than 1% during both peak hours of traffic with proposed expansion. These increases in the total traffic volumes are in the range of daily volume fluctuations along Farrington Highway and represent a minimal increase in the overall traffic volumes.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter: D4-3888/D4-3889
Counted: ZW/ER
Weather: Clear

File Name : farwaia
Site Code : 00000001
Start Date : 1/17/2007
Page No : 1

Groups Printed- Unshifted

	Waimanalo Gulch Dwy Southbound				Farrington Hwy Westbound				Northbound	Farrington Hwy Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
06:00 AM	2	0	0	2	0	60	8	68	0	2	558	0	560	630
06:15 AM	2	0	1	3	0	152	5	157	0	1	607	0	608	768
06:30 AM	2	0	0	2	0	190	3	193	0	2	491	0	493	688
06:45 AM	0	0	1	1	0	245	5	250	0	0	519	0	519	770
Total	6	0	2	8	0	647	21	668	0	5	2175	0	2180	2856
07:00 AM	5	0	0	5	0	249	10	259	0	0	426	0	426	690
07:15 AM	5	0	0	5	0	188	5	193	0	2	415	0	417	615
07:30 AM	8	0	0	8	0	209	9	218	0	0	394	0	394	620
07:45 AM	9	0	0	9	0	191	3	194	0	1	382	0	383	586
Total	27	0	0	27	0	837	27	864	0	3	1617	0	1620	2511
Grand Total	33	0	2	35	0	1484	48	1532	0	8	3792	0	3800	5367
Apprch %	94.3	0	5.7		0	96.9	3.1			0.2	99.8	0		
Total %	0.6	0	0	0.7	0	27.7	0.9	28.5	0	0.1	70.7	0	70.8	

	Waimanalo Gulch Dwy Southbound				Farrington Hwy Westbound				Northbound	Farrington Hwy Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 07:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 06:15 AM														
06:15 AM	2	0	**1**	3	0	152	5	157	0	1	**607**	0	**608**	768
06:30 AM	2	0	0	2	0	190	3	193	0	**2**	491	0	493	688
06:45 AM	0	0	1	1	0	245	5	250	0	0	519	0	519	**770**
07:00 AM	**5**	0	0	**5**	0	**249**	**10**	**259**	0	0	426	0	426	690
Total Volume	9	0	2	11	0	836	23	859	0	3	2043	0	2046	2916
% App. Total	81.8	0	18.2		0	97.3	2.7			0.1	99.9	0		
PHF	.450	.000	.500	.550	.000	.839	.575	.829	.000	.375	.841	.000	.841	.947

Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter: D4-3888/D4-3889
Counted: ZW/ER
Weather: Clear

File Name : farwaip
Site Code : 00000001
Start Date : 1/17/2007
Page No : 1

Groups Printed- Unshifted

	Waimanalo Gulch Dwy Southbound				Farrington Hwy Westbound				Northbound	Farrington Hwy Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	14	0	4	18	0	331	8	339	0	1	321	0	322	679
03:15 PM	10	0	2	12	0	409	9	418	0	1	321	0	322	752
03:30 PM	12	0	1	13	0	439	2	441	0	1	290	0	291	745
03:45 PM	8	0	1	9	0	532	3	535	0	3	351	0	354	898
Total	44	0	8	52	0	1711	22	1733	0	6	1283	0	1289	3074
04:00 PM	7	0	2	9	0	474	3	477	0	6	260	0	266	752
04:15 PM	5	0	3	8	0	561	1	562	0	3	257	0	260	830
04:30 PM	5	0	0	5	0	504	1	505	0	0	251	0	251	761
04:45 PM	4	0	0	4	0	464	0	464	0	0	300	0	300	768
Total	21	0	5	26	0	2003	5	2008	0	9	1068	0	1077	3111
05:00 PM	1	0	0	1	0	433	0	433	0	0	228	0	228	662
05:15 PM	10	0	1	11	0	430	0	430	0	0	254	0	254	695
05:30 PM	1	0	0	1	0	395	0	395	0	0	234	0	234	630
05:45 PM	1	0	0	1	0	266	0	266	0	0	216	0	216	483
Total	13	0	1	14	0	1524	0	1524	0	0	932	0	932	2470
Grand Total	78	0	14	92	0	5238	27	5265	0	15	3283	0	3298	8655
Apprch %	84.8	0	15.2		0	99.5	0.5			0.5	99.5	0		
Total %	0.9	0	0.2	1.1	0	60.5	0.3	60.8	0	0.2	37.9	0	38.1	

	Waimanalo Gulch Dwy Southbound				Farrington Hwy Westbound				Northbound	Farrington Hwy Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 03:45 PM														
03:45 PM	**8**	0	1	**9**	0	532	**3**	535	0	3	**351**	0	**354**	**898**
04:00 PM	7	0	2	9	0	474	3	477	0	**6**	260	0	266	752
04:15 PM	5	0	**3**	8	0	**561**	1	**562**	0	3	257	0	260	830
04:30 PM	5	0	0	5	0	504	1	505	0	0	251	0	251	761
Total Volume	25	0	6	31	0	2071	8	2079	0	12	1119	0	1131	3241
% App. Total	80.6	0	19.4		0	99.6	0.4			1.1	98.9	0		
PHF	.781	.000	.500	.861	.000	.923	.667	.925	.000	.500	.797	.000	.799	.902

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

Table 1: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

"Highway Capacity Manual," Transportation Research Board, 2000.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS

```
                 HCS+: Unsignalized Intersections Release 5.21

_______________________TWO-WAY STOP CONTROL SUMMARY___________________________

Analyst:              CL
Agency/Co.:
Date Performed:       1/19/2007
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:        Existing
Project ID:
East/West Street:     Waimanalo Gulch Dwy
North/South Street:   Farrington Hwy
Intersection Orientation: EW                 Study period (hrs):  1.00

______________________Vehicle Volumes and Adjustments_________________________
Major Street:  Approach      Eastbound               Westbound
               Movement     1      2      3    |  4      5      6
                            L      T      R    |  L      T      R
_______________________________________________________________________________
Volume                      3                            836    23
Peak-Hour Factor, PHF       0.84                         0.83   0.83
Hourly Flow Rate, HFR       3                            1007   27
Percent Heavy Vehicles      2      --     --             --     --
Median Type/Storage         Raised curb           / 2
RT Channelized?                                              No
Lanes                          1                         2    1
Configuration                   L                        T    R
Upstream Signal?                   No                    No
_______________________________________________________________________________
Minor Street:  Approach      Northbound              Southbound
               Movement     7      8      9    |  10     11     12
                            L      T      R    |  L      T      R
_______________________________________________________________________________
Volume                                            9             2
Peak Hour Factor, PHF                             0.55          0.55
Hourly Flow Rate, HFR                             16            3
Percent Heavy Vehicles                            90            2
Percent Grade (%)                  0                     0
Flared Approach:  Exists?/Storage                /              Yes     /1
Lanes                                                0       0
Configuration                                            LR
_______________________________________________________________________________

__________________Delay, Queue Length, and Level of Service____________________
Approach          EB     WB       Northbound          Southbound
Movement          1      4    | 7      8      9    | 10      11      12
Lane Config       L           |                    |         LR
_______________________________________________________________________________
v (vph)           3                                          19
C(m) (vph)        676                                        560
v/c               0.00                                       0.03
95% queue length  0.01                                       0.11
Control Delay     10.3                                       12.3
LOS                B                                          B
Approach Delay                                               12.3
Approach LOS                                                  B
_______________________________________________________________________________
```

```
                 HCS+: Unsignalized Intersections Release 5.21

______________________TWO-WAY STOP CONTROL SUMMARY___________________________

Analyst:              CL
Agency/Co.:
Date Performed:       1/19/2007
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:        Existing
Project ID:
East/West Street:     Waimanalo Gulch Dwy
North/South Street:   Farrington Hwy
Intersection Orientation: EW                Study period (hrs):  1.00

______________________Vehicle Volumes and Adjustments_________________________
Major Street:  Approach        Eastbound                Westbound
               Movement     1      2      3     |  4      5      6
                            L      T      R     |  L      T      R
______________________________________________________________________________
Volume                      12                            2071   8
Peak-Hour Factor, PHF       0.80                          0.93   0.93
Hourly Flow Rate, HFR       14                            2226   8
Percent Heavy Vehicles      15     --     --              --     --
Median Type/Storage         Raised curb           / 2
RT Channelized?                                              No
Lanes                          1                          2     1
Configuration                   L                         T    R
Upstream Signal?                   No                     No
______________________________________________________________________________
Minor Street:  Approach        Northbound               Southbound
               Movement     7      8      9     |  10     11     12
                            L      T      R     |  L      T      R
______________________________________________________________________________
Volume                                             25            6
Peak Hour Factor, PHF                              0.86          0.86
Hourly Flow Rate, HFR                              29            6
Percent Heavy Vehicles                             30            15
Percent Grade (%)                  0                      0
Flared Approach:  Exists?/Storage                /              Yes     /1
Lanes                                                 0        0
Configuration                                             LR
______________________________________________________________________________

__________________Delay, Queue Length, and Level of Service___________________
Approach            EB     WB          Northbound            Southbound
Movement            1      4   |  7      8      9     |  10     11     12
Lane Config         L          |                      |         LR
______________________________________________________________________________
v (vph)             14                                          35
C(m) (vph)          209                                         314
v/c                 0.07                                        0.11
95% queue length    0.21                                        0.38
Control Delay       23.5                                        19.5
LOS                  C                                           C
Approach Delay                                                  19.5
Approach LOS                                                     C
______________________________________________________________________________
```

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS PROJECTED PEAK HOUR TRAFFIC ANALYSIS WITH PROJECT

```
                 HCS+: Unsignalized Intersections Release 5.21

_______________________TWO-WAY STOP CONTROL SUMMARY______________________________

Analyst:              CL
Agency/Co.:
Date Performed:       1/19/2007
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:        w/ Proj
Project ID:
East/West Street:     Waimanalo Gulch Dwy
North/South Street:   Farrington Hwy
Intersection Orientation: EW                 Study period (hrs):  1.00

______________________Vehicle Volumes and Adjustments_____________________________
Major Street:  Approach        Eastbound               Westbound
               Movement     1      2      3      |  4      5      6
                            L      T      R      |  L      T      R
_________________________________________________________________________________
Volume                      4                                836    30
Peak-Hour Factor, PHF       0.84                             0.83   0.83
Hourly Flow Rate, HFR       4                                1007   36
Percent Heavy Vehicles      2      --     --                 --     --
Median Type/Storage         Raised curb          / 2
RT Channelized?                                                   No
Lanes                          1                             2    1
Configuration                   L                            T   R
Upstream Signal?                   No                        No
_________________________________________________________________________________
Minor Street:  Approach        Northbound              Southbound
               Movement     7      8      9      |  10     11     12
                            L      T      R      |  L      T      R
_________________________________________________________________________________
Volume                                              11            3
Peak Hour Factor, PHF                               0.55          0.55
Hourly Flow Rate, HFR                               19            5
Percent Heavy Vehicles                              90            2
Percent Grade (%)                  0                       0
Flared Approach:  Exists?/Storage                 /               Yes     /1
Lanes                                                   0        0
Configuration                                              LR
_________________________________________________________________________________

__________________Delay, Queue Length, and Level of Service_______________________
Approach            EB     WB          Northbound              Southbound
Movement            1      4    |  7      8      9    |  10     11     12
Lane Config         L           |                     |         LR
_________________________________________________________________________________
v (vph)             4                                           24
C(m) (vph)          667                                         596
v/c                 0.01                                        0.04
95% queue length    0.02                                        0.13
Control Delay       10.4                                        12.2
LOS                  B                                           B
Approach Delay                                                  12.2
Approach LOS                                                     B
_________________________________________________________________________________
```

```
                 HCS+: Unsignalized Intersections Release 5.21

_______________________TWO-WAY STOP CONTROL SUMMARY___________________________

Analyst:              CL
Agency/Co.:
Date Performed:       1/19/2007
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:        w/ Proj
Project ID:
East/West Street:     Waimanalo Gulch Dwy
North/South Street:   Farrington Hwy
Intersection Orientation: EW                 Study period (hrs):  1.00

______________________Vehicle Volumes and Adjustments_________________________
Major Street:  Approach        Eastbound              Westbound
               Movement    1      2      3     |  4      5      6
                           L      T      R     |  L      T      R
______________________________________________________________________________
Volume                     16                           2071   10
Peak-Hour Factor, PHF      0.80                         0.93   0.93
Hourly Flow Rate, HFR      19                           2226   10
Percent Heavy Vehicles     15     --     --             --     --
Median Type/Storage        Raised curb           / 2
RT Channelized?                                                No
Lanes                         1                          2    1
Configuration                 L                          T   R
Upstream Signal?                  No                     No
______________________________________________________________________________
Minor Street:  Approach        Northbound             Southbound
               Movement    7      8      9     |  10     11     12
                           L      T      R     |  L      T      R
______________________________________________________________________________
Volume                                            32            8
Peak Hour Factor, PHF                             0.86          0.86
Hourly Flow Rate, HFR                             37            9
Percent Heavy Vehicles                            30            15
Percent Grade (%)                 0                      0
Flared Approach:  Exists?/Storage               /               Yes    /1
Lanes                                                0        0
Configuration                                            LR
______________________________________________________________________________

____________________Delay, Queue Length, and Level of Service_________________
Approach           EB     WB          Northbound            Southbound
Movement           1      4    |  7      8      9     |  10     11     12
Lane Config        L           |                      |         LR
______________________________________________________________________________
v (vph)            19                                           46
C(m) (vph)         209                                          323
v/c                0.09                                         0.14
95% queue length   0.30                                         0.50
Control Delay      23.9                                         19.8
LOS                 C                                            C
Approach Delay                                                  19.8
Approach LOS                                                     C
______________________________________________________________________________
```

Appendix J

Socioeconomic Impact Assessment and Addenda: Environmental Injustice Issues and Impact on Property Values

Waimānalo Gulch Sanitary Landfill Expansion, 2008

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SOCIO-ECONOMIC IMPACT ASSESSMENT WAIMĀNALO GULCH SANITARY LANDFILL LATERAL EXPANSION, CITY AND COUNTY OF HONOLULU

March 24, 2008

SMS ***Affiliations and Associations:***

Warren Dastrup – Kauai Affiliate
Experian
International Survey Research
Interviewing Service of America
Solutions Pacific, LLC
Ka‘ala Souza Training
3i Marketing & Communications

Prepared for:

Environmental Services Department,
City and County of Honolulu

R.M. Towill Corporation

CONTENT

Exhibits

EXECUTIVE SUMMARY

The Proposed Action

The Waimanalo Gulch Sanitary Landfill (WGCL) is the only permitted municipal solid waste (MSW) landfill on Oahu. The City and City of Honolulu (City) proposes to expand the footprint and to extend the permitted use of the WGCL for a minimum period of 15 years.

The proposed project will extend the use of the site beyond November 1, 2009, the date the State Special Use permit calls for the closure of the landfill from the acceptance of MSW. Two main alternatives to the expansion and extension of WGSL have been considered:

1. Develop alternate methods or technologies to the present use of a landfill for the disposal of MSW and ash/residue from the City's H-POWER facility. This alternative includes the use of advanced technology methods as well as transshipment of Honolulu's waste off-island to decrease the need for a landfill.
2. Select an alternative landfill site. This alternative is based on the selection, acquisition and development of another location for a City landfill.

While the City has committed to the investigation and development of alternatives to landfilling, they contend that they have not yet found any technology or method (including the use of waste transshipment) that will themselves completely eliminate the need for a landfill operation. All known processes and methods result in the generation of some waste that cannot be feasibly processed, reused or recycled. For this waste, the City contends that a municipal sanitary landfill must continue to be provided.

The City currently uses the landfill as one of a mix of strategies to deal with MSW; the mix also includes the use of H-POWER, the City's waste-to-energy facility, increasing the island-wide rate of recycling, and technologies that transform MSW to new product materials such as fertilizer pellets. The City proposes that other strategies be employed based on feasibility and demonstrated capacity for the handling of waste on Oahu.

Socio-Economic Context

Oahu is home to approximately three quarters of Hawaii's residents, and is the economic hub of the State. Most of the major industries – tourism, military support, construction, government, and finance – are concentrated on Oahu. Oahu is enjoying a strong economy and, as a result, continues to experience population increases and a significant level of development.

Although officials forecast slower economic growth on the island in the foreseeable future, one of the few areas of exception is the Ewa Development Plan Area, within which the WGSL is located. For the last 30-years the Ewa Development Plan area has nearly tripled its population, making it the fastest growing area of the island. As the second city of Oahu has not yet been fully realized, officials expect that significant growth will continue.

Landfills have been a part of the MSW disposal solution since the 1800's and have always been located on the edge of urban development. When WGSL was established in 1989, it was selected, in part, because of its proximity to the H-POWER plant and its distance from heavy urbanization. Since then, Kapolei has experienced significant growth and the resort community of Ko 'Olina has developed, both within proximity to WGSL.

Community Concerns

For most of Oahu's people, as long as the landfill stays in Ewa, landfills have not been a topic of great concern. Those who have expressed an opinion favoring the extension believe the City has already made an investment in the landfill, that there is room for expansion, and that there is no better site on Oahu.

Residents in areas surrounding WGSL on the other hand are very concerned. Among other issues, community members most often cite the following irritants from current operations as significant impacts on their communities: litter, views of operation, odor, and highway safety. They are concerned that continuation and expansion of the landfill will only exacerbate the problems. They feel they have done their share and other solutions should be found.

These same community members also point out that a promise is not being kept (the previous administration had committed to closing the landfill after the current extension) thereby reducing the trust between the Administration and their communities.

Others along the Leeward coast claim that they are victims of environmental injustice. Residents argue that within a 10-mile stretch along Farrington Highway there are two separate landfills handling construction and municipal waste, as well as an existing electrical plant, a proposed electrical plant, a deep draft harbor and a major industrial park, all of which service the entire Island of Oahu -- all of which adversely impact the environment of their communities.

Impacts of Proposed Action

Expanding use of the WGSL for landfilling on Oahu has few expected impacts beyond those that currently exist.

> *Economic Impacts* Very little change can be expected with the expansion of WGSL. A small number of jobs will be created for ongoing construction of new cells in the Gulch.
>
> *Public Services* Expansion of WGSL will not have a significant impact on public safety, medical services, education or recreation.
>
> *Social Impacts* Release of dust, debris, and odors could affect the quality of life for people living near WGSL. Debris from trucks and congestion due to truck traffic could add to regional traffic problems, affecting both regional quality of life and residents' sense of their part of the island as a valuable and safe community.

Implications of Alternative Approaches to Waimanalo Gulch Sanitary Landfill

With a landfill available, the City, its residents, and businesses have assurance that solid waste services can be provided at a known cost for the foreseeable future. This is a guarantee of stability for the island economy.

To date no alternative technology has been found to adequately process the level of MSW that the island's communities generate. Other technologies exist that can complement the current H-POWER/WGSL solution, but there is no technology available that completely negates the need for a landfill on Oahu.

Transshipment is a serious alternative to handling a portion of MSW, but it has externalities that must be considered, including a negative impact on the feasibility of H-POWER and, in turn, a negative impact on the inexpensive production of alternative energy; a heightened sense of uncertainty around the management of MSW; and greater pressure on Oahu's already crowded harbor facilities.

Should a new technology become more viable, or should adjustments to the transshipment solution make it more acceptable, a landfill will still be needed in case of emergencies, in case of disruptions, and to manage material that cannot be handled by the alternative technologies or transshipment.

There does not appear to be an alternative site available to replace WGSL as a landfill. Nothing has significantly changed in the circumstances surrounding the four most viable alternatives since the last review of alternatives; a review in which WGSL was deemed to be the optimal site by the Mayor's Advisory Committee.

Taking no action, thereby allowing WGSL's permit to expire without a viable alternative, will result in serious health and economic challenges to Oahu's communities and its taxpayers.

Mitigation Measures

Suggested mitigations to social-economic impacts can be grouped into three categories: improving the management practices of the current landfill operation; improving community involvement and communications; and committing City resources to finding alternative sites and alternative technologies/management of MSW disposal.

Specific recommendations include the following:

- Improving current operations:
    - Continue to implement on-site landscaping plans that have begun, especially for those areas facing south toward Ko 'Olina.
    - Design and implement landscaping screens along the berm and the access road that is visible from Farrington Highway, fronting Kahe Power Plant.
    - Continue to be vigilant in processing sludge upon delivery and take all means to reduce any odor impacts;
    - Aggressively enforce the anti-littering regulations and fines; and
    - Improve communication between WM, ENV and the Police in response to odor and littering complaints.

- Improving community involvement and communications:
    - Continue to work with the Community Oversight committee and invite any expanded participation, including representatives from the police;
    - Continue to contribute to a community benefits package for as long as the landfill exists;
    - Ensure that all affected communities are represented on the Committee that determines the benefits package; and
    - Use the WM/ENV websites aggressively as education and communication tools.

- Committing City resources to the development of alternatives:
    - Continue to invest in Research and Development into alternative technologies; and
    - Continue to seek an alternative landfill site.

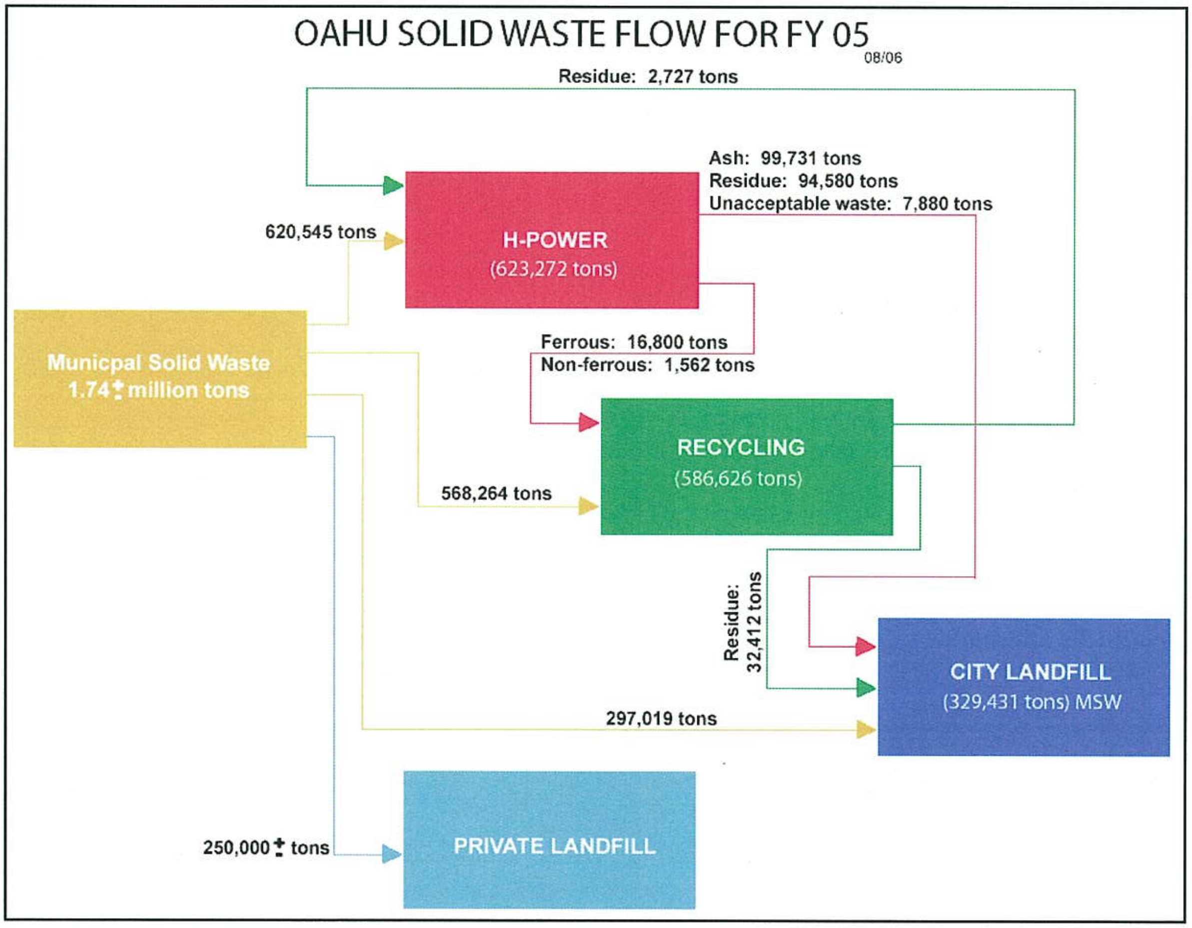
1. INTRODUCTION

1.1 PROPOSED ACTIONS AND ALTERNATIVES

The Waimanalo Gulch Sanitary Landfill is on a site of about 200 acres near the southwest corner of Oahu, owned by the City and operated by Waste Management of Hawaii Inc. The landfill opened in 1989. It is now Oahu's only permitted landfill for municipal solid waste (MSW).[1]

In 2005, the landfill received approximately 562,983 tons of waste annually. This includes 329,431 tons of direct MSW, 31,361 tons of recycling residue, and 202,191 tons of ash, residue, and unacceptable waste from H-POWER.

Exhibit 1-A: Oahu Solid Waste Flow for FY 05

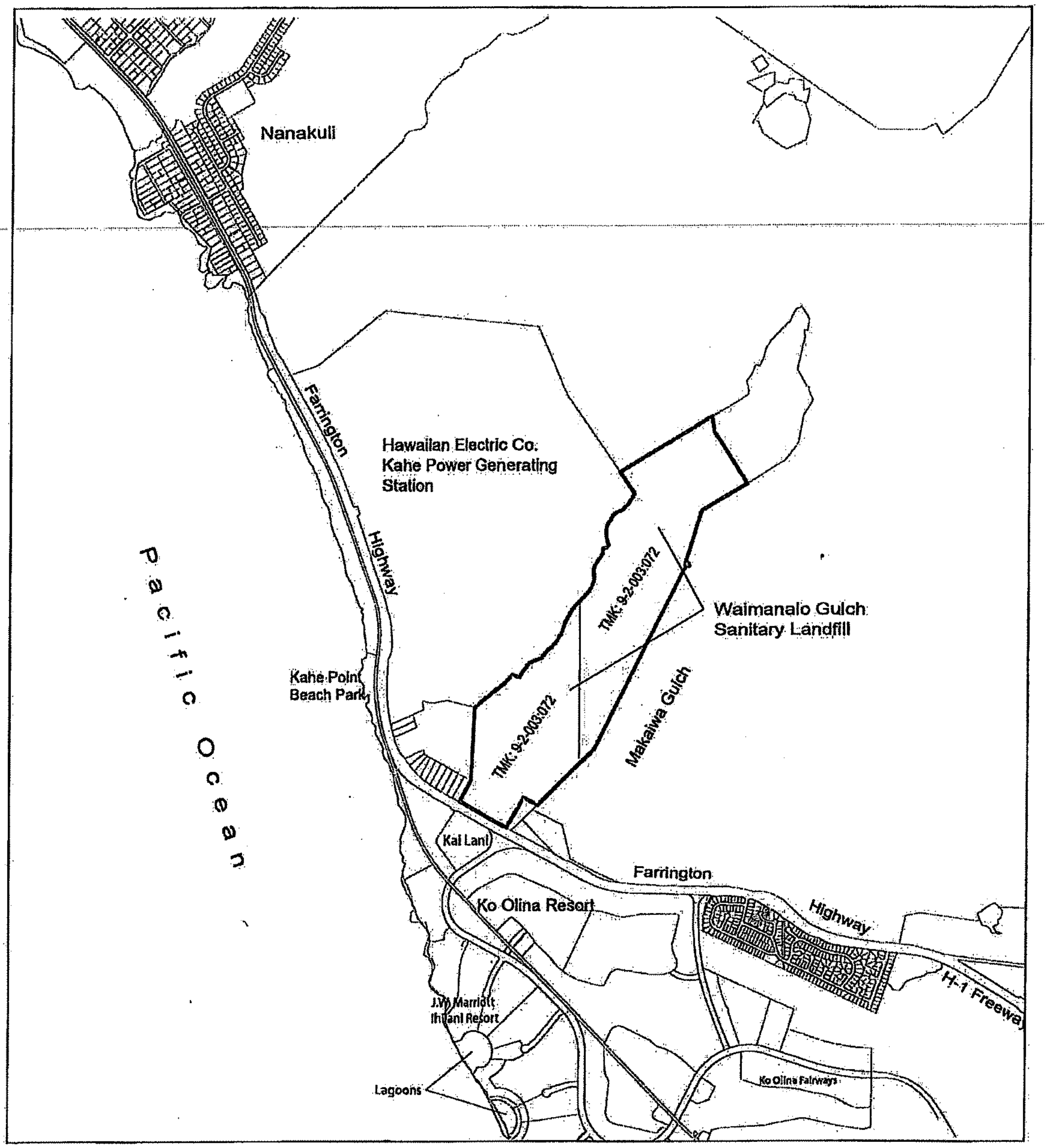


Originally intending to close the landfill in 2008, the City has since preliminarily determined that the continuation and expansion of operations at WGSL is a necessary part of the City's solid waste management program. The City is now proposing to expand the landfill footprint by 92.5 acres, which will utilize the total 200 acres available. This is expected to extend the use of the landfill through at least the year 2022. Exhibit 1-B shows the proposed expansion. In order to effectuate that action, the City must prepare an Environmental Impact Statement. This report identifies and analyzes the socio-economic impacts of that decision within the context of the full EIS.

---

[1] Another landfill in Nanakuli, handles construction and demolition waste.

Exhibit 1-B: Waimānalo Gulch Landfill Property Map



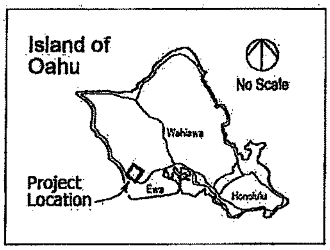


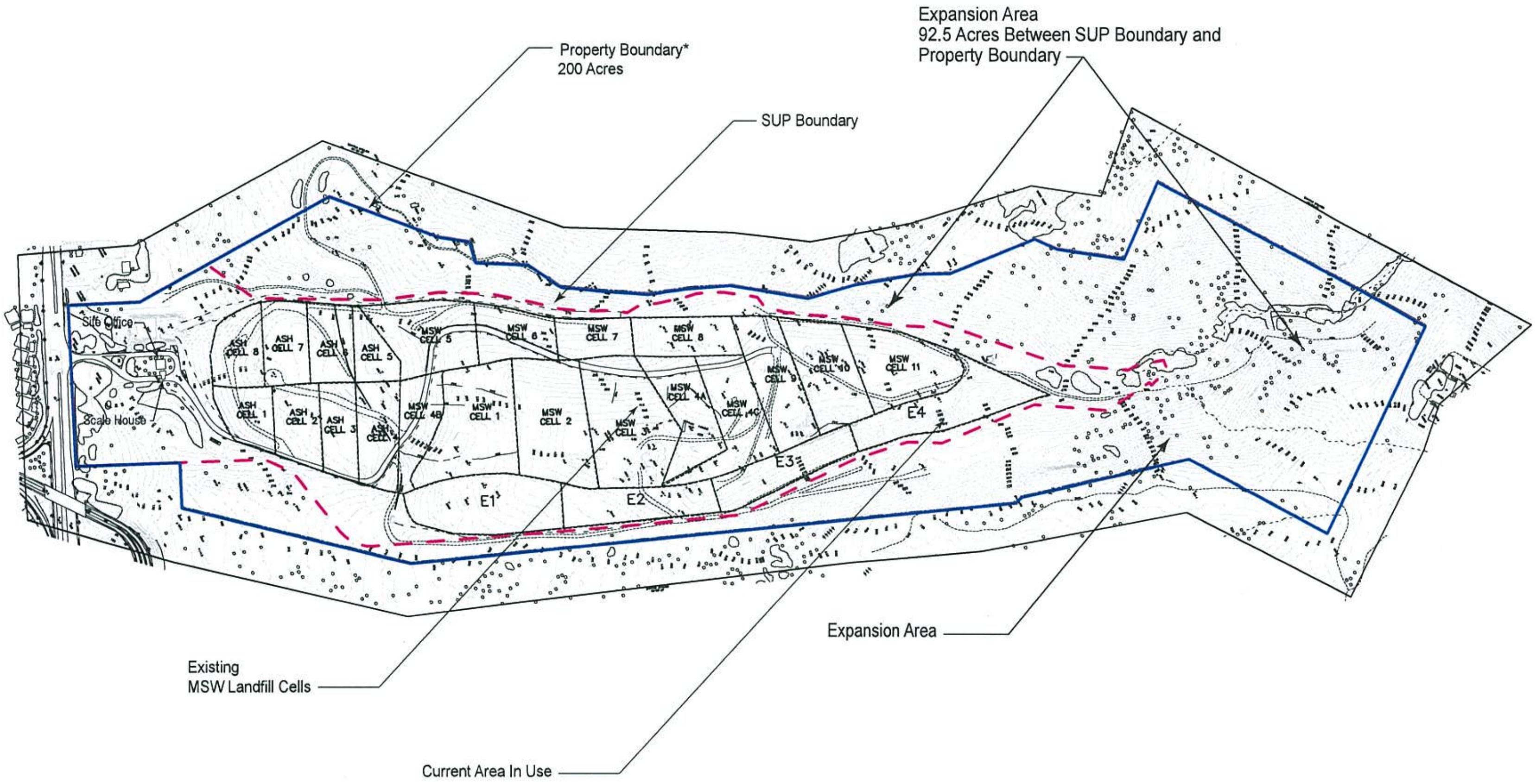
Figure 3-1
Waimanalo Gulch Landfill Property
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 2000 Feet 4000

R.M. TOWILL CORPORATION March 2008

Page 3-2

Exhibit 1-C: Waimanalo Gulch Sanitary Landfill Expansion Site



Note: *Proposed expansion project is subject to a 100 foot buffer from the property boundary.

Source: Base Drawing - GeoSyntec Consultants, Site Plan and Topography, Waimanalo Gulch Landfill, Ewa Beach Oahu, Hawaii, April 2007

Waimanalo Gulch Santiary Landfill
Lateral Expansion Site

Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 1000 Feet 2000

R.M. TOWILL CORPORATION March 2008

Landfilling has been a part of the mix of strategies used by the City to deal with MSW since at least as far back as 1905. Official *dumpsites* on Oahu have been located at Ala Moana Dump, present day Ala Moana Park, Waipahu, Kapaa and Kaneohe Bay Drive. Originally used to backfill swampy areas and other low spots intended for development, previous *dumpsites* now also include parks, parking areas, and other low intensity uses.

In 1963, ten years after originally opening as a *dump*, Kawainui Swamp became the first *landfill* on Oahu. *Landfills* differ from *dumps* in that *landfills* are lined, have a variety of engineering features that protect the landfill and the surrounding environment, and their operations significantly reduce exposure of MSW and its resultant externalities. *Landfills* continue to evolve as technology allows for improved operations. Although *landfills* are always expected to be a part of the mix of strategies used to dispose of MSW, the City explains that it is committed to investigating all proven methods or technologies with the potential to reduce the City's dependence on landfills. The City is actively: 1) analyzing the option of adding a third boiler at the H-POWER waste-to-energy plant; 2) researching alternative, new waste reduction technologies; and 3) exploring transshipment as a viable alternative. Where a method or technology can be demonstrated to be feasible, the City contends that it will be proposed and developed.

1.2 PURPOSE AND ORGANIZATION OF THIS REPORT

A socio-economic impact assessment is conducted to establish, for the use of policy-makers and the public at large, information about a proposed project and its socio-economic consequences. The report is used, with other aspects of the EIS, to inform decision-makers, and to ensure that consequences are taken into account. Where appropriate, this report points to other technical studies for more detailed examination of related topics.

This report is presented in six sections:

- Section 1 provides an introductory account of the proposed action;
- Section 2 discusses the socio-economic context of the proposed action;
- Section 3 briefly discusses alternative potential actions;
- Section 4 details the concerns of stakeholders with regard to the proposed action, and places those concerns in relation to more general issues and concerns of Oahu communities;
- Section 5 deals with potential impacts of the proposed action. Economic and demographic impacts are estimated first. Impacts on public facilities are established in relation to existing and planned local facilities. Other social impacts, which are less easily quantified, are then discussed; and
- Section 6 suggests mitigation activities for potentially adverse social/economic impacts, both ongoing processes and individual actions.

2. SOCIO-ECONOMIC CONTEXT

2.1 THE STUDY AREAS

A landfill on Oahu affects the entire island by providing a key element of Honolulu's solid waste system. All of Oahu's people and businesses are affected by the proposed action.

The Ewa Development Plan Area (EDPA), within which the landfill is located, is considered the area most affected by day-to-day operations of WGSL. The Waianae Development Plan Area (WDPA) is also noted as the residents of WDPA are users of major roads on which municipal solid waste is hauled to the WGSL and the only route in and out of WDPA runs by the WGSL.

2.1.1 Island of Oahu

Oahu has been the political and economic center of Hawaii since the time of Kamehameha I. It is the most urbanized and populated of the Hawaiian Islands. After World War II, Hawaii residents moved to Oahu in record numbers. According to the 2000 US Census, Oahu's resident population was 836,231, representing 72% of the State's population. By 2006, that population had risen to approximately 909,900.[2]

Since Statehood, Hawaii has witnessed rapid growth in tourism, supplanting agriculture and military spending as the major source of jobs and income. Because of their relative smaller economies on the neighbor islands, tourism has had and continues to have a greater impact on the neighbor islands. But even in tourism, Oahu dominates the industry. In 2006, Oahu had nearly twice as many visitors as any neighbor island with 4,606,400.

For the most part, Oahu's tourism has been centered in Waikiki (87% of Oahu's hotel units are located in Waikiki). In recent years, however, Ko Olina in Ewa has begun to shape itself into a visitor destination area, and Kuilima has resurrected plans to dramatically increase its hotel room count on the North Shore of Oahu.

During this same period Oahu also has reinforced its role as the financial and shipping center of the State. Oahu's more diverse economy has also resulted in less economic fluctuation, lower unemployment and higher average income than has been experienced on other islands (See Exhibits 2-A – 2-F).

---

[2] State of Hawaii DBED&T, State Data Book 2005 and American Community Survey, US Census Bureau, 2006.

Exhibit 2-A: Demographic Changes, Oahu, 1990-2000

				Change	
Subject	1990	2000	2006 (ACS)	Number	Percent
Total Population	**836,231**	**876,156**	**909,863**	**33,707**	**3.8%**
Male	425,994	440,518	455,051	14,533	3.3%
Female	410,237	435,638	454,812	19,174	4.4%
				-	
Under 5 years	61,931	56,849	63,084	6,235	11.0%
5 to 9 years	58,558	60,425	55,969	(4,456)	-7.4%
10 to 14 years	53,191	57,574	55,336	(2,238)	-3.9%
15 to 19 years	54,992	57,176	59,347	2,171	3.8%
20 to 24 years	75,418	65,376	68,052	2,676	4.1%
25 to 34 years	156,619	130,624	125,646	(4,978)	-3.8%
35 to 44 years	130,573	137,278	130,466	(6,812)	-5.0%
45 to 54 years	81,899	117,239	123,278	6,039	5.2%
55 to 59 years	34,560	42,705	52,456	9,751	22.8%
60 to 64 years	36,658	33,173	45,291	12,118	36.5%
65 to 74 years	58,279	62,474	60,962	(1,512)	-2.4%
75 to 84 years	25,939	42,504	51,422	8,918	21.0%
85 years and over	7,614	12,759	18,554	5,795	45.4%
				-	
Median age (years)	32	35.7	36.9	1	3.4%
				-	
18 years and over	631,618	667,398	700,359	32,961	4.9%
21 years and over	592,601	631,039	661,891	30,852	4.9%
62 years and over	113,889	136,945	156,602	19,657	14.4%
65 years and over	91,832	117,737	130,938	13,201	11.2%
				-	
18 years and over	631,618	667,398	700,359	32,961	4.9%
Male	320,656	333,139	346,193	13,054	3.9%
Female	310,962	334,259	354,166	19,907	6.0%
				-	
65 years and over	91,832	117,737	130,938	13,201	11.2%
Male	42,867	51,694	55,577	3,883	7.5%
Female	48,956	66,043	75,361	9,318	14.1%
				-	
RELATIONSHIP				-	
Household population	**802,338**	**845,211**	**877,485**	**32,274**	**3.8%**
Householder	264,304	286,450	299,217	12,767	4.5%
Spouse	158,438	156,195	157,567	1,372	0.9%
Child	259,193	253,694	257,391	3,697	1.5%
Other relatives	74,876	96,718	114,636	17,918	18.5%
Nonrelatives	44,527	52,199	48,674	(3,525)	-6.8%
Unmarried partner	10,436	14,420	14,245	(175)	-1.2%

Exhibit 2-A (Cont.): Demographic Changes, Oahu, 1990- 2000

				Change	
Subject	1990	2000	2006 (ACS)	Number	Percent
HOUSEHOLDS BY TYPE					
Total households	**265,304**	**286,450**	**299,217**	**12,767**	**4.5%**
Family households (families)	197,294	205,672	209,890	4,218	2.1%
With own children under 18 years	92,583	91,022	84,046	(6,976)	-7.7%
Married-couple families	158,438	156,195	157,578	1,383	0.9%
With own children under 18 years	76,217	70,442	64,824	(5,618)	-8.0%
Female householder, no husband present	27,773	35,138	36,659	1,521	4.3%
With own children under 18 years	12,479	15,235	14,187	(1,048)	-6.9%
Nonfamily households	68,010	80,778	89,327	8,549	10.6%
Householder living alone	51,006	61,963	74,425	12,462	20.1%
65 years and over	14,868	20,021	21,955	1,934	9.7%
				-	
Households with one or more people under 18 years	NA	108,247	103,107	(5,140)	-4.7%
Households with one or more people 65 years and over	NA	80,464	87,107	6,643	8.3%
				-	
Average household size	3.02	2.95	2.93	(0.02)	-0.7%
Average family size	3.50	3.46	3.52	0.06	1.7%
				-	
HOUSING OCCUPANCY				-	
Total housing units	**281,683**	**315,988**	**332,718**	**16,730**	**5.3%**
Occupied housing units	265,304	286,450	299,217	12,767	4.5%
Vacant housing units	16,379	29,538	33,501	3,963	13.4%
				-	
Homeowner vacancy rate	0.6	1.6	0.9	(0.7)	-43.8%
Rental vacancy rate	4.3	8.6	4.7	(3.9)	-45.3%
				-	
HOUSING TENURE				-	
Occupied housing units	**265,304**	**286,450**	**299,217**	**12,767**	**4.5%**
Owner-occupied	137,910	156,290	173,806	17,516	11.2%
Renter-occupied	127,394	130,160	125,411	(4,749)	-3.6%
				-	
Average household size of owner-occupied unit	3.23	3.13	3.11	(0.02)	-0.6%
Average household size of renter-occupied unit	2.80	2.74	2.69	(0.05)	-1.8%

Exhibit 2-B: Demographic Characteristics, Island and Selected Areas, 2000

	City & County of Honolulu	Ewa DP	Waianae DP	Makakilo CDP	Kapolei	Ko Olina/ Honokai Hale	Nanakuli
Population	876,156	57,265	42,259	13,156	17,441	1,680	10,814
Male	50.3%	50.4%	50.0%	50.3%	50.3%	50.9%	49.8%
Female	49.7%	49.6%	50.0%	49.7%	49.7%	49.1%	50.2%
Age							
Under 5	6.5%	9.2%	8.9%	8.6%	8.4%	6.2%	8.8%
5 to 9	6.9%	10.0%	9.7%	9.2%	10.2%	6.9%	9.9%
10 to 14	6.6%	8.3%	10.0%	8.4%	9.2%	6.8%	10.7%
15 to 19	6.5%	6.6%	9.5%	6.7%	7.1%	5.8%	10.4%
20 to 24	7.5%	6.0%	7.4%	6.0%	5.1%	5.1%	7.5%
25 to 34	14.9%	17.8%	13.0%	15.6%	15.8%	17.6%	12.7%
35 to 44	15.7%	18.0%	14.3%	18.0%	18.8%	16.3%	14.7%
45 to 54	13.4%	10.3%	11.9%	13.2%	11.3%	14.8%	10.9%
55 to 59	4.9%	3.6%	4.2%	4.7%	3.4%	5.9%	4.4%
60 to 64	3.8%	3.0%	3.1%	3.6%	2.8%	5.1%	3.2%
65 to 74	7.1%	4.6%	5.0%	4.3%	4.5%	5.9%	4.4%
75 to 84	4.9%	2.1%	2.4%	1.5%	2.7%	2.9%	2.0%
85 and over	1.5%	0.6%	0.7%	0.3%	0.9%	0.7%	0.4%
Median Age	35.7	30.9	28.5	32.4	31.4	36.8	27.2
Education							
Population 25 years or over	579,998	34,596	23,193	8,097	10,419	1,266	5,541
Less than 9th grade	7.3%	8.2%	6.4%	2.7%	10.4%	6.3%	7.1%
9-12 grade, no diploma	7.9%	9.3%	15.7%	7.2%	8.8%	7.3%	17.5%
High School graduate	27.8%	28.3%	45.3%	27.7%	27.1%	31.7%	49.0%
Some college/Associate degree	29.2%	34.5%	24.4%	36.2%	32.4%	30.2%	19.8%
Bachelor degree	18.9%	15.3%	6.1%	19.5%	16.7%	14.8%	4.9%
Graduate/Professional degree	9.0%	4.5%	2.1%	6.8%	4.6%	9.6%	1.7%
School Enrollment							
Population 3 years or older in:	234,038	17,143	13,283	4,148	5,644	345	2,188
Preschool	5.5%	5.7%	5.3%	7.9%	6.1%	2.6%	4.1%
Grades K through 8	45.7%	54.8%	66.0%	51.4%	55.6%	41.7%	58.8%
Grades 9 through 12	20.6%	20.9%	58.9%	17.8%	20.3%	25.2%	27.3%
College or Graduate School	28.0%	18.6%	11.8%	22.9%	18.2%	28.7%	9.8%

SOURCE: US Census of Population and Housing, 2000. Tables developed by SMS from SF1 and SF3 data available for download from www.census.gov.

Exhibit 2-C: Households, Island and Selected Areas, 2000

	City & County of Honolulu	Ewa DP	Waianae DP	Makakilo CDP	Kapolei	Ko Olina/ Honokai Hale	Nanakuli
Household Type							
Family HH	71.8%	84.9%	83.6%	82.7%	86.1%	78.8%	90.2%
With Own Children Under 18	31.8%	49.3%	43.3%	44.2%	52.5%	26.9%	46.0%
Non-family HH	28.2%	15.1%	16.4%	17.3%	13.9%	21.0%	9.8%
Householder living alone	21.6%	10.6%	11.9%	11.3%	10.8%	15.7%	6.7%
HH with members under 18	37.8%	57.5%	57.6%	51.4%	59.2%	37.1%	64.8%
HH with members 65 years and over	28.1%	18.1%	23.2%	15.1%	21.2%	21.0%	24.0%
Grandparents in HH							
Grandparent(s), grandchildren under 18 in same HH	36,868	3,145	3,182	554	895	77	750
Grandparent(s) responsible for grandchildren	28.1%	26.3%	36.3%	22.0%	24.0%	0.0%	46.5%

NOTE: "HH" = household.
SOURCE: US Census of Population and Housing, 2000. Tables developed by SMS from SF1 and SF3 data available for download from www.census.gov.

Exhibit 2-D: Household Income, Island and Selected Areas, 1999

	City & County of Honolulu	Ewa DP	Waianae DP	Makakilo CDP	Kapolei	Ko Olina/ Honokai Hale	Nanakuli
Household Income Distribution	286,731	15,498	10,532	3,913	4,623	581	2,249
Less than $10,000	7.3%	3.0%	11.6%	2.8%	3.9%	2.1%	7.2%
$10000 to $14,999	4.1%	2.4%	6.8%	0.5%	2.6%	3.2%	9.9%
$15,000 to $24,999	9.9%	6.9%	12.7%	6.4%	6.2%	5.7%	11.3%
$25,000 to $34,999	11.1%	9.8%	10.8%	7.6%	8.7%	2.5%	11.3%
$35,000 to $49,999	15.4%	15.0%	15.2%	17.1%	13.6%	10.9%	16.7%
$50,000 to $74,999	20.6%	29.5%	22.0%	27.8%	30.8%	27.1%	22.3%
$75,000 to $99,999	13.4%	18.9%	10.8%	18.9%	19.7%	25.0%	11.4%
$100,000 to $149,999	12.3%	11.6%	7.6%	15.6%	10.7%	18.5%	7.8%
$150,000 to $199,999	3.3%	1.7%	1.3%	2.6%	2.4%	1.6%	1.2%
$200,000 or more	2.5%	1.2%	1.3%	0.8%	1.4%	3.4%	0.8%
Median Income	$51,914	$59,583	$42,451	$66,515	$80,585	$74,063	$42,388
HH: Selected Income Sources							
Social Security Income	27.5%	18.7%	25.7%	17.9%	21.0%	29.7%	24.5%
Retirement Income	21.9%	18.1%	20.5%	6.5%	6.1%	27.0%	23.5%
Public Assistance Income	6.8%	7.7%	25.5%	22.6%	21.8%	10.1%	23.0%
Individuals Below Poverty Level	63,937	3,103	9,146	663	809	170	2,251
% of Persons under 18	12.9%	7.7%	29.1%	7.3%	7.3%	30.4%	27.0%
Children under 18 rel'd to household hd.	12.4%	9.3%	28.7%	7.1%	4.9%	29.1%	24.5%
Persons ages 18 to 64	9.0%	14.9%	18.1%	4.1%	5.1%	9.3%	18.9%
Persons ages 65 or more	7.4%	8.1%	10.3%	3.6%	24.3%	4.5%	8.7%
Unrelated Individuals	23.8%	41.2%	40.5%	12.4%	22.0%	3.7%	45.4%

NOTE: "HH" = household.
SOURCE: US Census of Population and Housing, 2000. Tables developed by SMS from SF1 and SF3 data available for download from www.census.gov.

Exhibit 2-E: Labor Force Characteristics, Island and Selected Areas, 2000

	City & County of Honolulu	Ewa DP	Waianae DP	Makakilo CDP	Kapolei	Ko Olina/ Honokai Hale	Nanakuli
Labor Force							
Population aged 16 or over	691,015	40,946	29,444	9,523	12,233	1,410	4,752
In Armed Forces	38,682	2,434	216	316	271	27	20
Potential Labor Force	652,333	38,511	29,228	9,207	11,962	1,383	4,732
% Actually in Civilian Labor Force	62.6%	63.1%	58.6%	72.7%	69.1%	66.0%	87.5%
Actual CLF	408,638	24,298	17,137	6,698	8,267	913	4,139
Male CLF	209,959	12,406	9068	3,389	4,296	438	2,154
Female CLF	198,679	11,892	8069	3,309	3,971	475	1,985
Labor Force Participation							
Male CLF	67.5%	68.0%	64.7%	78.2%	67.6%	78.8%	63.4%
Female CLF	58.2%	61.8%	53.1%	70.0%	65.1%	69.6%	51.8%
Unemployed							
Male CLF	6.9%	5.8%	15.2%	5.8%	5.7%	0.0%	18.2%
Female CLF	5.6%	5.5%	14.6%	4.6%	5.1%	2.5%	12.3%
Employed CLF							
By Selected Industry							
Agriculture, forestry, fishing	1.1%	0.5%	2.8%	0.5%	0.4%	0.0%	0.8%
Construction	5.4%	6.5%	8.6%	8.5%	6.2%	16.2%	7.9%
Manufacturing	3.8%	5.2%	4.5%	4.3%	4.9%	3.4%	4.3%
Wholesale Trade	3.4%	3.1%	4.3%	2.8%	3.2%	2.6%	4.0%
Retail Trade	12.2%	13.0%	13.2%	13.7%	12.0%	6.2%	9.6%
Transportation and utilities	6.5%	6.7%	8.9%	8.8%	7.2%	5.3%	13.1%
Information	2.7%	2.1%	1.3%	2.6%	2.2%	0.6%	1.7%
Finance, Insurance, Real Estate	7.5%	7.7%	5.3%	8.8%	9.2%	6.9%	6.1%
Professional, Mgmt, Admin.	9.9%	8.8%	9.1%	9.1%	8.8%	11.0%	9.5%
Education, Health, Social Services	19.9%	19.1%	17.7%	16.9%	16.6%	19.2%	17.3%
Recreation, Lodging, Food Services	13.8%	12.7%	12.3%	8.4%	13.9%	10.1%	10.9%
Other Services	4.5%	4.4%	4.7%	3.2%	4.8%	6.0%	5.5%
Public Administration	9.3%	10.1%	7.2%	12.5%	10.4%	12.5%	9.4%
By Occupation							
Management and Profesional	33.8%	26.6%	21.8%	30.5%	28.1%	30.6%	17.5%
Service	19.6%	23.4%	22.0%	15.8%	24.5%	18.9%	20.0%
Sales and Office	29.1%	28.8%	28.7%	30.8%	29.0%	26.6%	29.8%
Farming, Forestry, and Fishing	0.7%	0.3%	1.5%	0.4%	0.1%	0.0%	0.8%
Construction, Mining, Maintenance	8.1%	9.5%	13.0%	12.5%	9.5%	17.0%	9.5%
Production, Transportation	8.8%	11.4%	15.0%	10.0%	8.8%	6.9%	22.5%
Commute to Work	412,250	25782	14,314	6525	7853	928	2,271
Drove Alone or Carpooled	80.8%	86.0%	83.7%	91.6%	88.3%	92.0%	82.4%
Other Transp. (Public, Walked, Other)	16.3%	12.2%	15.2%	6.4%	11.0%	3.4%	14.7%
Worked at Home	2.9%	1.9%	2.1%	2.1%	1.7%	4.6%	2.8%
Travel Time More than 45 Minutes	8.9%	34.2%	45.6%	31.8%	35.1%	24.9%	33.7%
Mean travel time (in minutes)	27.3	36.5	41.9	35.3	39	29.2	35.8

NOTE: "CLF" = Civilian Labor Force.
SOURCE: US Census of Population and Housing, 2000. Tables developed by SMS from SF1 and SF3 data available for download from www.census.gov.

2.1.2 Ewa Development Plan Area

WGSL sits in the region officially known as the "Ewa Development Plan Area" (EDPA). The EDPA stretches from Waipahu to Ko 'Olina, from Ewa Beach to Makakilo. Without a doubt, the EDPA has been the fastest growing region on the island, nearly tripling its population over the 30-year period 1970 to 2000[3]. This compares to a 39 percent growth for the island as a whole during that same period (See Exhibit 2-F).

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[3] Population figures were not available by DPA in the American Communities Surveys, 2006.

Exhibit 2-F: Historical Population

Resident Population						
	1960	**1970**	**1980**	**1990**	**2000**	
County	500,409	630,528	762,565	836,231	876,156	
Waianae	16,452	24,077	31,487	37,411	42,259	
Ewa		24,235	35,523	42,931	68,696	
Central Oahu			101,685	130,526	148,208	
PUC			417,240	432,023	419,422	
East Honolulu			43,213	45,654	46,735	
North Shore			13,061	15,729	18,380	
Koolauloa			10,983	14,263	14,546	
Koolaupoko	60,238	92,219	109,373	117,694	117,910	
Average Annual Growth Rates						
	Ten-year Intervals					**1980-2000**
County		2.6%	2.1%	1.0%	0.5%	1.5%
Waianae		4.6%	3.1%	1.9%	1.3%	3.4%
Ewa			4.7%	2.1%	6.0%	9.3%
Central Oahu				2.8%	1.4%	4.6%
PUC				0.4%	-0.3%	0.1%
East Honolulu				0.6%	0.2%	0.8%
North Shore				2.0%	1.7%	4.1%
Koolauloa				3.0%	0.2%	3.2%
Koolaupoko		5.3%	1.9%	0.8%	0.0%	0.8%

Sources: DBEDT (2004a) and earlier years; City of Honolulu website (http://www.honoluludpp.org/Planning/ResearchStats.asp)

Exhibit 2-G: 2030 Socioeconomic Projections

	2005		2025		2030	
	Population	**Share of Island**	**Population**	**Share of Island**	**Population**	**Share of Island**
Waianae	44,004	5%	49,682	5%	50,616	5%
Ewa	84,154	9%	164,136	15%	184,612	17%
Central Oahu	157,250	17%	180,687	17%	189,599	17%
Primary Urban Center	424,183	46%	478,430	44%	489,389	44%
East Honolulu	50,377	6%	51,713	5%	51,059	5%
North Shore	18,703	2%	20,074	2%	19,945	2%
Koolauloa	15,099	2%	16,563	2%	16,725	1%
Koolaupoko	119,132	13%	116,766	11%	115,357	10%
Total	912,902	100%	1,078,051	101%	1,117,302	101%

Source: http://honoluludpp.org/planning/demographics2/Projections/2030byDP.pdf

Geographically, Ewa consists of what was once an arid and barren plain at the foothills of the Waianae Mountains. With the advent of irrigation, much of the eastern side of the plain was dedicated to sugar until Oahu Sugar Company closed in the mid-1990's, while the western side was ranch lands. The US Navy had land at both Puuloa (Iroquois Point and Puuloa) to the east, and Kalaeloa (Barbers Point Naval Air Station) to the west.

Barbers Point NAS ("Kalaeloa"), with some 3,709 acres, was a major land use for the area until the Naval Air Station closed in 1999. Its airfield is now operated by the State Department of Transportation for general aviation, while the remainder of the Kalaeloa land is parceled among public and private users, including among others, the City, the Hawaii National Guard, the State Department of Hawaiian Home Lands, the US Coast Guard, and the US Navy.

Honolulu has long been Oahu's commercial and transportation center. Squeezed between the Koolau Mountain Range and the ocean, growth has vertical and sprawled out, southeast toward Koko Head, and northwest toward Central Oahu and the Leeward communities. Concentration of activities in Honolulu has also created the expected problems of traffic congestion, overtaxed infrastructure, and deteriorating urban spaces.

Plans to develop a "Second City" at Kapolei on the Ewa Plain responded in part to these problems. Planning began in 1955, when Harland Bartholomew and Associates prepared the first Ewa region master plan for the Estate of James Campbell, the major landowner. The concept of a separate city emerged in 1974, and was officially sanctioned in 1977 when the City Council approved the new General Plan with a Secondary Urban Center for Oahu centered on the Ewa Plain. In 1986, the Estate proposed a detailed implementation plan for a city center, naming it the City of Kapolei. Since breaking ground in 1990, Kapolei, and for that matter all of the EDPA, has been bustling.

Kapolei land uses include a large industrial complex, with areas for both heavy industry (in the 1,367-acre James Campbell Industrial Park) and light industry plus new technologies (in Kapolei Business Park) and areas for commercial and office development in the City of Kapolei urban center. As Oahu's largest industrial area, Campbell Industrial Park has been developed over decades, having originally broken ground in 1958. A 2006 inventory showed that 251 businesses were located in the industrial park, with about 4,500 workers. Approximately 85 percent of the parcels in the park are owned in fee by its tenants.[4]

At Campbell Industrial Park's northern edge, Kalaeloa Harbor was created as a second harbor for Oahu in 1961. To the south of the industrial area, about a mile offshore, are a buoy and pipeline designed to allow oil tankers to off-load their cargo without docking in harbor. Steps are currently being taken by The Campbell Estate to construct a second industrial park at Kalaeloa Harbor. This industrial park would be built on a 332-acre parcel and construction is expected to begin in 2008 or 2009.

Over the years, residential areas developed along Farrington Highway and, as of 1962, uphill in Makakilo. At Kapolei, new residential development has been led by the State, as master developer of the Villages of Kapolei, beginning in the 1980's with Village One, Kumu Iki. The Villages and adjoining developments have rivaled developments along Fort Weaver Road, to the east, and Mililani in Central Oahu as new residential areas emerged with aggressive growth through the last decade.

While industrial and residential development proceeded over recent years, many of Kapolei's residents still commute to Honolulu. Growth in the center of Kapolei has been spurred by relocation of banking activities and both State and City offices; and the Campbell Estate stresses Kapolei's advantages as a wired community, with direct access to satellite and fiber-optic network communications.

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[4] Personal communication, Jeannie Schultz, Kapolei Property Development LLC

Ko Olina is being developed as a resort complementing the rest of Kapolei. Its innovative man-made coves provide recreational areas and frontage for hotels, and a 430-acre privately owned marina offers 330 full service slips for boats. Plans have called for as many as 8,700 housing units. These were planned with vacation markets in mind. Projects to date include a hotel, a time-share resort, and townhouse condominiums. One project, The Fairways at Ko Olina, was sold to the resident market, and newer projects have aimed at both second- and first-time home buyers (The Coconut Plantation, Kai Lani, Ko 'Oliina Kai). The newest project, the Beach Villas at Ko 'Olina, with 247 luxury units in beachside towers is expected to open in the spring of 2008.

When first opened in 1989, WGSL was surrounded by vacant land and agriculture. Although Makakilo had begun to be settled by homes 27 years earlier, it was still a significant distance from the landfill. The resort of Ko Olina was still a dream to its developer's mind and Kapolei's Second City had only just begun. Today, urbanization in the EDPA is creeping up on the landfill, the second City is a becoming a reality and the resort of Ko Olina is a growing vacation and residential community.

2.1.2.1 Demographics and Housing

The EDPA has a young population; the median age of its residents is 31.2 vs. Oahu's residents' median age of 35.7. Households are significantly larger than the average (3.69 persons per household, vs. 2.95 persons in the average household for Oahu as a whole). Of the 20,804 units in Ewa in 2000, 63.7 percent are owner occupied.

Within the EDPA, the Ko Olina sub-region (Census Tract 86.09) stands out as having an older median age, a large proportion of vacant homes held for seasonal or recreational use, and, among occupied homes, a low proportion of renters (26.1%).

2.1.2.2 Economic Characteristics

In general, the average per capita income over the entire EDPA is lower than the island's average. In the two census tracts abutting the landfill however, incomes tend to be higher. In the Kahe Census Tract, per capita incomes nearly at the Oahu average level; in Ko Olina Census Tract incomes are much higher.

Workers living in the EDPA area are diverse in occupation, and, despite their long history in sugar cane, a lower percentage of workers are in agriculture than the percentage island wide. Commuting times are long, and a third of the workforce normally drives over 45 minutes to work, characteristic of a suburban community.

Among the EDPA communities, Ko Olina/Honokai Hale[5] stands out in several ways. In this sub-region, population tends to be older, with a median age of 36.8, slightly higher than the island median. Most households do not have members younger than 18. The median household income level is much higher than in the other communities studied. However, the share of children under 18 living with family who are below the poverty level is comparable to that found in the Waianae Coast, suggesting that those families that do have children in this sub-region face an economic situation very different from that of their older neighbors.

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[5] In the Census tables, "Ko Olina" consists of Census Tracts 86.09 and 86.10, and includes Honokai Hale as well as Ko Olina.

Despite the intention to develop Kapolei into the second major Oahu city, Kapolei is today not much more than a significant suburban community. The same can be said of the neighboring communities along Fort Weaver Road, in Ewa and Makakilo. Outside of Campbell Industrial Park and the Kalaeloa Harbor, the commercial activity of the region is primarily designed to service a suburban community.

2.1.2.3 Ewa: Emerging and Anticipated Trends

Although the business core has not yet emerged, the building blocks being laid today forecast a very strong future growth in the EDPA. As noted in Exhibit 2-G, the EDPA is the ***only*** Development Plan Area on the island that is expected to increase its share of the City's population between 2005 and 2030.

The suburban residential areas that experienced vigorous growth through the last 15 years continue to fill in with projects by HASEKO, the Department of Hawaiian Home Lands, Gentry and others; and plans for accompanying major retail projects have progressed beyond the talking stages. If anything is missing to complete the City, it is the maturing of an intense, downtown core characteristic of other cities: home to the finance and professional services, upscale restaurants, specialty retail, medical services and other office tenants that make a downtown viable.

On February 9, 2005, ground was broken to begin construction on Ewa's North-South Road. This major roadway will connect H-1 with Kapolei Parkway and extend into Kalaeloa. That project is in full construction today and it completion later in 2008 will signal the start of construction on the new University of Hawaii West Oahu Campus, will provide a primary access to the underdeveloped lands of Kalaeloa and will make available the largely vacant lands of West Kapolei. The confluence of activity along the North-South Road will have significant impact on the shape and development timing of the entire EDPA.

On the industrial front, Campbell Industrial Park is full and employment has remained stable for the past few years. Light industrial space in the City of Kapolei and Kapolei Business Park is likely to attract office and light industry jobs from other parts of Oahu as the region's residential population continues to grow.

Kalaeloa Harbor is currently very busy. Sause Brothers barge operations have been shifted to this port from Honolulu. The harbor also handles several bulk cargo operations and metals recycling. With coral dredged from the harbor now placed on the harbor's land area, space for expansion will remain tight for the next few years.

A key to understanding the future of industrial/commercial uses in the Ewa region may lie with the Barber's Point Naval Air Station, now simply called "Kalaeloa". Because of its sheer size (nearly 3,700 acres) and the undeveloped nature of much of its lands, Kalaeloa offers business, commercial opportunities that no other part of the island can duplicate.

Finally, as noted earlier, Ko Olina continues to grow and to move toward a critical mass sufficient to fully support a resort community.

If anything will slow down the emergence of a true Second City at Kapolei, it is the capacity of the infrastructure. Despite building the North-South Road and widening Fort Weaver Road, the roadways of the Ewa region are significantly under capacity and deficient in connectivity. And the school systems, finished park space, liquid and solid waste disposal, drainage capacity must all be supplemented to accommodate the projected growth.

2.1.3 Waianae Development Plan Area

The Waianae Development Plan Area (WDPA) is the fifth largest of the City Development Plan Areas. A long corridor, the WDPA stretches 18 miles from Nanakuli to Kaena Point, and is confined by the Waianae Mountain Range to the east and the ocean to the west. With ten percent of Oahu's landmass, but less than five percent of the island's population, the WDPA is still rural, though it is becoming increasingly suburban.

The mountain range is a dominant feature and creates distinct valleys that line the corridor, linked by a single roadway and coastal beach parks. Nanakuli, about three miles from WGSL, includes the largest Hawaiian Homes community in the State, and is completely suburban in nature. Lualualei, home to large Navy munitions storage and communication facilities, as well as small residential communities along the highway is next. Maili and Waianae are home to large residential communities, as well as to many small farms. Waianae is also the urban core of the WDPA with shopping and civic services. Makaha has a small resort, but is essentially the last of the suburban housing communities along the coast. Makua is occupied by the US Army for military training, while Kaena is in conservation and nearly inaccessible to vehicular traffic.

The WDPA has experienced modest growth over the last 20 years (3.4%) and this has allowed the communities to retain the "small-town" values of the residents. But the isolation of these communities, and its rural character has had its downside. Average incomes in the WDPA ($42,451) are significantly below the City averages ($51,914) and the number of people living in poverty is nearly triple the number living in the EDPA. Unemployment is very high and a host of social concerns threaten the region. Of equal concern, the WDPA is seen by many of its residents as the "dumping" ground for problems that no one on Oahu wants, including two construction and debris landfills, a very large portion of the island's homeless population, a major power plant, and firing ranges and military dumping (over 32% of the region is controlled by the military).

The entire region is at the "end of the road" and there is, except in times of emergencies, only one road in and one road out of the WDPA. It is this road that runs by the WGSL.

2.1.2.3 Waianae: Emerging and Anticipated Trends

In recent years, the official City planning document that guides the growth of this region has migrated from a "development plan" to a "sustainable community plan", reflecting the intention of the City government and of the community to retain the rural nature of the region. The plan's vision and supporting provisions are oriented "to maintaining and enhancing the region's ability to sustain its unique character, current population, growing families, rural lifestyle, and economic livelihood . . . "[6]

With the exception of significantly upgrading the infrastructure servicing the region, and protecting and enhancing the lifestyle, not much is projected to change. And although there have been on-going discussion for many years about adding a new highway through the Waianae Mountain Range or completing the highway around Kaena Point, plans have not been developed for such a project. Till then, the only access in and out of the WDPA is along H-1/Farrington Highway.

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[6] Waianae Sustainable Communities Plan, City Department of Planning and Permitting, 2000

2.2 LANDFILLS

2.2.1 History of Landfills on Oahu

Since as early as the 1850's, Oahu is documented as providing its residents with some form of Public Service for solid waste disposal; however, locations, collection and disposal processes have varied greatly. The City's waste disposal methods have included "garbage crematoriums", dumps, landfills, swamp filling, incinerators and ocean dumping, just to name a few. Locations have also differed greatly, from downtown (at present Ala Moana Boulevard), to Kaneohe Bay Drive (Aikahi Dump), Kawainui Swamp (Kawainui Dump which became the first landfill on Oahu), Kapaa Quarry and most recently WGSL. Landfills were located in Windward Oahu from 1940 until 1997 when the Kapaa Quarry landfill location was closed.[7]

2.2.2 History of WGSL Site

Site selection for a Leeward Sanitary Landfill began in 1977 with studies of 26 potential sites. In 1978 an EIS was prepared listing three sites, Nanakuli A and B, Makaiwa Gulch and Kaloi as the best possible landfill locations. Community concerns about groundwater protection caused the reexamination of these three options.

In 1984 an REIS declared Waimanalo Gulch and Ohikilolo (below the 200-foot contour) the best locations for Leeward landfills. Acceptance of H-POWER eliminated the need for having two landfills; Ohikilolo was declared unnecessary at that time and Waimanalo Gulch emerged as the preferred location. In the 1984 REIS report, the Department of Public Works stated that their objectives for solid waste disposal on Oahu were to operate landfills on both Windward and Leeward sides of Oahu and to implement H-POWER as quickly as possible.

The landfill in Waimanalo Gulch has been in operation since 1989 and since 1997 has remained the only municipal sanitary landfill on Oahu. Residents were previously assured that WGSL would close in 2004, or when the landfill had reached its full capacity. In 2001 a proposal for a 60.5-acre expansion was submitted. A 14.9-acre expansion was approved with the closure date of 2008. At the time, residents were subsequently assured that the landfill would close in 2008. The City today believes that no feasible or timely alternative to the landfill is currently available and that an extension and expansion of the use of WGSL is again necessary.

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[7] Young, Robert, *Garbage in Paradise,* 2005
http://envhonolulu.org/solid_waste/archive/History%20_Garbage_in_paradise.html

3. ALTERNATIVE ACTIONS

The City's Preferred Action is to expand and continue to use the Waimanalo Gulch Sanitary landfill beyond its intended closure on November 1, 2009. Presented below are the most seriously considered alternatives to the Preferred Action. They include alternative technologies and methods of disposal, and alternative landfill sites.

3.1 ALTERNATIVES TECHNOLOGIES AND OTHER MEANS OF DISPOSAL

3.1.1 H-POWER

H-POWER is a major element in the reduction of MSW requiring landfilling on Oahu. In 2005, H-POWER processed 625,877 tons of waste and recycling residue. The H-POWER process consists of shredding, separating recyclable materials, and waste combustion, all leading to steam generation, which drives a turbine to create electricity for over 45,000 homes on Oahu.

Plans are to add a third boiler to H-POWER, which would significantly reduce the MSW being sent directly to the landfill. A landfill, however, would still be necessary for down periods in the operation of the H-POWER Plant, for processing materials that cannot be handled by H-POWER, and for periods of emergency caused by natural disasters (e.g. hurricanes, tsunami).

3.1.2 Conversion of Sludge into Fertilizer

In 2006, the design-build-operator Synagro-WWT, under contract to the City, completed an In-Vessel Bioconversion facility where it takes sludge from the Sand Island Wastewater Treatment Plant and converts it into commercial, high grade fertilizer pellets, which is planned to be sold on the market to landscapers and others.

Previous to this facility, as much as 26,000 tons of sludge annually was trucked from the Treatment Plant and landfilled at WGSL. Delays in processing would sometimes result in odor problems for surrounding communities, especially for residents in Honokai Hale and Ko Olina.

Although initially slowed by some equipment issues, the facility began full operation in September of 2007. With this diversion, the delivery of sludge to WGSL has dropped over 25 percent from two years ago, from a high of 2,240 tons in January, 2006 to a low of 1,670 tons in December, 2007. ENV is also attempting to expand bio-solid/green waste composting to help recycling and to further divert sludge from WGSL.

WM notes that today it processes the sludge immediately upon delivery. In order to further reduce odors emanating from the landfill, WM also uses a system that emits an odor neutralizing mist every half hour of every day, from early in the morning to early in the evening, along the fence line fronting the landfill.

3.1.3 Other Alternative Technologies

Anaerobic digestion, hydrolysis and gasification are forms of alternative technologies that could reduce the amount of waste processed at WGSL. These forms, however, would not eliminate the need for a landfill as they deal solely with organic materials leaving all other forms of waste for alternate disposal. Equally important, the apparent capacities of these facilities are not sufficient to replace the burden borne by WGSL.

Anaerobic digestion is the naturally occurring bacterial breakdown of organic material in a controlled, oxygen free environment. Anaerobic digestion creates three byproducts, biogas, which in turn can be used for electricity generation, stable organic material that can be used for low grade building products such as fiberboard, and a liquid rich in nutrients, which dependant on the quality of material digested, can be used as fertilizer.

Hydrolysis is the use of water to split chemical bonds of substances.

Gasification is the decomposition of organic waste by exposing it to high temperatures. This process, unlike anaerobic digestion, allows a small amount of oxygen to be present during decomposition. Byproducts include solid ash and slag, liquid spyrolysis oil, and synthesis gas, or syngas. Gasification reduces solid waste by 85% to 92%. The remainder must be disposed of in landfills. Gas created through this process can be used for electricity generation.

For anaerobic digestion and gasification, markets need to be found to use the gas fuel and the fertilizer materials, and proven applications have not been shown on Oahu.

The Plasma Arc technology creates an electrical arc between two electrodes, which in turn produces extremely high temperatures. The heat breaks down the waste into organic molecules leaving gases, including syngas that can be used to generate electricity. Byproducts include materials such as glass and metal, and a lava-like hardened material.

3.1.4 Recycling

In 2006, a total of 542,747 tons of material, including auto bodies and other ferrous material, paper, metals, glass, plastic, tires, auto batteries, electronic scrap, green waste, wood waste/pallets, construction & demolition, food waste, sewage sludge, and other reuse material (Goodwill, Salvation Army, Helping Hands) were recycled on Oahu. Over the course of the last twenty years in which the City has maintained recycle data, the amount of waste recycled by the City has grown from 73,992 tons in 1988 to over 600,000 tons in 2007 (precise 2007 totals are not yet available).

There are currently over 70 recycle bin locations at schools for public use, with plans to expand the program by 40 locations in the coming years. All money acquired from the sales of recycled materials goes directly to the school. The State also maintains over 50 redemption locations on the island that accept HI5 bottles and cans only.

In the fall of 2007, the City began curbside collection of mixed recyclables (e.g. glass, cardboard, newspapers, plastics, green waste) in Hawaii Kai and Mililani. The program has proven very successful and the Mayor has announced plans to expand the program island wide in staged increments, beginning sometime in the fall of 2008. The City is also considering ways to assist high rise complexes, which are not part of the curbside collection program, in collecting their recyclables.

Items that are restricted from recycling centers include business/commercial/agricultural refuse, liquids, oils, grease, wet kitchen garbage, animal carcasses, large auto parts, some of which can be landfilled after processing. (Other items such as explosives and weapons, toxic/poison waste, wet paint and solvents, and medical waste are disposed in more specialized, highly controlled ways). There remains a quantity of nonrecyclable and noncombustible refuse that will require landfill disposal even after recycling efforts and waste-to-energy capacity have been increased significantly.

3.1.5 Transshipment

Transshipment involves packaging Oahu's waste and shipping it off the island. This alternative has been discussed at least as far back as the 2001 EIS and today is a more realistic alternative than ever before. Transshipment would significantly reduce the need for daily landfill capacity. Currently, proposals call for the use of sites in Washington State or Idaho; where landfill capacity is readily available.

Transshipment is a serious alternative to handling a portion of MSW, but it has externalities that must be considered. These include the following:

- The tipping fees received from H-POWER and WGSL provide the resources necessary to run H-POWER and to collect residential solid waste at no additional fee to tax payers. Diverting a significant level of solid waste to the mainland diverts those fees and may force the City to find other revenue to offset the subsidies required to run H-POWER and to collect residential solid waste.
- H-POWER supplies the power for over 45,000 homes on Oahu. Reducing the solid waste input into H-POWER reduces its alternative energy output.
- Transshipment creates a level of uncertainty that is not apparent in today's technology of H-POWER and landfilling. Transshipment is more vulnerable to freight and vendor price increases (e.g. those tied to the price of oil), to shipping disruptions (e.g. strikes, weather, regulations in the receiving states) and to the loss of control at the out-of-state landfill site.
- Because of the amount of fuel needed to process and to ship MSW to its ultimate location and the reduction of alternate energy, it is likely that the carbon footprint of this alternative exceeds the processing of MSW on Oahu.
- Industrial area space and wharf space would be needed to process and to store solid waste to be transshipped off-island. Wharf space is limited.

The City has recently advertised an Invitation for Bid regarding the transshipment of MSW. A pre-bid conference on February 14, 2008 attracted about 10 interested parties. A decision to procure those services will depend on the bids that are received later this year, with the expectation that if successful, transshipment will probably not occur until sometime in 2009.

It should be noted that the City believes that even if transshipment is deemed economically viable and politically acceptable, limited landfill capacity will still be required for material that cannot be processed or shipped (e.g. agricultural waste, bulky waste/white goods, brown waste/furniture), for downtimes at the H-POWER Plant and for emergencies caused by natural disasters.

3.2 ALTERNATIVE SITES

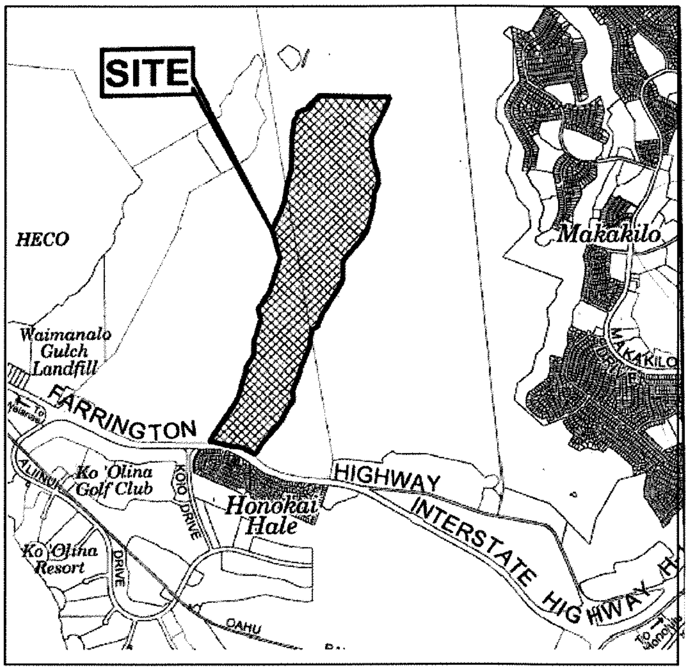
Since 2000, many alternative sites have been analyzed for potential as landfill candidates. After serious study by the City, four sites emerge as possible replacements for the WGSL. These include sites in Makaiwa Gulch, Maili, Nanakuli B, and the Ameron Quarry in Kailua. All four sites are privately owned: two are in active use and one is targeted by its landowner for partial residential development. Like WGSL, three of the four sites are in Leeward Oahu. All four alternative sites have a landfill life expectancy of at least 15 years. In 2001, in 2003 and in reviews since, the City has consistently found WGSL to be the optimal site based on a number of landfill siting criteria.

3.2.1 Makaiwa

The Makaiwa site is a gently sloping valley of more than 1,200 acres. The next valley to the west is Waimanalo Gulch, where the current MSW landfill is in operation. Part of the property has been classified as Urban by the State Land Use Commission, in response to a petition by the owner. Current plans for the property include residential development extending from Makakilo (above the site and to the east). To the south of the site is the residential community of Honokai Hale and, further seaward, Ko Olina.

The Makaiwa Gulch site consists of 338 acres with an anticipated landfill life of 25 years. There is currently only one building located on the site that would be displaced. There are two residences located 118 feet from the property line and the nearest school, Mauka Lani, is a little over a mile away. Although parts of the site are very visible from H-1 Highway, the landfill may not be if carefully located and screened. Traffic issues that affect WGSL may be apparent with Makaiwa as well since both have similar alignments with Farrington Highway.

Exhibit 3-A: Makaiwa Site



Source: Honolulu Department of Permitting and Planning
http://www.honoluludpp.org/Planning/PublicInfrastructureMap.asp

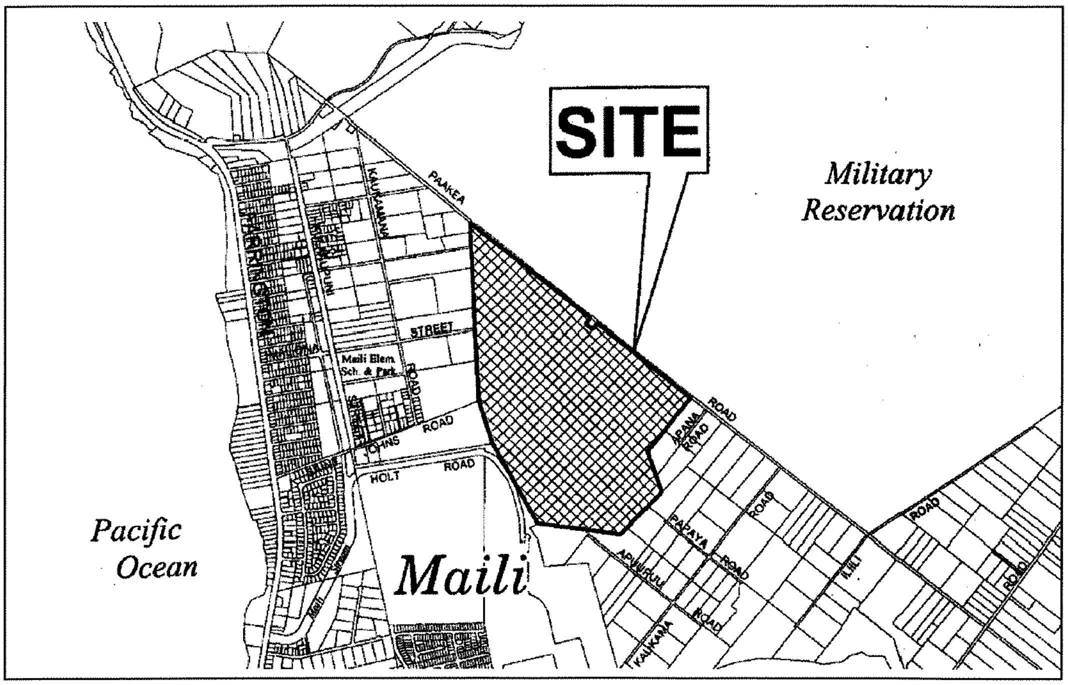
3.2.2 Maili

The Maili site can be reached by Paakea Road, which runs along the boundary between civilian and military areas in the Lualualei region. On the makai side of the road, its immediate neighbors include an egg farm. At slightly greater distance are a school and the Waianae Coast's major health clinic. Operations at the site would likely be visible from the Maili Kai residential area to the south.

The Maili site includes one dwelling and another building on 200 acres of land. The anticipated landfill life of this site is 15.33 years. There is a distance of 875 feet between the property line and the nearest residence and 1/5 of a mile between the property line and the nearest school, Maili Elementary. The site is located in an area that has low visibility from Farrington Highway, the closest general use public road.

The Maili property is currently being used as a coral quarry. Its operators have been mining the site since 1998 and project use of the site for another "40 to 50 years". Sphere LLC is accepting asphalt on site, and has a contract to take ash from AES Hawaii[8]. Sphere LLC applied to the State Land Use Commission for a Special Use Permit to operate a construction and debris landfill; the petition was denied in June 2004 due to insufficient information concerning the planned use of the site. The petition was denied again in March 2006 when the project was met with much more opposition from the community than in 2004.

Exhibit 3-B: Maili Site



Source: Honolulu Department of Permitting and Planning http://www.honoluludpp.org/Planning/PublicInfrastructureMap.asp

3.2.3 Nanakuli B

Although labeled as being in Nanakuli, some would argue that this site actually sits in Maili. The site itself nestles between a volcanic ridge and Lualualei Naval Road. The ridge separates the site from the bulk of developed land in Nanakuli Valley. Neighbors on the Naval Road include the existing construction and demolition debris landfill and acreage where the owner once proposed developing a golf course (Hida, Okamoto, 1991). The owners note that the site has plans and permits for the existing construction landfill located across the Naval Road.[9] An EIS has been in preparation for a municipal solid waste landfill at this site. Also across the road is the old Kaiser Cement plant. Seaward is a commercial area, including a large grocery store.

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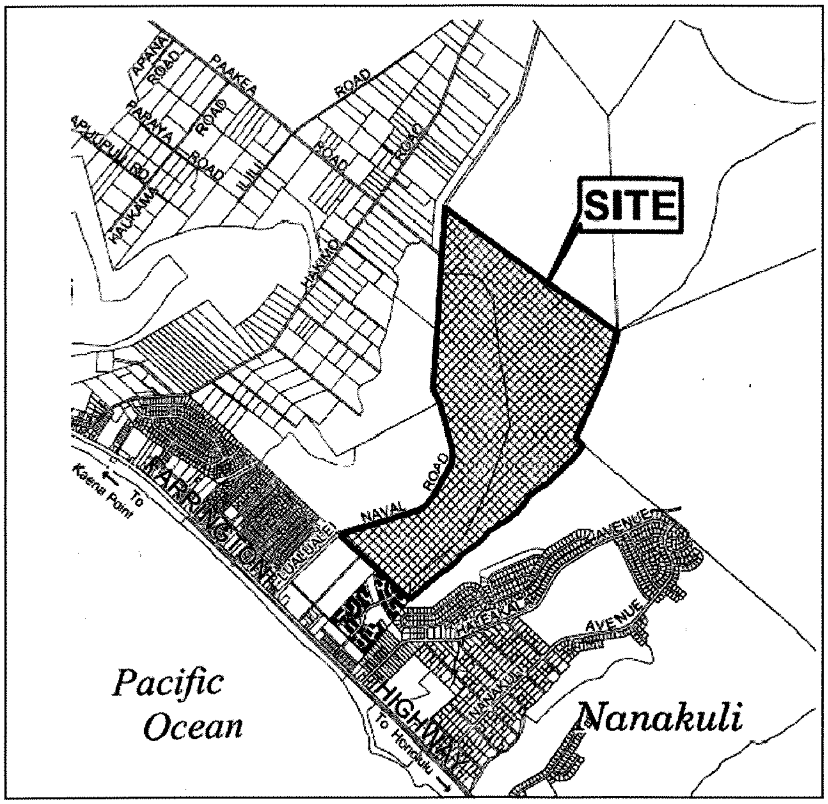
[8] Letter, L. Wilderman to W. Namumnart, August 25, 2004

[9] Letter, S. Joseph to W. Namumnart, August 19, 2004.

The Nanakuli B site is 432.3 acres with an anticipated landfill life of 15.63 years. The nearest residence is adjacent to the property line, while the nearest school, Nanakuli Elementary School is ¼ mile from the property line. There are currently no buildings or dwellings located on the site. The Nanakuli B site is visible from Farrington Highway.

Exhibit 3-C: Nanakuli "B"



Source: Honolulu Department of Permitting and Planning
http://www.honoluludpp.org/Planning/PublicInfrastructureMap.asp

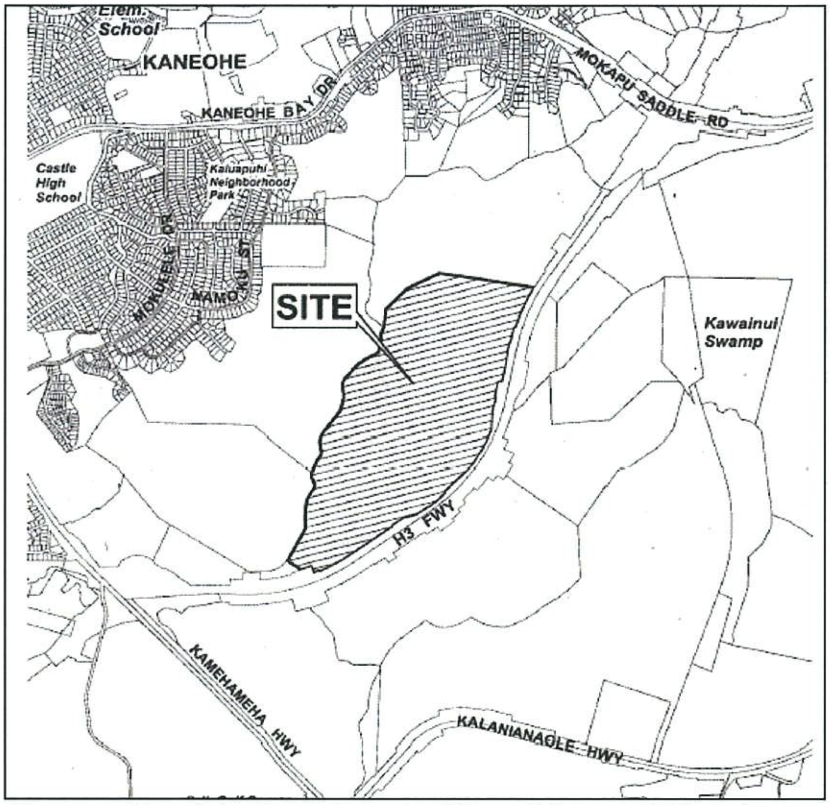
3.2.4 Ameron Quarry

This site is in Kapaa valley on the Kaneohe side of the Koolau's, an unpopulated area through which runs the H-3 Freeway. From the freeway it is possible to see structures in the Ameron site (notably crushers) but not the pits. To the north is the Veterans Cemetery. To the west, Kaneohe neighborhoods extend to the ridge that forms the back wall of the quarry. The nearest neighbor to the south is an industrial area, to which the Ameron supplies water for non-potable use. Further to the south is the Kawainui Marsh, a basin that has been identified as the State's largest wetland.

Current operations on-site include Ameron's rock quarrying and crushing activities and a Grace Pacific plant. The site includes stockpiles and water detention basins. To the east, on the other side of the freeway, Ameron is developing a second phase of its Kapaa operations. Current plans call for use of both sites, and a gradual transition to dependence on phase II. Even when quarrying in the existing pit ends, the owners claim that much of the area will still be needed for stockpiles and water detention.

The Ameron Quarry site consists of 391 acres with an anticipated landfill life of 15 years. There are presently 8 building located on site. The nearest residence, Pohai Nani – Elderly Development and the nearest school, Le Jardin Academy, are located 1/5 of a mile and 2/3 of a mile, respectively, from the property line.

Exhibit 3-D: Ameron Quarry Site



Source: Honolulu Department of Permitting and Planning
http://www.honoluludpp.org/Planning/PublicInfrastructureMap.asp

3.3 TAKE NO ACTION

Currently nearly 563,000 tons of MSW is sent annually to WGSL. There appears to be no single alternative, nor any combination of alternatives that can viably be expected to process that level of waste. And if there were, with each alternative a landfill is required to handle product that cannot be processed or to serve as a backup in case of downtimes or emergencies.

Closure of WGSL without a viable replacement that meets State and Federal requirements would mean that the City and its residents would be faced with some of the following challenges:

- The incidence of illegal dumping, with serious health and safety impacts and high costs of clean up, would greatly increase.
- An alternative site would have to be quickly activated for landfill requirements. Regulatory, construction and other start-up costs, which have already been incurred at WGSL, would have to be assumed.
- For commercial haulers, transshipment may become a greater reality, significantly cutting into the waste levels needed to operate H-POWER, thereby threatening its economic viability. A reduction in H-POWER usage will also result in a significant reduction of power generated on Oahu from alternate energy sources.
- Ash and residue from H-POWER and any residue from alternative waste disposal technologies may have to be exported elsewhere. If so, ENV will have to ensure proper process (autoclaving) of MSW, sludge, and non-incinerated residue from H-POWER to make sure these meet Federal and State requirements.

4. COMMUNITY ISSUES AND CONCERNS

This section identifies those landfill issues that are of concern to the communities of Oahu. As was echoed through numerous sources, waste disposal and WGSL specifically are of concern to all of Oahu's residents. This section helps to better understand the underlying causes of concern.

4.1 SOURCES AND METHODOLOGY

Major sources for the account of issues and concerns were:

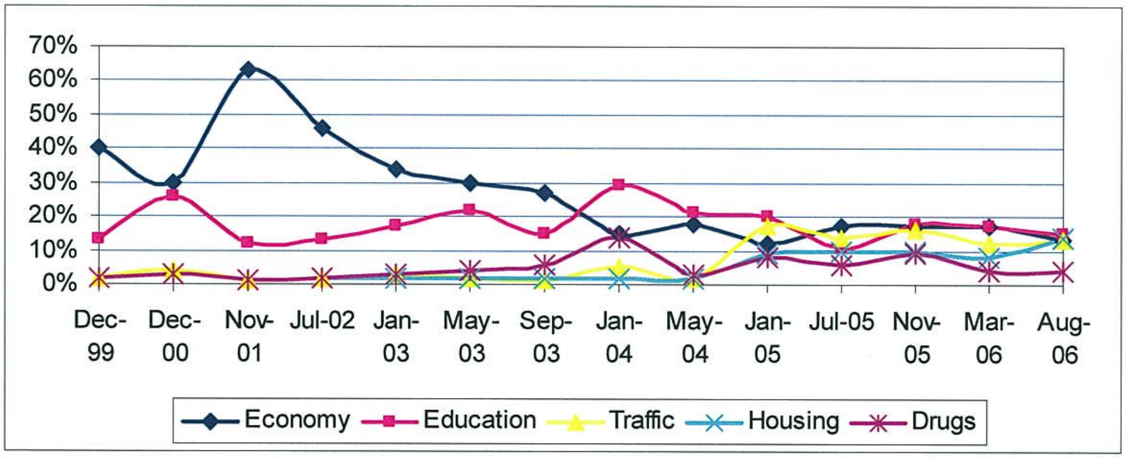
- Interviews with selected persons who SMS knew to be knowledgeable about the affected communities and activities relating to the proposed action;
- Neighborhood Board resolutions and summaries of discussions of the issues during the years 2005, 2006 and 2007; and
- 2005, 2006 and 2007 local newspaper articles.

The objective of data gathering for this section of the report is to understand the range of concerns and some of the linkages among them. The methodology was designed to cover a wide range of opinions, not to assess the relative importance of particular viewpoints.

4.2 COMMUNITY ISSUE AND CONCERNS INDEPENDENT OF THE PROPOSED ACTION

For several years, Hawaii residents have responded to polls on the major issues facing the community by pointing to the economy and education as the most important issues for the state of Hawaii (as shown in Exhibit 3-A). Environmental issues (e.g., environmental protection, recycling) do not achieve the same salience.

Exhibit 4-A: Major Public Issues, State of Hawaii, 1999-2006



Source: "People's Pulse Poll - OmniTrak Group Inc."

4.3 COMMUNITY ISSUES WITH REGARDS TO THE WGSL

4.3.1 Neighborhood Board Topics of Discussion

On the island of Oahu there are a total of 32 Neighborhood Boards; they meet monthly. Over the course of the last two years, discussions regarding WGSL arose in the Waianae, Makakilo/Kapolei/Honokai Hale, and Kailua neighborhood board meetings.

The Leeward Communities were mostly interested in closing the WGSL and in ensuring that following the 2008 closure of WGSL, the next landfill would not be located in Leeward Oahu. Among their specific concerns were the following:

1. Is the State Department of Health monitoring and conducting its own landfill investigations or are they relying on the operator?
2. What violations are outstanding and what is being done about them?
3. Is anyone, but in particular the military, being allowed to dump hazardous material in the landfill?
4. What is the present situation with transshipment? Is it a viable option to keeping WGSL open and at what cost?
5. What are the specific elements of the community benefits package and who benefits? Why? Who is represented in decision-making? Are there any features that are merely a substitute of City services that should be provided anyway?
6. What assurances are there that if WGSL is closed that another landfill is not opened on the Leeward Coast and what enforcement is available to prevent rogue trash dumping.
7. What is being done about the hazardous dump truck drivers and the dangerous traffic conditions caused by crossing the freeway without a light, by trucks lining up on the side of the highway waiting to enter the landfill area, by the airborne and highway trash left behind by trucks and the landfill operation?
8. What is the situation with the leachates? What is the stability of the landfill walls?
9. How is the landfill affecting the for-profit businesses in the area or the decisions of businesses that would like to locate in the Leeward area?

The Kailua Neighborhood Board, over the course of 2005 and 2006, had numerous mentions of WGSL Sanitary Landfill. A majority of their concerns were around the EIS, when the preparation process would begin, and expected completion date. The board was also notified monthly of any news or decisions surrounding the landfill. More specifically, among their mentions were:

1. Questions were raised numerous times in 2005 and 2006 regarding the status of the EIS. It was believed that there was no movement on this due to a face-off between the City Council and the Mayor's promise to Leeward not to extend the landfill.
2. Concern was expressed that if the EIS process did not begin soon the City would run into similar problems to what Maui was facing with their permit process.
3. Credit was given to the Mayor for vetoing Bill 37 that would have closed WGSL by May 1, 2008. They understood that it was not an easy decision.

4.3.2 Individual Community Responses

Interviews with community leaders, individuals and community groups solicited strong and wide ranging reactions on WGSL. A sampling of the most often mentioned reactions, slightly edited for grammar, without analysis as to their legitimacy, are presented below in italics.[10] Information from ENV and WM are also presented.

4.3.2.1 People Who Favor Closing the WGSL

4.3.2.1.1 On the City's Commitment to Close the Landfill

When it opened, the City committed to a short-term usage of WGSL. They extended it under the Harris Administration with a strong commitment that it would close in 2008. If we can't trust the City Administration to stand by the commitments of previous administrations, how can we trust anything they say?

The commitment to close the WGSL is reflected in the deeds of buyers in Ko'Olina. We were told it would close in 2008. I'm not sure people would have bought units without that commitment by the Administration.

It's not like we have NO choices to using WGSL. We can expand H-POWER, we can ship waste to Washington State, we can landfill elsewhere on the island. So, if we have options, how do we justify going back on a commitment given in good faith?

It seems to me that if one reads the last EIS, there was absolutely no intention of keeping the timetable to five years. Remember, Harris started with an extension for 15 years, then cut it to five years after all the protest. There was no plan for what to do after five years. The City doesn't care; it takes the community for granted.

Where's the transparency necessary to deal honorably with the community? It robs the community and the larger Oahu community of the opportunity to make reasoned judgments and it breeds distrust.

Does the Administration pay attention to its citizens; does it feel an obligation to keep its word. This is overwhelmingly the stuff that drives the response to ideas and fuels the energy behind the opposition to WGSL.

Discussions with ENV indicate that the City is continuously seeking ways to find relief for the landfill, but thus far with limited success. They have had or are seeking proposals for alternate technologies, for expanding to a 3rd boiler at H-POWER, and for transshipment. They keep open the option of an alternate site if one can be found. But they contend that despite assurances given by a previous administration, it is not practical to close WGSL at this time.

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[10] In the course of the interviews, interviewees were assured anonymity and confidentiality. This allowed for free and frank conversations. As such, the names of interviewees are not presented within this report

4.3.2.1.2 On Management of the Operation

Despite numerous complaints over the years, we continue to have litter on the roads, we continue to have dangerous truck situations where merging into and crossing traffic occurs; we continue to have smells coming from the landfill; and we continue to have deliveries at off-hours. There may have been some improvements, but these issues are not being adequately addressed by Waste Management.

Waste Management is very secretive. They don't answer our questions; they subtly harass people who come to the site; they make the community suspicious.

Discussions with WM indicate that they are trying to be more transparent on their operations. They participate in the Mayor's Oversight Advisory Committee and they give tours of the landfill upon request. In 2006, more than 1,600 individuals toured the landfill. There is a website that posts pertinent information and contact information for questions or complaints.

4.3.2.1.3 On Traffic

It is very dangerous when trucks line up on the highway waiting to turn mauka. It doesn't happen often, but when it does, it's very dangerous.

When trucks merge back onto the highway going toward town, they have to cut across traffic, sometimes very heavy traffic, without the benefit of a light. I'm surprised there haven't been any major accidents caused by these trucks.

The individual household deliveries, in cars and trucks, may be even more problematic than commercial trucks. These aren't professional drivers and they often don't cover the trash. These people are more likely to litter the road and to cause traffic hazards.

WM notes that they are not aware of any major accidents involving trucks entering and exiting the landfill site. They continue to monitor the intersection and to counsel truck drivers on appropriate driving practices.

4.3.2.1.4 On Odors

The State Department of Health has done tests and they tell us that "yes, under certain conditions, odor is a very real problem." It is not our imagination. This is especially a problem for Honokai Hale and Ko'Olina residents and guests.

The odor problem is most noticeable when they deliver sludge material from the Sewage Treatment Plant and it is not immediately buried. It happens often.

Sometimes it gets so bad, you can't come out of your house. I feel sorry for those people in Honokai Hale who may not have air conditioning.

Following numerous complaints a few years ago, WM indicates it instituted a practice to immediately process sludge material upon delivery. WM also improved the operation of their odor neutralizing misting system that functions during landfilling operations. And the successful operation of the Synagro-WWT facility has reduced sludge delivery to the landfill by 25 percent. Taken together WM believes that they are actively addressing this issue. Their records indicate a drop in odor complaints from seven different instances in 2006 to one complaint in 2007.

4.3.2.1.5 On Litter

This is the most visible problem. It was worse before, but the problem has certainly not gone away. Trucks litter because the load is not properly covered on the way to the landfill or because they do not clean the truck out completely before leaving.

Litter occurs sometimes because of the winds blowing over the landfill. Some days one can see paper and plastics hovering over the landfill, kicked up by the wind. And sometimes, that trash is blown down the mountain to the areas around the landfill and out to the ocean. There is a reason that wind farm people have looked seriously at sites above the landfill; the wind is very strong there.

Discussion with WM indicate that it is their current practice to continuously process and cover the trash as it arrives, thereby limiting its exposure to wind. They also cover the trash everyday, as is indicated by photos that are sent to the State Department of Health at the end of each day. WM also employs people to pick up litter along the extremities of the landfill before it can blow off of the property. They appreciate that they are not always successful, but they believe they have greatly reduced the problem.

As to trucks not properly covering their load or not completely emptying their load, WM contends that they monitor the trucks entering and leaving and are very aggressive about employing a system of counseling and fines. It is their position that anyone seeing violations of littering should call them and call the police with information on licenses and time/date of occurrence.

4.3.2.1.6 On Views

The landfill is visible from Ko'Olina and from the highway. It is most visible from Farrington Highway as you drive by the Kahe Power Plant.

If operations are visible now, how much more visible will it be if they expand operations? They are not supposed to excavate, so I don't understand how it will not be more visible?

The visibility of the landfill has a direct impact on the development of Ko'Olina; on the largest single economic engine on the Leeward Coast. Hotel developers are very reluctant to buy parcels because all mauka view units will be looking at an operating landfill. One can say that the current landowners knew it was there when they bought the project, but they believed the City when the City committed to close the landfill in 2003 and then in 2008. The landfill is not the only reason these sites are difficult to sell, but it is a major reason.

People keep saying the view will improve as they plant cover and put in view screens. But it's been a long time and I don't see any trees or view screens.

Discussions and site visits indicate that Norfolk pines and monkey pod trees have been planted along a berm fronting the landfilling operation. These trees have yet to mature to a level to adequately screen views. Most of the finished surfaces have been hydro mulched, but grass has not yet taken hold. Berms have been erected in such a manner that views of the operation from the highway fronting the landfill and from much of Ko 'Olina have been partially obscured. WM contends that if the operation is allowed to expand deeper into the valley, the finished heights of the berms and additional planting will almost totally obscure any views of operation for most of the neighbors.

4.3.2.1.7 On the Safety of the Site

Is the site safe? I worry about the plastic linings since they have had some recent fires.

I worry about the fill coming down the hillside. When the recent earthquakes happened, my first thought was how we would handle the toxic materials if the walls of the landfill breeched.

WM contends that the landfill was never unstable and that the site has always been safe. However, to address the small area of ash monofill that had a factor of safety less than permitted by the DOH, a berm was constructed and completed in 2005. The basis for WM's contention are geotechnical studies and analyses that have been performed by third party professional firms whose work has been reviewed by independent, nationally recognized engineering professionals.

4.3.2.1.8 On the Community Benefits Package

If the package is going to have elements that merely replace funds that should have been spent in the community anyway (e.g. park maintenance), then it's a farce.

Leave the decision to the community as to how the money is spent. People who don't have to live with the problem should not control those decisions.

There is absolutely no reason not to include Makakilo as a recipient. They live next to the landfill. How does the WGSL affect the people living Ewa? Yet, they are recipients and the community of Makakilo is not.

If truth be told, the only communities that are directly affected by WGSL are Honokai Hale and Ko 'Olina; the communities indirectly affected are Makakilo, Kapolei, and the residents who pass by going further out Leeward.

I'm not sure I even want to discuss a "better" community package. As soon as we start "negotiating" a community package, we will surely have to keep the landfill. We'll get bought off. There's too much money being made by the City at the landfill.

ENV notes that the benefit package thus far has been $2.7 million in 2007 and will be $2.0 million in 2008. They expect that participation and benefits will continue to evolve as they gain experience in working with the community.

4.3.2.2 People Who Favor Extending the WGSL Landfill Operation

4.3.2.2.1 On the City's Decision

We need a landfill on the island, even if we have other successful alternative technologies. WGSL has more room for expansion; the investment is already made there. Honolulu town has had its share of landfills as has Windward Oahu. It's just logical to extend the use of WGSL.

I support the full use of the Waimanalo site before any other site is considered. Anything else would be a terrible waste of money and resources.

Discussions with people opposed to the continuing operation of WGSL indicates that they believe the financial investment is not sufficient to offset the burden placed on the communities of Ewa and the Leeward Coast. They further indicate that this investment might have been more aggressively fought if they did not believe the previous administrations that indicated that the WGSL would be closed.

5. SOCIAL-ECONOMIC IMPACTS

5.1 IMPACTS ON PUBLIC FACILITIES AND SERVICES

In this section, the social impacts expected from the Preferred Alternative are presented for consideration in decision-making. The sources of information were the published annual reports and direct discussions with agency personnel.

5.1.1 Police Protection

5.1.1.1 Existing Conditions

Honolulu Police Department (HPD) District 8 encompasses the Waianae Coast, Makakilo, Ewa Plains, and the City of Kapolei. District 8 has 19 beats, shown in Exhibit 4-B. The district headquarters is in Kapolei, while a substation in Waianae provides a base of operations for officers patrolling the Waianae Coast.

5.1.1.2 Future without Proposed Action

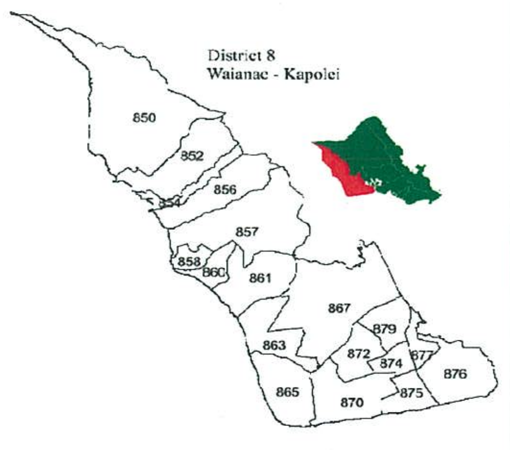
The Honolulu Police Department has found it difficult to fill its ranks in the face of budgetary limits. This situation seems unlikely to change greatly.

5.1.1.3 Future with Project

During a one year time period, April 2006 – April 2007, in the area immediately surrounding WGSL, there were a total of 41 documented nuisance complaints received by HPD, but they could not be specific on what types of complaints nor to whom they were attributable. Since April of 2007, HPD's records show only one complaint in the area. This is consistent with WM complaints logs, which indicate 14 complaints in 2006 and only 4 complaints in 2007. Complaints made to WM may not be made to the police and vice versa.

Extension of the landfill operations should not result in any additional burden to the Honolulu Police Department.

Exhibit 5-A: Honolulu Police District 8



SOURCE: Honolulu Police Department website (www.honolulupd.org/).

5.1.2 Fire Protection

5.1.2.1 Existing Conditions

The Honolulu Fire Department's Fourth Battalion, as shown in Exhibit 5-B, serves leeward Oahu. The Kapolei Fire Station, Station 40, also serves as the headquarters for Battalion 4. The headquarters building houses an engine and a ladder truck. Station 28, in Nanakuli, has an engine and a tanker. Station 26, the Waianae Fire Station, has an engine, a quint truck (with pump and ladder), and tanker. Also housed in this fire station are the Waianae EMS units. The Makakilo Fire Station (No. 35) has a single engine.

The Fire Department has worked successfully with WM in the past supplying equipment to help fight area brush fires outside of the landfill property (no fires have occurred from within the landfill itself).

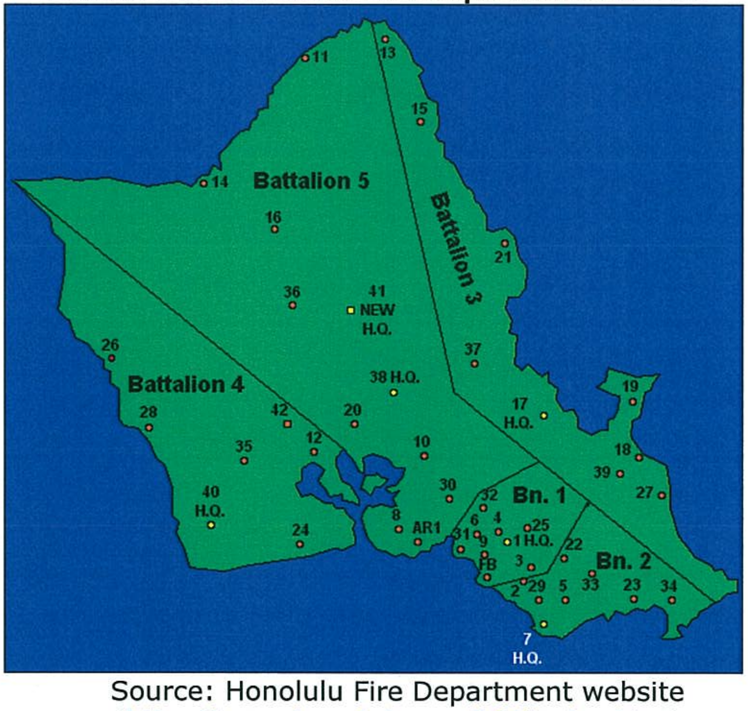
5.1.2.2 Future without Proposed Action

No change in services is expected over the course of the next few years.

5.1.2.3 Future with Proposed Action

The Honolulu Fire Department has asked that WM maintain adequate access for fire apparatus and indicates that WM is complying. As long as WM continues to provide adequate access, the Fire Department foresees no necessary additions as a result of the WGSL expansion.

Exhibit 5-B: Honolulu Fire Dept. Service Areas



Source: Honolulu Fire Department website (http://www.honolulu.gov/hfd/index.htm)

5.1.3 Emergency Services

5.1.3.1 Existing Conditions

In Leeward Oahu there are currently three EMS locations as well as one of the island's two Rapid Response locations. EMS is found at Waianae Fire Station, in Nanakuli along Farrington Highway, and Makakilo in Kapolei. The island's first rapid response location is at St. Francis West Hospital.

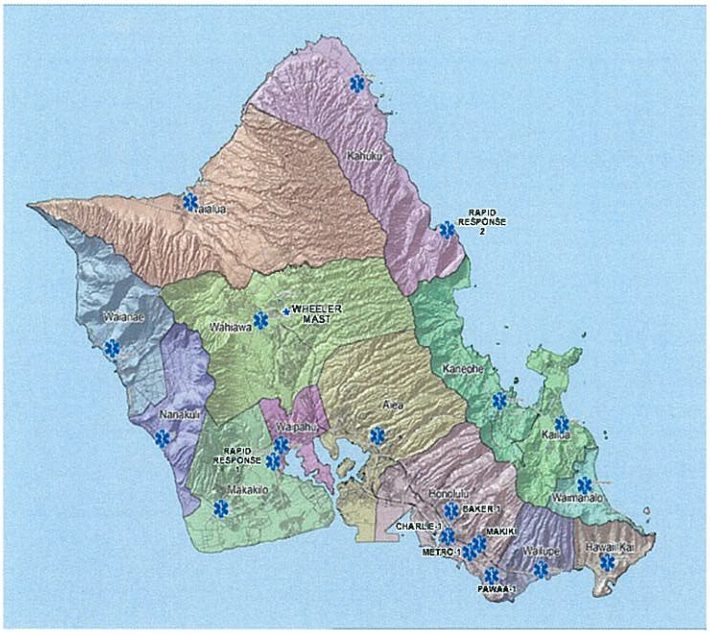
5.1.3.2 Future without Proposed Action

The landfill and its surrounding communities are adequately serviced by EMS services.

5.1.3.3 Future with Proposed Action

Expansion of the WGSL will not add new residents and, according to Waste Management, only 5 – 12 additional contract workers to the site. This will not significantly impact the quality of service currently available for those on the Leeward Coast.

Exhibit 5-C: Oahu EMS Locations



Source: Department of Emergency Services website (http://www.honolulu.gov/esd/ems/emsorg.htm)

5.1.4 Education

5.1.4.1 Existing Conditions

Leeward Oahu has seen growth in school populations and schools in recent years, notably in Kapolei where new middle and high schools have opened. Availability of primary school space remains a problem. Two schools are located in the landfill site vicinity, Makakilo Elementary and Mauka Lani School.

Mauka Lani School having no complaints or staff concerns about WGSL nor do they report any incidences of odor or children feeling ill at school.

5.1.4.2 Future without Proposed Action

Development in the Kapolei area will lead to an increase in population, eventually causing the need for additional school locations.

5.1.4.3 Future with Proposed Action

Expansion of the WGSL Sanitary Landfill will not create a need for additional elementary schools, nor will it affect existing elementary schools differently than they are affected at the present time.

5.1.5 Library Services

5.1.5.1 Existing Conditions

Hawaii's public libraries are operated by the State Department of Education. Libraries are open in Waianae, Ewa Beach and Kapolei.

5.1.5.2 Future without Proposed Action

Due to limited funds, hours at libraries throughout Hawaii have been reduced in recent years. No additional libraries have been announced as planned.

5.1.5.3 Future with Proposed Action

No impact on library services is anticipated.

5.1.6 Parks and Recreation

5.1.6.1 Existing Conditions

There are parks situated in Waianae, Maili, and Nanakuli, and throughout the major residential zones of Ewa. Also, beach parks are located along the Waianae Coast at the tip of Barbers Point (in the Campbell Industrial Park) and in Ewa Beach. Odor issues and occasional airborn trash at nearby beach parks are the only reported issues caused by the current operations of the landfill. In the past, outdoor recreation at Ko Olina has been limited during occasions when odor was a problem.

Long-term WGSL may one day be used as a reclaimed recreational facility much like Ala Moana Park and Honolulu Waterfront Park.

5.1.6.2 Future without Proposed Action

After the closure of Barbers Point, much of the Navy land was conveyed to the City of Honolulu for eventual redevelopment as recreation and sports facility. Funds for significant new developments have not been allocated, so major changes are not likely in the next few years.

5.1.6.3 Future with Proposed Action

An expanded WGSL does not generate any additional demand on area parks. If odor issues and litter issues are adequately addressed, expansion and continued use of WGSL will have no impact on the use of nearby parks.

5.1.7 Medical Services

5.1.7.1 Existing Conditions

Leeward Oahu is served by St. Francis West, a 100-bed hospital with 24 Emergency Service located outside Waipahu, the Waianae Coast Comprehensive Health Clinic between Nakakuli and Waianae and clinics in Kapolei maintained by other health care providers.

5.1.7.2 Future without Proposed Action

SMS knows of no major changes in medical services planned for the study area.

5.1.7.3 Future with Proposed Action

No impact is anticipated.

5.2 OTHER SOCIAL IMPACTS OF NOTE

5.2.1 Positive Social Impacts

5.2.1.1 Reduced Impact on Other Oahu Communities

Unless a package of alternatives can feasibly process MSW and refuse currently handled by the WGSL, a landfill will still be needed. Without it, the health, sanitation and aesthetic issues associated with unprocessed waste or uncontrolled dumping will burden the entire island.

In addition, moving the current landfill operation to another Oahu location, merely shifts the adverse impacts to another community, still requiring that the issues of litter, traffic, odors, and visual pollution be addressed and managed.

5.2.2 Negative Social Impacts

5.2.2.1 Department of Health Issues

In February 2006, the Department of Health proposed one of the largest environmental fines ever against the City: Eighteen violations were identified in DOH's six-month investigation. According to WM, all but two violations were corrected in 2006. The final two, 1) failing to measure leachate levels and to maintain these records and 2) exceeding permitted grades were deemed corrected as of September 26, 2007 and February 20, 2008 respectively. The violations included:

Exhibit 5-D: DOH Notices & Finding of Violations

Count	*Alleged Violation*	*Dates of Last Alleged Violation*	*Compliance Status*
1	Exceeding Permitted Grades	2/20/08*	In compliance
2	Failure to submit Annual Operating Reports in a Timely Manner	2/22/2005	In compliance
3	Failure to Place Daily Cover on the Active Face of MSW Landfill	6/9/2005	In compliance
4	Failure to Place Intervediate cover Material on the Ash Monofil	6/29/2005	In compliance
5	Exceeding Leachate Head on th4e Liner in Ash Monofill	6/15/2005	In compliance
6	Exceeding Leachate Head on Liner in MSW Cell E-1 Sump	6/22/2005	In compliance
7	Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in Cell 4B Sump	9/26/07*	In compliance
8	Failure to Measure Leachate Levels and to Maintain Records on Leachate Levels in Ash Monofill Sump	2/9/2005	In compliance
9	Failure to notify DOH of Noncompliance on Equipment Blockage in MSW Cell 4B Leachate Lateral line and inability to Measure Leachate Levels	6/22/2005	In compliance
10	Failure to Notify DOH of Noncompliance in a Timely Manner on the Exceedances of Permitted Grades and submission of the annual Operating Reports (AOR's)	2/22/2005	In compliance
11	Unauthorized Storage of Material on the Ash Monofill	3/2005	In compliance
12	Failure to Manage and Ban the Acceptance of Special Waste	5/19/2005	In compliance
13	Failure to Maintain Records and Record Location of Asbestos Disposal at the Landfill	7/2/2005	In compliance
14	Failure to Cover a Dead Animal	2/17/2005	In compliance
15	Failure to Submit annual Surface Water Management Plan	9/1/2005	In compliance
16	Failure to Control the Generation of Dust from Vehicular Traffic	2/17/2005	In compliance
17	Failure to Minimize Free Litter Generation in the Landfill	6/24/2005	In compliance
18	Failure to Monitor Explosive Gasses and Maintain Monitoring Records	2004	In compliance

* Date that DOH deemed WGSL in compliance.

5.2.2.2 Property Values

The 2002 Socio-Economic Impact Assessment of WGSL Sanitary Landfill Expansion presented property value results that were not necessarily in line with what experts and the public at large would have expected.

Research found that single-family homes fit the hypothesis that property values increase with distance from the landfill up to a distance of about three miles. However, the condominium analysis shows a significant correlation of increased value and proximity to the landfill – the opposite result.

Condominium property values are higher near WGSL due to the location of the condominiums, Ko Olina. According to the Ko Olina website, "Ko Olina Resort & Marina's residential development will be Hawaii premier location for homebuyers across the word and for local residents...Ko Olina will provide a feeling of luxury in a private community..."

5.2.2.3 Diminishing Community Trust

The failure to follow through on commitments from the City to close WGSL may be having an impact in eroding public trust and increasing cynicism toward City government. This is happening in the fastest growing community on the island where private-public partnerships are necessary to ensure sensible and well-managed growth.

The problem is being complicated by a "community-benefits package" proposal with which both proponents and opponents of the landfill who were interviewed expressed some hesitation. There appears to be general agreement among them that there has been insufficient community involvement in questions surrounding "who should benefit?", "what impacts are being addressed?", and "what services are appropriate?"

5.2.2.4 Environmental Injustice

"Environmental Injustice: An environmental injustice exists when members of disadvantaged, ethnic, minority or other groups suffer disproportionately at the local, regional (sub-national), or national levels from environmental risks or hazards, and/or suffer disproportionately from violations of fundamental human rights as a result of environmental factors, and/or denied access to environmental investments, benefits, and/or natural resources, and/or are denied access to information; and/or participation in decision making; and/or access to justice in environment-related matters." [11]

A number of interviewees point out that Leeward Oahu has been and continues to remain on the receiving end of many of Oahu's burdens. They argue that within a 10-mile stretch along Farrington Highway there are two separate landfills handling hazardous[12], construction and municipal waste, as well as an two existing electrical plants, a proposed new generator unit at the Campbell plant, a deep draft harbor and a major industrial park, all of which service the entire Island of Oahu -- all of which adversely impact the environment of these communities. Further, Leeward Oahu is now the home of thousands of homeless people, many of whom were driven out of other communities only to be "welcomed" and "tolerated" on the Leeward Coast. They argue that the continued use and expansion of WGSL will only increase the imbalance of those impacts on Leeward Oahu.

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[11] Wikipedia *Environmental Justice* http://en.wikipedia.org/wiki/Environmental_justice

[12] Note: WGSL does not accept hazardous waste for disposal.

Proponents of keeping the landfill in operation point out that the siting of the landfill occurred long before the siting of the other examples noted above and had nothing to do with the demographics of the people in surrounding communities. Furthermore, the surrounding communities also accommodate one of the most beautiful resort complexes on Oahu, abutting the ever-expanding Second City of Kapolei. This is the fastest growing region on Oahu and WGSL does not appear to have stymied its growth. They believe that this is not indicative of a community suffering from environmental injustice.

Data from Exhibit 2-D would appear to support this position. Although the median household income in the Waianae DPA ($42,451) is below the island average ($51,194), the median household income in the Ewa DPA ($59,583), in which the WGSL is located, exceeds the island average. Additionally, the median household incomes for the two communities immediately surrounding the landfill all significantly exceed the island averages. These are Makakilo ($88,515) and Ko ‘Olina/Honokai Hale ($74,083).

Finally, Windward Oahu residents note that for the last 40 years most of the active landfills were on the Windward side of the island. It is only recently that WGSL has been the only major landfill for MSW on Oahu.

These arguments are all worth taking into account as decision-making proceeds.

5.3 Economic Impact

5.3.1 Approach and Terminology

This economic impact section reviews the impacts that this project will contribute to the economic environment. Technical terms are used here to distinguish impacts of several sorts. First, in economic analysis, a distinction is made between impacts of the actual construction and operations of a project, and the effects of project-related spending throughout the local economy. In discussions of jobs, earnings, and taxes, three broad types are distinguished:

- *Direct* jobs/earnings/taxes are immediately involved with construction of a project or with its operations. It is important to note that direct jobs are not necessarily on-site: construction supports company personnel in offices and base yards, as well as on-site.
- *Indirect* jobs/earnings/taxes are created as businesses directly involved with a project purchase goods and services in the local economy.
- *Induced* jobs/earnings/taxes are created as workers spend their income for goods and services.

Direct, Indirect and induced economic impacts in Hawaii can be estimated using multipliers from a model of input-output relations developed and refined by State researchers.

It is also important to understand that although construction has a positive impact on the state economy, funds for this expansion will be generated from the tipping fees assessed to haulers for the use of the landfill. These tipping fees are translated to the consumers and business through maintenance fees and collection fees. As a result, financial resources for this construction will come from a reallocation of funds that are already a part of the Hawaii State economy rather than out-of-state investment. The reallocation of state monies results in a negative impact on jobs, earnings and taxes. These positive and negative impacts must be considered, in order to gain a clear picture of the economic impact of the WGSL expansion.

5.3.2 Employment And Earnings

5.3.2.1 Construction

Expansion of WGSL is expected to take 10 years to complete. This expansion will result in an increase in the capacity of the landfill and is expected to increase the life expectancy of the landfill by 15 or more years.

Pending the receipt of final engineering figures, the construction of the expansion has been estimated at $86,000,000 over ten years, with expenditures spread consistently over those ten years. The construction estimates were determined through discussions with officials from Waste Management of Hawaii Inc., the current operator of WGSL. The expansion is planned in several stages. Each stage and year of construction will result in approximately the same level of construction spending.

5.3.2.2 Employment

Construction spending will create jobs and spending in related industries. Exhibit 5-E shows that the direct jobs created as a result of this project will include some 746 person-years of employment[3] over the ten-year construction period. Direct jobs are not necessarily located on-site. As a rule of thumb, about 20% of direct construction jobs are off-site (in base yards, offices, and the like).

Indirect and induced jobs are also created throughout the state. These are likely to be concentrated in commercial and/or industrial centers, rather than near a job site. In addition, this project will support some 328 indirect and 720 induced person-years of employment. In total, approximately 1,795 person-years of employment will be created as a result of the WGSL expansion.

Exhibit 5-E: Economic Impact – Positive Impact on Jobs

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Infrastructure											
Construction spending [1]	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	86.0
Direct Jobs [2]	85	82	79	77	74	72	69	69	69	69	746
Indirect Jobs	37	36	35	34	33	32	31	31	31	31	328
Induced Jobs	82	79	77	74	72	69	67	67	67	67	720
Total Jobs	**204**	**197**	**191**	**184**	**178**	**172**	**167**	**167**	**167**	**167**	**1,795**

[1] In millions of 2006 constant $, [2] person-years of employment

Source: DBEDT: State Input – Output Study 2002

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[3] Person years of employment is the number of full time equivalent positions required to complete the work defined by the estimated cost of construction during the specific period of time.

This, however, is not the net impact of this project. Remember that this project will result in a reallocation of funds that could be otherwise spent in other areas of the economy. The cost of construction is generated by revenue received from tipping fees and these fees are translated to Hawaii consumers; therefore, one must account for the negative impact associated with this project. Since tipping fees are translated to consumers, it can be inferred that this expansion will have a negative impact on personal consumer expenditures. A reduction in personal consumer expenditures results in a negative impact on jobs, earnings, and tax revenues. Exhibit 5-F shows the negative impact on jobs associated with this project.

Exhibit 5-F: Economic Impact – Negative Impact on Jobs

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Direct Jobs Lost 1	72	72	72	72	72	72	72	72	72	72	721
Indirect Jobs Lost	15	15	15	15	15	15	15	15	15	15	147
Induced Jobs Lost	31	30	29	28	27	27	26	26	26	26	275
Total Jobs Lost	**117**	**117**	**116**	**115**	**114**	**113**	**113**	**113**	**113**	**113**	**1,143**

[1] person-years of employment

Source: DBEDT: State Input – Output Study 2002

As shown in Exhibit 5-G, the WGSL expansion will result in a net positive impact. Despite the negative impact associated with the expansion some 651 direct, indirect and induced person-years of employment will be created as a result of this project.

Exhibit 5-G: Economic Impact – Net Impact on Jobs

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Direct Jobs Net	13	10	7	5	2	(0)	(3)	(3)	(3)	(3)	25
Indirect Jobs Net	23	21	20	19	18	17	16	16	16	16	181
Induced Jobs Net	51	49	48	46	44	43	41	41	41	41	445
Total Jobs Net	**87**	**81**	**75**	**70**	**64**	**59**	**54**	**54**	**54**	**54**	**651**

Source: DBEDT: State Input – Output Study 2002

5.3.2.3 Earnings

Positive workforce earnings associated with the project's construction will amount to $59.6 million in direct earnings and $40.1 million indirect and induced earnings (as shown in Exhibit 5-H). The total positive impact on direct, indirect, and induced earnings associated with all construction will be about $99.8 million.

As with employment, this project will also have negative impacts on earnings. As shown in Exhibit 5-I a total negative impact on earnings of approximately $36.5 million can be expected.

This project will result in an overall positive impact on earnings. In total approximately $63.3 million in earnings will be generated as a result of this project. See Exhibit 5-J.

Exhibit 5-H: Economic Impact – Positive Impact on Earnings

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Construction Earnings [1]											
Direct earnings	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	59.6
Indirect earnings	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	14.3
Induced earnings	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	25.8
Total	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**99.8**

[1] in millions of 2006 constant $

Source: DBEDT, State Input - Output Study, 2002

Exhibit 5-I: Economic Impact – Negative Impact on Earnings

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Earnings											
Direct earnings lost	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	19.3
Indirect earnings lost	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	7.7
Induced earnings lost	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	9.4
Total Lost	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**36.5**

Source: DBEDT, State Input - Output Study, 2002

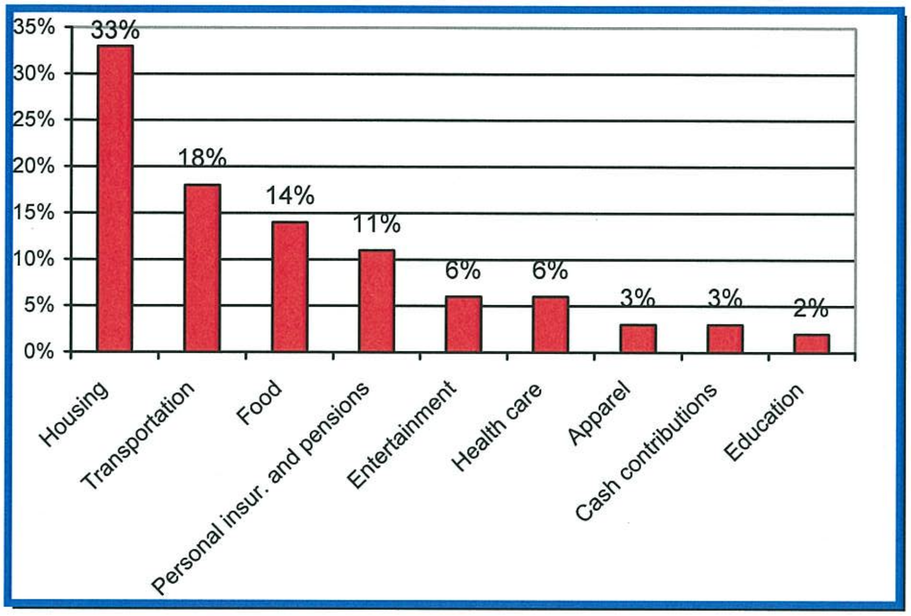
Exhibit 5-J: Economic Impact – Net Impact on Earnings

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Earnings											
Direct earnings - Net	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	40.3
Indirect earnings - Net	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	6.6
Induced earnings - Net	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	16.4
Total Net	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**63.3**

These earnings will boost the local economy, as many of these dollars will be used to purchase goods and services from other industries. Exhibit 5-K shows Honolulu consumer spending patterns to illustrate how earnings may be used.

Housing costs such as shelter payments and utilities account for more than 33 percent of consumer expenditures. Food and transportation also account for a large amount of consumer spending (14 and 18 percent respectively). It can be expected that these patterns will continue in the future creating economic growth in several industries as a result of this project.

Exhibit 5-K: Consumer Spending Patterns by Industry – 2003-2004



Source: US Census 2000, State of Hawaii Data Book 2005

5.3.3 Fiscal Impacts

5.2.3.1 State Of Hawaii

Construction spending has an impact on state tax revenues. Exhibit 5-L displays estimated positive impact on state tax revenues as a result of the WGSL Expansion.

Exhibit 5-L: Positive Impact on State Tax Revenues

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
State Taxes 1											
Direct	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	3.18
Indirect	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	2.34
Induced	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	4.90
Total	**1.04**	**1.04**	**1.04**	**1.04**	**1.04**	**1.04**	**1.04**	**1.04**	**1.04**	**1.04**	**10.42**

[1] in millions of 2006 constant $

Source: DBEDT, State Input – Output Study, 2002

The expansion cost is estimated at $86 million and this construction will result in $3.2 million in direct state tax revenues. The indirect and induced impact of this project will result in $6.2 million in state tax revenues. In total, this project will result in an estimated positive impact of $10.4 million in state tax revenues.

As shown in Exhibits 5-M and 5-N, the total impact on state tax revenues will be positive. Approximately $6.6 million in state tax revenue will be lost as a result of this project. In total, there will be a small **positive** impact in state tax revenues of approximately $3.8 million during the 10 years of construction.

Exhibit 5-M: Negative Impact on State Tax Revenues

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
State Taxes [1]											
Direct lost	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	3.84
Indirect lost	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.98
Induced lost	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	1.79
Total Lost	**0.66**	**0.66**	**0.66**	**0.66**	**0.66**	**0.66**	**0.66**	**0.66**	**0.66**	**0.66**	**6.61**

[1] in millions of 2006 constant $

Source: DBEDT, State Input – Output Study, 2002

Exhibit 5-N: Net Impact on State Tax Revenues

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
State Taxes [1]											
Direct Net	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.67)
Indirect Net	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	1.36
Induced Net	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	3.11
Total Net	**0.38**	**0.38**	**0.38**	**0.38**	**0.38**	**0.38**	**0.38**	**0.38**	**0.38**	**0.38**	**3.80**

[1] in millions of 2006 constant $

Source: DBEDT, State Input – Output Study, 2002

In sum, the economic impacts of the expansion appear to be net positive with approximately $63.3 million net flowing directly and indirectly through the economy and $3.8 million of net tax revenues being raised. All of the income is a result of the 10-year construction period. Waste Management does not believe the expansion will result in the need for new hires or other increased operating costs.

This socioeconomic analysis did not take into account any indirect or induced economic effects of the landfill operation on surrounding businesses. There was insufficient, verifiable information available at the time of the compilation of the report. As noted, the residential sales program at Ko Olina has been successful. If it could have been more successful without the landfill is speculative.

6. MITIGATIONS

Mitigation measures are normally considered in anticipation of potential impacts. In the case of the WGSL, where there is history, as well as existing practices, one can observe the current impacts, and propose measures that go beyond mitigation measures already practiced by Waste Management, Inc. (WM) and the City.

The measures proposed below can be grouped into three areas: improving the measures currently practiced regarding irritants and safety; improving community involvement and communication; and committing to funding the necessary research and development into alternative solutions.

6.1 IMPROVING CURRENT PRACTICES

6.1.1 Views

- *WM should continue to implement the on-site landscaping plans that have already been developed and begun; especially for those areas facing south toward Ko-Olina.*

  Because of its elevation, the most obvious views of the landfill are from a distance. Berms obscure much of the operations, but the face of the berms are exposed dirt (hydro seeding has occurred, but the grass has not yet taken), and aspects of the operation are still visible. Plans have been developed to landscape the exposed areas and to shield the view of operation, and initial plantings have already begun in earnest. These should continue.

- *WM should design and implement landscape screens (e.g. pines, tall hedges) along the berm and the access road that is visible from Farrington Highway, fronting the Kahe Power Plant. As an alternative, WM might also consider entering into a partnership with HECO to plant an effective screen of trees along Farrington Highway, which would have the dual purpose of screening the landfill operations and the power plant from passing vehicles.*

  The west-facing stability berm along the upper access road shields some of the operations, but not all of it. Selected plantings, consistent with the areas natural growth (e.g. keawe) could effectively complete the visual buffer. If that is not feasible, consider plantings right along the highway that would serve the dual purpose.

6.1.2 Odors

- *WM and the City should continue to be vigilant in processing the sludge from the sewage treatment plants upon delivery and to take all means to reduce any odor impacts.*

  In recent months, the combined impact of immediate processing, diversion of some of the sludge to the Synagro-WTT facility, and the improved operation of the odor neutralizing mist system appear to have had a significant impact. Continued vigilance is required. In addition, any successful expansion of the composting or fertilizer conversion efforts will also reduce the amount of sludge delivered to the landfill, and reduce the possibility of odor problems.

6.1.3 Litter

- *WM must continue to monitor the egress and ingress of vehicles and continue to aggressively enforce the anti-littering regulations and fines.*

  WM has instituted inspection practices that monitor commercial trucks upon entering and leaving the landfill area, to ensure that their loads are secured upon entry and that the trucks are free of debris before exiting. WM policy prohibits repeat violators from entry to the landfill. These inspections are beneficial and must continue aggressively.

  The greater problem may be with ordinary citizens who are personally delivering their trash, and who are not adequately securing their loads. An aggressive education program by ENV and WM should be implemented to supplement the inspections.

- *ENV and WM should maintain a direct communication link with the HPD; in the case of littering, it will lead to faster, more effective response.*

  In a general sense, for all types of complaints, a good communication link between HPD and WM/ENV will only increase the responsiveness to the problem and reduce public anxiety with the operation. This could simply take the form of exchanging key telephone or email contacts. An important first step would be the participation of HPD on the Oversight Advisory Committee.

  On the specific problem of littering, before truck drivers enter the landfill and after they leave, WM has no control over the actions of the truck drivers. Although WM educates and informs the drivers that they will enforce the covered load policy, the issue becomes a public one once the truck is on the roadway. If complaints are received by WM or ENV and quickly reported to HPD, the offenders may be more effectively identified and prosecuted.

6.2 IMPROVING COMMUNITY INVOLVEMENT AND COMMUNICATIONS

6.2.1 Community Involvement

- *The City must find a way to effectively use the Oversight Advisory Committee.*

  The Oversight Advisory Committee allows for building relationships that are so important in addressing community concerns. But it takes time and a commitment of people to the effort. Websites and telephone communication are important complements, but face-to-face meetings build community bonds. In 2007, the Oversight Advisory Committee went through a period of having difficulty getting a quorum for its meetings. The City must find ways to stimulate attendance and participation; some ideas include rotating membership, more tours and education of the members, and so forth.

- *The City should continue to contribute to a community benefits package for as long as the landfill exists.*

  The impacts that lead to a benefit package are evident as long as the WGSL exists. The package can vary in size and content over time as the community and the City determine. The City might also consider using a variety of means to establish the priorities of the benefits package, including open communicy forums, surveys, and maintaining a suggestion link on the website.

- *Ensure that all directly affected communities are represented on the Committee that determines the benefits package.*

  There is a perception that the Committee that determines the benefits package does not include representation from all neighboring communities. If that is already the case, then this needs to be made known. Consider placing the names of the Committee members on the web site.

6.2.2 Web-site

- *WM/ENV should use its web sites aggressively as educational and communication tools..*

  Uncertainty is often the cause of increasing community concern; communication is usually the most effective remedy. Many of the people interviewed were unfamiliar with the Waimanalo Gulch location on the WM website and did not know that there was an avenue for electronic communication, a staple in today's world of communication. Slight improvements on what is basically a good web site and greater education as to its availability will help maximize its use as a communication tool.

6.3 COMMITTING TO ALTERNATIVES

6.3.1 Alternatives to Landfills

- *The City should continue to invest in Research and Development, and where feasible, implement alternative technologies that will result in a reduction in the City's dependency on a landfill.*

  Although the short term would appear to require a continual dependence on H-POWER and landfills, the long-term future will likely involve a mix of these elements together with transshipment, recycling and other waste processing technologies. The sooner the City brings these alternatives on line, the sooner the dependency on landfills will be reduced.

6.3.2 Alternative Locations

- *The City should continue to seek an alternative site to WGSL as the primary landfill location on Oahu.*

  Regardless of the technologies involved, everyone anticipates that a landfill will always be needed. Every viable process that has been proposed to reduce dependency on a landfill has excluded waste that cannot be recycled or further process; additionally, a landfill will always be required for process residue and for emergencies.

The history of landfills on Oahu teaches that landfills have worked best on the edge of urbanization. Urbanization is quickly catching up with WGSL as the second city grows and Ko' Olina expands.

Prior commitments to close WGSL will weigh heavily on the relations between the City and the communities of Ewa and the Leeward Coast. The City should make every effort to initiate the plan for selectioin of Oahu's next landfill site as soon as possible. Participation in this effort should include not only the potentially affected community in which the site is proposed, but all the communities of Oahu. In addition to safety and design issues, details on mitigation to address nuisance concerns like odor, litter, and visual aesthetics should be actively discussed and the solutions offered made a part of the record.

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Addendum on Environmental Injustice Issues (Section 5.2.2.4. Environmental Injustice)

SOCIO-ECONOMIC IMPACT ASSESSMENT WAIMĀNALO GULCH SANITARY LANDFILL LATERAL EXPANSION, CITY AND COUNTY OF HONOLULU

September 2008

Prepared for:

Environmental Services Department,
City and County of Honolulu

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5.2.2.4 Environmental Injustice

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" to focus federal agencies' attention on disadvantaged communities with the goal of achieving Environmental Justice. Over the years, each federal has defined environmental justice or injustice within the context of the Executive Order and in a manner that allows its application to their particular agency's functions. The EPA defines **Environmental Justice** as "*the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies".*[1]

The US Department of Transportation, like other service agencies, goes slightly further by noting **three pro-active environmental justice principles**: *"(1) to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations; (2) to ensure the full and fair participation by all potentially affected communities in the decision-making process'; and (3) to prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations".*[2]

A number of interviewees point out that Leeward Oahu has been and continues to remain on the receiving end of many of Oahu's burdens. They argue that within a 10-mile stretch along Farrington Highway there are two existing electrical plants, a proposed new generator unit at the Campbell electrical plant, a deep draft harbor and a major industrial park, all of which service the entire Island of Oahu – and all of which adversely impact the environment of these communities. Further, Leeward Oahu is now the home of thousands of homeless people, many of whom were driven out of other communities only to be "welcomed" and "tolerated" on the Leeward Coast. They argue that the continued use and expansion of WGSL will only increase the imbalance of those impacts on Leeward Oahu. They believe that the expansion of WGSL is a case of Environmental Injustice.

Proponents of keeping the landfill in operation point out that when the landfill was sited, the only residential communities in the area were in Makakilo. The communities of Kapolei and Ko'Olina grew up on sugar fields that once abutted the landfill, after the landfill had already been in operation. Furthermore, they note that the surrounding communities also accommodate one of the more important and successfully developing resort complexes on Oahu, Ko 'Olina, and the ever-expanding Second City of Kapolei. This is the fastest growing region of Oahu and WGSL does not appear to have stymied its growth. They believe that this is not indicative of a community suffering from environmental injustice. Finally, Windward Oahu residents note that for the last 40 years most of the

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[1] EPA goes on to define *Fair Treatment* to mean that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal environmental programs and policies. And they define *Meaningful Involvement* to mean that: (1) potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decisions; (3) the concerns of all participants involved will be considered in the decision-making process; and (4) the decision-makers seek out and facilitate the involvement of those potentially affected. Toolkit for Assessing Potential Allegations of Environmental Injustice, Office of Environmental Justice, US Environmental Protection Agency, November, 2004.

[2] An Overview of Transportation and Environmental Justice, Federal Highways Administration, US Department of Transportation, May, 2000.

active landfills were on the Windward side of the island. It is only recently that WGSL has been the only major landfill for MSW on Oahu.

A closer examination of the surrounding communities against the definition of Environmental Justice provides further insight. In 2004, the Oahu Metropolitan Planning Organization and the County Department of Planning and Permitting attempted to identify areas of the island that are vulnerable to Environmental Justice concerns.[3] Using definitions and criteria established by FHWA and 2000 US Census block data, OMPO/DPP developed a systematic and comprehensive methodology to identify such communities. In their final analysis, 70 of the 435 blocks that make up Oahu were determined to be environmental justice areas based on race, and 17 blocks were identified as environmental justice areas based on income.

None of the Census blocks in the Ewa Development Plan Area were identified as environmental justice areas **based on income**. One can understand this as the overall average income in the Ewa DPA of $59,583 far exceeds the island average of $51,194. Additionally, the median household incomes for the two communities in closest proximity to the landfill all significantly exceed the island averages. These are Makakilo ($88,515) and Ko ʻOlina/Honokai Hale ($74,083).

On the other hand, two of the Census blocks in proximity to the WGSL are environmental justice areas **based on race,** one in Makakilo and Honokai Hale. Both were selected because they have a Hispanic population that slightly exceeds the average settlement pattern plus an acceptable standard deviation for Hispanics. The acceptable index for Hispanics is 14.3 percent of the population. Hispanics make up 17.3 percent and 16.5 percent of these two communities respectively. No other minority groups exceed their acceptable indices in any block in proximity to WGSL.

Having identified these two communities as EJ areas, one asks whether these two blocks are subject to disproportionately high and adverse health and environmental impacts due to the WGSL and whether they have had meaningful access to decision-making regarding the WGSL.

On the first point, the EIS findings to date would indicate that with the possible exception of views and windblown litter, no one is subject to disproportionately high and adverse health and environmental impacts based on the use of existing and future mitigation measures that have been identified in the subject DEIS document. Further, the significant mix of EJ and non-EJ communities in proximity to the WGSL would indicate that the EJ communities are not suffering disproportionately.

On the second point, it would appear that everyone has had opportunity to make their preferences known. The subject has been presented in numerous Neighborhood Board meetings, and in community meetings with the Mayor and other County officials. Additionally, the County Councilman for this district is very approachable. He is also an articulate and forceful spokesperson in opposition to the lateral expansion of the WSGL, he ably defends that position, and he is one of nine votes on the County Council to whom this question will be presented for approval. For those who support the extension, their position has been expressed by the Mayor and his Administration.

Finally, the EIS process is specifically designed to allow for review and comment by all citizens. There has been significant opportunity for any expression of concern; such expressions become part of the record for review by decision-makers.

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[3] Environmental Justice in the OMPO Planning Process: Defining Environmental Justice Populations, Oahu Metropolitan Planning Organization and the County Department of Planning and Permitting, March, 2004.

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Impact on Property Values

ADDENDUM TO THE SOCIO-ECONOMIC IMPACT ASSESSMENT

WAIMĀNALO GULCH SANITARY LANDFILL LATERAL EXPANSION, CITY AND COUNTY OF HONOLULU

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IMPACT ON PROPERTY VALUES

Disamenities like landfills may reduce residential property values near the site. In the present case, the proposition of interest is that the closer a residential property is to the site of the Waimānalo Gulch Sanitary Landfill, the lower will be the sales price of that unit, other factors held constant. Although much of the literature on the general topic involves unsubstantiated speculation, empirical studies have supported a negative impact on residential property values.

For this study, we adopted the often used hedonic pricing model. The model considers a single family home to be a collection of attributes including physical characteristics (size, number of bedrooms and bathrooms, age, etc.) and location (neighborhood, distance from the landfill, etc.). The sales price of the unit is considered to be a function of all of these attributes. Multiple linear regression or some other appropriate analytical method is used to estimate the impact of each attribute net of the impacts of the other attributes. The impact of distance from the landfill, therefore, can be estimated independent of the other housing unit characteristics.

The data used for the study were a set of 173 property records taken from Multiple Listing Services for properties listed between August 1, 2007 and July 10, 2008. The properties were located in West O‘ahu between ‘Ewa and Mā‘ili and within six miles of the landfill site. Data extracted for each property included physical attributes (unit type [single or multi-family], number of bedrooms, number of bathrooms, size in square feet, age in years, and date sold), and location (neighborhood name, distance from the Waimānalo Gulch Landfill site in miles). These data were analyzed using multiple linear regression with sales price as the dependent variable. Results for all communities are shown in Table 1.

Table 1: Regression Results for All Properties, 2008

Property Attributes	Coefficients		Significance Test Results		
	Unstandardized Coefficient B	Standardized Coefficient Beta	t-value	Sig.	Std. Error
unit size in square feet	435.17	0.755	9.78	0.000	44.50
distance from landfill in miles	-27,602.06	-0.287	-6.06	0.000	4,552.41
age of unit	-5,543.84	-0.330	-5.47	0.000	1,014.24
number bedrooms	-74,253.62	-0.279	-4.02	0.000	18,488.33
number bathrooms	-26,485.37	-0.082	-1.16	0.249	22,911.94
multi-family	48,240.65	0.046	1.13	0.262	42,864.92
date sold	0.00[1]	0.021	0.50	0.620	0.00
(Constant)	-5,754,621.47		-0.47	0.636	

Dependent Variable: price

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[1] Dates were stored as the number of seconds since October 14, 1582, the start of the Gregorian calendar. The unstandardized regression coefficient will therefore be very small, but can be statistically significant if real differences exist in the model.

Results show that four of the eight property attributes had statistically significant[2] relationships with property value (price). Based on the unstandardized regression coefficient, the most highly related attribute was size in square feet. It was positively related to price. The age of the unit was negatively related to price. That is, as the age of the unit increased, the price decreased. The number of bedrooms was also negatively related to price, suggesting that the greater the number of bedrooms, the lower the price. And finally, the distance from the Waimānalo Gulch Landfill was negatively related to unit price. That is, the greater the distance from the landfill, the lower the price.

This analysis shows no empirical support for the proposition that the landfill results in lower residential property values for the Waimānalo Gulch Sanitary Landfill. Specifically, that distance from the landfill would be associated with lower property values.

Studies that report a negative relationship between sanitary landfills and residential property values are not unusual in the literature. Negative or statistically insignificant results have been reported by Bleich, Findlay and Philips (1991); Cartee (1989); Reichert, Small, and Mohanty (1992); Thayer, Albers and Rahamatian (1992), Zeiss and Atwater (1989). Furthermore, many reviewers have cautioned that disamenities such as landfills do not necessarily cause nearby residential property values to decrease. They note that several issues have been confounded in the discussion in the recent past. Sanitary landfills generally have much less impact on property values than hazardous materials landfills. Very large landfills have some impact on property values while smaller ones have none or even increase values (Lim and Missios, 2007). Overall, the characteristics of the residential unit (size, configuration, amenities) generally have a greater impact on market prices than distance from a landfill (Chan *et. al.,* 1993; Kung *et. al*., 1993). In this particular case, two factors are probably more important. First, the sample size for the study is small and the number of variables may be too large for reliable estimates. The adjusted R-squared value for this analysis was .728, suggesting that the model with eight property attributes explained about 73 percent of the variance in the prices measured. That is considered a reasonable level of reliability. Nevertheless, 27 percent of the variance was unexplained.

Second, the results were consistent with known property values in West Oʻahu. Koʻolina Resort properties are essentially "across the street" from the landfill site. Koʻolina properties are among the highest in West Oʻahu. As you move away from the site, you encounter communities with increasingly lower property values. We have not discovered a way to analyze this difference because the price of an individual residential property and the average property value in a community are based on the same variable – unit price. This suggests that the hedonic model may present problems when dealing with the impact of disamenities on residential property values.

In order to add some clarity to the situation, we developed a model for properties located in Koʻolina alone. It was necessary to drop the "unit type" attribute because all Koʻolina properties in our dataset were multi-family units. The results of this analysis are shown in Table 2.

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[2] The significance of the t-value was less than .050.

Table 2: Regression Results for Koʻolina Properties, 2008

Property Attributes	Coefficients		Significance Test Results		
	Unstandardized Coefficient B	Standardized Coefficient Beta	t-value	Sig.	Std. Error
distance from landfill in miles	267,480.96	0.663	4.32	0.000	61,962.28
age of unit	-5,300.70	-0.116	-1.23	0.227	4,306.57
unit size in square feet	134.12	0.216	1.09	0.281	122.49
date sold	0.00	0.091	1.00	0.323	0.00
number bathrooms	61,273.99	0.142	0.97	0.338	63,107.20
number bedrooms	39,571.27	0.120	0.90	0.374	43,906.19
(Constant)	-24,096,747.51		-1.00	0.325	

Dependent Variable: price

Only one property attribute, distance from the landfill, had a statistically significant relationship with price. And that relationship was positive. That is, within the Koʻolina Resort, the farther from the landfill a property is sited, the higher the unit price.

The adjusted R-square coefficient was .629, somewhat less reliable than the prior analysis. The sample size was 41 property records, much smaller than we would have preferred for reliable estimates. This is particularly problematic because the price of Koʻolina properties has 3.5 times the variance of other properties and is strongly skewed to the higher end of the market. Equally important, the other property attributes in our Koʻolina dataset had only half the variance of the same attributes for other communities. Koʻolina properties were 2- and 3-bedrooms only; others were 1 to 4 bedrooms. Koʻolina unit sizes ranged from 653 to 1,834 square feet; other communities ranged from 407 to 1,766. The age of units varied from 2 to 14 in Koʻolina and from 2 to 35 in other areas. Regression models analyze covariance, the extent to which the dependent variable co-varies along with independent variables. The limited variance associated with property attributes other than price will make it difficult to identify statistically significant relationships with those attributes.

There is another issue with applying the hedonic model and regression analysis to the Koʻolina dataset. In this procedure, the correlations or covariances among the individual property attributes are analyzed to produce unidirectional relationships. The finding that distance from the landfill is related to property value (price) can be interpreted to mean that the distances exist first (in time) and result in the observed price level differences. But the landfill predates the resort development. Therefore we cannot easily eliminate the possibility that the price came before distance from the landfill. That might occur, for instance, if a developer were to locate less valuable units nearer the landfill and more valuable units at greater distances. Regression results for our second model could be produced by either process.

This analysis presents different results from the previous analysis. Once again, mixed results are not uncommon in the literature. Reichert, Small and Mohanty (1992) found all three possibilities – positive, negative and not significant -- within their landfill evaluations. Michaels and Smith found drastically different results for individual communities. Thayer, Albers and Rahamatian (1992) found that even when analysis shows a negative relationship with property value, the function may not be smooth. That is, the loss in value may not be the same for all neighborhoods.

Summary

Given the caveats mentioned above, results for the two analyses reported here are clear. With respect to all properties located within six miles of the Waimānalo Gulch Sanitary Landfill, there is no evidence that the landfill is associated with decreasing property values. In fact, as distance from the landfill decreases, property values increase. Within the Koʻolina Resort area, distance from the landfill is associated with increasing property values.

We caution readers to consider the limitations of the data and the hedonic model. Sample sizes for both analyses were small, and the Koʻolina model is based on only 41 cases. The available data may exclude important variables used by property buyers in making their final decisions. And finally, there may be issues with applying the same hedonic model to both sets of property records.

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Appendix K

Alternatives Analysis and Addenda, September 2008
Waimānalo Gulch Sanitary Landfill Expansion, 2008

Alternatives Analysis for Disposal of Municipal Refuse

Submitted to the Department of Environmental Services (ENV),
City and County of Honolulu

Pacific Waste
CONSULTING GROUP

April 2008

Alternatives Analysis for Disposal of Municipal Refuse

Submitted to the City and County of Honolulu
Department of Environmental Services

April 2008

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Abbreviations & Acronyms

APHIS	US Department of Agriculture Animal and Plant Health Inspection Services
BWS	City and County Board of Water Supply
C&C	City and County of Honolulu
DOH	Department of Health
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
ENV	Department of Environmental Services
HIS	Hawaii Information Systems
HI5	Beverage containers subject to State's recycling law
HWS	Hawaii Waste Systems, LLC
IDS	Information Decision Systems
LUC	Land Use Commission
MFD	Multi–family dwelling
MSL	Mean sea level
MSW	Municipal solid waste
OEQC	Office of Environmental Quality Control
OIP	Office of Information Practices
PPQ	Local office of USDA, APHIS
PRER	Pacific Rim Environmental Resources, Inc.
PWED	Public Works & Economic Development Committee

RCRA	Resource Conservation and Recovery Act
RDF	Refuse Derived Fuel
RFP	Request for Proposal
SUP	Special use permit
SWIMP	Solid Waste Integrated Management Plan
TCLP	Toxicity Characteristic Leaching Procedure
TMK	Tax map key
TPD	Tons per day
TPY	Tons per year
UIC	Underground Injection Control
USEPA (or EPA)	Unites States Environmental Protection Agency
WTE	Waste-to-energy

Executive Summary

This analysis reviews the alternatives for replacing the Waimanalo Gulch Sanitary Landfill before November 1, 2009 when the Special Use Permit (SUP) issued by the State Land Use Commission (LUC) to operate the landfill expires. On January 16, 2008 the Planning Commission extended the date of permit expiration to May 2010 to allow time for processing the permit request supported by this *Waimanalo Gulch Sanitary Landfill Expansion Environmental Impact Statement* (EIS). A request for extension was approved by the LUC on March 7, 2008 to allow operation of the landfill until November 1, 2009.

The "Project," for EIS purposes, is to "... provide information and evaluation of the potential for environmental impacts on the natural and built environment associated with the planned 92.5-acre expansion of the Waimanalo Gulch Sanitary Landfill...."[1] when the landfill receives the expansion permit.

1.1 Alternatives to the Proposed Project

The alternatives evaluated were:

- No action — Landfilling at the Waimanalo Gulch Sanitary Landfill would cease on November 1, 2009, with no alternative site or technology available.
- Delayed action — The action on the permit would be delayed. Given the time needed to process the permits, the delayed and no action alternatives have the same effect.
- Transshipment — Oahu's MSW would be baled and transported to a mainland landfill for disposal.

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[1] *Environmental Impact Statement Preparation Notice, Waimanalo Gulch Sanitary Landfill Expansion, Waimanalo Gulch, Oahu, Hawaii, TMKs: (1) 9-2-003: 072 and 073,* November 2006.

- Alternative technologies — Technologies other than landfilling that could reduce the amount of material requiring disposal and generate electricity or another beneficial reuse product. Alternative technologies considered here include:
    - Thermal and non-thermal technologies;
    - Enhanced recycling;
    - Addition of a third boiler to H–POWER; and
    - Alternative methods of landfilling, such as co-disposal of ash and MSW and use of a bioreactor landfill.
- Alternative sites — Alternative locations on Oahu for the landfill. The five alternative landfill sites considered in this analysis were:
    - Ameron Quarry;
    - Maili Quarry;
    - Makaiwa Gulch;
    - Nanakuli B; and
    - Waimanalo Gulch Sanitary Landfill.

An analysis is provided for each of the alternatives. With the alternative technologies, some operating examples are used to provide information describing the technologies. Much of the analysis was taken from the December 2003 report of the Mayor's Advisory Committee on Landfill Site Selection. That report provided details of the process to identify a future landfill site to disposes of the waste. Since completion of the report several factors have changed (e.g., updated estimate of the cost of two of the sites, current construction on one site) but the order of the four of the sites with respect to their suitability of the land for use as a landfill did not change. The fifth site, the Makaiwa Gulch site, is under construction for another use and, as a result, it might not be included on a future list of potential landfill site.

All of the alternatives were compared to criteria the City and County of Honolulu (C&C or City) had established for the alternative technologies, the alternative landfill sites, or transshipment. In the case of the alternative sites, the requirements were established by the Mayor's Advisory Committee report in December 2003, which was an independent panel comprised of citizens and legislators from several areas of the island. The requirements for alternative technologies were established in the City's

January 16, 2007 Notice to Bidders.[2] The transshipment alternative requirements were established in the City's January 22, 2008, Notice to Bidders.[3]

1.2 Preferred Alternative

The preferred alternative is the Waimanalo Gulch Sanitary Landfill. However, the City is immediately pursuing another alternative, the expansion of H–POWER, by adding another boiler. [4]

> "I have said that my administration recognizes the need to reduce the amount of opala that goes to our landfill at Waimanalo Gulch. Adding a third boiler at H-POWER is one of the best ways to help us achieve that goal and is certainly a form of energy recycling," Hannemann said.[5]

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2 City and County of Honolulu, Notice to Bidders, Project to Construct and Operate Alternative Energy Facility and/or H–POWER Facility. Competitive Sealed Proposals (CSP) NO. 037, January 16, 2007.

3 City and County of Honolulu, Notice to Bidders, Shipping of City Provided MSW. January 22, 2008.

4 Johnny Brannon, City to Expand H-POWER Capacity, Honolulu Advertiser, January 18, 1008.

5 January 18, 2008 Mayor's press release regarding the City's decision to proceed with the third boiler at H–POWER.

2 Introduction

This Appendix details the analysis of alternative sites and technologies that could be used in lieu of the expansion of the Waimanalo Gulch Sanitary Landfill and is part of the EIS.

This analysis reviews the alternatives for replacing the Waimanalo Gulch Sanitary Landfill before November 1, 2009, when the SUP issued by the LUC to operate the landfill expires. As such, the alternative technologies and sites considered must be in operation by November 2009. It will be difficult to get an alternative in operation in 18 months (except possibly an expansion of H–POWER) given the time needed for environmental review, permitting, contracting, and construction.

At the same time, many of the alternatives discussed in this analysis hold great potential in helping to reduce the existing need for a municipal solid waste (MSW) landfill. However, while it is possible to reduce the use of landfill space through the adoption of alternative technologies or transshipment, there are no alternatives that will completely eliminate the need for an MSW landfill on the Island of Oahu. All waste reduction technologies generate by-products that cannot be further recycled. Even with the alternative of transshipment, there is concern over the need to maintain a self-sufficient facility to protect the public welfare in the event of a shipping strike, natural disaster, or other event not in the control of the City and County of Honolulu (C&C or City).

The "Project," for EIS purposes, is to "… provide information and evaluation of the potential for environmental impacts on the natural and built environment associated with the planned 92.5-acre expansion of the Waimanalo Gulch Sanitary Landfill…."[6] when the landfill receives the expansion permit.

The alternatives evaluated were: no action, delayed action, transshipment, alternative technologies, and alternative sites.

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[6] *Environmental Impact Statement Preparation Notice, Waimanalo Gulch Sanitary Landfill Expansion, Waimanalo Gulch, Oahu, Hawaii, TMKs: (1) 9-2-003: 072 and 073,* November 2006.

2.1 City Requirements

This section discusses the City's requirements for a disposal system to manage its MSW. The disposal system needs to meet minimum criteria to be considered before the City will direct waste to it.

Examples of the criteria include; operations at the capacity needed to dispose the amount of MSW the proponents plan to accept, a record of compliance with environmental laws and regulations, and the necessary financial strength.

2.1.1 Transshipment of Waste

Transshipment is the packaging of Oahu's waste for shipment to a disposal site located off-island. The transshipment alternative requirements were established in the City's January 22, 2008, bid documents[7] and the C&C has received offers from transshipment firms. These firms propose sending Oahu's waste to Washington State to be landfilled at the Roosevelt Landfill (one firm) and to a landfill in Idaho. If the C&C were to begin transshipping Oahu's waste, requirements for the handling and storage may need to be modified if the Compliance Orders established by the federal government with one of the proposers is determined to be inadequate. The C&C would also need to look at the effects of transshipment on the H-POWER facility. With the shipment of Oahu's waste off-island, waste disposed in H-POWER may be reduced and revenue from the energy sold would diminish. Also, the MSW needed to fuel the new boiler could be inadequate.

2.1.2 Alternative Technology

The requirements for alternative technologies are identified in the City's Invitation for Bid issued to vendors of potential technologies on October 2, 2006. The requirements are detailed in Section 5.1 of this document and are summarized below. This Alternatives Analysis also uses these requirements as these are the minimum a vendor must meet for its technology to be considered by the C&C.

- "There is at least one operational facility that has been processing 500 tons per day (TPD) of municipal solid waste (MSW) for the past two years, and the vendor has been substantially involved in its design and operations.
- The facility has been fully operational and has met all performance and environmental compliance requirements 85 percent of the time during the two years of operation.

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[7] City and County of Honolulu, Notice to Bidders, Shipping of City Provided MSW. January 22, 2008.

- The facility would substantially represent the system proposed for Honolulu without major modification or equipment changes, other than those needed for the scale up or scale down.

- The product produced at the facility has been marketed and resulted in the beneficial reuse of processed materials and/or production of energy.

- The vendor must demonstrate that it has power purchase contracts ongoing to be able to claim an ability to contract for sale of electric power to a utility.

- The proposed facility shall be commercially available such that:

  (1) The design is proven and the proposed facility is not the first of its kind;

  (2) The equipment has operated successfully at a minimum of 85 percent of rated capacity for at least 85 percent of the time during the past two years;

  (3) The equipment is regarded as being reliable and is not subject to excessive maintenance or operational problems and does not require major re-designs; and

  (4) The facility has processed a minimum of 500 TPD of MSW while operating in accordance with all environmental permits.

- Certification that the ash, slag and residue by-products from the proposed facility have met all environmental requirements for either marketing or landfill disposal."

2.1.3 Landfill Site

The C&C has the following requirements that must be satisfied for an alternative landfill site to be acceptable:

- "The site must provide equal or better environmental protection than the Waimanalo Gulch Sanitary Landfill.

- The site must have the capacity to dispose of at least 15 years of refuse, considering the current disposal tonnage at Waimanalo Gulch Sanitary Landfill as the starting point and an assumed rate of growth in waste generation.

- The site must be convenient to the H-POWER plant to allow for cost-effective disposal of the ash, bypassed materials, and unacceptable waste.

- Development and operating costs must be reasonable when compared to other options."

These requirements were developed by the Mayor's Landfill Site Selection Committee in December 2003. The requirements were developed by the Mayor's Committee based primarily on local considerations and on federal and state criteria.

3 Oahu Refuse Disposal

Information about the system used by the C&C to manage waste and recyclables is needed as general background. Due to the preparation schedule for this EIS and the schedule for the C&C Solid Waste Integrated Management Plan Update (SWIMP), data from the November 2007 draft update was used for this document.

Information about the composition of the disposed waste is needed to analyze some of the programs and provide background to other discussions. The C&C studied the composition of the waste and the results are presented later. The final report was published with the November 2007 Draft SWIMP update.

3.1 Composition of Waste Stream

The composition of the disposed waste is based on hand-sorting randomly selected samples of the waste from garbage trucks. In 2006, the C&C studied the composition of the waste at H-POWER, the Waimanalo Gulch Sanitary Landfill, and the Keehi Transfer Station. Sampling took place at the Landfill on September 11–14, 2006, at Keehi Transfer Station on September 15–16, 2006, and at H-POWER on September 18–21, 2006.

Table 1 shows the composition of Oahu's waste from H-POWER and the Waimanalo Gulch Sanitary Landfill combined.

Table 1, Aggregate Overall Waste Characterization Results - 2006

Material	Mean	+/-	Mean (tons)	+/- (tons)
Total Paper	**30.2%**	**1.8%**	**284,082**	**17,040**
OCC (Recyclable)/Kraft	5.2%	1.1%	49,166	10,747
Newspaper	4.3%	1.1%	40,757	10,589
High-Grade Paper	2.6%	0.9%	24,420	7,993
Low-Grade Paper	5.1%	0.9%	48,151	8,012
Other Compostable Paper	11.7%	1.8%	110,142	16,582
Other Paper	1.2%	0.2%	11,446	1,896
Total Plastics	**12.1%**	**1.3%**	**113,821**	**11,808**
PET Bottles/Containers (Deposit)	0.3%	0.1%	2,843	578
PET Bottles/Containers (Non-Deposit)	0.3%	0.1%	2,449	646
HDPE Bottles/Containers	1.0%	0.3%	9,128	2,562
Other Bottles/Containers	1.1%	0.2%	10,142	1,818
Mixed Rigid Plastics	1.1%	0.4%	10,479	3,431
Plastic Film/Wrap	5.1%	0.7%	47,989	6,654
Polystyrene	0.8%	0.1%	7,056	1,371
Other Plastics	2.5%	0.4%	23,734	4,156
Total Metals	**4.8%**	**0.8%**	**45,448**	**7,151**
Aluminum Cans (Deposit)	0.3%	0.1%	2,626	632
Aluminum Cans (Non-Deposit)	0.3%	0.1%	2,630	1,351
Tin Cans	0.6%	0.2%	5,830	1,467
Other Ferrous	1.5%	0.4%	14,103	4,160
Other Non-Ferrous	0.4%	0.1%	4,148	1,020
Mixed Metals/Other Metals	1.7%	0.5%	16,111	4,660
Total Glass	**1.7%**	**0.4%**	**16,089**	**4,039**
HI5 Glass Bottles/Containers	0.4%	0.2%	4,158	1,589
Other Glass	1.3%	0.3%	11,930	3,102
Total Other Inorganics	**3.1%**	**1.2%**	**29,370**	**11,020**
Gypsum Board	0.3%	0.1%	2,760	1,280
Asphalt Roofing	0.5%	0.3%	4,261	2,609
Asphalt Paving	0.0%	0.0%	38	27
Concrete	0.3%	0.2%	3,078	1,535
Sand/Soil/Rock/Dirt	1.3%	0.8%	12,525	7,811
Ceramics	0.4%	0.2%	4,214	1,772
Miscellaneous Inorganics	0.3%	0.2%	2,496	1,445
Total Other Waste	**9.8%**	**1.6%**	**91,946**	**15,278**
Batteries	0.0%	0.0%	381	156
Furniture	3.4%	1.0%	31,555	9,795
Appliances	1.1%	0.7%	10,728	6,734
E-Waste	2.0%	0.7%	18,820	6,161
Auto Fluff*	3.2%	NA	30,462	NA
Total Green Waste	**8.7%**	**2.8%**	**82,041**	**26,182**
Total Wood	**4.5%**	**2.3%**	**42,273**	**21,884**
Untreated Wood	1.4%	0.5%	13,017	5,004
Treated Wood	2.1%	0.6%	19,428	5,371
Pallets	0.3%	0.1%	2,644	1,248
Stumps	0.8%	0.4%	7,185	3,473
Total Other Organics	**24.8%**	**2.1%**	**232,874**	**19,621**
Food	12.7%	1.9%	119,645	17,575
Textiles	3.1%	1.0%	28,726	9,136
Carpet	0.7%	0.3%	6,650	2,454
Tires	0.2%	0.1%	1,540	1,090
Miscellaneous Organics	3.7%	0.8%	34,569	7,578
Sludge	4.4%	NA	41,744	NA
Total HHW	**0.2%**	**0.1%**	**2,234**	**1,399**
Pesticides/Herbicides	0.0%	0.0%	0	0
Paints/Adhesives/Solvents	0.0%	0.0%	256	172
Household Cleaners	0.0%	0.0%	0	0
Automotive Products	0.2%	0.1%	1,711	1,221
Other HHW	0.0%	0.0%	277	147
TOTAL	**100.00%**		**940,187**	

* There was no auto fluff or sludge in the samples sorted for this study. As such, the standard deviation and the lower and upper bounds of the confidence interval are not applicable. The Waimanalo Gulch Sanitary Landfill is known to accept auto fluff and sludge and therefore the average composition for these materials was obtained from sources outside this study.

Table 2 shows the composition of waste being disposed at the Waimanalo Gulch Sanitary Landfill. The majority of the waste going into the landfill is from commercial and self-haul sources, rather than residential sources. 90 percent of the residential waste goes to H–POWER.

The results in *Table 2* are adjusted because the samples of waste for the waste characterization report were taken when H–POWER was in full operation and not diverting waste to the landfill. Waste from H–POWER is diverted to the landfill when H-POWER is unable to accept waste due to maintenance or capacity limitations. Because no waste was diverted, the composition at the landfill would have overstated the amount of some types of material. For example, if the landfill had 100 tons of material coming in and 50 tons were widgets, the waste would be 50 percent widgets. If an additional 30 tons of material were diverted from H–POWER, the total tonnage would have been 130 tons and the widgets would have been 38 percent. The annual amount of waste received at the landfill was reduced by the amount of the material diverted from H–POWER so the relative proportion of the remaining material was correct.

Table 3 shows the composition of waste being disposed at H-POWER. About half of the waste going into H–POWER is from residential sources and about half is commercial waste. The types and amounts of material shown in this table reflect potential material for recycling programs.

Table 2, Waimanalo Gulch Landfill Waste Characterization Results - 2006

Material	Mean	+/-	Mean (tons)	+/- (tons)
Total Paper	**4.3%**	**1.6%**	**7,864**	**3,020**
OCC (Recyclable)/Kraft	1.6%	0.6%	2,993	1,110
Newspaper	0.3%	0.2%	504	307
High-Grade Paper	0.1%	0.1%	161	96
Low-Grade Paper	1.0%	0.5%	1,902	963
Other Compostable Paper	0.7%	0.4%	1,347	817
Other Paper	0.6%	0.3%	1,057	627
Total Plastics	**4.6%**	**1.7%**	**8,463**	**3,155**
PET Bottles/Containers (Deposit)	0.1%	0.1%	166	102
PET Bottles/Containers (Non-Deposit)	0.0%	0.0%	87	55
HDPE Bottles/Containers	0.2%	0.1%	426	248
Other Bottles/Containers	0.1%	0.0%	154	89
Mixed Rigid Plastics	1.5%	0.9%	2,811	1,664
Plastic Film/Wrap	0.7%	0.3%	1,195	632
Polystyrene	0.2%	0.1%	326	197
Other Plastics	1.8%	0.8%	3,298	1,468
Total Metals	**10.1%**	**2.8%**	**18,654**	**5,212**
Aluminum Cans (Deposit)	0.0%	0.0%	90	54
Aluminum Cans (Non-Deposit)	0.0%	0.0%	2	1
Tin Cans	0.1%	0.1%	152	96
Other Ferrous	4.6%	1.7%	8,377	3,099
Other Non-Ferrous	0.3%	0.2%	570	346
Mixed Metals/Other Metals	5.1%	2.0%	9,463	3,619
Total Glass	**0.5%**	**0.3%**	**950**	**547**
HI5 Glass Bottles/Containers	0.2%	0.1%	413	261
Other Glass	0.3%	0.2%	537	329
Total Other Inorganics	**4.9%**	**2.4%**	**8,957**	**4,452**
Gypsum Board	0.8%	0.5%	1,477	933
Asphalt Roofing	2.3%	1.4%	4,166	2,585
Asphalt Paving	0.0%	0.0%	0	0
Concrete	0.5%	0.3%	965	637
Sand/Soil/Rock/Dirt	0.0%	0.0%	0	0
Ceramics	1.2%	0.7%	2,209	1,363
Miscellaneous Inorganics	0.1%	0.1%	141	100
Total Other Waste	**33.9%**	**4.0%**	**62,267**	**7,436**
Batteries	0.0%	0.0%	62	39
Furniture	12.6%	4.4%	23,194	8,054
Appliances	1.0%	0.6%	1,832	1,164
E-Waste	4.0%	1.9%	7,393	3,582
Auto Fluff*	16.2%	NA	29,786	NA
Total Green Waste	**3.4%**	**1.5%**	**6,270**	**2,833**
Total Wood	**10.7%**	**3.3%**	**19,589**	**6,020**
Untreated Wood	2.2%	1.2%	4,053	2,148
Treated Wood	5.9%	2.1%	10,806	3,877
Pallets	0.8%	0.5%	1,381	867
Stumps	1.8%	1.2%	3,349	2,231
Total Other Organics	**27.6%**	**1.8%**	**50,788**	**3,243**
Food	1.1%	0.7%	2,075	1,206
Textiles	1.6%	0.8%	2,975	1,549
Carpet	1.6%	0.9%	2,908	1,618
Tires	0.0%	0.0%	33	23
Miscellaneous Organics	1.1%	0.6%	1,978	1,149
Sludge	22.2%	NA	40,818	NA
Total HHW	**0.0%**	**0.0%**	**64**	**44**
Pesticides/Herbicides	0.0%	0.0%	0	0
Paints/Adhesives/Solvents	0.0%	0.0%	0	0
Household Cleaners	0.0%	0.0%	0	0
Automotive Products	0.0%	0.0%	0	0
Other HHW	0.0%	0.0%	64	44
TOTAL	**100.00%**		**183,866**	

* There was no auto fluff or sludge in the samples sorted for this study. As such, standard deviation and the lower and upper bounds of the confidence interval are not applicable. The Waimanalo Gulch Sanitary Landfill is known to accept auto fluff and sludge. The average composition for these materials was obtained from sources outside this study.

Table 3, H-POWER Waste Characterization Results - 2006

Material	Mean	+/-	Mean (tons)	+/- (tons)
Total Paper	**36.7%**	**2.3%**	**277,570**	**17,082**
OCC (Recyclable)/Kraft	6.1%	1.4%	46,463	10,889
Newspaper	5.4%	1.4%	40,465	10,784
High-Grade Paper	3.2%	1.1%	24,390	8,143
Low-Grade Paper	6.1%	1.1%	46,462	8,103
Other Compostable Paper	14.5%	2.2%	109,368	16,874
Other Paper	1.4%	0.2%	10,423	1,821
Total Plastics	**14.0%**	**1.5%**	**150,749**	**11,585**
PET Bottles/Containers (Deposit)	0.4%	0.1%	2,689	579
PET Bottles/Containers (Non-Deposit)	0.3%	0.1%	2,373	655
HDPE Bottles/Containers	1.2%	0.3%	8,741	2,598
Other Bottles/Containers	1.3%	0.2%	10,039	1,851
Mixed Rigid Plastics	1.0%	0.4%	7,647	3,048
Plastic Film/Wrap	6.2%	0.9%	47,026	6,749
Polystyrene	0.9%	0.2%	6,760	1,382
Other Plastics	2.7%	0.5%	20,474	3,956
Total Metals	**3.5%**	**0.7%**	**26,517**	**4,936**
Aluminum Cans (Deposit)	0.3%	0.1%	2,548	642
Aluminum Cans (Non-Deposit)	0.3%	0.2%	2,642	1,377
Tin Cans	0.8%	0.2%	5,706	1,491
Other Ferrous	0.7%	0.4%	5,566	2,794
Other Non-Ferrous	0.5%	0.1%	3,585	977
Mixed Metals/Other Metals	0.9%	0.4%	6,470	2,948
Total Glass	**2.0%**	**0.5%**	**15,201**	**4,077**
HI5 Glass Bottles/Containers	0.5%	0.3%	3,756	1,597
Other Glass	1.5%	0.4%	11,445	3,142
Total Other Inorganics	**2.7%**	**1.4%**	**20,322**	**10,251**
Gypsum Board	0.2%	0.1%	1,256	884
Asphalt Roofing	0.0%	0.0%	0	0
Asphalt Paving	0.0%	0.0%	38	27
Concrete	0.3%	0.2%	2,103	1,420
Sand/Soil/Rock/Dirt	1.7%	1.1%	12,594	7,959
Ceramics	0.3%	0.2%	1,966	1,138
Miscellaneous Inorganics	0.3%	0.2%	2,365	1,469
Total Other Waste	**3.8%**	**1.8%**	**28,424**	**13,558**
Batteries	0.0%	0.0%	319	154
Furniture	1.0%	0.7%	7,879	5,568
Appliances	1.2%	0.9%	8,904	6,755
E-Waste	1.5%	0.7%	11,322	5,083
Auto Fluff	0.0%	0.0%	0	0
Total Green Waste	**10.1%**	**3.5%**	**76,048**	**26,516**
Total Wood	**3.0%**	**1.3%**	**22,363**	**9,557**
Untreated Wood	1.2%	0.6%	8,921	4,594
Treated Wood	1.1%	0.5%	8,423	3,749
Pallets	0.2%	0.1%	1,238	906
Stumps	0.5%	0.4%	3,781	2,693
Total Other Organics	**24.1%**	**2.6%**	**181,937**	**19,711**
Food	15.6%	2.4%	118,175	17,863
Textiles	3.4%	1.2%	25,825	9,172
Carpet	0.5%	0.2%	3,696	1,866
Tires	0.2%	1.0%	1,515	1,111
Miscellaneous Organics	4.3%	1.0%	32,726	7,630
Sludge	0.0%	0.0%	0	0
Total HHW	**0.3%**	**0.2%**	**2,190**	**1,425**
Pesticides/Herbicides	0.0%	0.0%	0	0
Paints/Adhesives/Solvents	0.0%	0.0%	257	176
Household Cleaners	0.0%	0.0%	0	0
Automotive Products	0.2%	0.2%	1,720	1,244
Other HHW	0.0%	0.0%	212	142
TOTAL	**100.00%**		**756,321**	

3.2 Collection

Residential waste from single-family dwellings is collected by the Refuse Division. The Refuse Division also collects from some multifamily units and small commercial accounts. Private haulers collect from a majority of the high-rise condominiums, multifamily units, and commercial facilities.

The Refuse Division uses both automated and manual trucks for single-family residential waste collection. Nearly all of the routes are collected by automated trucks. Collection areas not accessible by automated trucks (e.g., one-way, narrow streets, or steep roads) are served by manual collection vehicles.

Most City-serviced multifamily units are collected with front loader trucks.

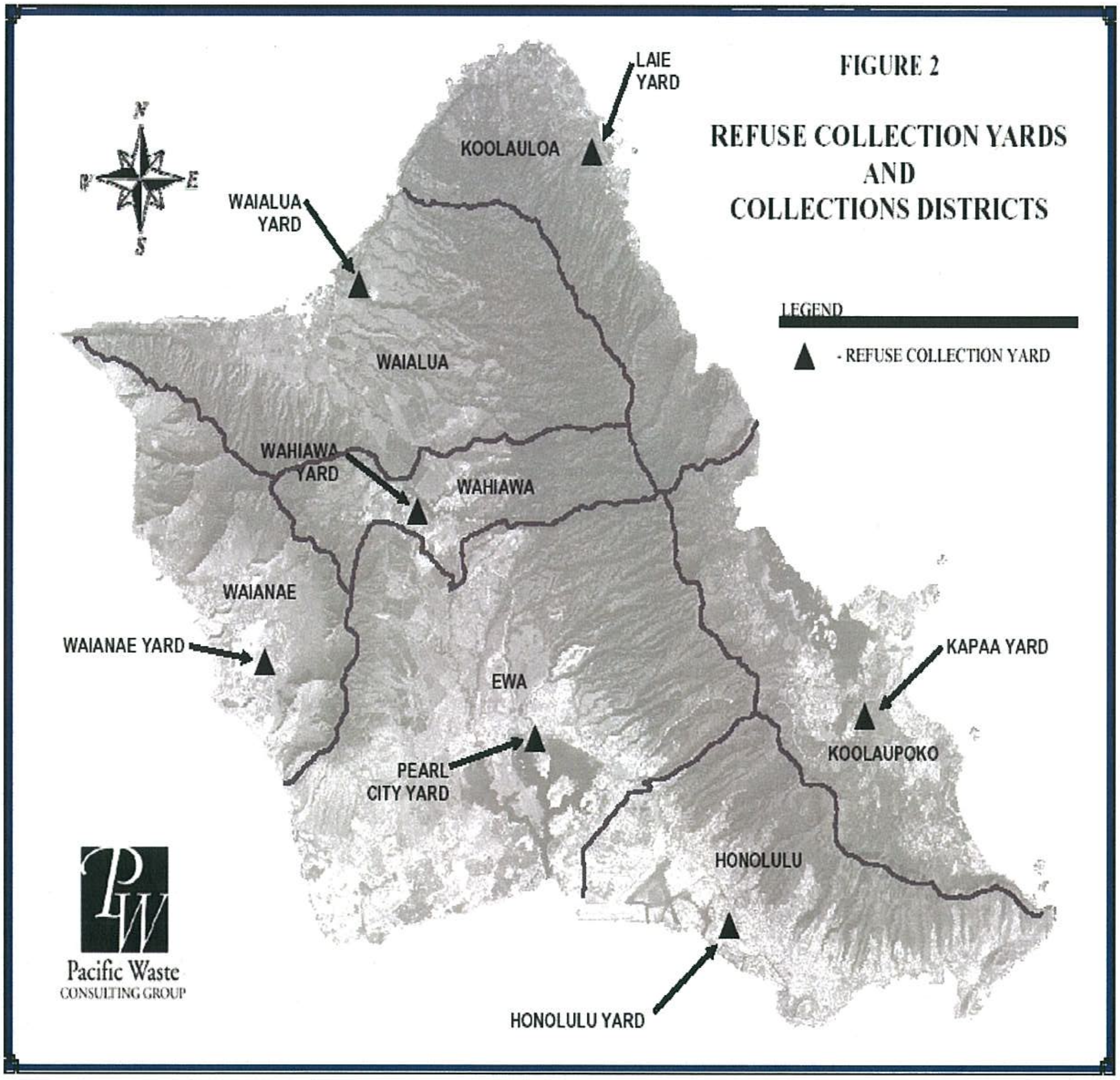
The City has seven collection districts. The dispatch yard for the collection vehicles is located in these districts near the waste generation area, which reduces the cost of collection. *Figure 1, Refuse Collection Yards and Collection Districts*, is a map showing the seven collection districts.

In districts with automated collection services, green waste is collected separately twice per month. In areas with manual collection, green waste is commingled with garbage. Residential garbage is collected twice per week. Collections are a free service to Oahu's communities. The cost of collecting Oahu's green waste and garbage is covered by property tax and tip fees at H–POWER and the landfill.

The C&C has three transfer stations for consolidating waste from small waste collection loads (six to eight tons) into large loads (20 to 22 tons) for transport to the recycling/disposal site. The use of a transfer station allows for less costly and more efficient transportation, since the contents of three collection trucks can be transported for disposal by one transfer trailer. The City owns and operates transfer stations located at Keehi, Kapaa, and Kawailoa. They service City collection vehicles and private individuals. Commercial collection vehicles; however, are restricted. There are two privately owned and operated transfer stations for commercial collection vehicles.

The City also operates six convenience centers where residents can drop-off garbage, recyclables, and green waste. Depending on the material, waste from convenience centers is recycled, composted, combusted, or disposed in a landfill. Some recyclable materials accepted at convenience centers include white goods (appliances), tires, and auto batteries.

Figure 1, Refuse Collection Yards and Collection Districts



3.3 Recycling

Current recycling infrastructure consists of a pilot program to evaluate weekly MSW collection with weekly curbside recycling and green waste collection, community recycling bins, recycling support for schools, HI5 redemption sites, and curbside green waste recycling. The overall goal is to reduce the amount of waste disposed at the Waimanalo Gulch Sanitary Landfill. The community recycling bin program is supported by participating schools. The program uses a 40 cubic-yard recycling roll-off bin, divided into sections for mixed containers and paper. Students, their family members, community members, and the school employees drop-off their recyclable materials. The host school receives revenues for the recycled materials collected in their bin(s). Since the program began in 1990, more than $1,000,000 has been paid to the participating schools.

Schools are also receiving additional support through assistance programs, in which the C&C offer 96-gallon wheeled toters labeled for aluminum, glass, plastic, and newspaper. Fundraising materials, such as banners, graphics, lists of recycling companies, collection services, and redemption centers are also provided to help advertise a recycling event. The schools use these events as fundraisers. Currently, there are 75 to 80 schools and 35 non-profit organizations participating in this program. A new contract that began in March 2008 will add 40 additional sites for multi-material recycling.

The C&C also provides, through the contract, 10 HI5 event bins. These 40-cubic-yard bins are used at special school or community events for recyclables. The City's contractor removes the bin after the event and the school or community group receives the redemption value from the materials in the HI5 containers.

Another current effort is the expansion of the number of HI5 redemption sites in the C&C. The HI5 redemption sites are privately-operated for residents to drop-off their recyclable cans, plastic, aluminum, and glass HI5 containers for a 5 cent cash refund. The C&C also provides curbside green waste pick-up to its residents. The City picks up green waste twice a month on the day following garbage collection days. Approximately 10,000 tons of green waste is collected annually from residences. The collected green waste is turned into mulch and offered to residents at no cost.[8]

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[8] Department of Environmental Services www.opala.org, March 11, 2008.

The City established a pilot curbside recycling/green waste collection program in the fall of 2007 to evaluate the efficacy of waste collection once per week (rather than the current twice-per-week schedule) and collect either containers and paper, or green wastes on the second collection day (that is green waste one week and containers and paper the next). That program is to be expanded island-wide starting in the fall of 2008.

Recycling alone does not replace the need for a landfill on Oahu. Recycling is just one step to reducing the amount of waste going to the Waimanalo Gulch Sanitary Landfill.

3.4 Disposal

The disposal facilities used by the C&C are discussed in this section. This discussion was taken from the November 2007 draft SWIMP update.[9]

3.4.1 Waimanalo Gulch Sanitary Landfill

> "The Landfill is located in Kapolei on the leeward side of Oahu in Waimanalo Gulch, Kahe Valley. The Landfill property is 200 plus acres. About half of the property is permitted for landfilling and support operations. It is the intent of the City that the Landfill accept two types of MSW: 1) noncombustible MSW and 2) ash and residue from the H-POWER facility. In FY 2006 (July 1, 2005 to June 30, 2006), the Landfill received 337,667 tons of MSW. However, nearly half of this was combustible MSW diverted from H-POWER, as shown in Table 1-7 (Note, this table is not included in this document as the same information is presented in Section 4). Additionally, the Landfill received 88,380 tons of ash and 79,443 tons of residue from the H-POWER waste-to-energy facility. Per the permit renewal issued by the State in April 2003, the peak daily disposal rate can not exceed 3,300 tons per day of MSW and 800 tons per day of ash and residue. In FY 2006, the landfill averaged 930 tons per day of MSW and 460 tons per day of ash and residue."

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[9] City and County of Honolulu Draft Integrated Solid Waste Management Plan Update, November 2007.

3.4.2 H-POWER

"H-POWER is a waste-to-energy (WTE) facility owned by DFO Partners, Bank of America, Inc., and the Ford Credit Corporation and operated via contract with a full service vendor since 1990. The facility, located in Campbell Industrial Park, uses combustion technology to recycle combustible solid waste materials into energy. The MSW is processed into refuse derived fuel (RDF) that is used as fuel to generate electricity. Approximately 90 percent of the volume and 70 to 75 percent of the weight of the MSW received at H-POWER is diverted from the landfill. The ash and residue from H-POWER is delivered to the Waimanalo Gulch Landfill.

The City has a waste supply contract with the facility operator to deliver 561,600 tons of solid waste per year to H-POWER. The majority of residential and commercial MSW collected on the island is delivered here. In FY 2006, 602,520 tons of waste was recycled for energy at H-POWER. An additional 153,801 tons was characterized as suitable for energy recycling at H-POWER, but was redirected from the H-POWER facility to the Landfill because the facility was closed for maintenance or because of capacity limitations. A total of 71,381 vehicles delivered waste (or would have delivered waste, if not diverted, to the Landfill at facility closure) to H-POWER in 2006. Nearly half of these were Refuse Division vehicles. The other half was private haulers delivering waste from commercial generators. The current tipping fee paid by the private haulers and other commercial vehicles at the H-POWER is $91 per ton (includes $0.35 state surcharge and 12 percent City recycling surcharge).

The City has an agreement with Hawaiian Electric Company (HECO) to purchase the electricity generated at H-POWER. Over 320 million kilowatt hours of electricity were generated in FY 2006. The sale of this electricity generated nearly $35 million in revenues.

H-POWER extracts ferrous metals from the waste using magnets and non-ferrous metals from the ash using an eddy current. Approximately 18,600 tons of ferrous metals and 2,100 tons of non-ferrous metals were recycled in FY 2006 from H-POWER per information reported by the City. The sale of ferrous and non-ferrous metal generated approximately $1.5 million per year.

As previously discussed, H-POWER is presently operating beyond its design capacity. To attempt to address this situation, the City has issued a Request for Proposals for alternative energy facility to increase overall capacity."[10]

3.4.3 C&D Disposal

"In addition to the Waimanalo Gulch Landfill, a private landfill (PVT) is located in Nanakuli and is permitted to accept C&D waste and petroleum contaminated soils. Information on the exact quantity of material received at this facility was not available, but is estimated at approximately 200,000 tons per year. This estimate is used for planning purposes only."

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[10] Since publication of the draft Solid Waste Integrated Management Plan in November 2007, the City has announced that it will proceed with expansion of H–POWER by adding a third boiler.

4 Alternatives Considered

4.1 No Action

Under this alternative, landfilling at the Waimanalo Gulch Sanitary Landfill would cease on November 1, 2009, with no alternative site or technology available. Several actions would result:

- There would be no landfill to accept the waste currently going to the Waimanalo Gulch Sanitary Landfill, leaving about 800 TPD of MSW requiring disposal.
- Because the garbage could not be disposed, it could not be collected, requiring people to hold it at their homes and residences; resulting in health and safety problems.
- Ash disposal from H-POWER would cease as no other landfill on the island is permitted to accept that material.
- Eliminating ash disposal would stop the operation of H-POWER.
- Businesses would be closed to avoid health issues with improperly managed garbage.

Taken together, these actions can result in a health, safety, and economic catastrophe.

4.2 Delayed Action

The *Delayed Action* and *No Action Alternatives* would have similar results. Given the complexity of the landfill permitting process in Hawaii and the limited time until November 2009, it is possible that delaying action will prevent the C&C from receiving an updated SUP before November 2009, forcing the closure of the Waimanalo Gulch Sanitary Landfill.

Neither the *No Action* or the *Delayed Action* alternatives are changed by the City Planning Commission action on January 16, 2008, or the State LUC action on March 7, 2008, at which point the LUC extended the operation of the landfill until November 2009 to allow time to complete the documents to request an extension of the permits for 15 additional years from 2010.

4.3 Transshipment Off-Island

Transshipment off-island would require a landfill owner/operator on the mainland to accept Oahu's MSW for disposal. Facilities would be needed to process the MSW into shrink-wrapped bales, store the bales while awaiting shipment, and load bales onto barges. Some materials cannot be transshipped. The federal government approval to export precludes more than three percent of the bale being green or agricultural waste. In addition, there are certain materials that must be disposed either in a landfill or by incineration, such as expired food, drugs, and cigarettes. Household hazardous waste is shipped separately and white goods could not be commingled with MSW for transshipment. The lost revenue from transshipment is anticipated to reduce tipping fee revenue that currently helps support the cost of the C&C's refuse management system.

At the time this EIS was prepared, the City had issued a request for proposal to transship waste while a third boiler of H–POWER was being constructed.

4.4 Alternative Technologies

Alternative technologies could reduce the amount of material requiring disposal and generate electricity or another beneficial reuse product. Alternative technology is not expected to eliminate Oahu's need for a landfill as bulky, hard-to-handle items and disaster debris are expected to require landfill disposal. Any technology considered must meet the City's requirements for investing in a new approach to managing MSW.

Alternative technologies considered here include thermal and non-thermal technologies, enhanced recycling, addition of a third unit to H–POWER, and alternative methods of landfilling, such as co-disposal of ash and MSW and use of a bioreactor landfill.

At the time of this EIS, alternative technologies are not viable alternatives to eliminating Oahu's need for a landfill. Further recycling of the by-products produced from these technologies is impossible and requires a landfill for disposal. Alternative technologies do, however, hold great potential in reducing the existing need for MSW landfills in the future.

4.5 Alternative Sites

The five alternative landfill sites considered in this analysis are:

- Ameron Quarry
- Maili Quarry
- Makaiwa Gulch
- Nanakuli B
- Waimanalo Gulch Sanitary Landfill

The preferred alternative is the Waimanalo Gulch Sanitary Landfill.

5 Transshipment Off-Island

On August 23, 2006, the US Department of Agriculture (USDA) through its US Animal and Plant Health Inspection Services (APHIS) announced its decision to allow the transshipment of MSW to the continental United States from Hawaii.[11] Transshipment will be allowed only under certain circumstances. Wastes by federal regulation that would be restricted from transshipment are, hard-to-handle wastes, such as white goods, sewage sludge, auto fluff, and precluded materials such as green and agricultural wastes (more than three percent of the bale weight). The announcement is attached as Attachment A.

Three transshipment firms have shown interest in shipping Oahu's waste to the Roosevelt Landfill in Washington State. Two of the three have submitted proposals to the C&C to ship a portion of Oahu's MSW to the mainland for disposal. Both proposals would shrink-wrap the waste prior to shipping.

On January 22, 2008 the City provided a notice to bidders that it would entertain proposals for transshipping waste to the mainland for disposal. [3]

5.1 City Requirements for Transshipment

In the January 22, 2008 notice to bidders, the C&C established requirements for the transshipment of MSW:

(1) Permits, compliance letters, certifications, environmental assessments, and other documents, related to services needed to carry out the contract, must be current for the transshipment contractor.

(2) The proposed methods and measures to fulfill each requirement of the contract must be identified.

(3) A site plan displaying existing facilities, equipment, traffic conditions, and a description of operations must be provided.

(4) A back-up plan for equipment maintenance, failure, or other disruption, to minimize landfill disposal must be provided.

(5) A back-up plan for barge-loading obstruction or other disruptions of exporting operations to minimize landfill disposal must be provided.

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11 Federal Register volume 71, number 163, published August 23, 2006.

(6) A copy of facility agreements between the bidder and facility, barging, or disposal operators must be provided if the bidder is not the director/operator of each.

(7) The bidder must provide a property easement for the placement of a City-owned scale, scale house, and associated equipment.

5.2 How It Works

Two of three interested transshipment firms have submitted applications to the State for modifications to the transfer stations they currently have permitted to handle MSW. Modifications include adding the equipment needed to transship MSW to the Roosevelt Landfill in Washington State or a landfill in Idaho.

The transshipment vendors would shrink-wrap the waste to avoid shipment of pests and control nuisance impacts. The approach is described in the risk assessment prepared by APHIS for its regulatory action.[12]

The process for handling the waste in Honolulu is specified in the final Compliance Agreement between the USDA and Hawaii Waste Systems, LLC (HWS). The procedures for handling the waste and transporting it to the landfill for disposal are detailed[13] as follows:

> "...Garbage and Regulated (domestic) Garbage collected by refuse trucks shall be delivered to the HWS facility at HWS Transfer Station ...Trucks of agricultural waste shall not be accepted. Waste materials, containers, and bins associated with Foreign Garbage are strictly prohibited and shall not be accepted. The ground surface of the all areas for handling the Garbage and Regulated (domestic) Garbage should be level, solid, and impervious surface of asphalt or cement.

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[12] *The Risk of Introduction of Pests to the Continental United States via Plastic-Baled Municipal Solid Waste from Hawaii,* United States Department of Agriculture, Animal and Plant Health Inspection Service, March 2006.

[13] Final Compliance Agreement between Hawaiian Waste Systems, LLC, and the United States Department of Agriculture relating to the Regulated Article "Garbage and Regulated (domestic) Garbage from Honolulu, Hawaii." January 19, 2007. Pages 4-7.

The risk assessments for the movement of Garbage and Regulated (domestic) Garbage were conducted based on the specific details provided by HWS. These details included the removal of all hazardous and liquid waste prior to baling. HWS will notify PPQ (USDA, APHIS local office) if the company plans change to include such materials so that the proper risk assessments can be conducted...

The waste transfer station will receive only household and commercial waste acceptable for disposal at Roosevelt Regional Landfill. Collection trucks will deliver waste picked up from existing collection routes. After waste is tipped onto the tipping floor it will be inspected for unacceptable waste including yard waste, (other than incidental amounts not to exceed 3% of the total waste stream pursuant to 7 CFR Part 330), agricultural waste, industrial waste, infections waste, loads of predominantly of [C&D] waste and regulated hazardous waste. Any segregated unacceptable waste will be separated for further processing. Loads consisting predominately of [C&D] waste will be transferred to a C&D handling facility. Other waste will be drummed or otherwise contained and arrangements made for its proper transportation and disposal. Notwithstanding the foregoing, it is acknowledged and agreed that follow-up inspection of the route that was the source of the unacceptable waste will be conducted to try to locate the source and correct the waste handling process that allowed unacceptable waste to be collected.

Each load of waste received at the facility will be weighed and the date, time, company, driver name, truck number (i.e., company fleet number), weight (loaded), weight (empty), and origin of load, will be recorded. Records will be kept for a minimum of three years.

Step-by-step waste receiving and processing description is as follows:

1. Waste is delivered by collection truck to the HWS Transfer Station. The truck is weighed and then proceeds to the baling facility where it tips its waste onto the tipping floor. The collection truck is weighed again as it exits the site and continues on its collection routes. A weigh ticket is generated and kept on file.

2. A loader operator inspects the waste and segregates any non-household or on-commercial waste. Household and commercial waste is pushed onto the in-feed conveyor by the loader. Segregated waste is set aside and handled separately as described previously.

3. Garbage and Regulated (domestic) Garbage moves along the conveyor to the intake feed of the baler. The baler operator introduces waste into the baler where it is compressed using a compactor that produces bale densities of approximately 1000 kg per cubic meter for the most waste materials. The same force compaction will be used regardless of the material in the processing line. Companies will provide documentation of the equipment used and compactor specifications…

4. The compacted bale moves from the baler via conveyor belt to the plastic wrapper. The plastic wrapper automatically wraps the bale with a minimum of 4 layers of pre-stretched, mastic-backed polyethylene plastic, of at least 16 micrometers thickness, and extrudes it onto a roller conveyor. The baler operator or loader operator will inspect each bale for integrity of the plastic wrap. Any bale with unsatisfactory wrapping will be re-sent through the wrapper.

5. The wrapped bale moves down the roller conveyor and is removed by a loader with a special attachment that picks up the bale by squeezing it between two hydraulically operated smooth faced arms, or another piece of equipment designed to handle the bales without tearing or damaging them in any way. The smooth faced arms prevent damage to the plastic wrap.

6. The loader moves the bale onto the bale storage area – which has a solid, impervious (concrete or asphalt) surface that is kept free of soil or other contaminants – or directly onto a flat bed truck, if one is available. The loader then returns to pick up another bale from the roller conveyor.

7. Bales that are placed onto the bale storage area will be loaded onto flat bed trucks as they become available.

8. Flat bed trucks will haul the bales to Barber's Point where they will be unloaded and stacked in the Staging Area. The same type of loader attachment (or equivalent equipment) will be used for unloading to prevent damage to the plastic wrap. The loader operator will inspect each bale for damage to the plastic wrap. If damage is found it will be returned to a wrapping area for rewrapping.

9. Bales cannot be loaded onto the barge until they have been staged for at least five days. After five days, the bales are considered ready for transport and the area will be designated the Transport Area. HWS will maintain a clear separation between those bales ready for transport and those bales in the staging process.

10. Bales at the Barbers Point Harbor facility will be stored until a barge is ready to be loaded. Barge loading will occur approximately monthly. When a barge is ready for loading, the bales in the Transport Area will be transferred onto the barge, again using squeeze-arm hydraulic equipment or other comparable, appropriate lifting equipment to prevent damage to the plastic wrap. The loading supervisor will inspect each bale once the bale is loaded onto the barge. Any damaged bale will be returned to the Transfer Station for rewrapping and restaging or be rewrapped and restaged on site at Barber's Point

11. When the barge is fully loaded it will proceed to its destination at the Roosevelt Regional Landfill in Washington State.

The compression settings on the baler shall be 1,000 kg per cubic meter or more.

Records indicating the size and weigh to each bale shall be maintained.

Garbage and Regulated (domestic) Garbage which has fallen apart from an unwrapped compressed bale, or has been otherwise improperly compressed shall be set aside for a subsequent compression cycle.

The unwrapped, compressed bales shall be bound with plastic or metal clamps, netting, or strapping devices to retain its shape.

Compressed bales that do not hold together shall be rejected and set aside for a subsequent compression cycle. Records of re-compressed bales shall be maintained by HWS and available for monitoring by PPQ…"

5.3 Other Jurisdictions Using Transshipment

Shipment of MSW using shrink-wrap has been used in New Jersey and other areas of the US. It has been used in Europe for as long as 10 years. The Roosevelt Landfill in Washington receives MSW, not only from Washington State, but also from Oregon, Canada, Idaho, and Alaska.[14] Canada has transshipped its MSW to Michigan landfills for many years, while New York is in the process of transshipping its MSW to North Carolina. Most of these operations do not use the shrink-wrap technology.

APHIS determined, with its acceptance of transshipment of MSW stateside from Hawaii, that transshipment could occur from both Oahu and the island of Hawaii once contracts and compliance agreements have been set up in Hawaii.

5.4 Physical, Regulatory, and Environmental Requirements

The limitations on shipping waste from Hawaii to the mainland are established in federal regulations[15] with approval of the specific requirements promulgated in the Federal Register.[16]

Garbage subject to these regulations (Regulated Garbage) is defined as waste on—or removed from—a transport that has been in any non-U.S. or Canadian port within the past two years. The garbage is also regulated if that transport has either directly or indirectly moved in the past year between the United States and its territories and non-U.S. territories.

Any garbage commingled with regulated garbage is considered Regulated Garbage and would have to be shrink-wrapped and handled according to the Compliance Agreement.

The primary regulator of transshipment is the U.S. federal government through APHIS.

Regarding flow control of the waste, it has been determined that if the City controls the scale house, it can direct the flow of the waste to the disposal location. The January 22, 2008 Notice to Bidders requires that the successful bidder provide an easement at their site for the City's scale house and supporting equipment.

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14 Washington State Department of Ecology, Solid Waste and Financial Assistance Program, "Solid Waste in Washington State Fifteenth Annual Status Report", December 2006.

15 7CFR 330.400 and 9CFR 94.5.

16 Federal Register volume 71, number 163, published August 23, 2006.

5.4.1 Compliance Agreement

Before any waste can be transshipped, all parties involved with the export must enter into a Compliance Agreement with the USDA. All parties must comply with conditions within the Compliance Agreement, as well as, all provisions in 7CFR 330.400–403 and 9CFR 94.5.

5.4.2 Transshipment Regulations

The requirements for shipping the waste are in the Compliance Agreement and in other federal rules and regulations relating to transportation of materials by barge.

5.4.2.1 Receptacles

MSW transported from Hawaii to the mainland must be stored in specified receptacles. If the MSW is to be sent by watercraft, the receptacles must be contained within the guard rails of that watercraft. Receptacles must be tight, leak-proof, and covered while being transported.[15] Removal of receptacles must be under the direction and supervision of an inspector from APHIS and taken to an approved facility.

An approved facility is a facility certified by an appropriate government official as complying with environmental protection laws. The Administrator of APHIS must deem the equipment and procedures adequate to prevent the widespread contamination of plants and livestock.

The shrink-wrap technology used to contain the MSW before it is transshipped uses plastic film wrapping material. The wrapping material is to be impermeable and made of low density polyethylene at least 16 micrometers in thickness. It is to be coated on one side with a non-hardening mastic/adhesive. Bales are mechanically wrapped to achieve airtight seals. The film anoxiates the wrapped MSW to kill the insects and pests entrained in the bale. In a 10-month study, DEKRA Umwelt, an international service provider, determined that the filmed bale environment is made up of 1 percent oxygen and more than 50 percent methane; that within 24 hours, any insects captured during baling of the MSW died from lack of oxygen. The film contracts once it is wound around the MSW. This ensures that during transshipment and disposal no materials or insects are leaked.[12]

5.4.2.2 Disposal

Disposal of MSW must take place at an approved facility. The Roosevelt Landfill has a permit issued pursuant to the federal Subtitle D regulations and would be considered an approved facility.

5.5 Potential Issues

A shipping strike would create potential problems for Oahu should it occur during transshipment of MSW to the continental United States. The plastic film used to bale the MSW in preparation for transshipment is required by the USDA Compliance Order to be re-wrapped if the bale will not be in the landfill within 75 days.[13] The film has a life of at least 100 days when exposed to sunshine in tropical environments such as that found on Oahu.[12] Assuming a transit time of 14 to 21 days, even a short strike would threaten to cause the shipper to exceed the 75 day time limit from wrapping to disposal as required by the USDA. Oahu would not be able to transship its MSW during a shipping strike. This could potentially result in a health and safety catastrophe, leaving Oahu with no place to dispose of its waste.

According to the Chief Executive Officer of HWS,[17] the bales can be stacked two high. The space they have at the port facility will allow for storage of 30,000 tons of MSW. Assuming that the company handles 100,000 TPY, they can store about four months of shrink-wrapped MSW. In addition, the agreement for barge services allows management of the barge company to operate the equipment needed to transship the waste in a strike due to the health and safety aspects of transporting the waste.

Another issue with transshipment off-island is that green and agricultural wastes, as well as household hazardous wastes, are not permitted to be shipped commingled with the MSW. Incidental amounts, less than three percent of the total amount of MSW shipped, are permitted. Therefore, the source of waste that is transshipped must separate green and agricultural wastes from the MSW.

Assuming that a bale weighs 3.5 tons[17] the total weight in the bale is 7,000 pounds. The limitation of three percent or less of yard wastes[16] allows for 210 pounds of yard waste in the bale. While it is a small percentage of the bale, that amount of green waste should be observed in the inspection prior to baling.

Transshipping Honolulu's MSW makes the C&C dependent upon an outside source rather than maintaining self-sufficiency managing its own refuse. For a state that in recent months has continued to voice its desire for independence, transshipment could be a step backwards.

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17 Meeting on December 14, 2006, with Jim Hodge and Mark White held in Sacramento, California.

Transshipment would also result in the loss of high BTU value waste that would otherwise go to H–POWER. Transferring the disposal of a portion of the City's waste reduces the generating capacity at the H–POWER facility, which provides power to 45,000 homes.[18] It could also require the use of more oil and/or coal to generate power to compensate for the loss of H-POWER generation.

Relying on outside sources for the transshipment of MSW leaves Honolulu vulnerable to shipping strikes and with less negotiating power. The municipality would lose control of cost and possibly lose a source for disposal.

5.6 Impact on City Solid Waste Management System

From an environmental perspective, the impact of transshipment through the HWS system will be consistent with the impact of on-island disposal.

- The transfer, baling, shrink-wrap, and loading will be done at a permitted transfer station.
- The material will be contained within a system that has received approval from the federal government based on the system's ability to prevent the unexpected discharge of waste or plant pests.

From the perspective of how transshipment will impact the City's current system for financing the solid waste collection and disposal activities, the conclusion is not so clear. If transshipment removes 100,000 tons (the total could be more as there are at least three vendors seeking to transship up to 100,000 TPY each), the tip fee and energy revenues from energy production and disposal of that waste will be lost to the city. That revenue helps support the collection system, so the City will have to find other sources of funds to offset the lost revenue.

The transshipment of up to 100,000 TPY would also reduce the amount of energy produced from the H-POWER facility. Currently, H-POWER processes approximately 600,000 TPY of solid waste. With a loss of 100,000 TPY of MSW, the fuel to the H-POWER facility will be reduced, reducing the amount of homes powered by the facility if the C&C were unable to make up the tons shipped off-island. That loss would also increase the cost of power to the residents and businesses on the island because the utility would have to import more oil to generate the necessary power, assuming the utility has the excess generating capacity.

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[18] H-POWER. http://www.honoluluhpower.com, March 11, 2008.

The CEO of HWS has provided a summary of their company's suggestions on how to integrate their transshipment program into the City's solid waste management system. The e-mail summarizing his suggestions is in Attachment B.

5.7 Consistency With City Requirements

The C&C guidelines regarding the transshipment of MSW off-island are listed in section 5.1, which were summarized from the Notice to Bidders released on January 22, 2008.

In addition, not all waste can be shipped off-island. Items such as flocked Christmas trees, sewage sludge, auto fluff, out of date medicines, and other hard-to-handle wastes cannot be shipped without special arrangements to dispose of these materials. The shipping alternative only accepts materials from a specific waste stream and does not eliminate the need for a landfill.

5.8 Additional Considerations

The C&C had issued an RFP seeking Alternative Technologies. On January 18, 2008 the Mayor announced that the City had decided to install the third boiler at H–POWER and not proceed with the other alternative technologies. The Mayor also stated that "... the city will invite companies to bid to ship 100,000 tons of Oahu's trash off island." [5]

5.9 Global Warming Considerations

In addition to these actions, the increasing concern about global warming and climate change caused an evaluation of the greenhouse gas emissions from transshipment. An analysis was conducted (See Attachment C for details) of the emissions of greenhouse gases (GHG) from transshipment compared to landfilling the same amount of waste in the Waimanalo Gulch Sanitary Landfill or burning it in H–POWER. The assumptions and general conditions in the analysis were:

- Commonly accepted emission factors used to calculate the emissions.

- Where actual data was unavailable to define the logistical details of transshipment process necessary to quantify emissions (e.g., physical considerations in port facilities, the time needed to move the wrapped waste onto and off the barge), a report prepared for the C&C to estimate the cost of transshipment was used as a resource.[19]

- Manufacturer's data was used to estimate electrical use by a baler and a shrink wrap machine as data was unavailable on the equipment that had been proposed for transshipment.

- Information on the fuel use on a tug and the time required for a load to be moved from Oahu to the mainland was obtained from shipping industry contacts.[20]

The results of the evaluation are summarized in *Table 4, Comparison of GHG Emissions from Transshipment to On-island Disposal* which shows the emissions in thousands of tons of CO_2 equivalent per year. The emissions at H–POWER are negative because the GHG emissions resulting from the power it generates are more than offset by the reduction in emissions from burning either coal or oil to produce that same amount of energy in other power plants on the island. The emissions from the Waimanalo Gulch Sanitary Landfill are negative because this landfill (as does Roosevelt) sequesters the carbon emissions due to the efficient landfill gas collection system. In addition, the emissions for Roosevelt also reflect the credit for offsetting the electrical generation from other sources in the Northwest. Roosevelt produces power with the gas collected and the Waimanalo Gulch Sanitary Landfill incinerates the gas using a flare.

Table 4, Comparison of GHG Emissions from Transshipment to On-island Disposal

Disposal Location	Emissions ($MTCO_2e$ per year)
H–POWER	(28,711)
Waimanalo Gulch	(3,686)
Roosevelt	3,978

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[19] RW Beck, Draft Integrated Solid Waste Management Plan Update, November 2007, Appendix C Trans-Shipment of Waste Analyses.

[20] Personal communication with a representative of Young Brothers.

6 Alternative Technologies

This section of the Alternatives Analysis discusses the alternative technology approaches that may be able to reduce the demand for landfilling. Currently, there are no alternatives that have been proven to completely eliminate the need for a landfill. Alternative technologies reduce the demand for a landfill, but some residue will need to be disposed in a landfill.

Prior to the evaluation of alternative technologies, there are several factors that are important to the discussion.

The City encourages alternatives methods for waste disposal, such as the H–POWER facility. This facility converts about 40 percent of the MSW produced on Oahu into electricity. By-products are ash, residual, and unprocessible materials that require landfilling.

Prior to the H-POWER facility, the City operated the Waipahu, Kewalo (two plants), and Kapalama Incinerators at different times to reduce the volume of material needing disposal.

Currently, the City has contacted a private vendor to operate a sludge pelletizing facility at the Sand Island Waste Water Treatment Plant. The dryer converts sludge material previously disposed at the Waimanalo Gulch Sanitary Landfill into a fertilizer amendment product. At the current time, the fertilizer product is not being marketed.

These examples share several characteristics:

- All were operated for many years using waste material similar to that produced on Oahu and in amounts in excess of the capacity needed for Honolulu.
- The risk of operational problems was minimized because of the history of operations and the availability of firms to design, build, and operate the plants that had long term operating results.
- The environmental impacts of the technologies were well understood and all had long histories of operating in compliance with regulations.
- The total cost of the technology was well understood.
- H-POWER has resulted in a significant reduction in volume of material disposed in the landfill disposal, with the dried sludge being used as cover.
- The City has continued its search for additional alternatives. Other areas of the

United States and other countries are evaluating landfill alternatives and have observed some progress. Some of the results of those evaluations are used in this section to identify the advantages and disadvantages of the alternatives and compare them to the City's criteria, which are also listed in this section.

The alternatives fall into several categories:

- Thermal processes which use heat to reduce the waste to other reusable products or a fuel. Pyrolysis and hydrolysis are examples of thermal processes.
- Non-thermal processes that produce a material, such as compost, that is sold.
- Enhanced recycling.
- Expansion of H-POWER.

All of these alternatives have the potential for reducing the amount of waste disposed at the Waimanalo Gulch Sanitary Landfill. Each process produces a residue that, at this time, can only be landfilled.

6.1 City Requirements for Alternative Technologies

The consideration of alternative technologies has been ongoing in the C&C for many years. Those efforts have included implementing new recycling programs, bans on disposing certain recyclable materials in the landfill, and issuance of an RFP for Alternative Technologies or another boiler for H–POWER. It has since selected the addition of a third boiler at H-POWER to increase diversion of waste from the landfill.

Where an Alternative Technology is proposed, the C&C identified the following six minimum requirements.[21]

- "There exists at least one (1) operational facility processing municipal solid waste that over the past two (2) years has been operating at a rate of at least five hundred (500) TPD in which the Offeror or its design and operational members have been substantially involved. Names, addresses, and phone numbers of persons that can be contacted at the facility or at the agency responsible for the facility shall be provided.

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[21] City and County of Honolulu, Notice to Bidders, Project to Construct and Operate Alternative Energy Facility and/or H–POWER Facility. Competitive Sealed Proposals (CSP) NO. 037, January 16, 2007.

- Such facility has been operated successfully for the past two (2) years and has been fully operational eighty five percent (85%) of this time while meeting all performance and environmental compliance requirements.

- The facility without major modification or equipment changes, other than for the acceptable application of good engineering practice for scale up or scale down, would substantially represent the system proposed for Honolulu.

- The product produced at the facility has for the past two (2) years been marketed and resulted in the beneficial reuse of energy. The Offeror shall provide descriptions and documentation of the beneficial reuse such as, operating reports, weight records, names of purchasers, revenues from sales, etc. in sufficient detail to demonstrate fulfillment of this requirement. For example, producing steam for steam sale is not as complex as producing steam for generating electric power. For an Offeror to be able to claim an ability to contract for electric power to a utility, the Offeror must demonstrate that it has power purchase contracts on going and that the utility or energy customer, to which the power is to be sold, provides evidence in writing that it shall enter into a power purchase contract based on its understanding of the proposed facility's ability to produce such power. If energy sales at existing facilities are not comparable to those proposed, anticipated revenues shall not be included in the Offeror's Price Proposal. Research and development projects or similar efforts that have not resulted in a contracted marketed product with actual sales are not acceptable and shall not be included as Revenue in the Offeror's Price Proposal. For the Options proposed, the selected Offerors shall participate with the City in the development and maintenance of the Power Purchase Agreement (PPA) between the City and the Utility similar to the PPA included as Appendix D of the Contract Documents. In order to assure a good understanding of the Hawaiian Electric Co., Inc. service requirements, the Offeror shall complete and submit Sections 1 and 2 of Attachment 'A' as part of its Proposal. In addition, the selected Contractor shall be required to enter into an Interconnection Requirements Study Agreement as provided for in Attachment 'B'. Attachment 'C' Sample Information on Performance Requirements is provided as information for the bidders. The specific values for these performance parameters would be finalized in the course of the PPA negotiations. It is understood that the selected Contractor shall be responsible for the payment of all cost required for the development of and adherence to conditions of the Power Purchase Agreement and those of Attachments 'A', 'B' and 'C' of this Notice to Bidders and for the payment of all penalties for non performance due to Contractors fault associated with these Contract Documents.

- The proposed Facility shall be commercially available such that: (1) The design is proven and the proposed facility is not the first of its kind; (2) The equipment proposed has operated successfully at least eighty-five percent (85%) of rated capacity while at the same time operating for at least eighty-five percent (85%) of the time during the past twenty-four (24) month period; (3) The equipment is regarded as being reliable and not subject to excessive maintenance, operational problems, or requires major re-designs; (4) The facility has processed a minimum of five hundred (500) TPD of municipal solid waste while operating in accordance with all environmental permits.

- Certification that the ash slag and residue by products from the proposed facility have met all environmental requirements for either marketing or landfill disposal including passage of the [Toxicity Characteristic Leaching Procedure (TCLP)] test and classification as non-hazardous materials, or, if deemed hazardous certification from the final disposal site that materials have been properly disposed of and how it would be disposed of for this project."

In its RFP, the C&C encouraged both thermal and non-thermal technologies. With thermal technologies the by-product is steam or electricity which can be sold. The by-products of non-thermal technologies are materials that require development of a market (i.e., building material, or compost). Technologies that produce a product that must be sold into a market (other than an energy market) will be more difficult in Honolulu. For example, a market does not currently exist for an alternative technology that produces an MSW compost product. The reason is that the market for MSW compost is restricted on the mainland and has faced controversy in Honolulu.[22] The proponent of a technology that produces a solid MSW fuel would need to find a fuel user and there are only two solid fuel users, H-POWER and the AES coal fired power plant. The current H-POWER facility is operating at capacity. To handle an MSW fuel at AES would probably require a revision to its permits, a lengthy and expensive process, provided AES wished to pursue it.

6.2 Non-Thermal

Non-thermal or non-combustion technologies are those that do not require and/or produce large quantities of heat. Non-thermal technologies included in this analysis are digestion and hydrolysis.

Digestion is the decomposition of MSW with the use of microorganisms. The process can either be anaerobic or aerobic.

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[22] Leone, Diana. *Waianae Compost Plan Hits Turbulence*. Star Bulletin. August 17, 2006.

6.2.1 Anaerobic Digestion

Anaerobic digestion is the decomposition of MSW without the introduction of oxygen. End by-products tend to be liquid, gas, and solid materials. The organic fractions of MSW are converted into single-celled proteins, which can be used for compost and fertilizers. Due to the length of time anaerobic digestion takes, more land is required to process the amount of MSW the C&C requires of an alternative technology.

Examples of anaerobic technologies include:

- ArrowBio
- Orgaworld
- Organic Waste Systems' DRANCO Dry Anaerobic Digestion

The discussions in this section are based on information about the ArrowBio process. ArrowBio uses naturally occurring microbes to break down the organic faction of MSW. Others will have different approaches and equipment, but produce similar products.

Currently, Orgaworld has two operating facilities, each with a capacity of 96 TPD, while Organic Waste Systems' facilities process up to 137 TPD. Both are less than the C&C minimum requirements and the Orgaworld and Organic Waste Systems are not discussed further.

ArrowBio has a 200 TPD plant operating.

6.2.1.1 How It Works

Using a separation-dissolving tank, organic and inorganic materials are separated based on buoyancy. Heavier inorganic materials, such as metal and glass, sink to the bottom of the tank and are taken for further separation and then are recycled or disposed. Plastics, which remain floating, are separated pneumatically, while the remaining organic fraction is shredded and more water is introduced to further the biodegrading process. The remaining organic material is treated in acetongenic and methanogenic reactors producing fertilizer and biogas. The biogas, made up of approximately 75 percent methane, can be sold as clean, green energy for use in transportation and power facilities, or used internally to power the facility. The technology vendor is responsible for the disposal of these residues.

The demonstration facility, located in Hadera, Israel, processed more than 30 TPD of MSW and operated from 1996 to 1999. The facility was designed to process 11 TPD of MSW.

One full scale ArrowBio facility located at the Hiriya transfer station in Tel Aviv, Israel has been in operation since 2002. The facility processes approximately 210 TPD of MSW and generates biogas sufficient to produce three MW.[23]

6.2.1.2 *Other Jurisdictions Using This Technology*

Currently the only ArrowBio facility in operation is at the Hiriya transfer station in Tel Aviv, Israel. ArrowBio technology may soon be added as part of Australia's Macarthur Resource Recovery Park, a proposed integrated waste facility on the current Jacks Gully landfill site.[24]

6.2.1.3 *Physical, Regulatory, and Environmental Requirements*

The ArrowBio facility at the Hiriya transfer station in Israel has one 200 TPD module and requires approximately two acres of land, with an additional one-half to one acre for long-term storage of materials. If it were sized up to meet the 500 TPD requirement, an estimated six acres would be needed.

This facility would require 0.05 MW of electricity per ton of MSW processed, which is met with the generation from the biogas. Water consumption data is not readily available; however, ArrowBio claims the consumption is low due to moisture in the MSW. Additional water is required for the separation/dissolving tank.

ArrowBio claims no negative environmental impacts. There is no significant odor potential as the MSW is immediately placed into the separation-dissolving tank. The treatment takes place in enclosed tanks, also reducing potential odors. Water used throughout the process is reused in the separation-dissolving tank, which results in low water consumption. A small amount of wastewater is generated from the process, but is expected to be suitable for release into the sanitary sewer system.

The company provided no information regarding economic benefits associated with the technology.[25]

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23 Arrow Ecology www.arrowecology.com, March 11, 2008.

24 Marshall, A.T. and Morris, J.M., "A Watery Solution," Chartered Institute of Waste Management Journal, August 2006.

25 *Evaluation of New and Emerging Solid Waste Management Technologies,* New York City Economic Development Corporation and New York City Department of Sanitation, September 16, 2004.

6.2.1.4 Potential Issues

- There may be size-up issues unless units of the same size as the existing facility are used.

- A market will need to be developed for the MSW compost, which may be difficult. MSW compost is not currently marketed on Oahu so it may be challenging and time consuming to develop the market.

- A market will be needed for biogas or it will need to be used to generate electricity and sold to HECO.

6.2.1.5 Consistency With City Requirements

The anaerobic digestion facilities do not meet the City's requirements:

- The existing facilities either process less than the City's minimum waste stream (the existing ArrowBio facility 210 TPD of MSW, 300 TPD less than what the C&C requires) or they process source-separated organics.[25] ArrowBio could use multiple units to meet the City requirement.

- The facility design for the ArrowBio is the first fullsize facility.

- There is no proven market for the MSW compost product.

6.2.2 Aerobic Digestion

Aerobic digestion is the decomposition of MSW with the introduction of air. Examples of aerobic digestion include Mining Organics, Real Earth Technologies, and Herhof Environmental's MBT Process. Due to the lack of readily available information about both Mining Organics and Real Earth Technologies, a generic explanation of Herhof Environmental's MBT Process is included. Different companies use different approaches and equipment, but produce similar products.

6.2.2.1 *How It Works*

The aerobic digestion process can be either wet or dry. Dry aerobic digestion is similar to in-vessel aerobic composting.[25] Inorganic materials, such as glass, metals, and plastics are removed from the MSW for recycling. The remaining material is shredded, mixed, and put into a vessel with a controlled amount of air and heat. Liquid is removed thereby reducing the volume. The mixture continues to be aerated, mixed, and depending on the reactor used, heated.[26]

Wet aerobic digestion removes inorganic materials, such as glass, metals, and plastics, and pulps the organic materials from the MSW. The slurry is then mixed, aerated, and heated. Heating dries some of the organic material, reducing the total volume. Microbes are then introduced, which reduce the slurry to solid and liquid soil amendments for use in fertilizers.[25] The technology vendor is responsible for the marketing these materials.

6.2.2.2 *Other Jurisdictions Using This Technology*

Composting of kitchen, food, and green waste scraps is well established in Europe. Germany has more than 500 biochemical treatment facilities processing more than eight million TPY of food and green wastes; the majority of those facilities are aerobic compost facilities. However, these facilities are not processing MSW.[27] Vancouver, Canada has a 30 TPD demonstration plant by Herhof in operation processing separated food and other organic wastes.[25] There are currently seven commercial MSW Herhof plants in operation in Germany, Belgium, and Italy, with one proposed for the United Kingdom that will use the solid fuel produced by the MBT Process in a combustion plant.

6.2.2.3 *Physical, Regulatory, and Environmental Requirements*

These requirements are unknown as there are currently no aerobic facilities that meet the requirements of the C&C.

6.2.2.4 *Potential Issues*

The process results in a compost that would have to be sold, and no markets have been demonstrated in Honolulu. Even with a solid fuel by-product, Honolulu does not have an existing, market for the fuel.

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[26] Kumar, Surendra, Shashi and Salman Zafar. "Composting Technology." *MSW Management, The Journal for Municipal Solid Waste Professionals*. May/June 2006.

[27] Oaktech Environmental, http://www.oaktech-environmental.com/, March 11, 2008.

The process requires source-separated organics; it does not process mixed MSW.

6.2.2.5 Consistency With City Requirements

None of the Herhof Environmental plants currently in operation process more than 500 TPD of MSW. However, Herhof Environmental states their MBT Process is capable of processing up approximately 1,095 TPD.[28]

6.2.3 Hydrolysis

Hydrolysis is a chemical reaction in which water and another substance react, forming two or more new substances. With the hydrolysis of MSW, the reaction is between water and the cellulose fraction of the wastes to produce sugars. To obtain the cellulose fraction of the MSW, glass, metals, and other inorganic materials must first be removed.

Several types of hydrolysis technologies exist. The description by Arkenol Fuels is provided as an example for discussion. Another technology is the Masada Oxynol process.

6.2.3.1 How It Works

Arkenol Fuel technology, also named Concentrated Acid Hydrolysis, uses the source-separated fraction of MSW. The process first sorts out recyclable materials. The remaining material is ground for further processing. Sulfuric acid decrystallizes the material and breaks the organic fraction into its component sugars (cellulose and hemicellulose). The material is then hydrolyzed; the chemical bonds are broken, producing hexose and pentose sugars required for commercial fermentation. Insoluble materials are filtered for processing for other uses. The entire process runs on biomass, including agricultural residues, crops grown specifically for use as biomass, paper, wood, and green waste.[25]

The pilot facility for Arkenol Fuels is in Orange, California, and processed one TPD of MSW. This facility operated for five years beginning in 1992.[29]

The only commercialized Arkenol Fuel facility is in Izumi, Japan. It has been in operation since 2002, using waste wood chips as feedstock.[30]

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[28] http:// www.herhof.com/en/, March 11, 2008.

[29] Arkenol Fuels, http://www.arkenol.com/, March 11, 2008.

[30] California Integrated Waste Management Board, Session Summary: Emerging Technology Forum, Brief summary of presentations by Rick Diederich prepared by CIWMB staff, April 17–18, 2006.

6.2.3.2 *Other Jurisdictions Using This Technology*

There are no hydrolysis facilities currently in operation that process MSW as feedstock and none of the size the City requires.[31]

6.2.3.3 *Physical, Regulatory, and Environmental Requirements*

A Masada facility that could process about 600 TPD is expected to require 10-acres. The environmental impacts include emissions from the process, waste water discharges, and other impacts. The facility will need to satisfy the State's regulatory and environmental process for MSW processing plants.

6.2.3.4 *Potential Issues*

The use of MSW as feedstock has not successfully been demonstrated except at a pilot facility scale, although Masada is developing a commercial facility.[25]

A market for the ethanol produced is expected to exist in the City, but has not been proven. An uncertain market for ethanol is believed to be one of the reasons an Arkenol Fuel project failed, according to Arnold Klann, President, and Chief Executive Officer for Arkenol, Inc.[30]

6.2.3.5 *Consistency With City Requirements*

Hydrolysis is inconsistent with the C&C requirements because there has not yet been a successful facility at the size required by the City operating on MSW.

6.3 Thermal

Thermal or combustion technologies produce a significant amount of heat. During the processes, both organic and non-organic materials are combusted while the non-combustible materials can be recycled either before or after combustion. Common thermal technologies are gasification, plasma arc, pyrolysis, and incineration. Examples of thermal technologies include:

- Covanta Energy — the City's H-POWER facility.
- Rigel Resource Recovery — Westinghouse Plasma Gasification.
- Dynecology — Gasification with Briquetting of Refuse Derived Fuel (RFD)/Coal/Sewage Sludge.

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[31] Interstate Waste Technologies, http://www.iwtonline.com/, March 11, 2008.

- Ebara Corporation — Fluidized Bed Gasification with Ash Vitrification.
- GEM America — GEM Thermal Cracking Technology (Gasification).
- Global Energy Solutions — Thermal Converter Technology (Gasification and Vitrification).
- Interstate Waste Technologies — Thermoselect Gasification.
- Pan American Resources — Destructive Distillation Lantz Converter.
- Pratt Industries/VISY Paper (RDF).
- Comprehensive Resources, Recovery, & Reuse, Inc. (RDF).
- Takuma Mass Burn Renaissance System.
- Resource Recycling, L.L.C. (Mass Burn).

H-POWER technology is discussed in its own section since it is a proven technology that is currently in use by the C&C.

6.3.1 Plasma Arc

This technology uses large carbon rods in a sealed vessel to generate a high temperature arc that converts the materials in the vessel into plasma (ionized air). Heat generated by the arc melts the inorganic fractions into a glass and vaporizes the organic fractions, which become a synthetic fuel gas. The glass can be disposed in a landfill or may be used for beneficial purposes, such as for replacement of imported sand for sand blasting. The synthetic gas is cleaned and burned to produce power.

There are several vendors of plasma systems, including Westinghouse, and other project developers. A four TPD plasma system was operating near the H–POWER plant to process medical waste.

The City Council Public Works and Economic Development Committee heard from some plasma system representatives during its review of potential landfill sites.[32] The representatives that addressed the Committee were identified in the report as:

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[32] November 16, 2004 memorandum from Councilmember Rod Tam to Concerned Citizens of Oahu transmitting the report titled "Committee on Public Works and Economic Development's Summary Report on its Landfill Site Selection Process."

> "…. the following companies with the plasma gasification technology have made presentations or submitted materials to the Committee on Public Works and Economic Development ..:
>
> (1) JDI/Geoplasma, LLC;
>
> (2) Environmental Solutions Corporation representing the Solena Group;
>
> (3) EnviroDyne;
>
> (4) Startech Environmental Corporation;
>
> (5) Scientific Utilization, Inc. /Waste To Energy; and
>
> (6) Phoenix Consulting Group International, LLC, for Biomass Conversion Technology, LLC".

6.3.1.1 How It Works

Plasma arc technology gasifies MSW with high pressure air and an electric arc that produces very high temperatures (up to 8,000 ° F). These temperatures virtually vaporize the waste into its elemental components, creating syngas, which can then be used to generate electricity.

6.3.1.2 Other Jurisdictions Using This Technology

Currently, there are two operating plasma arc facilities that process MSW. The longest running one and the only one that is not a demonstration plant is the Eco Valley Utashinai facility located in Utashinai, Japan. The facility processed more than 270 TPD of MSW and 130 TPD of automobile shredder residue and generates approximately 4,700 kKWh of salable energy in fiscal year 2005.[33]

The City of St. Lucie, Florida has begun the negotiations for a plasma arc facility. The Georgia-based company, Geoplasma, has agreed to build and operate the facility and claims the facility will process 2,000 TPD of MSW and 1,000 TPD of MSW mined from a landfill while producing 120 MW of electricity.[34]

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33 Shigehiro, Michiaki, General Manager of Eco Valley Utashinai.

34 Sladky, Lynne. "Florida county plans to vaporize landfill trash." USA Today. September 9, 2006 and Margasak, Gabriel. "Trash zapper in St. Lucie County gets shot in arm from Crist", TCPalm, November 10, 2007.

Geoplasma has agreed to build and operate the facility, estimating that within the next 15 to 18 years the facility will have disposed of all the current waste in the landfill. Ron Roberts, the Assistant Solid Waste Director in St. Lucie, estimates the plant will be finished within 25 to 30 months.[35]

A second plasma plant operating on MSW started operation in late January 2008 in Ottawa, Canada. It is a demonstration project. The information about the plant was obtained from news sources[36], which stated:

> "A demonstration waste-to-energy plant in Ottawa has finally turned its first load of trash into power...
>
> ... The $27 million plant uses a process called plasma gasification to decompose waste under high heat and low oxygen into a gas mixture called syngas, and a glass-like material that can be turned into asphalt or concrete....
>
> Once the plant is running at full capacity, it is to divert 85 tonnes of waste a day from the city's landfills while generating enough electricity to run the facility and power 3,600 homes....
>
> Plasco hopes its demonstration plant in Ottawa will persuade other cities to buy the technology....
>
> Construction of the plant started in September 2006. It was to run as a two-year pilot project."

The PLASCO plant was partially funded by the Canadian government.

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[35] Miller, Dan. "State-of-the-art plant makes trash vanish into thin air." County News Online. National Association of Counties, Washington, D.C., October 2, 2006.

[36] Information from http://www.cbc.ca/technology/story/2008/02/07/ot-plasco-080207.html, March 12, 2008

> "This brings to over C$90 million the equity invested in PlascoEnergy since August 2005. The Company had nominal debt and a modest cash position prior to this issue, and is well funded for development of commercial facilities next year," said Rod Bryden, PlascoEnergy President and CEO. "Commitment of funding from Sustainable Development Technology Canada ('SDTC') to the Ottawa demonstration project was a key factor in bringing the PlascoEnergy technology to reality and to attracting private capital that will fund its future commercial use around the world. SDTC has committed a non-repayable contribution of C$9.5 million," he said.[37]

6.3.1.3 Physical, Regulatory, and Environmental Requirements

The Eco-Valley Utashinai facility is the only one of its kind that has been operating. If a similar facility were built on Oahu, it would have to meet the same requirements of both State and Federal regulations as any new alternative technology. *Table 5, Actual Treatment Record in 2005 (Fiscal Year)* was provided by the plant operator to the City staff and shows the operational record for one year. "ASR" refers to Automobile Shredder Residue.

Table 5, Actual Treatment Record in 2005 (Fiscal Year) [38]

Month	Receipt of Waste (Tons)		Treatment of Waste (Tons)		Slag (Tons)	Electric Power (MWh)			Operating (day)
	MSW	SR,ASR	MSW	SR,ASR		Generation	Consumption	Sold	Line1+Line2
Apr	2,118	850	1,447	238	314	305	1,659	0	25+10
May	2,288	665	2,406	443	372	1,172	2,098	25	25+27
June	2,317	561	2,063	913	651	1,063	2,059	19	22+30
July	2,186	1,083	2,625	743	450	1,053	2,317	0	31+31
Aug	2,391	939	1,527	881	443	637	1,862	0	21+21
Sept	2,169	93	2,302	895	469	840	2,202	0	30+24
Oct	2,206	449	1,773	671	453	548	1,963	0	22+19
Nov	2,067	619	3,364	896	676	1,360	2,397	0	30+30
Dec	1,965	718	1,164	387	308	297	1,388	0	20+1
Jan	1,722	519	2,207	737	451	613	1,881	0	14+22
Feb	1,398	702	1,612	788	345	356	1,510	0	0+28
Mar	1,877	1,353	1,247	741	278	341	1,522	0	0+19
Total	24,704	8,551	23,737	8,333	5,210	8,585	22,858	44	240+262

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[37] Information from PLASCO new release dated December 12, 2007, http://www.plascoenergygroup.com/?News/23/2007-12-03:First_Reserve_leads_PlascoEnergy_equity_funding, March 12, 2008.

[38] Nomura, Akira. Hitachi Metals. Actual Treatment Record for Utashinai Eco Valley. 2005. Correspondence to Wilma Namumnart. August 10, 2006.

6.3.1.4 Potential Issues

The experience with plasma operating on MSW has been limited to one full-scale plant.

The cost of the facility is believed to be $425,000,000.[39] Until a full scale plant is operating on MSW, the actual cost of operations will not be known.

6.3.1.5 Consistency With City Requirements

Currently, plasma arc technology does not meet the C&C requirements:

- One of the two operating facilities has required maintenance for the furnace reflectors and the other started operations this year.[35]
- The Eco Valley Utashinai facility processes 270 TPD of MSW, 230 TPD short of the C&C requirements. The Ottawa facility at 85 metric TPD is also short of the C&C requirements.
- These facilities are the only ones operating on MSW.

6.3.2 Gasification/Pyrolysis

Gasification is the process of reducing MSW to a synthesis gas. Pyrolysis is similar to gasification and often considered a type of gasification technology. The by-products of gasification are syngas and vitrified material (slag) and pyrolysis by-products are solid carbon and liquid fuel. Pyrolysis generally takes place during the first steps of gasification. Examples of gasification technologies are:

- Dynecology—Gasification with Briquetting of Refuse Derived Fuel (RDF)/Coal/Sewage Sludge.
- Ebara Corporation—Fluidized Bed Gasification with Ash Vitrification.
- GEM America—GEM Thermal Cracking Technology (Gasification).

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[39] Waste Age Magazine, September 13, 2006. "Florida county to generate energy by vaporizing solid waste". Also their web page at http://wasteage.com/news/Geoplasma/?cid=most-popular, March 11, 2008.

- Global Energy Solutions—Thermal Converter Technology (Gasification and Vitrification).
- Interstate Waste Technologies—Thermoselect Gasification.
- Pan American resources—Destructive Distillation Lantz Converter.

6.3.2.1 How It Works

Dynecology's Gasification with Briquetting of RDF/Coal/Sewage Sludge technology processes MSW into RDF and then blends RDF and dewatered sewage sludge together with coal making briquettes. The briquettes are then introduced to the gasifier, or high-pressure, fixed-bed reactors. The inorganic fraction melts and is removed from the bottom of the chamber as slag and the synthesis gas is removed from the top. Dynecology has no facilities currently operating on MSW.

GEM America's GEM Thermal Cracking technology processes unsorted MSW. Recyclable materials, such as metals, glass, and cardboard are separated and the remaining materials are shredded, dried, and granulated. The MSW is then gasified and converted into synthesis gas. The synthesis gas can be used to generate electricity. GEM America has no commercial facilities currently in operation, but has two demonstration plants processing 73 TPD that have been in operation since 2000.

Ebara Corporation's Fluidized Bed Gasification with Ash Vitrification technology introduces shredded MSW into a fluidized bed reactor vessel. Gasification takes place in the reactor at atmospheric pressure. Temperatures range between 1,022–1,166° F, reducing the MSW to ash. The ash and synthesis gas enter into a second chamber where the materials are heated again at higher temperatures (2,372–2,642° F). Fine particles are collected on the walls and become molten slag collected at the bottom of the chamber and cooled to form a vitrified granulate. The synthesis gas is used to produce energy. The largest Ebara plant is its Kawaguchi City reference plant which processes 462 TPD of MSW.

With Global Energy Solutions' Thermal Converter technology (Gasification and Vitrification), unsorted MSW is introduced into the gasification reactor. Preheated air (660–840° F) is then introduced and the MSW is passed to a conversion chamber heated between 2,200–2,500° F and then to a second conversion chamber heated between 3,000–3,100° F. This secondary chamber cleans the gases and vitrifies the residue using a bed of molten material. The synthesis gas produced is used in a boiler to produce steam or to generate electricity.

Interstate Waste Technologies uses a waste treatment process called Thermoselect Gasification. The system compacts unsorted MSW thereby removing most of the air and evenly distributing the moisture content. The compacted waste is then pushed through a high temperature chamber where the inorganic waste turns molten and the organic waste converts into gas. The organic gases enter a lower temperature chamber and are shock cooled to avoid the formation of dioxins or furans. The gases are then shuttled through scrubbers to remove sulfur, heavy metals and other toxins. The resulting synthesis gas can be used for energy production or as a base material for chemical synthesis. The molten inorganic waste is also shock cooled and results in reusable mineral substances and metals. The water condensed during the different phases of the gas treatment is fed into the water treatment chambers where it undergoes a multiple-stage treatment. The processed water is then used for cooling purposes.[40]

6.3.2.2 Other Jurisdictions Using This Technology

Global Energy Solutions has 14 facilities in operation in Japan, Asia, and Europe. Two facilities operating in Japan process solely MSW.

Interstate Waste Technologies has the following facilities:[41].

- Fondotoce, Italy, operated the demonstration Thermoselect facility for six years, with commercialization commencing in 1994, from 1992-1998. The plant was decommissioned in 1999.
- Karlsruhe, Germany, operated a Thermoselect facility from 1999 until 2004, when it was closed due to "general business strategy decisions." The facility processed 225,000 TPY of waste from surrounding towns and rural districts.
- Currently, seven Thermoselect facilities are operating in Japan. Three of the facilities operate on MSW. Commercialization of the Matsu facility began in 2003 and currently processes 140 TPD. The Nagasaki and Tokushima facilities commenced operations in 2005, with the Nagasaki facility processing 300 TPD and the Tokushima facility processing 120 TPD of MSW.

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[40] http://www.iwtonline.com/docs/Thermoselect_process_description.pdf, March 12, 2008.

[41] http://www.iwtonline.com/docs/Thermoselect_process_description.pdf, March 12, 2008

6.3.2.3 Physical, Regulatory, and Environmental Requirements

Global Energy Solutions states that their Thermal Converter technology exceeds all known emission standards worldwide and that there are no odors due to their storage of MSW inside a building. Global Energy Solutions also states that their technology requires less land than traditional incinerators; however, no documentation of land requirements was found.[42]

The synthesis gas produced is sufficient to power the Thermoselect facility.

Water consumption is 560 gallons/ton of MSW. Wastewater is treated and reused.[42]

6.3.2.4 Potential Issues

- Global Energy Solutions' Thermal Converter technology vitrified residual by-product requires a market.
- Interstate Waste Management's Thermoselect technology requires a market for the metal pellet and vitrified granulate by-products.

6.3.2.5 Consistency With City Requirements

Global Energy Solutions' Thermal Converter technology might be consistent with the C&C requirements; there is no information readily available regarding how long either of the two MSW facilities in Japan have been in operation. This by-product residual requires a market that is not proven on Oahu.

Interstate Waste Management's Thermoselect technology is inconsistent with the C&C requirements. Although there are seven Thermoselect facilities in Japan, only three operate on MSW, none at the size the City requires (the Matsu facility processes 140 TPD, the Nagasaki processes 300 TPD, and the Tokushima facility processes 120 TPD.) All those listed here have been in operation for more than two years. The market for the metal pellets and vitrified granulate by-products would have to developed on Oahu.

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[42] Global Energy Solutions. http://www.teamges.com/, March 11, 2008.

6.4 Waste-To-Energy

H-POWER is a working example of the waste-to-energy (WTE) alternative technology. It is proven in long-term operation in Honolulu where it converts MSW into energy, with residue of ash, by-passed material, and unacceptable waste. An expansion of H-POWER was approved by the Mayor on January 18, 2008. The expansion is included as an alternative.

6.4.1 How It Works

There are two general approaches to WTE, mass burn and RDF. In a RDF plant (the H-POWER facility is an RDF plant) MSW is processed through shredders and screens, through which dirt, glass, and other recyclable and non-burnable materials are sorted out. The remaining material is incinerated, resulting in the creation of ash (approximately ten percent of the original volume), residue, and steam used to generate electricity. Metals are separated in the pre-combustion processing and from the ash post-combustion and are recycled.

Mass burn plants combust MSW without pre-processing. Waste is introduced into the furnace after being unloaded from the collection vehicle. The waste combustion creates steam, which is used to make electricity. By-products are ash and residual waste. Metals are separated from the ash and are recycled.

The project host and technology vendor are responsible for the disposal of ash and residual waste.

The H-POWER facility in Kapolei is a RDF plant and is capable of processing 2,160 TPD of MSW. It generates seven percent of Oahu's energy, enough electricity to support 45,000 homes. Residual waste and ash are disposed at the Waimanalo Gulch Sanitary Landfill.

6.4.2 Jurisdictions Using This Technology

WTE is a proven technology with facilities found throughout the United States. Covanta, the operator of H–POWER, operates plants in Alabama, California, Connecticut, Florida, Indiana, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Oregon, Pennsylvania, and Virginia. WTE is used in many other countries where it has been operating for more than 75 years.[43]

H–POWER itself has been continuously operating since 1989.

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[43] Covanta Holding, http://www.covantaholding.com/, March 11, 2008.

6.4.3 Physical, Regulatory, and Environmental Requirements

The physical, regulatory, and environmental requirements of a third boiler at H-POWER are well understood since the C&C already has one of these plants in operation. Land is available on the H–POWER site for the expansion.

6.4.4 Potential Issues

WTE requires a landfill for the disposal of ash and residual wastes. The market for the electricity is already contracted for with the current facility. The technology is well understood.

6.4.5 Consistency With City Requirements

WTE is consistent with the C&C requirements.

6.5 Expanded Recycling

Expanding current recycling infrastructure within the C&C would not eliminate the need for landfills; however, expanded programs would decrease the amount of materials sent to landfills. The expanded recycling could include expansion of the number of sites that accept materials from the HI5 beverage container program, addition of more sites to the school drop-off program, increasing the frequency of curbside collection of residential green waste, and adding a program to collect other recyclables from residences at the curb.

6.5.1 Improvements to Current Recycling Infrastructure

The C&C has stepped up efforts to increase the recovery of recyclable materials island-wide. The City wants to expand the community recycling bins program by 40, 40-cubic-yard recycling roll-off bins, totaling 120 island-wide. This would not only increase the amount of recyclable materials being diverted, but it would also increase the amount of funding schools receive; the main participant in this program. Further, the City is offering support for schools to establish recycling projects on campus and coordinate HI5 fundraising events.

Additional City sites are being considered to increase the number of HI5 redemption sites, particularly in underserved areas. Kiosk systems with automated reverse vending machines that would be open to the public 24 hours a day, seven days a week, are also being considered.

In March 2006, the City changed its residential curbside green waste recycling program by automating 50,000 homes. The automated program is expected to expand throughout the island in phases. The City expects green waste recycling to increase to between 50,000 and 80,000 tons annually with the new bin system.

The C&C is also evaluating the possibility of implementing a residential curbside recycling program for bottles, cans, and paper. Curbside recycling could capture as much as 40,000 tons of recyclable materials from more than 160,000 homes, according to ENV.

A pilot program is operating in Mililani and Hawaii Kai to test weekly collection with weekly recycling. Waste is collected on the first collection day of each week. Green waste is collected on the second collection day. On the second collection day the next week, the other recyclables are collected.

6.5.2 Recycling to Energy

Recycling materials into products, as is done with the green waste program (made into mulch and compost) and the collection of bottles and paper (made into new bottles and paper products) is one form of recycling. Recycling to energy (conversion of the waste to energy) is another.

WTE, such as H-POWER, is a technology of choice due to the direct benefits of energy production and reduction in disposal. Approximately 90 percent of the residential garbage and 77 percent of the commercial waste collected on Oahu is disposed at the H-POWER facility and is turned into energy that powers approximately 45,000 homes.[44] Incinerating 90 percent of the garbage that goes through the H-POWER facility means only one-tenth, by volume, remains to be landfilled. Expanding the H-POWER facility would be the most beneficial to the C&C in reducing the amount of waste sent to the landfill.

6.6 Wet Cell Landfill

Wet cell, or bioreactor landfills, use accelerated decomposition to create additional landfill gas to convert to energy and recover landfill space as the waste decomposes. The wet cell would enhance energy recovery from the landfilled waste and extend the life of the landfill.

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[44] City and County of Honolulu Department of Environmental Services. Solid Waste Integrated Management Plan. Updated: November 2007. Table 63a, Table 63b and Table 2-7.

There are three forms of wet cell landfills: aerobic, with the presence of oxygen; anaerobic, without the presence of oxygen; or a combination. Both processes accelerate the decomposition of the waste. Conventional landfills take 30 to 50 years for the waste to decompose, while wet cell landfills take only five to ten years.[45]

6.6.1 How It Works

Aerobic wet cell landfills collect leachate from the bottom layer of the landfill, pump it into a storage unit (water is added if required), and then redistribute the liquid throughout the landfill. Air is then injected to encourage aerobic decomposition and stabilization of the waste.

Anaerobic wet cell landfills add moisture to the landfill through re-circulated leachate and other sources to achieve optimal moisture levels, but do not add air. A biogas is produced comprised mostly of methane, carbon dioxide, and volatile organic compounds. The gas can be used to create electricity.

Hybrid wet cell landfills use both aerobic and anaerobic processes to rapidly accelerate the biodegradation and decomposition of the landfilled waste. Biogas can also be collected from hybrid wet cell landfills; this by-product occurs much earlier than during the anaerobic process.

6.6.2 Other Jurisdictions Using This Technology

Currently the Federal Environmental Protection Agency (EPA) is conducting case studies of bioreactor landfills within its Project XL, which begun in 1995. Project XL provides flexibility to regulated entities to conduct pilot projects demonstrating the ability to "achieve superior environmental performance." Since September of 2001, 51 pilot experiments have been implemented. Of those 51, four have been approved to operate as wet cell landfills. The landfills are Buncombe County Landfill Project, North Carolina; the Maplewood Landfill and King George County Landfill, both in Virginia; and the Yolo County Bioreactor Landfill, California. The EPA is evaluating the advantages and disadvantages of bioreactor landfills. The studies are expected to be completed between 2006 and 2026.

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[45] County of Yolo Planning and Public Works Department Division of Integrated Waste Management, EPA Project XL, Final Project Agreement for the Yolo County Accelerated Anaerobic & Aerobic Composting (Bioreactor) Project, September 14, 2000.

6.6.3 Physical, Regulatory, and Environmental Requirements

A wet cell landfill requires a different liner design, leachate collection system, and monitoring system. One concern regarding wet cell landfills is the increased possibility for leachate. Therefore, one of the EPA's requirements for their case study is liner design to address the increased production of leachate.[46] The Yolo County Module D Bioreactor proposes a liner over five feet thick with earth and clay layers alone, as well as a collection system that would recycle the leachate and reintroduce it to the landfill.[45] The permitting process for wet cell landfills is also different. Only the EPA through its XL project program grants permits for wet cell landfills. The expansion space at the Waimanalo Gulch Sanitary Landfill could have cells that could be used for wet cell landfilling; however, major changes in site design, and potentially site life, would be required. The benefit to justify such an expense has not been shown with only four test sites in operation.

6.6.4 Issues

The cost of the wet cell and potential environmental effects has not been determined. The wet cell technology must also be demonstrated in relation to current plans for the use of the WGSL expansion area.

6.6.5 Consistency With City Requirements

The wet cell is a variant of traditional landfilling practice and could be consistent with City & County of Honolulu requirements. The cost and environmental implications of using the technology would have to be evaluated by the City and landfill operator.

6.7 Co-Disposal

Co-disposal is the dumping of MSW and ash together in a landfill, where the ash replaces the dirt cover and fills the voids in the MSW. By integrating with the landfilled materials, the ash takes up much less space than if it is disposed in separate cells, as is the current practice. The ash would replace the use of soil for cover.

6.7.1 How It Works

At the end of the operating day, the ash would be used as alternate daily cover to replace the soil cover now used.

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[46] United States Environmental Protection Agency. http://www.epa.gov/

6.7.2 Physical, Regulatory, and Environmental Requirements

The State DOH approved the use of H-POWER ash as ADC at the Waimanalo Gulch Sanitary Landfill provided that a number of requirements are followed: [47]

- A six-month demonstration project to evaluate the performance of ADC in meeting the requirements of daily cover.
- Ash must be used within 24 hours of its creation.
- Ash must contain less than 25% moisture.
- Ash can only be used between 3 and 5 p.m.
- No more than 300 tons of ash can be used per day.
- Equipment must not be used on ash, a two foot depth and 15-foot buffer must be in place to protect the general public.
- Equipment operators must use positive pressure cabs, while spotters must wear personal protective gear.
- Warning signs must be posted to inform the general public.
- A wind shut-down trigger must be in place (to be determined from the six-month demonstration project).
- A rain shut-down trigger must be in place to prevent ash from entering the storm water system.
- Total metals must be tested quarterly.
- An engineering study evaluating the landfill's static and seismic stability is required.
- A lime depletion study is required.

6.7.3 Issues

The operational issues introduced by the DOH requirement may preclude the co-disposal option.

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[47] Hawaii State Department of Health. Response to Comments on the Draft Conditions for the Use of H-POWER MST Ash as Alternative Daily Cover at the Waimanalo Gulch MSW Landfill. April 12, 2001.

6.7.4 Consistency With City Requirements

Co-disposal is consistent with the C&C requirements.

6.8 Response To Scoping Questions Regarding Alternative Technology

The C&C conducted scoping sessions on the following dates at the locations indicated:

- Monday, July 10, 2006, at Nanakuli High School.
- Tuesday, July 11, 2006, at Ben Parker Elementary School.
- Thursday, July 27, 2006, at Mission Memorial Auditorium.
- Thursday, August 10, 2006, at Kapolei Hale.

Several of the audience members offered their comments in response to the information presented by the C&C. This portion of the analysis presents the comments that related to technology. The response to questions relating to siting is later in this document.

Comments will be denoted by a 'C,' questions by a 'Q,' and answers by an 'A.'

Q: What is the status of the ideas presented to Mayor Harris regarding alternatives (i.e. Plasma Arc technology, Gasification)?

A: They are all considered as alternatives (see section 5.3.1). The City requested that vendors of these technologies and others to present information to the City about their technology. That process concluded on January 18, 2008 with the City selecting expansion of H–POWER on the current site.

Q: Was a portion or all of the tipping fees supposed to be earmarked for developing alternatives? If so, how much and was this fund used for other purposes by the Harris administration? If so, what and why?

A: We are unaware of a portion of the tipping fees being earmarked for developing alternatives.

C: The community has said, "No more landfills!" When will the City get the message—No Landfills, Yes JDI Plasma Arc Gasification—stop thinking about the money; think and look at our community, our families' health and safety.

A: Plasma Arc technology was considered as a potential alternative technology. The discussion is located in section 5.3.1.

C: Before any approval of the requested permits are considered, the C&C administration must be required to demonstrate the following: The issuance of an RFP notice and initiation of the review process for the consideration of alternative MSW processing technologies by October 2006 as stated by Director Takamura at the last City Council Public Works committee meeting held July 27, 2006.

A: This was discussed in the City Council Public Works committee meeting, November 2, 2006. A Competitive Sealed Proposal (RFP) was issued on January 16, 2007 and the City's decision announced on January 18, 2008.

C: Before any approval of the requested permits are considered, the C&C administration must be required to demonstrate the following: The presentation of a plan to the Honolulu City Council for the execution of a long overdue comprehensive and mandatory island-wide Recycling program by December 2006.

A: An island-wide mandatory recycling program is currently under review by the City Council members. Mayor Hannemann signed Bill 57 into law requiring an island-wide recycling program be initiated by summer 2007. The City has instituted a pilot program and is testing the cost and effectiveness of the recycling program.

C: Immediately start an easy-to-use, comprehensive recycling program throughout the island. After all, this is an island and our land and resources are even more precious here than on continental places in the world. Glass, plastic, metal, and newspapers should all go into one bin and be picked up and sorted for recycling.

A: Section 2.3 discusses current recycling programs available island-wide, while section 5.5.1 discusses proposed expansions to the current recycling programs. See the earlier discussion of the pilot program.

C: Start innovative programs to encourage us all to use less and re-use what we have. The C&C could and should become a national and international leader in this area.

A: The C&C has an active public outreach program that encourages recycling. That program has expanded each year and continues to reach residents with a message to conserve resources and recycle.

C: With the latest innovative technology in mind, open a new landfill at another site on another part of the island. Start over the right way. We know that this is a political challenge, but done right, it will help to teach us all—on all sides of the island—to be better stewards of the land; educate us in the latest landfill technologies; and say to the people of the Waianae coast that you value this area and do not see it—or its people—as a place of garbage.

A: The recent landfill site selection activities the C&C has had, suggests that the Waimanalo Gulch Sanitary Landfill is the most appropriate site to use until it has reached full capacity. The C&C has encouraged alternative technologies and has used them (for example, H-POWER and the sludge dryer at Sand Island Waste Water Treatment Plant) to reduce the amount of material needing landfill disposal.

Landfills have been used in many locations of Oahu including Ala Moana Park and the Kakaako Waterfront Park. Windward Oahu has served to provide landfills for the island for at least a 40 year period.

7 Alternative Sites

This section reviews potential landfill sites that are feasible for consideration as alternatives to the Waimanalo Gulch Sanitary Landfill. The alternative sites discussed in this document were previously identified in the December 2003 report by the Mayor's Advisory Committee on Landfill Site Selection (Advisory Committee).

Since the Advisory Committee completed its report, several changes have occurred that are mentioned in this report if needed to update the situation with four of the alternative sites. For example, the Makaiwa Gulch site has construction occurring as this document is being completed. Information about the landfill capacity needed has been updated to include consideration of the reduction in landfill disposal expected because of from H–POWER boiler #3. The effect of reducing the landfill capacity needed is to increase the life of alternative landfill sites, but would not change their relative scores.

The process for identifying the sites used by the Advisory Committee is summarized here. That process was useful for this analysis because:

- It used a committee that included professionals and residents, from the areas most likely to be the location of a future landfill, to identify the screening criteria for evaluation of the new landfill site. The Advisory Committee represented a broad range of interests and expertise and relied on the consultant and ENV staff for technical input. The Advisory Committee made all the decisions relative to inclusion or exclusion of the sites.

- The inventory of potential sites that was the starting point for the Advisory Committee analysis was comprehensive, drawn from reports and other work between two and 28 years old (at the time of the Advisory Committee work in 2003). The Advisory Committee members, were asked, but had no additional sites of sufficient capacity that could be added to the list. In fact, the list of potential sites was reduced substantially due to land use development that encroached on some sites.

- The Advisory Committee focused its evaluations on the community perspective and most of their criteria were community–based considerations. While technical issues were considered, the Committee placed most of its emphasis on potential landfill impacts on the community where the sites were located. These potential impacts are also assessed as part of this EIS.

- The Advisory Committee recommendations were submitted to the Honolulu City Council on December 1, 2003.

The work of the Advisory Committee was part of the basis for a review of potential sites conducted by the City Council Committee on Public Works and Economic Development. The Committee Chair, Mr. Rod Tam, reported the results of his Committee's evaluation to the full council on November 16, 2004.[48] The following statement is taken from Mr. Tam's report:

> "...Landfills, in my view, should no longer be considered our primary depository of unwanted waste. We should be making every effort to divert all of our solid waste to recycling and reprocessing into energy or other useful products. Our goal should be to initially process all our solid waste in some form or fashion so that what ends up in our landfills is only the by-products of that initial processing that has no current use. This will reduce significantly the volume of waste going into our landfills thereby extending its useful life...."

The Committee conducted meetings on the Leeward and Windward sides of the island to receive public input. The memorandum reporting the results[48] made no recommendation regarding a specific site, but provided background for the final site selection. Information gathered in Councilmember Tam's investigation has been used in this analysis.

This section discusses the landfill site selection process, identifies the features of the sites recommended by the Advisory Committee that caused them to have different scores on the evaluation process, and discuses the City's general requirements for a landfill site.

7.1 City Landfill Requirements

The C&C has not published its "requirements" for a potential landfill site but uses the following general precepts:

- Environmental — The site must not have physical features that make it more difficult to minimize environmental impacts. For example, if two sites were otherwise equal, the one with the lesser impact on wetlands would be preferred.

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[48] November 16, 2004 memorandum from Councilmember Rod Tam to Concerned Citizens of Oahu transmitting the report titled "Committee on Public Works and Economic Development's Summary Report on its Landfill Site Selection Process."

- Landfill capacity or life span — A site needs to accommodate at least 10 years disposal to justify the time and expense of permitting it. A landfill with a long life also minimizes the environmental impacts compared to landfilling at smaller landfill sites. The longer the life of a landfill the more waste it can accept, thus reducing disposal cost.

- Disaster debris — Having the space and equipment to mange and temporarily store disaster debris will be important. A potential landfill site needs to have space for disaster debris storage or disposal to preserve public health, safety, and welfare.

- Reasonable cost — The City provides the lowest cost, environmentally sound disposal to benefit the taxpayer.

- Proximity to the H-POWER facility — The contract with Covanta to operate H–POWER provides for a price increase for ash transportation if the landfill is more than 12 miles from the plant site. In addition, the more miles traveled by trucks transporting ash, the greater the opportunity for accidents.

7.2 Report of the Mayor's Advisory Committee on Landfill Site Selection

The Mayor's Advisory Committee on Landfill Site Selection was formed in response to Condition No. 1, of the approved State Special Use Permit[49] calling for the formation of a "Blue Ribbon Site Selection Committee". The Committee started with the reports of studies done by the City over the past 30 years to identify potential landfill sites. ENV and the Advisory Committee consultant assembled a list of 45 potential sites for the Advisory Committee to consider from those reports:

(1) *Inventory of Potential Sanitary and Demolition Landfill Sites*, August 1977.

(2) *Supplement to Inventory of Potential Sanitary and Demolition Landfill Sites,* November 1979.

(3) *Revised Environmental Impact Statement for Leeward Sanitary Landfill at Waimanalo Gulch Site and Ohikilolo Site,* 1984.

(4) *Solid Waste Integrated Management Plan Update, Final Report,* 1995.

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[49] Decision and Order Approving Amendment to State Special Use Permit, Docket No. SP87-362, Waimānalo Gulch Sanitary Landfill, June 5, 2003.

(5) *Final Supplemental Environmental Impact Statement, Waimanalo Gulch Sanitary Landfill Expansion*, December 2002.

The remainder of this section discusses how the Advisory Committee evaluated the 45 sites, identifies the specific criterion used, and summarizes their recommendations to the City Council.

7.2.1 Sites Considered

The sites that were considered as potential landfill sites are listed in *Table 6, Potential Landfill Sites*. This table shows the site name, the tax map key (TMK), the estimated acreage, the estimated volume, and the landfill life (the number of years the landfill could provide disposal capacity at the estimated disposal needs in the C&C.) The estimated disposal need is calculated in *Table 11, Estimate of Landfill Capacity Needs*

Table 6, Potential Landfill Sites

Site Name	TMK	Size (Acres)	Capacity (MM cy)	Life (Years)
Auloa	4-2-14:por 1	55	2.8	4.7
Ameron Quarry	4-2-15:01	391	9.0	15.0
Barbers Point	9-1-16:18, por 1	15	0.7	1.2
Bellows	4-1-15: por. 01	173	7.5	12.5
Diamond Head Crater	3-1-42:por 6	115	4.3	7.2
Ewa No. 1	9-1-17	-	-	
Ewa No. 2	9-1-10	-	-	
Halawa A	9-9-10:8,9,por 10 & 26	40	1.5	2.5
Halawa B	9-9-10:27, por 10	60	2.2	3.7
Heeia Kai	4-6	-	-	
Heeia Uka	4-6-14:01	163	2.4	4.0
Honouliuli	9-1-17:por 4	22	1.7	2.8
Kaaawa	5-1	150	5.6	9.3
Kaena	6-9-1:por 3, 33 & 34	40	1.5	2.5
Kahaluu	4-7	-	-	
Kahe	9-2-3:por 27	200	7.4	12.3
Kalaheo (landfill reuse)	4-2-15:por 1 & 6	134	4.3	7.2
Kaloi	9-2-02:por 1; 9-2-3:por 2; 9-2-4:por 5	400	24.3	40.5
Kapaa No. 1	4-4-14:por 2	60	3.0	5.1
Kapaa No. 2 & 3 (closed)	4-2-15:por 1, 3, 4, 7	-	-	
Kaukonahua	7-1	34	1.3	2.2
Keekee	6-9-1:por 3 & 4, 6-9-3: por 2	40	1.2	2.0
Koko Crater	3-9-12: por 1	140	5.5	9.2
Kunia A	9-4-4: por 4	150	5.6	9.3
Kunia B	9-4-3: por 19	190	7.0	11.7
Maili	8-7-10:por. 03	200	9.2	15.3
Makaiwa	9-2-3: por. 02	338	15.0	25.0
Makakilo Quarry	9-2-3:82	175	10.0	16.7
Makua	8-1-1, 8-2-1	600	7.4	12.3
Mililani	9-5	34	2.2	3.7
Nanakuli A	8-7-9:1 &3 and 8-7-21:26	179	4.0	6.7
Nanakuli B	8-7-9: pors. 1 & 7	432	9.4	15.6
Ohikilolo	8-3-1: 13	706	15.6	26.0
Olomana	4-2	-	-	
Poamoho	7-1	5	0.7	1.2
Punaluu	5-3	200	7.4	12.3
Sand Island	1-5-41	150	5.6	9.3
Waiahole	4-8	60	2.3	3.8
Waianae Expansion	8-5-3 and 6	140	6.8	11.3
Waihee	4-7	61	2.3	3.8
Waikane	4-8	200	9.0	15.0
Waimanalo Gulch Exp.	9-2-3: 72 & 73	60	12.0	20.0
Waimanalo North	4-1-8: 13	171	9.6	16.0
Waimanalo South	4-1	355	14.0	23.3
Waipio	9-3-2	60	2.5	4.2

*Million cubic yards (cy)

**Information has been updated since the Mayor’s Committee Report by engineering. Current fillable acreage equals 92.5 acres.

Note: The size, capacity, and life shown in this table for the Waimanalo Gulch Sanitary Landfill reflects data available to the Advisory Committee. The current estimate shows increased remaining life because of refined estimates.

7.2.2 Site Evaluation Process

The Advisory Committee first developed siting criteria to use to quantitatively compare the characteristics of one site to another and allow identification of the "best" site. The siting criteria were divided into three groups: exclusionary, evaluation, and Advisory Committee criteria.

The Exclusionary Criteria included:

- EPA siting criteria as promulgated in the Resource and Conservation Recovery Act, Subtitle D (RCRAD).
- Sites located in areas which have since been developed or are closed landfills with no further expansion potential.
- The Honolulu Board of Water Supply (BWS) evaluation governing whether a site should be protected in consideration of its proximity to the Groundwater Protection Zone and Underground Injection Control (UIC) Line zone; and
- The Advisory Committee's capacity criterion stating that the site must have a minimum life of more than 10 years.

For the qualitative evaluation of the potential sites, the Advisory Committee developed 31 Screening Criteria following extensive discussion and deliberation. After applying the criteria, the Advisory Committee used the numeric scores for the sites, which compared one site to another on the basis of community, economics, land use, and technical considerations.

The Advisory Committee members applied their own insights regarding each site as the final step in the siting evaluation.

After application of all of the criteria, the Advisory Committee deliberated on the remaining sites and arrived at its recommendations for the Mayor and City Council by vote.

Table 7, Sites Eliminated at Each Stage in the Evaluation, shows the number of potential sites eliminated at each step in the evaluation process.

Table 7, Sites Eliminated at Each Stage in the Evaluation

Phase of Evaluation	Number of Sites	
	Before Application of Criteria	After Application of Criteria
Exclusionary Criteria		
RCRA Subtitle D Criteria	45	40
Sites in Developed Areas or Closed Landfills w/No Expansion Potential	40	34
BWS Staff Review and Evaluation	34	16
Committee Evaluation Process		
Landfill Capacity Requirement [50]	16	8
31 Screening Criteria	8	8
Committee Vote	5	4

An initial list of 45 sites was assembled by ENV and the consultant after review of prior work completed by the City in the siting and evaluation of MSW landfills. The *Exclusionary Criteria,* which included EPA criteria and local exclusionary criteria, were applied to the initial list of 45 potential landfill sites. Sixteen of the 45 sites remained after application of the Exclusionary Criteria. The *Landfill Capacity* criterion was applied to the 16 sites remaining with eight remaining for further evaluation. The Advisory Committee's 31 *Screening Criteria* were applied to the remaining eight reducing the number of sites to five and putting them in order of usefulness as a landfill. Up to this point in the evaluation, the Advisory Committee had acted by consensus. At this point in the process, the Committee voted to remove the Waimanalo Gulch Sanitary Landfill from consideration. [51]

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[50] The capacity evaluation was completed before the Committee's site evaluations.

[51] The capacity evaluation was completed before the Committee's site evaluations.

This section contains a description of each *Exclusionary Criteria, Landfill Capacity,* and *Screening Criteria* used by the Advisory Committee to rank the sites and identify the five alternative sites appropriate for landfilling.

7.2.3 EPA Exclusionary Criteria

The EPA Exclusionary Criteria are: [52]

- **Airport Restriction** – Owners/operators must demonstrate that the landfill site does not constitute a bird hazard if the facility is located within 10,000 feet of the end of any airport runway used by turbojet aircraft, or within 5,000 feet of any airport runway used only by piston driven aircraft.

  If the owner/operator proposes construction of a landfill or expansion of an existing landfill within five miles of any airport, the airport and the Federal Aviation Administration must be notified.

- **Floodplains** – Landfills located within a 100-year floodplain cannot restrict storm flows within the floodplain, reduce the temporary water storage capacity of the floodplain, or allow the washout of solid waste.

- **Wetlands** – Owners/operators of a proposed landfill may not build or expand into wetlands. An exception to this rule may be permitted by the EPA-approved permitting programs to construct or expand a landfill only if the following can be demonstrated:

  - No other siting alternative is available.

  - Construction and operation of the landfill will not violate applicable State regulations governing water quality or discharges of toxic or hazardous effluent; jeopardize threatened or endangered species, or critical wildlife habitat; or, violate protection of a marine sanctuary.

  - The landfill will not contribute to the significant deterioration of the wetland.

  - Steps are taken to achieve no net loss of wetlands by avoiding potential for impacts where possible, sufficiently minimizing unavoidable impacts; or, making proper compensation; for example, through the restoration of damaged wetlands or the creation of manmade wetlands.

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[52] 40 CFR 258

- **Fault Areas** – New landfills or landfill expansions are generally prohibited within 200 feet of fault areas that have shifted since the last Ice Age. However, the DOH may permit an alternative setback distance of less than 200 feet if the owner/operator can demonstrate that the landfill will maintain structural integrity in the event of a fault displacement.

- **Seismic Impact Zones** – Landfills located in a seismic impact zone must demonstrate that the facility including, but not limited to, its liners, leachate collection system, surface water control system, and other engineering features have been designed to resist the effects of ground motion due to earthquakes.

- **Unstable Areas** – All owners/operators must demonstrate that the structure of their units will not be compromised during geologically destabilizing events including:

    - Debris flows resulting from heavy rainfall or storm conditions.

    - Fast formation of sinkholes caused by excessive groundwater withdrawal.

    - Rockfalls that are initiated by explosives or sonic booms.

    - The sudden liquefaction of soil after prolonged periods of repeated wetting and drying.

Application of the EPA exclusionary criteria reduced the number of sites under consideration from 45 to 40. *Table 8, Site Evaluation with EPA Exclusionary Criteria* shows the sites that failed the review for these criteria.

Table 8, Site Evaluation with EPA Exclusionary Criteria

Site Name	Sites Failing EPA Criteria					
	Airport Restriction	Flood Plain	Wetlands	Fault Areas	Seismic Impact Zone	Unstable Area
Auloa						
Ameron Quarry						
Barbers Point	X					
Bellows						
Diamond Head Crater			X			
Ewa No. 1						
Ewa No. 2						
Halawa A						
Halawa B						
Heeia Kai						
Heeia Uka						
Honouliuli						
Kaaawa						
Kaena	X					
Kahaluu						
Kahe						
Kalaheo (landfill reuse)						
Kaloi						
Kapaa No. 1						
Kapaa No. 2 & 3 (closed)						
Kaukonahua						
Keekee	X					
Koko Crater						
Kunia A						
Kunia B						
Maili						
Makaiwa						
Makakilo Quarry						
Makua						
Mililani						
Nanakuli A						
Nanakuli B						
Ohikilolo						
Olomana						
Poamoho						
Punaluu						
Sand Island	X	X				
Waiahole						
Waianae Expansion						
Waihee						
Waikane						
Waimanalo Gulch Exp.						
Waimanalo North						
Waimanalo South						
Waipio						

7.2.4 Local Exclusionary — Developed Areas

In the 30 years that elapsed since most of the sites on the list in *Table 6, Potential Landfill Sites* were identified many of the original landfill locations have been developed, primarily with residential housing. Some locations that were previously considered possible landfill sites may either have buildings on-site, or are so close to developed areas that a landfill would now be an incompatible land use. The City therefore determined that it would not propose new landfills within such developed areas.

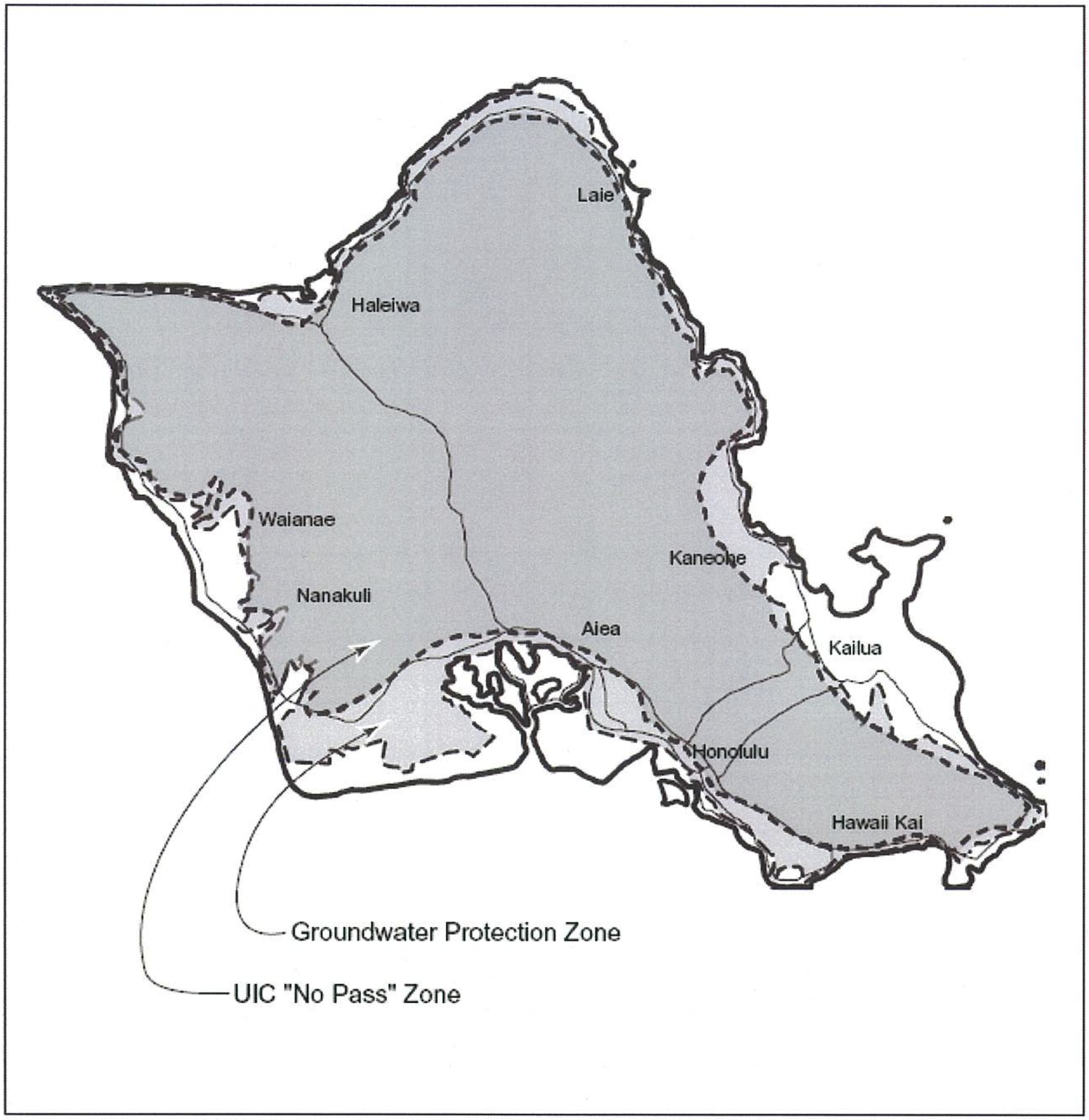
The City also reviewed potential sites that were expansions of closed landfills. Landfills on the original list that have been filled to capacity and closed were removed from further consideration.

This step reduced the potential site list from 40 to 34. *Table 9, Site Evaluation with Developed Area Criteria*, indicates the sites eliminated by application of these local exclusionary criteria.

Table 9, Site Evaluation with Developed Area Criteria

Site Name	Sites Failing Criteria for	
	Developed Area	**Closed Landfill**
Auloa		
Ameron Quarry		
Bellows		
Ewa No. 1	X	
Ewa No. 2	X	
Halawa A		
Halawa B		
Heeia Kai	X	
Heeia Uka		
Honouliuli		
Kaaawa		
Kahaluu	X	
Kahe		
Kalaheo (landfill reuse)		
Kaloi		
Kapaa No. 1		
Kapaa No. 2 & 3 (closed)		X
Kaukonahua		
Koko Crater		
Kunia A		
Kunia B		
Maili		
Makaiwa		
Makakilo Quarry		
Makua		
Mililani		
Nanakuli A		
Nanakuli B		
Ohikilolo		
Olomana	X	
Poamoho		
Punaluu		
Waiahole		
Waianae Expansion		
Waihee		
Waikane		
Waimanalo Gulch Expansion		
Waimanalo North		
Waimanalo South		
Waipio		

Figure 2, Groundwater Protection Zone and Underground Injection Control (UIC) Zone



7.2.5 Local Exclusionary Criteria — Groundwater

Local exclusionary criteria include groundwater restrictions. Groundwater resources of Oahu are protected through the State DOH, UIC program, and the BWS Groundwater Protection Zones.

The UIC program was established in 1984. The purpose of the program is to protect the State's potable groundwater resources from pollution by subsurface wastewater disposal. The program regulations are accompanied by UIC maps that demarcate a boundary line known as the "UIC Line." Landfills are restricted on lands that are landward of the UIC Line. Lands seaward of this line, however, are not restricted from subsurface wastewater disposal by underground injection (Figure 2). Sanitary landfills and waste disposal facilities may therefore be sited makai of this zone.

Prior to 1987, groundwater recharge areas for the Island of Oahu were identified by BWS. Since 1987, the State DOH has administered the No Pass Program (also shown in Figure 2). The BWS Groundwater Protection Zones identifies areas of groundwater recharge, areas of brackish groundwater supplies, and additional areas that may be acceptable for landfill development. Areas that are considered critical for groundwater recharge have been designated the "No Pass Zone." Within this area sanitary landfill and waste disposal systems are generally not permitted. All other areas are identified as within the "Pass Zone" and have been determined to be areas where landfills and shallow waste disposal systems may be permitted. These facilities are limited to a maximum depth of 30 feet.

Protection of ground and surface water, and air quality, from facilities such as sanitary landfills, is through the existing environmental permit process. Protection of ground and surface waters is delegated by EPA to the State DOH under provisions of the Federal Safe Drinking Water Act and Clean Water Act. These federal regulations enable the State DOH to protect Hawaii's drinking and surface waters from the siting of facilities, such as sanitary landfills, through Hawaii Administrative Rules, Chapter 11–23, UIC; Chapter 11–55, Water Pollution Control, and the National Pollution Discharge Elimination System Permit program. Regulation of air quality standards are similarly delegated from EPA to the State DOH, through the Clean Air Permit.

The State DOH has provided some guidance about what might be needed to establish a landfill outside the UIC line.[53] In part that guidance stated:

> "Should a solid waste permit applicant propose to site a landfill over drinking water resources, the permittee will be required to demonstrate that the proposed project is protective of our groundwater resource. As seen in other states, the design of this landfill will likely be at a minimum a double composite liner system. In addition, other requirements, such as screening and monitoring, may become more stringent. Needless to say, siting a landfill over drinking water resources will increase our scrutiny over the design and operation of the landfill, as well as significantly increase the cost to design, construct, and operate the landfill."

After application of the Groundwater Exclusionary Criteria, the potential list of sites decreased from 34 to 16. *Table 10, Site Evaluation with Groundwater Criteria*, shows the sites that were eliminated after review by the BWS staff and their comments on each of the 34 sites they reviewed.

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[53] Letter dated May 23, 2002, from Dr. Bruce Anderson, Director, State Department of Health, to Mr. Timothy Steinberger, Director, City Department of Environmental Services.

Table 10, Site Evaluation with Groundwater Criteria

Site Name	BWS Evaluation Notes	Sites Failing Review
Auloa	Very little to no groundwater resources. Within a rock complex. BWS does not consider feasible for use.	
Ameron Quarry	Dike type rocks associated with caldera complex. Very little groundwater resources.	
Bellows	No potable resources. Non-potable irrigation developed. BWS does not consider feasible for use.	
Halawa A	Site within BWS groundwater resource.	X
Halawa B	Site within BWS groundwater resource.	X
Heeia Uka	Site outside BWS designed groundwater resource zone.	
Honouliuli	Site just outside BWS designated groundwater resources zone, but within area considered subject to groundwater impact.	X
Kaaawa	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kahe	BWS plans to use site for future desalination facility.	X
Kalaheo (landfill reuse)	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kaloi	Groundwater resources present or nearby.	X
Kapaa No. 1	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kaukonahua	Site within BWS groundwater resource.	X
Koko Crater	Very little to no groundwater resources. BWS does not consider feasible for use.	
Kunia A	Groundwater resources present or nearby.	X
Kunia B	Groundwater resources present or nearby.	X
Maili Quarry	Brackish groundwater present but BWS does not consider feasible for use.	
Makaiwa Gulch	No potable resources. BWS does not consider feasible for use.	
Makakilo Quarry	Groundwater resources present or nearby.	X
Makua	Groundwater resources present or nearby.	X
Mililani	Site within BWS groundwater resource.	X
Nanakuli A	Very little to no groundwater resources. BWS does not consider feasible for use.	
Nanakuli B	Very little to no groundwater resources. BWS does not consider feasible for use.	
Ohikilolo	Only half of site available for development where there is very little to no groundwater resources in the lower half of property. BWS does not consider feasible for use.	
Poamoho	Groundwater resources present or nearby.	X
Punaluu	Groundwater resources present or nearby.	X
Waiahole	Groundwater resources present or nearby.	X
Waianae Expansion	Groundwater resources present or nearby.	X
Waihee	Groundwater resources present or nearby.	X
Waikane	Groundwater resources present or nearby.	X
Waimanalo Gulch Expansion	Very little to no groundwater resources. BWS does not consider feasible for use.	
Waimanalo North	Very little to no groundwater resources. BWS does not consider feasible for use.	
Waimanalo South	Groundwater resources present or nearby.	X
Waipio	Very little to no groundwater resources. BWS does not consider feasible for use.	

7.2.6 Landfill Capacity

The C&C and Advisory Committee established 10 years of landfill capacity as the lower limit for a site to be considered. The capacity of each site was determined from the earlier siting reports, which were listed in section 7.2. Those capacity calculations were done with topographic data of varying levels of detail and used requirements for landfill design and operation that preceded RCRAD, which made major changes to earlier landfill practice. As a result, the capacity evaluation would likely be different if recalculated with more detailed topographic information following current landfill practice.

In addition to the comments regarding the capacity calculations made earlier, it should be noted that the Waimanalo Gulch Sanitary Landfill has been designed after extensive evaluations of information such as:

- Civil engineering design supported by geotechnical investigations and soils evaluations so that the landfill will provide environmentally sound containment of the waste and maximize the capacity at the site
- The engineering design calculations that account for slope stability considerations so that the filled areas are stable under normal loading and potential seismic conditions
- Balancing the soil needed for cover with the excavation needed to maximize the landfill capacity is a complex engineering calculation that accounts for sequencing of fill at the landfill and other site specific factors.

These costly analyses can be completed only after a landfill site has been selected and they all impact the amount of capacity, and therefore, the number of years a site can be used as a landfill. The information available for the Waimanalo Gulch Sanitary Landfill reflects these calculations, whereas the information available for the alternative sites does not. As such, one must expect that the estimates of capacity for the alternative sites are subject to much more variability than for the Waimanalo Gulch Sanitary Landfill.

The amount of capacity needed was estimated using 2003 disposal data, and updated with the results of the November 2007 draft Update of the Solid Waste Integrated Management Plan and the City's announcement that the third boiler at H–POWER would be constructed. This data provides realistic information to estimate site life. The estimated volume that would be used for the estimated tonnage disposed is calculated below. The volume estimate includes the waste material as compacted before it is covered and the amount of dirt used to cover the waste. The key assumptions in estimating the volume are:

- MSW is compacted to a density of approximately 1,600 pounds per cubic yard.
- An additional 20 percent of the MSW and ash volume is added as cover material.
- The H-POWER ash is covered. It has a density of 1 cubic yard per ton.

Table 11, Estimate of Landfill Capacity Needs,[44] provides the calculation of volume needed. The estimates in this table reflect the estimated capacity of the third boiler at H–POWER provided by the Mayor's press release on January 18, 2008.

Table 11, Estimate of Landfill Capacity Needs (TPY)

Year	Landfill	H-Power	Additional WTE *	Landfill w/~~o~~ Additional WTE	Ash/ Residue **	Total Landfilled	Total Waste
2009	359,980	610,000		359,980		359,980	969,980
2010	379,070	610,000		379,070		379,070	989,070
2011	400,330	610,000	150,000	250,330	37,500	287,830	1,010,330
2012	403,270	610,000	300,000	103,270	75,000	178,270	1,013,270
2013	425,010	610,000	300,000	125,010	75,000	200,010	1,035,010
2014	447,010	610,000	300,000	147,010	75,000	222,010	1,057,010

* Mass burn facility: See Mayor's Press Release January 18, 2008.

** Assumed that the expansion would be operational at mid-year and 25 percent of Additional WTE becomes ash/residue that is landfilled.

Using the estimates from *Table 11,* the total landfill volume required for 10 years is 6,712,670 cubic yards (10 times the estimated annual requirement).

Of course, this estimate of need will vary with waste flow changes. For example, if a natural disaster occurs there will be an increase in the material entering the landfill and the estimated life of the site will decrease. If the residential curbside recycling program is more successful than expected and the curbside yard waste program expanded to weekly, the material needing disposal will decrease and the site life will increase.

The amount of landfill capacity needed will also vary if new means to process MSW prior to disposal are implemented. This Alternatives Analysis includes several technologies that could reduce the need for a landfill. It also discusses the approved addition of a third boiler to H-POWER to reduce the volume of waste that needs disposal. The use of transshipment could divert 100,000 tons per year to a landfill off the island, reducing the need for a local landfill. Implementation of any of these programs, or economic changes that decrease or increase waste production, will change the estimate of volume needed and change the expected life of the landfill.

The evaluation summarized in Table 12 assumes that the landfill site is used to its capacity, with the necessary excavation and lateral expansion. Excavation is needed to take advantage of the capacity at the site and minimize the cost and environmental impact of landfilling. The changes to the site capacity reported in this EIS assume that the landfill will be excavated.

The application of the capacity criterion is shown in *Table 12, Results of Application of Landfill Capacity Criterion*. The 16 sites evaluated were reduced to eight after the 10-year site life was considered. The capacity of the Waimanalo Gulch Sanitary Landfill was based on calculations that are updated as the design of the expansion is being done. As a result, the capacity of the expansion will be revised during the processing of the EIS.

Table 12, Results of Application of Landfill Capacity Criterion

Site Name	Landfill Life (years)	Capacity Less Than 10 Years
Auloa	4.7	X
Ameron Quarry	15.0	
Bellows	12.5	
Heeia Uka	4.0	X
Kaaawa	9.3	X
Kalaheo (landfill reuse)	7.2	X
Kapaa No. 1	5.1	X
Koko Crater	9.2	X
Maili	15.3	
Makaiwa	25.0	
Nanakuli A	6.7	X
Nanakuli B	15.6	
Ohikilolo	26.0	
Waimanalo Gulch Expansion	15.0	
Waimanalo North	16.0	
Waipio	4.2	X

7.2.7 Other Considerations

Two of the sites shown in *Table 12*, were also disqualified based on input from other governmental bodies that had control of the sites. *Table 13, Sites Considered After Capacity Criterion Applied*, lists the sites for which input from other agencies was sought.

Table 13, Sites Considered After Capacity Criterion Applied

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9.0	15.0
Bellows	4-1-15: por. 01	173	7.5	12.5
Maili	8-7-10:por. 03	200	9.2	15.3
Makaiwa	9-2-3: por. 02	338	15.0	25.0
Nanakuli B	8-7-9: pors. 1 & 7	432	9.4	15.6
Ohikilolo	8-3-1: 13	353	7.8	13.0
Waimanalo Gulch Expansion	9-2-3: 72 & 73	60	12.0	20.0
Waimanalo North	4-1-8: 13	171	9.6	16.0

Comments were received from the US Marine Corps regarding the Bellows site and from the State regarding the Waimanalo North site.

- The Bellows Air Force Base site is in federal control and cannot be condemned. A reply from the Marine Corps further indicated that the site is not available.

- The Waimanalo North site was designated as a State Forest Preserve, according to a letter the City received from the State Department of Land and Natural Resources. The State will not support its use for landfill and the City cannot condemn state land.

Several Advisory Committee members had reservations about the Ohikilolo site. The site was removed from further consideration based on these reservations:

- The site had the strong possibility of significant archeological and cultural resources (although studies had not been done to confirm the resources).

- It is remote from where the waste is collected and would require trucks to travel long stretches of road through the Waianae and Leeward Coast communities (where frequent accidents have occurred) to get to the site. This thoroughfare (Farrington Highway) is the only road providing access to the site.

- There were potential Native Hawaiian title issues regarding use of this site.
- It is one of very few remote coastal areas left on Oahu and is considered culturally sensitive by the community.

Eight sites were on the list before the Advisory Committee discussed its *other considerations*. Five remained on the list after the other considerations were reflected and they are shown in *Table 14, Potential Sites to which Advisory Committee Siting Criteria Applied.*

Table 14, Potential Sites to which Advisory Committee Siting Criteria Applied

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9	15
Maili	8-7-10:por. 03	200	9	15
Makaiwa	9-2-3: por. 02	338	15	25
Nanakuli B	8-7-9: pors. 1 & 7	432	9	16
Waimanalo Gulch Expansion	9-2-3: 72 & 73	200	9	15

7.2.8 Advisory Committee Siting Criteria

The criteria discussed in the previous sections relate to general limitations on locating landfills. The Advisory Committee considered local community concerns to be highly important and not adequately reflected in the above exclusionary criteria. Therefore, Screening Criteria were established to compare potential sites using factors considered important to the Advisory Committee. The Screening Criteria allow numerical comparisons of the different factors (the Advisory Committee identified 31 of them) for different sites to rank the sites in order of suitability as a landfill.

The site evaluations were done with a "double blind" process. That is, the Advisory Committee assigned one of the factors for numerically judging a site without the City or consultant's knowledge. The consultants evaluated the sites and assigned numeric value of the other factor without the Advisory Committee's knowledge of which sites were being evaluated. When the two parts of the evaluation were combined, the resulting site scores were insulated from undue influence or bias from any party.

The Screening Criteria were identified in five categories:

- Community,
- Environmental and Land Use,
- Economic,
- Technical, and
- Other considerations.

7.2.9 Screening Criteria Development

The general approach to developing local Screening Criteria involved identifying the impacts a landfill could have in a region and a method to numerically measure those impacts. These criteria were organized into two parts: *Point Value* and *Weighting Factor*.

- The *Point Value* measured how well a potential site satisfied a criterion.
- The *Weighting Factor* reflected the Advisory Committee's assessment of how important one criterion was compared to the other criteria. The *Weighting Factor* was multiplied by the *Point Value* to calculate the score for each criterion.

The sum of the criterion scores was the site score. The higher the final score for a site, the more appropriate it was for a landfill site.

The *Point Values* ranged from one to three. The higher the *Point Value* the better a site met a criterion. For example, a good landfill should be in an area with low rainfall. A site with annual rainfall of more than 60 inches received one point; a site with 20 to 60 inches of rain received two points; and a site with less than 20 inches of rain received three points.

The *Weighting Factor*s also varied from one to three with a *Factor* of three giving the best score.

The *Weighting Factors* were determined by the Committee members. Each member voted on the 10 criteria most important to them. There were 31 criteria. Criteria that received the most votes were assigned a *Weighting Factor* of three. The votes fell into three distinct groupings. Six criteria received the most votes and were assigned a *Weighting Factor* of three; seven had a *Weighting Factor* of two; and 18 had the fewest votes and were assigned a *Weighting Factor* of one. Several criteria received no votes and were also assigned a Weighting Factor of one.

The higher the product of the *Weighting Factor* and the *Point Value*, the better the site's characteristics are for use as a landfill.

The Screening Criteria and Weighting Factor assigned to each are shown in *Table 15, Screening Criteria.* The type of criteria is shown in the table for convenience. The type of criteria had no influence on the site screening.

Table 15, Screening Criteria

	Criterion	Weighting Factor
	Community	
1	Displacement of residences and businesses	1
2	Distance to nearest residence, school or business	3
3	Wind direction relative to populated areas	2
4	Population density near the site	3
5	Proximity to parks and recreational facilities	1
	Environmental and Land Use	
6	Zoning	1
7	Compatibility with/distance to existing land uses	1
8	Visibility from a general use public road	1
9	Visibility from residences and/or schools.	2
10	Groundwater	3
11	Wetlands	3
12	Flora and fauna habitat	2
13	Site aesthetics	1
14	Residential units along access road	1
15	Schools or hospitals along access road	1
16	Final use of the site when the landfill is closed	1
17	Archeological and/or historical significance	3
	Economic	
18	Cost of site acquisition	1
19	Cost of development	1
20	Cost of operations	1
21	Impact of removal of site on tax base	1
22	Haul distance from H–POWER	2
	Technical	
23	Landfill capacity or site life	3
24	Annual precipitation	2
25	Adequacy of drainage	1
26	Access to fire protection	1
27	Length of haul	2
28	Geology	1
29	Closure and post-closure cost	1
	Other Considerations	
30	Employment	1
31	Access	2

7.2.10 Site Scoring

The five sites listed in *Table 14*, were scored using the Screening Criteria. Each criterion had specific methods to assess the Point Value of the criterion. The information needed to make the assessment was gathered by observation at the site, through review of technical literature, or by calculation from known data. The information for each site was extensive and compiled in several attachments to the Advisory Committee report. A summary of the conditions at each of the five sites is provided in sections 7.3 to 7.7.

The results of the application of the 31 criteria for each of the five sites is shown in *Table 14, Potential Sites to which Advisory Committee Siting Criteria Applied.* That table also summarizes the data included in the site information attached to the Advisory Committee report. The methods to evaluate the *Point Value* of some of the criterion used data specific to the site, where such data was available. For example, the soil data was in soil reports that provided information about soils in the general area of the site. The criterion relating to cost used the best information available at the time.

Table 16, Results of Application of Screening Criteria shows the scores of each site for each of the criteria.

The methodology for site scoring for each of the 31 criteria is in Attachment C. The information in that attachment was taken from the attachments to the Advisory Committee report relating to each of the five alternative sites.

Table 16, Results of Application of Screening Criteria

	Criterion	Ameron	Maili	Makaiwa	Nanakuli B	Waimanalo Gulch
	Community					
1	Displacement of residences and businesses	3	3	3	3	3
2	Distance to nearest residence, school or busines	3	3	3	3	3
3	Wind direction relative to populated areas	6	2	2	2	2
4	Population density near the site	3	3	3	6	6
5	Proximity to parks and recreational facilities	2	2	1	2	2
	Environmental and Land Use					
6	Zoning	1	3	3	3	3
7	Compatibility with/distance to existing land uses	2	1	1	1	2
8	Visibility from a general use public road	2	3	2	1	3
9	Visibility from residences and/or schools.	6	2	2	2	2
10	Groundwater	9	9	9	9	9
11	Wetlands	3	3	6	6	3
12	Flora and fauna habitat	6	6	6	2	6
13	Site aesthetics	2	1	1	2	3
14	Residential units along access road	3	1	3	3	3
15	Schools or hospitals along access road	3	2	3	3	3
16	Final use of the site when the landfill is closed	1	1	1	1	1
17	Archeological and/or historical significance	6	6	3	6	6
	Economic					
18	Cost of site acquisition	2	2	2	3	3
19	Cost of development	2	2	2	2	3
20	Cost of operations	1	2	3	1	3
21	Impact of removal of site on tax base	1	1	1	1	3
22	Haul distance from H–POWER	4	4	6	6	6
	Technical					
23	Landfill capacity or site life	6	6	9	6	6
24	Annual precipitation	2	6	4	4	6
25	Adequacy of drainage	1	2	2	2	1
26	Access to fire protection	1	2	2	3	2
27	Length of haul	4	2	6	4	6
28	Geology	2	2	2	2	3
29	Closure and post-closure cost	3	3	2	1	3
	Other Considerations					
30	Employment	1	3	2	3	2
31	Access	6	2	4	4	6
	Total Site Score	107	102	113	109	131

Since the Advisory Committee report was completed, additional information has been provided regarding the cost of acquiring the Ameron Quarry and Makaiwa Gulch sites. In the Advisory Committee report, the cost of acquisition was the assessed value for property purposes. Parties representing Ameron Quarry and Makaiwa Gulch provided information to correct that information in letters appended to a letter from City Councilmember Tam to the State LUC[54].

Mr. Tam's letter reported on a meeting his Committee conducted in which it received testimony from representatives of Ameron Quarry and accepted a letter from the Estate of James Campbell, owner of the Makaiwa Gulch site. Mr. Tam's letter stated that:

> "… A presentation was made by Ameron Hawaii, the lessee of the Kapaa Quarry site, and by the Estate of James Campbell, owner of the Makaiwa Gulch site. Ameron Hawaii cited an economic impact of $109-$133 million should it have to shut down its operations and relocate (full report attached). The Kaneohe Ranch, owner of the Kapaa Quarry site did not testify but offered written testimony which stated its estimate of land acquisition cost to be $22-$46 million as opposed to the City's estimate of $3.7 million (letter attached). The Estate of James Campbell provided testimony suggesting that the economic impact should the Makaiwa Gulch site is chosen would be in the area of $121 million cost to the City …"

The cost evaluations used in the Advisory Committee report have been revised to reflect the added costs stated in Mr. Tam's report to the State LUC. The cost of acquiring the site was assessed by criterion number 18, Cost of Site Acquisition. *Table 17, Revised Evaluation of Criterion 18, Cost of Site Acquisition*, shows the original calculation of the Point Value for this criterion and the revised calculation using the revised site cost for Ameron Quarry and Makaiwa Gulch.

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[54] August 3, 2004 letter from Mr. Rod Tam, Chair Committee on Public Works & Economic Development, City Council, City and County of Honolulu to Mr. Anthony Ching, Executive Officer of the State Land Use Commission.

Table 17, Revised Evaluation of Criterion 18, Cost of Site Acquisition

Item	Ameron	Maili	Makiawa Gulch	Nanakuli B	Waimanalo Gulch
Cost in Advisory Committee Report	$3,184,200	$3,912,500	$16,516,900	$545,200	$0
Years of Life	15	15.33	25	15.7	15
Cost/Year of Life	$212,280	$255,219	$660,676	$34,726	$0
Point Value	2	2	2	3	3
Revised Cost	$46,000,000	$3,912,500	$121,000,000	$545,200	$0
Years of Life	15	15.33	25	15.7	15
Cost/Year of Life	$3,066,667	$255,219	$4,840,000	$34,726	$0
Revised Point Value	1	2	1	3	3

The result of that change is shown in *Table 18, Comparison of Site Scores.* That table shows the total site score with the original acquisition cost and the revised cost. It also shows that there was no change in the numerical order of the site scores with either acquisition cost. The detailed changes resulting from the change in site scoring for criterion number 18 is shown in *Table 19, Results of Application of Screening Criteria with Revised Cost of Acquisition*. The only change in this table is in criterion number 18. The number of points for Ameron Quarry and Makaiwa Gulch changed from six to three when using the increased cost numbers provided in Councilman Tam's report to the State LUC. [54]

Table 18, Comparison of Site Scores

Site	Original Acquisition Cost		Revised Acquisition Cost	
	Score	Rank	Score	Rank
Ameron Quarry	97	4	96	4
Maili	90	5	90	5
Makaiwa Gulch	99	2	98	2
Nanakuli B	97	3	97	3
Waimanalo Gulch	113	1	113	1

Table 19, Results of Application of Screening Criteria with Revised Cost of Acquisition

Criterion	Ameron	Maili	Makaiwa	Nanakuli B	Waimanalo Gulch
Community					
1 Displacement of residences and businesses	3	3	3	3	3
2 Distance to nearest residence, school or business	3	3	3	3	3
3 Wind direction relative to populated areas	6	2	2	2	2
4 Population density near the site	3	3	3	6	6
5 Proximity to parks and recreational facilities	2	2	1	2	2
Environmental and Land Use					
6 Zoning	1	3	3	3	3
7 Compatibility with/distance to existing land uses	2	1	1	1	2
8 Visibility from a general use public road	2	3	2	1	3
9 Visibility from residences and/or schools.	6	2	2	2	2
10 Groundwater	9	9	9	9	9
11 Wetlands	3	3	6	6	3
12 Flora and fauna habitat	6	6	6	2	6
13 Site aesthetics	2	1	1	2	3
14 Residential units along access road	3	1	3	3	3
15 Schools or hospitals along access road	3	2	3	3	3
16 Final use of the site when the landfill is closed	1	1	1	1	1
17 Archeological and/or historical significance	6	6	3	6	6
Economic					
18 Cost of site acquisition	1	2	1	3	3
19 Cost of development	2	2	2	2	3
20 Cost of operations	1	2	3	1	3
21 Impact of removal of site on tax base	1	1	1	1	3
22 Haul distance from H-POWER	4	4	6	6	6
Technical					
23 Landfill capacity or site life	6	6	9	6	6
24 Annual precipitation	2	6	4	4	6
25 Adequacy of drainage	1	2	2	2	1
26 Access to fire protection	1	2	2	3	2
27 Length of haul	4	2	6	4	6
28 Geology	2	2	2	2	3
29 Closure and post-closure cost	3	3	2	1	3
Other Considerations					
30 Employment	1	3	2	3	2
31 Access	6	2	4	4	6
Total Site Score	96	90	98	97	113

7.3 Ameron Quarry

7.3.1 Description of Site

Ameron Quarry is 391-acres located on the windward side of Oahu, within the Kapaa watershed, capable of holding nine million cubic-yards of MSW. The site was once the caldera of an ancient volcano, making the rock almost completely impermeable and of high quality for construction purposes.[55] Due to the fine grained materials of the quarry, such as Alaeloa and Helemano silty clays, there are no sensitive or endangered flora and fauna habitat found inside and within a half-mile of the quarry. Archaeological and/or historical significance is low due largely to late twentieth century land disturbances. However, thirty-one sites of known archaeological and/or historical importance are located within one mile of the quarry.

7.3.2 Landfill Infrastructure

7.3.2.1 On-Site

Ameron Quarry currently does not have landfilling infrastructure on-site and there is no space on-site for that infrastructure. As the site currently operates as a rock quarry, the existing infrastructure would need to be modified for the quarry to operate as a landfill, but much of the heavy equipment services needed for the quarry could also be used for the landfill.

7.3.2.2 Off-Site

The area within the quarry is used for the necessary infrastructure and for landfilling; space would be needed off-site for offices and other support facilities.

7.3.3 Capacity

Ameron Quarry has an estimated 15-year life span as a landfill. The site life was estimated from existing information (listed in section 7.2) and does not reflect current landfilling practices. The landfill life was estimated based on data available in existing reports. The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary, and filling to the natural grade.

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[55] KBAC Streamwalks, http://www.kbac-hi.org/, March 11, 2008.

7.3.4 Opportunities and Constraints

Ameron Quarry has some major advantages as a landfill:

- It has significant capacity in an area where the City has operated a landfill. It will be closer to the point of waste generation for the windward side waste than the Waimanalo Gulch Sanitary Landfill.
- The site has existing infrastructure for quarry operations that could be used for a landfill, reducing the startup cost.
- Roadways are wide enough and designed to carry heavy trucks.
- The site geology includes Alaeloa and Helemano silty clays that will help protect against leakage. Under State regulations, a landfill liner would be installed.
- The quarry operation has created a hole that may need to be filled.

There are constraints with using Ameron Quarry as a landfill:

- The quarry receives more than 60 inches of precipitation annually, making this site the wettest of the five alternatives. However, landfills operated in wetter areas in the mainland U. S. must do so under stringent EPA Subtitle D regulations.
- The site is the furthest from the H–POWER facility and population centers.
- The cost of acquisition is likely to be significantly more than shown in the Advisory Committee siting report. In addition, the land owner has stated that costs will be associated with moving the operation to another location.[48 54]
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development (PWED) commented: "The PWED Committee has received testimony in opposition to siting a landfill at the Ameron Quarry site including testimony in opposition from the landowner Kaneohe Ranch, the lessee Ameron Hawaii, the Kailua Neighborhood Board and various city and State elected officials. No testimony has been received in support of a landfill at the Ameron Quarry site."[48]
- The loss of construction material resources would be significant, according to the quarry operator. The operator stated that 10 years of capacity remain at the quarry that would be lost if the site were converted to a landfill, when the Advisory Committee report was issued in December 2003. [54]

7.4 Maili Quarry

7.4.1 Description of Site

Maili Quarry is 200-acres, capable of holding 9.2-million cubic-yards of MSW; located in the Waianae District of Leeward Oahu. The site is 3,500 feet mauka of Farrington Highway, four miles northwest of Nanakuli, and three miles south of Waianae. Elevation of the site averages approximately 40 feet above mean sea level (MSL). Soils are predominantly sand and gravel materials of the quarry, including Lualualei clay and Mamala stony silty clay loam. Sensitive and endangered flora and fauna are not known to exist inside the quarry, nor within a half-mile distance. No archaeological or historical areas of significance have been documented within the Maili Quarry; however, 16 sites do exist within a quarter-mile of the site boundaries, eight sites between a quarter-mile and half-mile, and six sites between a half-mile and mile.

7.4.2 Landfill Infrastructure

7.4.2.1 On-Site

Maili Quarry currently has infrastructure on-site to support the existing quarrying operation. However, there is space available on-site for necessary infrastructure. As the site currently operates as a recycler of concrete, improvements and modifications to the existing concrete recycling infrastructure may be necessary for Maili Quarry to operate **as a landfill**.

7.4.2.2 Off-Site

No facilities are needed off-site as space appears to be available on-site.

7.4.3 Capacity

Maili Quarry has an estimated 15.33 year life span. This equates to an estimated capacity for the disposal of approximately 9.2-million cubic-yards of waste. The landfill life was estimated based on data available in existing reports (listed in section 7.2). The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary and filling to the natural grade.

7.4.4 Opportunities and Constraints

The advantages of using Maili Quarry as a landfill are:

- On-site cover,
- On-site brackish well for dust control,
- Consistent zoning in the State Agricultural District
- Utilities on-site,
- Low precipitation,
- Close proximity to H-POWER.

Constraints on using Maili Quarry as a landfill are:

- The distance to residents, schools, and businesses. The site is located 1,139 feet from Maili Elementary School and 875 feet from the nearest resident. It is just over 100 feet from single-family residential units, and the Waianae Coast Comprehensive Health Center is located along the access road to the quarry.
- Traffic accidents cause major delays; only one road access.
- Significant pedestrian cross-traffic.
- Access road privately owned.
- Only coral quarry on-island.
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development commented: "The PWED Committee has received testimony in opposition to a landfill at the Maili site and anywhere on the Leeward coast in general. No testimony has been received in support of a landfill at the Maili site."[48]

7.5 Makaiwa Gulch

7.5.1 Description of Site

Makaiwa Gulch is 338-acres, capable of holding 15-million cubic-yards of MSW (25-years capacity). The site is located on West Oahu, 1.5 miles northwest of Puu Palailai, north of Farrington Highway, 1.6 miles south of Puu Manawahua, and 1.3 miles east of Kahe Point. Elevation ranges from approximately 120 feet to over 600 feet MSL. Soils are generally associated with sand and gravelly materials of the gulch and include Stony steep land, Lualualei extremely stony clay, Helemano silty clay, and Mahana-Badland complex soils. Sensitive and endangered flora and fauna are not known to exist within the site, but do exist at distances greater than a half-mile away. Seven sites of archaeological and/or historical significance are located within and on the edge of the site. Twenty-three sites are located within a mile, fourteen within a quarter-mile (although only two have been evaluated as possibly meriting preservation), four between a quarter-mile and half-mile, and five sites are between a half-mile and mile. Makaiwa Hills, LLC has submitted an Environmental Impact Statement Preparation Notice (EISPN) for the development of a residential community on 1,781 acres of undeveloped land in Ewa, Oahu; the same land proposed as an alternative landfill site. The notice was submitted October 2006, and is available on the Office of Environmental Quality Control (OEQC) web page.[56] Construction is currently underway.

7.5.2 Landfill Infrastructure

7.5.2.1 On-Site

There is space available on-site for the construction of landfill infrastructure.

7.5.2.2 Off-Site

Construction of infrastructure off-site is not anticipated to be required.

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[56] A final environmental impact statement (FEIS) has been filed. Office of Environmental Quality Control, The Environmental Notice. November 8,2007.

7.5.3 Capacity

Makaiwa Gulch has an estimated 25 year life as a landfill, or disposal ability to process 15-million cubic-yards of waste. The landfill life was estimated in data available from existing reports (listed in section 7.2). The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary, and filling to the natural grade. With evaluations based on current practice, it is likely that significantly more life is available at this site than the estimate included in this report.

7.5.4 Opportunities and Constraints

The Makaiwa Gulch site has several advantages:

- It has a significant amount of capacity – 25 years.
- Access is potentially available off main highway.
- Consistent zoning in the State Agricultural District
- The property is currently not being used, although development for a residential subdivision has been proposed.
- It is the shortest distance of the alternative sites from the H-POWER facility and close to service population (short haul distance).
- Extensive archeological/flora/fauna surveys have been completed.
- The area has low precipitation, which will mean less water from rainfall that must be managed at a landfill.

There are several major constraints:

- The current development under construction at the site precludes its use as a landfill
- Acquisition Costs.[54]
- Upwind from heavily populated residential and resort areas.
- No on-site utilities or access road.
- Rockfall hazards may exist along the highway to Makaiwa Gulch.
- Not consistent with development plan which is planned for residential subdivision development.

- Close to a transition between H-1 and Farrington Highway
- HECO electric power lines (138 KV) cross the site.
- View planes readily seen.
- Perception that a landfill would create a major economic impact that would "close down" residential and resort development, according to developer's representative[54]
- Close to center of area of major population growth
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development commented: "The PWED Committee has received testimony in opposition to a landfill at the Makaiwa Gulch site including testimony in opposition from the landowner and also testimony was received in opposition to siting a landfill anywhere on the Leeward coast in general. No testimony has been received in support of a landfill at the Makaiwa Gulch site."[48]

7.6 Nanakuli B

7.6.1 Description of Site

Nanakuli B is 432.3-acres, capable of holding 9.4-million cubic-yards of MSW, on West Oahu, south of Maili Quarry. The site is located 2,000 feet mauka of Farrington Highway and Nanaikapono Beach Park, 4,000 feet west of Puu Helakala, and 4,000 feet east, southeast of Puu O Hulu Uka. Elevation ranges from approximately 40 feet to over 300 feet MSL. Nanakuli B borders a critical habitat area for sensitive and endangered flora and fauna. Although the potential landfill site does not contain any archaeological and/or historical sites within its boundaries, sixty-two archaeological and/or historical sites can be found within one mile of the site boundaries; with the majority of the sites located closer to one mile out. Three of these archaeological and/or historical sites are less than a quarter-mile from site boundaries, nine are located between one-quarter and one-half mile, while fifty are located between one-half and one mile.

Leeward Land LLC has submitted an EISPN for the construction and operation of an MSW landfill and composting facility on an approximate 172-acre site on Nanakuli B. The notice was submitted May 23, 2006, and is located on the State OEQC web page.

7.6.2 Landfill Infrastructure

7.6.2.1 On-Site

Nanakuli B currently does not have landfilling infrastructure on-site; however, there is space available.

7.6.2.2 Off-Site

Off-site space is not needed for infrastructure.

7.6.3 Capacity

Nanakuli B has an estimated 15.6 year life, or capacity of 9.4-million cubic-yards. The landfill life was estimated in data available in existing reports (listed in section 7.2). The life should be recalculated to reflect current landfilling practices, allowing for an adequate buffer around the site boundary, and filling to the most advantageous grade. With evaluations based on current practice, it is likely that more life is available at this site than the estimate included in this report.

7.6.4 Opportunities and Constraints

The Nanakuli B site has several advantages:

- The zoning is consistent.
- The area gets low precipitation.
- The landfill would be close to existing C&D landfill.
- Utilities are readily accessible.
- The site is not currently being used.
- Site acquisition costs relatively low.
- Brackish wells are available on-site for water for dust control.

The disadvantages of this site include:

- Hazardous rockfalls on highway to site.
- Traffic accidents cause major delays on Farrington Highway and could slow access to the site.

- Pedestrian cross traffic on Farrington Highway and the access road.
- The Navy owns the access road, which may necessitate the City paying for access.
- Upwind of Maili Elementary School and residences. It is surrounded by single-family residences less than 300 feet away, on the southern and western boundaries. Nanakuli Elementary is 1,372 feet away, Nanaikapono Elementary is 2,190 feet away, and the Pacific Shopping Mall is 1,335 feet away. Residences are located on the far west side of Lualualei Naval Road.
- Dust could impact nearby homes.
- Trucks would pass schools and medical facilities to get to site.
- In its report on its review of potential sites the Council Committee on Public Works and Economic Development commented: "The PWED Committee has received testimony in opposition to a landfill at the Nanakuli B site and anywhere on the Leeward coast in general. No testimony has been received in support of a landfill at the Nanakuli B site."[48]

7.7 Waimanalo Gulch Sanitary Landfill

7.7.1 Description of Site

Waimanalo Gulch Sanitary Landfill is a 200-acre site, with approximately 92.5-acres remaining for expansion and capable of holding 9-million cubic-yards of MSW, on the Leeward side of Oahu. Waimanalo Gulch is owned by the C&C and operated under contract by Waste Management of Hawai'i, Inc. The site currently receives the H-POWER facility's ash and residual wastes. It is also the landfill site for commercial MSW that exceeds the capacity at H–POWER.[57] The site adjoins Farrington Highway. To the northwest is the Hawaiian Electric Kahe Power Generating Station. South of the site are the Ko Olina Resort, while southeast of the site is the Honokai Hale residential subdivision.

The on-site soils including Rock land, Stony steep land, Lualualei extremely stony clay, and Mahana-Badland complex, provide an improved barrier between surface and groundwater. Sensitive and endangered flora and fauna habitat are not known to exist within the boundaries or within a half-mile of the site. Archaeological and/or historically significant sites are not found within the majority of the landfill site. An archaeological

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[57] Waste Management, Keeping Hawaii Clean, http://www.keepinghawaiiclean.com/waimanalo.htm, March 11, 2008.

site comprised of three stone uprights was recently discovered. Mitigation to address the find is underway with the State Historic Preservation Division and community informants to identify an appropriate and culturally sensitive means of preserving the stones. No other sites are known within the property. Surrounding the site, 30 sites of potential archaeological and/or historical significance can be found between a quarter-mile and half-mile of the site boundaries.

Construction and operating practices at the Waimanalo Gulch Sanitary Landfill are consistent with state and City & County of Honolulu requirements for site and soils stability and environmental compliance. The operation of the landfill had been the subject of DOH action regarding a notice of violation and fine. The DOH and Waste Management of Hawai'i, Inc., the site operator, have agreed to a settlement. DOH proposed fining the landfill $2.8 million (DOH and the operator settled for $1.5 million) for 18 alleged violations of the operating permit that were self-reported by Waste Management.

7.7.2 Landfill Infrastructure

7.7.2.1 On-Site

Waimanalo Gulch currently has landfilling infrastructure on the landfill property, as well as additional space available for the expansion of such infrastructure.

The infrastructure is part of the landfill property, but not part of the area permitted for use as the disposal site. The area permitted for landfilling is 107.5 acres of the total 200 acre site.

7.7.2.2 Off-Site

Facilities are not needed off-site.

7.7.3 Capacity

Waimanalo Gulch Sanitary Landfill has an estimated minimum 15 year life, or ability to dispose of nine million cubic-yards of waste. The capacity is expected to be reevaluated as the EIS is processed.

7.7.4 Opportunities and Constraints

The continued use of the Waimanalo Gulch Sanitary Landfill offers the following opportunities:

- Least costly site to acquire and operate as it is owned by the C&C and the necessary infrastructure is already in place.
- Close to H-POWER.
- The technical information needed to design the landfill is known. With the other sites, a significant amount of technical information will be needed before they can be designed and permitted.
- Road access acceptable.
- Close to the service population centers – shorter haul distance than all alternative sites, except Makaiwa Gulch.
- Low precipitation.
- It is good policy to use a resource, like the Waimanalo Gulch Sanitary Landfill property, until it is no longer capable of providing the service.
- In its report on its review of potential sites the PWED Committee commented: "There was some testimony received in favor of including the Waimanalo Gulch Landfill as one of the sites under consideration by the City Council and some testimony received supporting the continued use of the Waimanalo Gulch Landfill including testimony from the current operator, Waste Management Hawaii."[48]

There are several disadvantages to the continued use of the Waimanalo Gulch Sanitary Landfill, including:

- It is located upwind and visible from a major resort area.
- Further effort involving landscaping is needed to reduce viewplanes of the landfill facing Farrington Highway and Ko Olina.
- Developers' representatives have claimed there would be major economic impact on residential development and resort development with continued operation of the Waimanalo Gulch Sanitary Landfill. [54]
- Trucks are visible lined on-site and along Farrington Highway.

- The site is located close to the center of population growth.

- In its report on its review of potential sites the PWED Committee commented:
  > "The PWED Committee has received testimony in opposition to continued use of the Waimanalo Gulch Landfill and also testimony in opposition to siting a landfill anywhere on the Leeward coast in general."[48]

7.8 Response to Scoping Questions to Alternative Sites

The C&C conducted scoping sessions on the following dates at the locations indicated:

- Monday, July 10, 2006 at Nanakuli High School.
- Tuesday, July 11, 2006 at Ben Parker Elementary School.
- Thursday, July 27, 2006 at Mission Memorial Auditorium.
- Thursday, August 10, 2006 at Kapolei Hale.

Several of the audience members offered their comments in response to the information presented by the C&C. This portion of the analysis presents the comments that related to alternative sites.

Comments will be denoted by a 'C', questions by a 'Q', and answers by an 'A'.

Q: LUC and City Planning Commission said to close Waimanalo Gulch. In light of this, how are you proposing to expand it and keep it open?

A: The City will seek an amendment to the State SUP to allow an expansion at Waimanalo Gulch Sanitary Landfill. The amendment will be submitted to the City Planning Commission for approval and forwarding to the State LUC.

Q: What is the status of other public and private landfill operations and proposed sites?

A: The only State-permitted public operating landfill is Waimanalo Gulch Sanitary Landfill. The only State-permitted private landfill is PVT Landfill. PVT Landfill accepts C&D wastes. The City Department of Planning and Permitting has received an EISPN for Nanakuli B.

Q: Why is the City not honoring its commitment to close the Waimanalo Gulch Sanitary Landfill by May 2008?

A: The City acknowledges that commitments were made to close Waimanalo Gulch Sanitary Landfill with the implied understanding that a new landfill could be located and permitted on the island to accept waste. The issue of selecting a new landfill that would be operational, despite having been reviewed by several parties, could not be accomplished by the May 2008 deadline when the current State SUP Amendment will expire. The parties reviewing this matter included the ENV, the prior administration's Report of the Mayor's Advisory Committee on Landfill Site Selection on Landfill Siting, the current Administration, and the Honolulu City Council.

Q: Why did the previous assessment of landfill sites not include excavation costs for the expansion, as excavation was needed for the current site?

A: The assessment of landfill sites evaluated all sites with similar technical information. All sites would require some amount of excavation; however, precise costs could not be determined with the information available, so excavation costs were not used as part of the evaluation criteria.

C: The community has said, "No more landfills!" When will the City get the message – No Landfills, Yes JDI Plasma Arc Gasification – stop thinking about the money; think and look at our community, our families' health, and safety.

A: The C&C cannot immediately close down all landfills on Oahu. Section 3.1 gives an explanation as to why a sudden cease of landfills is not the best solution, as well as a catastrophe to Oahu residents and visitors' health and safety.

C: Legislation should be passed requiring each council district to be responsible for the trash from their district being buried in their district. If the residents of the Districts will not consent to a landfill in their district it may be buried in the Waimanalo Gulch Sanitary Landfill at an additional tipping charge. These charges must be of sufficient rate as to (A) encourage each district to be responsible for their trash or (B) be adequate enough for the residents of the 1st district to accept the trash from any other districts. These monies would be used for the sole benefit of the legal residents of the 1st district and only them.

A: The general concept that this comment refers to is a Host Benefit Fee. The Community Benefits Package was proposed by the Mayor and $1,000,000 in grants has been made to Leeward nonprofit groups.

C: With the latest innovative technology in mind, open a new landfill at another site on another part of the island. Start over the right way. We know that this is a political challenge, but done right, it will help to teach us all – on all sides of the island – to be better stewards of the land; educate us in the latest landfill technologies; and say to the people of the Waianae coast that you value this are and do not see it – or its people – as a place of garbage.

A: Past siting efforts can be found in section 6.2. This section discusses the Report of the Mayor's Advisory Committee on Landfill Site Selection and the work accomplished in determining the best site for Oahu's next landfill. The sites chosen are discussed in sections 6.4-6.8.

It should also be noted that the Waimanalo Gulch Sanitary Landfill is only the latest site the City has used. Others have been located at Kapaa and Ala Moana.

8 Preferred Alternative

Several of the alternative technologies and the transshipment alternative show promise to offer the C&C an option to continued use of the Waimanalo Gulch Sanitary Landfill for the MSW that exceeds H–POWER capacity. The time between preparation of this EIS and the date to comply with the State LUC Order, November 1, 2009, is insufficient for the administrative processes to arrange for another alternative for all of the MSW and H-POWER refuse being disposed at the Waimanalo Gulch Sanitary Landfill.

A viable alternative must meet several considerations:

- It needs to provide for the health and safety of Honolulu residents and visitors by properly managing the waste produced on the island.
- Any alternative, whether it is technology, another site, or transshipment, needs to be contracted for, permitted, and made operational by November 1, 2009.
- Because of the complexity of the siting requirements in Hawaii, the high degree of public interest and input into any siting process, the environmental clearance needed, and the permitting process, a significant amount of time (some say up to 10 years for a new landfill site or new alternative technology) may be needed for an alternative to become operational.

The Waimanalo Gulch Sanitary Landfill is the only alternative currently available to dispose of MSW and H–POWER ash and residue. Continued use of the Waimanalo Gulch Sanitary Landfill until it has been filled to its physical capacity to accept waste is the Preferred Alternative.

8.1 Continued Use of Waimanalo Gulch Sanitary Landfill

The Waimanalo Gulch Sanitary Landfill has capacity to handle MSW for at least 15 years. The site is providing that service today.

It was the site selected by the City Council on December 1, 2004, as stated in Resolution 04-348, C.D.1, F.D.1. That resolution includes the following statements:

> "...BE IT FURTHER RESOLVED by the council, and in accordance with the conditions set forth by the state land use commission, that the Waimanalo Gulch site is selected as the site for the city's landfill because:

> (1) The site currently has over 15 years capacity left with further expansion, and this capacity can be further extended should the city be successful in reducing the amount of waste currently entering the landfill through recycling and the use of new technologies;
>
> (2) The city already owns the property and the infrastructure is already in place, making the site the most economical and least expensive to develop and maintain as a landfill;
>
> (3) Other sites will require a large capital outlay by the city to acquire the land through condemnation and to develop and construct the site and required supporting infrastructure;
>
> (4) A landfill management contract is already in place for 15 years;
>
> (5) This is the only site where the costs and revenues for a landfill are known factors; and
>
> (6) The current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impact, odors, airborne waste, litter and dust control; and

BE IT FURTHER RESOLVED that the city administration is requested to immediately contact the planning commission, the state department of health and state land use commission to satisfy any necessary requirements for the use of the selected landfill site; ..."

8.2 Transshipment Alternative

Transshipment of waste transfers the responsibility for stewardship of the land to the mainland landfill that disposes of the transshipped waste. However, operation of transshipment in conjunction with continued use of the Waimanalo Gulch Sanitary Landfill, expansion of recycling alternatives, and addition of a third boiler to H–POWER offers the C&C another alternative for reducing the material being landfill. The C&C has issued a Notice to Bidders to determine if transshipment is advantageous in the time before addition of a third boiler to H–POWER. However, transshipment cannot handle all the waste going to the landfill, so the landfill will continue to be needed.

The regulatory process for transshipment requires considerable time. It involves federal approval of the transshipment of waste materials from Honolulu to the mainland and local approval of the facilities used to prepare the waste for shipment.

There are at least two companies that have expressed interest in transshipping Honolulu's waste: Pacific Rim and Hawaiian Waste Services. At the time this EIS is being prepared, Hawaiian Waste Services has received the federal approvals needed to ship the waste from its point of arrival on the mainland up the Columbia River to the Roosevelt Landfill in Washington State.[58] [59]

Transshipment may offer near term advantages to the C&C to reduce disposal at the Waimanalo Gulch Sanitary Landfill. The C&C may wish to issue a Request for Proposal or other solicitation for transshipment to identify the costs and other considerations.

While transshipment offers an alternative for some of the MSW, there are parts of the waste stream that cannot be shipped due to federal restrictions, some items that cannot be accepted due to the process used, and financial and solid waste management considerations that may limit transshipment to a select portion of the waste stream. The continued use of the Waimanalo Gulch Sanitary Landfill offers a means to handle the prohibited material, offers an essential safety net if transshipment is interrupted, and is an integral part of the C&C waste management system.

In addition to the other disadvantages of transshipment, that activity produces over 200 percent more emissions that disposal at the Waimanalo Gulch Sanitary Landfill. The difference in emissions compared to taking the waste to H–POWER is even more dramatic. H–POWER shows a reduction in island-wide emissions (or negative emissions) of 28,711 metric tons per year of CO_2 equivalent compared to a positive generation from transshipment of 3,978.

The Waimanalo Gulch Sanitary Landfill cannot be replaced by transshipment, although the amount of MSW needing on-island landfill disposal can be reduced.

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58 United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine. Compliance Agreement with Roosevelt Landfill. January 10, 2007.

59 United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine. Compliance Agreement with the State of Hawaii. January 19, 2007.

8.3 Technology Alternative

Technology has progressed since the last EIS was completed for this site. The references used for this evaluation note that alternative technologies have operated in Europe and Japan processing MSW for two or more years. Other alternatives are showing promise and other jurisdictions (e.g., New York City[60] and Los Angeles County[61]) are investing a significant amount of time and money studying technologies and evaluating proposals to provide them with technology solutions. The jurisdictions considering alternative technologies have a landfill within reasonable distance by rail or truck transport to provide backup if the technology does not perform as expected. That is not the case in Honolulu, making the use of an alternative technology and closure of the Waimanalo Gulch Sanitary Landfill a risky concept.

None of the technologies meet all of the City requirements as listed in section 6.1. In addition, none of the alternative technologies can have the environmental, land use, permitting, and administrative contracting completed before the November 1, 2009, State LUC deadline.

Expansion of recycling offers advantages for reducing waste going into the Waimanalo Gulch Sanitary Landfill. It should be pursued, but cannot be relied upon to completely eliminate the need for the Waimanalo Gulch Sanitary Landfill.

Addition of a third boiler to H–POWER will reduce the amount of material needing disposal and generate energy needed on the island. However, landfill capacity is needed for the non-processible materials. In addition, the environmental, land use, permitting and administrative contracting cannot be completed before the November 1, 2009, State LUC deadline.

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[60] New York City Economic Development Corporation and New York City Department of Sanitation. Evaluation of New and Emerging Solid Waste Management Technologies. September 16, 2004.

[61] County of Los Angeles Department of Public Works. Los Angeles County Conversion Technology Evaluation Report, Phase II- Assessment. October 2007.

8.4 Site Alternative

None of the alternative sites offer the advantages that the Waimanalo Gulch Sanitary Landfill site does. Since it is an operating site with remaining capacity, it has many benefits the others do not have. Assuming that the State LUC and DOH both extend the existing permits, there will be no delay in its use.

The four alternative sites have the capacity and other important features that make them reasonable candidates. However, there are considerations with all four sites that make them less attractive.

The representatives of the Ameron Quarry and the James Campbell Estate, owner of the Makaiwa Gulch site, have both provided estimates of significantly increased cost to acquire the sites and have highlighted several additional complicating issues. Using either of these two sites as a landfill will require potentially protracted action to obtain the site in addition to the lengthy time for the environmental, land use, and permitting processes. In addition, the Makaiwa Gulch site is currently being developed for other purposes.

The other two sites, the Maili Quarry and Nanakuli B are both located further into the Waianae area, which would probably result in increased opposition from the community. Also, the Nanakuli B site has been proposed as a landfill by a private developer, so the cost of acquiring the site should be expected to be greater than estimated here.

The only landfill site that can be in use before the November 1, 2009, State LUC deadline is the Waimanalo Gulch Sanitary Landfill.

Attachment A — August 22, 2006 USDA Decision Regarding Transshipment

Rules and Regulations

Federal Register
Vol. 71, No. 163
Wednesday, August 23, 2006

DEPARTMENT OF AGRICULTURE

Animal and Plant Health Inspection Service

7 CFR Part 330

9 CFR Part 94

[Docket No. 05–002–4]

RIN 0579–AC12

Interstate Movement of Garbage From Hawaii; Municipal Solid Waste

AGENCY: Animal and Plant Health Inspection Service, USDA.

ACTION: Final rule.

SUMMARY: We are amending the regulations pertaining to certain garbage to provide for the interstate movement of garbage from Hawaii subject to measures designed to protect against the dissemination of plant pests into noninfested areas of the continental United States. We are amending these regulations upon request in order to provide the State of Hawaii with additional waste disposal options, and after determining that the action is highly unlikely to result in the introduction and dissemination of plant or animal pests or diseases into the continental United States from Hawaii. We are also making other amendments to the garbage regulations to clarify their intent and make them easier to understand.

DATES: *Effective Date:* September 22, 2006.

FOR FURTHER INFORMATION CONTACT: Ms. Shannon Hamm, Assistant Deputy Administrator, Policy and Program Development, APHIS, 4700 River Road Unit 20, Riverdale, MD 20737–1231; (301) 734–4957.

SUPPLEMENTARY INFORMATION:

Background

Under 7 CFR 330.400 and 9 CFR 94.5 (referred to elsewhere in this document as the regulations), the Animal and Plant Health Inspection Service (APHIS) regulates the importation and interstate movement of garbage that may pose a risk of introducing or disseminating animal or plant pests or diseases that are new to or not widely distributed within the United States. Not all movements of waste material are regulated by APHIS;[1] only movements of waste that meets APHIS's definition of "garbage" are regulated, and even then, only under certain circumstances. Under the regulations, the term "garbage" is defined as "all waste material derived in whole or in part from fruits, vegetables, meats, or other plant or animal (including poultry) material, and other refuse of any character whatsoever that has been associated with any such material on board any means of conveyance, and including food scraps, table refuse, galley refuse, food wrappers or packaging materials, and other waste material from stores, food preparation areas, passengers' or crews' quarters, dining rooms, or any other areas on means of conveyance." Garbage also means "meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed."

Waste material that meets the definition of garbage is regulated by APHIS if it is removed from a means of conveyance that:

- Within the last 2 years, has been in any port outside the United States or Canada; or
- Within the last year, has moved from Hawaii or a U.S. territory to another U.S. State.[2]

However, garbage onboard a conveyance that meets one of the two conditions above may be exempted from regulation if the conveyance is cleared of all regulated garbage, and after cleaning and disinfection, an inspector certifies that the conveyance contains no garbage that poses a risk of pest introduction into the United States. Garbage from Canada is also exempted from regulation.

The regulations were established to address the risk posed by garbage that originates on or is onboard conveyances that have been located in areas where exotic animal or plant pests or diseases are present. Such garbage includes waste generated during the course of commercial and private air travel and commercial or private transit of goods or persons by sea. The regulations were not intended to address risks posed by movements of municipal solid waste (MSW).

Due to a limited availability of landfill space in Hawaii, business interests and public officials are exploring other options for disposal of the State's waste. These persons have requested that APHIS allow the interstate movement of MSW from Hawaii. We believe the regulations require amendment to provide for the movement of garbage generated in Hawaii.

Pest Risk Assessment

As part of our evaluation of the request by business interests and public officials in Hawaii, we prepared a draft pest risk assessment (PRA), titled "The Risk of Introduction of Pests to the Continental United States via Plastic-Baled Municipal Solid Waste from Hawaii " (March 2006) to evaluate the interstate movement of garbage from Hawaii to the mainland of the United States. The objective of the PRA was to evaluate whether a baling technology that would bundle, wrap, and seal the MSW into airtight bales will effectively mitigate potential plant pest risks associated with MSW from Hawaii. The PRA focused on the planned use of the baling technology because airtight enclosure from creation to burial will mitigate the risks of establishment by any plant pests. The PRA addressed the following three issues:

- The ability of the baling technology to provide a strong, airtight barrier;
- The examination of the occurrence of ruptures or punctures; and
- The examination of general pathway procedures to reduce pest incidence in the bales and the chances of escape in the event of accidental ruptures or punctures.

In addition, the PRA provides qualitative risk ratings for different pest types based on the likelihood of introduction. Only those pathway

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[1] The operation of landfills and incinerators and the intrastate and interstate movement of garbage are regulated predominantly by State and local governments. The U.S. Environmental Protection Agency (EPA) regulates the interstate movement of hazardous wastes. See EPA's Web site for additional information: *http://www.epa.gov/epaoswer/osw/index.htm.*

[2] "State" is defined as any of the 50 States and any U.S. territory or possession.

processes likely to be common to all company proposals to transport baled Hawaiian waste were considered. We will prepare separate assessments for other company proposals which will address factors such as the destination landfill, type of transportation to be used on the mainland, and pest species that may pose particular threats.

The PRA concluded that transporting MSW from Hawaii to the continental United States in airtight bales poses a low risk of pest introduction and dissemination because the baling technology mitigates the risk from all types of plant pests. In addition, the other pathway procedures should adequately protect against accidental ruptures or punctures in bales during the handling and transport process. Pest mitigation processes such as the baling technology itself or features of the proposed pathway, including the waste type, and how bales are staged, handled, transported, and buried, are added safeguards that we conclude will prevent the introduction and dissemination of exotic pests. As a complement to the baling technology, the PRA recommends proper staging of bales and certification that they are mollusk-free to mitigate against contaminating pests. As long as those processes and the procedures proposed by the companies (including diversion of yard and agricultural waste, prompt shipment, monitoring and inspection of bales, and thorough cleanup of any ruptures that do occur) are followed, establishment of Hawaiian plant pests via this pathway is highly unlikely.

On April 19, 2006, we published in the **Federal Register** (71 FR 20030–20041, Docket No. 05–002–2) a proposal[3] to amend the regulations in "Subpart—Garbage" (7 CFR 330.100 through 330.400) and 9 CFR 94.5 pertaining to certain garbage to provide for the interstate movement of garbage from Hawaii subject to measures designed to protect against the dissemination of plant pests into noninfested areas of the continental United States.

We solicited comments on the proposed rule for 30 days ending on May 19, 2006. We received five comments by that date, including a request to extend the comment period. In a document published in the **Federal Register** on May 31, 2006 (Docket No. APHIS–2005–0047, 71 FR 30834), we reopened and extended the deadline for comments until June 5, 2006. We received an additional seven comments by that date. The comments came from several municipalities in Hawaii, waste companies, congressional representatives, the State of California, a tribal representative, and members of the general public. Of the 12 comments, 8 fully supported the proposal. The remaining commenters raised several issues, which are discussed below.

Bale Technology

Comment: APHIS must test the bale technology to ensure that the plastic bales will not breach. In addition, APHIS should use its own experts to validate the research data provided by the technology vendors and their consultants regarding the safety of bale technology.

Response: As cited in the PRA, independent researchers have tested the baling technology in a variety of situations and firmly established its utility and effectiveness at creating airtight bales of MSW. Because these studies have been peer reviewed, APHIS believes that it is not necessary to repeat the testing performed in the underlying research.

Pest Risk Assessment

Comment: APHIS should revisit its PRA to clarify the roles played by compaction and shredding because whole fruit containing fruit fly or other insect eggs or larvae will not be affected by the anoxic conditions of the bales.

Response: While insect eggs and larvae, including those of fruit flies and other agricultural pests, could theoretically survive in whole fruit under short-term anoxic conditions, whole fruit would not be present in the bales due to the processing, i.e., pulverizing or shredding followed by compaction, of the MSW prior to being baled. As described in the PRA, bale densities are expected to be in excess of 800 kg/m^3, so compaction will likely kill most insects, including fruit flies, regardless of stage, and may also neutralize some weed seeds and nematodes. Moreover, bales that remain airtight from creation until burial completely mitigate the risk from all plant pests because the pests and pest propagules cannot escape. That mitigation is universal, i.e., it does not depend on pest type or taxonomy, and probably applies equally to both current and future pests that establish in Hawaii.

Comment: How will APHIS ensure that noxious weeds would not be included in the bales of MSW?

Response: As we discussed in the PRA, the exclusion of most yard and agricultural waste from the baling process will greatly reduce the likelihood that seeds of regulated pest plants will be present in the baled MSW. In addition, very few regulated species are likely to have viable seeds in the bales, either because they mostly reproduce vegetatively, or because they are not found in yards and gardens in residential areas in Hawaii. Species of concern to particular mainland States will be further evaluated in site-specific PRAs to identify any exceptions and assess their potential risks.

Environmental Impacts

Comment: APHIS should research the consequences of any spill of baled MSW during transport.

Response: APHIS conducted several evaluations, including a PRA and an EA to determine the consequences of any spill involving bales containing MSW during transport from Hawaii to the mainland United States. We have determined that there is a very low likelihood that plant pests or noxious weeds would be introduced and disseminated into the mainland United States as a result of this action. As described in the PRA, there is a series of mitigations that would take place including limiting waste materials that would exist in the bales and ensuring proper staging, handling, transport, and burial of these bales. There will also be specific contingency plans for emergency response to potential spills outlined in compliance agreements with specific sites. In addition, short of a barge capsizing (which would be considered catastrophic events and would be cause to initiate emergency consultation), there is essentially no risk of impact on aquatic life from the transport of baled MSW from Hawaii to the mainland United States. Situations where there is potential for impacts occur wherever bales are moved from one staging area or mode of transportation to another. These transfer points include: The facility in Honolulu where bales are initially loaded onto the barges; the unloading facility on the mainland where bales are unloaded from the barges and loaded onto trucks; and the final destination where bales are unloaded from trucks and placed into the landfill. In some scenarios there could be intermediate steps requiring the handling of bales, e.g., an ocean-going barge may offload its bales onto smaller-sized barges to navigate a river; an ocean-going barge may offload its bales onto railcars; and railcars would then need to transfer their bales onto

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[3] To view the proposed rule and the comments we received, go to *http://www.regulations.gov*, click on the "Advanced Search" tab, and select "Docket Search." In the Docket ID field, enter APHIS–2005–0047, then click on "Submit." Clicking on the Docket ID link in the search results page will produce a list of all documents in the docket.

trucks for the final leg of the trip to the landfill.

At each of the bale transfer points identified above, there is a small potential for dropping a bale into the water or, more likely, compromising the integrity of one or more bales of MSW which could result in spillage of the contents on the ground or into the water. In most cases the spilled MSW would be retrieved and the bale repackaged. If this were to happen over water, it would be more difficult to retrieve the spilled MSW, particularly if the integrity of the bale was breached. Any spill, in the event of a broken bale, would be handled in accordance with a spill cleanup plan, attached to each compliance agreement, that provides guidance on what detergents and disinfectants to use, how to safely use them, and how to avoid aquatic contamination.

Comment: Shipping MSW to the mainland from Hawaii should only be done if alternative disposal options are not available.

Response: Municipal jurisdictions within the State of Hawaii will be responsible for determining which disposal option to pursue. APHIS will be responsible for ensuring that if the disposal option includes the movement of MSW from Hawaii to the mainland United States, it occurs in accordance with conditions provided in our regulations and compliance agreements.

Comment: Sending barges with MSW through the Columbia and Snake Rivers would negatively impact the number of fish in the area.

Response: We do not believe that there will be a significant increase in barge traffic in this region due to this action. We will have the opportunity to quantify this assertion when we conduct a site specific PRA and EA for the Columbia River Basin. In addition, APHIS does not regulate barge traffic. Under our authority we ensure that safeguards are in place to prevent the introduction and dissemination of plant pests, noxious weeds, and animal diseases.

APHIS did conduct a biological assessment for this action to determine impacts on listed species of fish and wildlife. We found that there are two types of risks that must be considered in such a situation. One is a physical disruption of the environment caused by the broken bales and the physical retrieval of their strewn contents. Compromised bales or spilled MSW that is on land can be retrieved relatively easily. MSW that is spilled into waterways will be more difficult to retrieve, and some may not be retrievable, resulting in an incremental degradation of the natural aquatic environment. Since hazardous wastes are not permitted, any negative impacts will be restricted to physical ones and no chemical pollution is likely to result from the MSW itself.

The second type of risk that could result from breaking bales and the spilling of MSW could be from detergents and disinfectants that may be used during a cleanup of any spilled MSW that may occur on land. Detergents and disinfectants would not be effective in aquatic situations, and therefore, would not be used if spills were in or over water. If such tools were used during a cleanup effort, care must be taken to prevent them from entering waterways. Their use would be in accordance with a spill cleanup plan, attached to each compliance agreement, that provides guidance on what detergents and disinfectants to use, how to safely use them, and how to avoid aquatic contamination.

As mentioned above, APHIS will develop a site-specific pest risk assessment and environmental assessment which will examine any risks associated with transporting MSW into specific regions. The public will have an opportunity to comment on those documents before they are finalized.

Comment: Has APHIS conducted any studies on the potential to introduce new plant and animal pathogens to the Columbia Basin Region?

Response: This final rule provides a general framework which will allow for the interstate movement of MSW from Hawaii under certain conditions. One condition of that movement will be that shipments will be moved under provisions outlined in a compliance agreement. A compliance agreement will be developed for each individual site on the mainland of the United States into which these shipments would be moved. For each compliance agreement, APHIS will develop a site-specific pest risk assessment and environmental assessment to examine the risks associated with transporting MSW into the specific region, including into the Columbia Basin region.

Requested Change to the Regulations

Comment: APHIS should add the staging requirement and certification of snail free shipments language found in the PRA to the regulatory text.

Response: The regulations state that garbage must be processed, packaged, safeguarded, and disposed of using a methodology that the Administrator has determined is adequate to prevent the introduction and dissemination of plant pests into noninfested areas of the United States. In addition, specific provisions will be outlined in individual compliance agreements for site-specific shipments. These provisions would be consistent with those in § 318.13–8, which pertain to inspection of articles and persons moved from Hawaii. We believe that the current provisions in the regulations, combined with site-specific compliance agreements, are sufficient to prevent the introduction and dissemination of snails and other hitchhikers.

Tribal Consultation

Comment: APHIS did not consult with Indian Tribes as directed under Executive Order (EO) 13175 and requested government-to-government consultation.

Response: We were petitioned to amend our regulations by the operators of several landfills located in the area of the Columbia River Basin who expressed an interest in receiving MSW from Hawaii. Therefore, our initial contacts were limited to tribes located within that area. To comply with EO 13175, APHIS contacted the tribal chairs of each of the 13 tribes generally considered as Columbia River Basin Tribes (Burn Paiute Tribe, Coeur d'Alene Tribe, Colville Tribe, Kalispel Tribe, Kootenai Tribe, Nez Perce Tribe, Salish Kootenai Tribes, Shoshone Bannock Tribes, Shoshone Paiute Tribe, Spokane Tribe, Umatilla Indian Reservation, Warm Springs Reservation, and Yakama Indian Nation) in early November 2005. Each of these tribes has ties to the land and resources in and near the Columbia River and its drainage. APHIS believes that if there were any effects on tribes resulting from this rule, these are the tribes most likely to be affected. Each tribe was provided information on our proposed rule, environmental assessment, and pest risk analysis and offered an opportunity to request consultation.

At about the same time, APHIS contacted tribal organizations to determine which additional tribes may be affected and should be contacted. The tribal organizations contacted were the Affiliated Tribes of Northwest Indians (ATNI), the National Congress of American Indians, the National Tribal Environmental Council, and the Intertribal Agriculture Council. In addition, APHIS contacted the Columbia Basin Fish and Wildlife Authority.

In mid-February 2006, an Agency official provided a presentation about the proposed rule at the Winter Conference of the ATNI, and invited requests for tribal consultation. ATNI represents over 55 tribes in the Pacific

Northwest. In early March 2006, the Agency sent reminders to tribal chairs stating that APHIS would consider requests for consultation until March 20, 2006. Although we received both oral and written comments from tribes and tribal members, we received no requests for consultation.

In mid-April 2006, upon publication of the proposed rule, copies of the proposed rule, environmental assessment, and pest risk analysis were mailed to the tribal chairs of each of the above-listed tribes and also to the listed tribal organizations. APHIS encouraged tribes and tribal organizations to submit comments. Based on our actions as described above, we believe that we have complied with EO 13175 for the purposes of this rulemaking. We will follow this final rule with risk and environmental assessments as well as compliance agreements with specific waste management sites located on the mainland of the United States that have expressed interest in receiving MSW from Hawaii. At the time that we make the site-specific assessments available to the public, we will also invite potentially affected tribal governments to engage in consultations with APHIS.

Change Regarding Agricultural and Yard Waste

In the proposed rule, the regulations in 7 CFR 330.402(a)(2) and 9 CFR 94.5(d)(1)(ii) provided that "The interstate movement of agricultural wastes and yard waste from Hawaii to the continental United States is prohibited." After further consideration, we have concluded that this provision, which implies a zero tolerance for agricultural or yard waste, is unrealistic. Despite the presence of yard waste recycling programs in Hawaii and the efforts of waste management companies to separate various types of waste, the presence of an incidental amount of agricultural or yard waste in baled MSW is, in practical terms, unavoidable. This situation was taken into account in the PRA, which recognized that there will likely be some minimal volume of agricultural and yard waste entering the pathway despite efforts to exclude that waste. Therefore, we have modified 7 CFR 330.402(a)(2) and 9 CFR 94.5(d)(1)(ii) in this final rule to read: "The interstate movement from Hawaii to the continental United States of agricultural wastes and yard waste (other than incidental amounts (less than 3 percent) that may be present in municipal solid waste despite reasonable efforts to maintain source separation) is prohibited."[4] We believe this change will establish a more practical standard with respect to agricultural and yard waste while continuing to prohibit the interstate movement of dedicated shipments or large quantities of such waste.

Therefore, for the reasons given in the proposed rule and in this document, we are adopting the proposed rule as a final rule, with the change discussed in this document.

Executive Order 12866 and Regulatory Flexibility Act

This rule has been reviewed under Executive Order 12866. The rule has been determined to be not significant for the purposes of Executive Order 12866 and, therefore, has not been reviewed by the Office of Management and Budget.

We are amending the regulations pertaining to certain garbage to provide for the interstate movement of garbage from Hawaii subject to measures designed to protect against the dissemination of plant pests into noninfested areas of the continental United States. We are amending these regulations upon request in order to provide the State of Hawaii with additional waste disposal options, and after determining that the action will not result in the introduction of plant or animal pests or diseases into the continental United States from Hawaii.

For the purposes of this analysis, we have determined that the Island of Oahu (where Honolulu is located) is expected to be the source of most, if not all, of any MSW that is moved to the continental United States under the regulations. Oahu has only one municipal landfill (Waimanalo Gulch), and there is no alternative landfill on the island at the present time.

Oahu generates approximately 1.6 million tons of MSW per year. That figure is expected to rise an additional 20,000 tons and remain at that level for the next 10 years. Of the current total, 500,000 tons are recycled, 600,000 tons are burned for electricity, and 500,000 tons are landfilled. Of the 500,000 tons that are landfilled, 200,000 tons go to a privately operated construction and demolition landfill and 300,000 tons go to Waimanalo Gulch municipal landfill. Waimanalo Gulch landfill is owned by the City of Honolulu and managed by a private company.

The Island of Hawaii (where Hilo is located) is another potential source of MSW that would move to the continental United States if the proposal is adopted. The island's only two landfills are located approximately 75 miles apart, and one (South Hilo Sanitary Landfill) may be nearing capacity. To date, one waste management service company has proposed to bale and move at least some of the island's MSW to a landfill in Washington State. Approximately 200 tons of garbage per day is landfilled at the South Hilo facility.[5]

This rule will allow for the garbage to be compacted into bales, and then wrapped in plastic for transport to the mainland (the baling and wrapping would take place in the State of Hawaii). Estimates of the annual volume of MSW that would be shipped from Oahu to the continental United States range from 100,000 tons to 350,000 tons.[6]

Need for Rule and Alternatives Considered

These are being amended upon request to provide public officials in Hawaii another option for disposal of the State's waste. The only other regulatory alternative is to leave the regulations unchanged, but that alternative would unnecessarily limit Hawaiian officials' disposal options.

Small Entity Impact

The Regulatory Flexibility Act (RFA) requires that agencies consider the economic impact of rules on small entities, *i.e.*, small businesses, organizations, and governmental jurisdictions. The changes to the regulations will allow for the movement of MSW from Hawaii to the continental United States.

These changes will not have a significant economic impact on a substantial number of small entities, because few entities, large or small, are likely to be affected. Only a handful of businesses are potentially affected by the rule—*e.g.*, the company or companies that would secure the contract to move the waste from Hawaii, the barge line or lines that would physically move the waste to the mainland, the trucking company/railroad on the mainland that would physically move the waste to the interior landfill locations, and perhaps a few companies on Hawaii that would be forced to discontinue participation (or play a reduced role) in the State's waste

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[4] Based on the mean percentage of yard waste at the Waimanalo Gulch landfill, Oahu (6.0 percent ± 3.4 percent) and on Hawaii (5.4 percent), if companies are only 50 percent effective with additional screening and removal of visible yard waste in transfer stations or on bale processing lines, the fraction of yard waste in baled Hawaiian MSW should be reduced to 3 percent or less.

[5] Source: News accounts in the *Honolulu Star-Bulletin*.

[6] Source: News accounts in the *Honolulu Star-Bulletin* and APHIS staff. Similar estimates for the Island of Hawaii are not available.

disposal process once shipments to the mainland began. Those businesses that will participate in the movement of the waste to the mainland could be expected to benefit, since they will generate additional revenue and, presumably, profits from the increased business activity. Conversely, those businesses that will either no longer participate or will play a reduced role in Hawaii's waste disposal process could be expected to suffer lost revenue.

The revenues generated by the private company that manages the Waimanalo Gulch landfill, for example, are presumably tied to the volume of waste that is landfilled there. If waste is diverted from Waimanalo Gulch to the mainland, that company's revenues are likely to be reduced. The City of Honolulu and the County of Hawaii are also potentially affected by the proposed changes.

The preceding discussion assumes that the rule will not have significant environmentally related economic consequences for small entities. There are several reasons. First, the environmental assessment in this document concludes that the movement of MSW from Hawaii to the continental United States (using the plastic-baled methodology) will not have a significant impact on the environment. Second, site-specific environmental assessments will also be prepared as requests for compliance agreements are made. The site-specific assessments, which will be made available for public comment, will allow APHIS to address any environmental issues that may arise based on precise destination and handling protocols for the proposed movements, which are now unknown.

Although the size of virtually all of the businesses potentially affected by the rule is unknown, it is reasonable to assume that at least some could be small. This assumption is based on composite data for providers of the same and similar services in the United States. As an example, North American Industry Classification System (NAICS) category 562 ("Waste Management and Remediation Services") consists of establishments engaged in the collection, treatment, and disposal of waste materials. Under the U.S. Small Business Administration's (SBA) size standards, the small entity threshold for establishments that fall into most of the activity subcategories under NAICS 562 is annual receipts of $10.5 million. For all 18,405 U.S. establishments in NAICS 562 in 2002, average per-establishment receipts that year were $2.8 million, an indication that most waste management service companies are small entities.[7] Annual receipt data for three of the four firms that have proposed to move Hawaii's waste to the mainland are not available. Although annual receipt data for the fourth company are also not available, that company is considered large by virtue of it being a subsidiary of a publicly owned firm with receipts (operating revenues) of over $13 billion in 1999.[8] The private company that currently manages the Waimanalo Gulch landfill is also a subsidiary of that publicly owned firm.

As another example, there were 677 U.S. entities in NAICS category 483113 in 2002. NAICS 483113 consists of entities primarily engaged in providing deep sea transportation of cargo to and from domestic ports. For all 677 entities, average per-entity employment that year was 36, well below the SBA's small entity threshold of 500 employees for entities in that NAICS category.[9]

Under the RFA, the term "small governmental jurisdiction" generally means cities, counties, townships, etc., with a population of less than 50,000. The City of Honolulu, which owns the Waimanalo Gulch landfill, does not qualify as a small entity because its population exceeds 50,000. The County of Hawaii, where Hilo is located, also has a population that exceeds 50,000.

The changes to the regulations will not, as noted previously, have a significant economic impact on a substantial number of small entities, because few entities, large or small, are likely to be affected. The size of virtually all of the businesses potentially affected by the changes to the regulations is unknown, but it is reasonable to assume that at least some could be small.

Under these circumstances, the Administrator of the Animal and Plant Health Inspection Service has determined that this action will not have a significant economic impact on a substantial number of small entities.

Executive Order 12372

This program/activity is listed in the Catalog of Federal Domestic Assistance under No. 10.025 and is subject to Executive Order 12372, which requires intergovernmental consultation with State and local officials. (See 7 CFR part 3015, subpart V.)

Executive Order 12988

This final rule has been reviewed under Executive Order 12988, Civil Justice Reform. This rule: (1) Preempts all State and local laws and regulations that are inconsistent with this rule; (2) has no retroactive effect; and (3) does not require administrative proceedings before parties may file suit in court challenging this rule.

National Environmental Policy Act

An environmental assessment and finding of no significant impact have been prepared for this final rule. The environmental assessment provides a basis for the conclusion that the importation of MSW from Hawaii to the mainland United States will not have a significant impact on the quality of the human environment. Based on the finding of no significant impact, the Administrator of the Animal and Plant Health Inspection Service has determined that an environmental impact statement need not be prepared.

The environmental assessment and finding of no significant impact were prepared in accordance with: (1) The National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 *et seq.*), (2) regulations of the Council on Environmental Quality for implementing the procedural provisions of NEPA (40 CFR parts 1500–1508), (3) USDA regulations implementing NEPA (7 CFR part 1b), and (4) APHIS' NEPA Implementing Procedures (7 CFR part 372).

The environmental assessment and finding of no significant impact may be viewed on the Regulations.gov Web site.[10] Copies of the environmental assessment and finding of no significant impact are also available for public inspection at USDA, room 1141, South Building, 14th Street and Independence Avenue, SW., Washington, DC, between 8 a.m. and 4:30 p.m., Monday through Friday, except holidays. Persons wishing to inspect copies are requested to call ahead on (202) 690–2817 to facilitate entry into the reading room. In addition, copies may be obtained by writing to the individual listed under FOR FURTHER INFORMATION CONTACT.

Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*), the information collection or recordkeeping requirements included in this rule have been approved by the Office of Management and Budget

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[7] Source: U.S. Census Bureau (2002 Economic Census) and SBA.

[8] Source: Various Internet sites.

[9] Source: U.S. Census Bureau (2002 Economic Census) and SBA.

[10] Go to *http://www.regulations.gov*, click on the "Advanced Search" tab and select "Docket Search." In the Docket ID field, enter APHIS–2005–0047, click on "Submit," then click on the Docket ID link in the search results page. The environmental assessment and finding of no significant impact will appear in the resulting list of documents.

(OMB) under OMB control number 0579–0292.

E-Government Act Compliance

The Animal and Plant Health Inspection Service is committed to compliance with the E-Government Act to promote the use of the Internet and other information technologies, to provide increased opportunities for citizen access to Government information and services, and for other purposes. For information pertinent to E-Government Act compliance related to this rule, please contact Mrs. Celeste Sickles, APHIS' Information Collection Coordinator, at (301) 734–7477.

List of Subjects

7 CFR Part 330

Customs duties and inspection, Imports, Plant diseases and pests, Quarantine, Reporting and recordkeeping requirements, Transportation.

9 CFR Part 94

Animal diseases, Imports, Livestock, Meat and meat products, Milk, Poultry and poultry products, Reporting and recordkeeping requirements.

■ Accordingly, we are amending 7 CFR part 330 and 9 CFR part 94 as follows:

Title 7—[Amended]

PART 330—FEDERAL PLANT PEST REGULATIONS; GENERAL; PLANT PESTS; SOIL, STONE, AND QUARRY PRODUCTS; GARBAGE

■ 1. The authority citation for part 330 continues to read as follows:

Authority: 7 U.S.C. 450, 7701–7772, 7781–7786, and 8301–8317; 21 U.S.C. 136 and 136a; 31 U.S.C. 9701; 7 CFR 2.22, 2.80, and 371.3.

■ 2. In § 330.100, a definition for *State* is added and the definition for *United States* is revised to read as follows:

§ 330.100 Definitions.

* * * * *

State. Any of the several States of the United States, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, the District of Columbia, Guam, the Virgin Islands of the United States, or any other territory or possession of the United States.

* * * * *

United States. All of the States.

* * * * *

■ 3. Subpart—Garbage, § 330.400, is revised to read as follows:

Subpart—Garbage

Sec.

Subpart—Garbage

§ 330.400 Regulation of certain garbage.

(a) *Certain interstate movements and imports*—(1) *Interstate movements of garbage from Hawaii and U.S. territories and possessions to other States.* Hawaii, Puerto Rico, American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, Guam, the U.S. Virgin Islands, Republic of the Marshall Islands, and the Republic of Palau are hereby quarantined, and the movement of garbage therefrom to any other State is hereby prohibited except as provided in this subpart in order to prevent the introduction and spread of exotic plant pests and diseases.

(2) *Imports of garbage.* In order to protect against the introduction of exotic animal and plant pests and diseases, the importation of garbage from all foreign countries except Canada is prohibited except as provided in § 330.401(b).

(b) *Definitions—Agricultural waste.* Byproducts generated by the rearing of animals and the production and harvest of crops or trees. Animal waste, a large component of agricultural waste, includes waste (*e.g.*, feed waste, bedding and litter, and feedlot and paddock runoff) from livestock, dairy, and other animal-related agricultural and farming practices.

Approved facility. A facility approved by the Administrator, Animal and Plant Health Inspection Service, upon his determination that it has equipment and uses procedures that are adequate to prevent the dissemination of plant pests and livestock or poultry diseases, and that it is certified by an appropriate Government official as currently complying with the applicable laws for environmental protection.

Approved sewage system. A sewage system approved by the Administrator, Animal and Plant Health Inspection Service, upon his determination that the system is designed and operated in such a way as to preclude the discharge of sewage effluents onto land surfaces or into lagoons or other stationary waters, and otherwise is adequate to prevent the dissemination of plant pests and livestock or poultry diseases, and that is certified by an appropriate Government official as currently complying with the applicable laws for environmental protection.

Carrier. The principal operator of a means of conveyance.

Garbage. All waste material that is derived in whole or in part from fruits, vegetables, meats, or other plant or animal (including poultry) material, and other refuse of any character whatsoever that has been associated with any such material.

Incineration. To reduce garbage to ash by burning.

Interstate. From one State into or through any other State.

Sterilization. Cooking garbage at an internal temperature of 212 °F for 30 minutes.

Stores. The food, supplies, and other provisions carried for the day-to-day operation of a conveyance and the care and feeding of its operators.

Yard waste. Solid waste composed predominantly of grass clippings, leaves, twigs, branches, and other garden refuse.

§ 330.401 Garbage generated onboard a conveyance.

(a) *Applicability.* This section applies to garbage generated onboard any means of conveyance during international or interstate movements as provided in this section and includes food scraps, table refuse, galley refuse, food wrappers or packaging materials, and other waste material from stores, food preparation areas, passengers' or crews' quarters, dining rooms, or any other areas on the means of conveyance. This section also applies to meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed.

(1) Not all garbage generated onboard a means of conveyance is regulated for the purposes of this section. Garbage regulated for the purposes of this section is defined as "regulated garbage" in paragraphs (b) and (c) of this section.

(2) Garbage that is commingled with regulated garbage is also regulated garbage.

(b) *Garbage regulated because of movements outside the United States or Canada.* For purposes of this section, garbage on or removed from a means of conveyance is regulated garbage, if, when the garbage is on or removed from the means of conveyance, the means of conveyance has been in any port outside the United States and Canada within the previous 2-year period. There are, however, two exceptions to this provision. These exceptions are as follows:

(1) *Exception 1: Aircraft.* Garbage on or removed from an aircraft is exempt from requirements under paragraph (d) of this section if the following

conditions are met when the garbage is on or removed from the aircraft:

(i) The aircraft had previously been cleared of all garbage and of all meats and meat products, whatever the country of origin, except meats that are shelf-stable; all fresh and condensed milk and cream from countries designated in 9 CFR 94.1 as those in which foot-and-mouth disease exists; all fresh fruits and vegetables; and all eggs; and the items previously cleared from the aircraft as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (d)(2) and (d)(3) of this section.

(ii) After the garbage and stores referred to in paragraph (b)(1)(i) of this section were removed, the aircraft has not been in a non-Canadian foreign port.

(2) *Exception 2: Other conveyances.* Garbage on or removed in the United States from a means of conveyance other than an aircraft is exempt from requirements under paragraph (d) of this section if the following conditions are met when the garbage is on or removed from the means of conveyance:

(i) The means of conveyance is accompanied by a certificate from an inspector stating the following:

(A) That the means of conveyance had previously been cleared of all garbage and of all meats and meat products, whatever the country of origin, except meats that are shelf-stable; all fresh and condensed milk and cream from countries designated in 9 CFR 94.1 as those in which foot-and-mouth disease exists; all fresh fruits and vegetables; and all eggs; and the items previously cleared from the means of conveyance as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (d)(2) and (d)(3) of this section.

(B) That the means of conveyance had then been cleaned and disinfected in the presence of the inspector; and

(ii) Since being cleaned and disinfected, the means of conveyance has not been in a non-Canadian foreign port.

(c) *Garbage regulated because of certain movements to or from Hawaii, territories, or possessions.* For purposes of this section, garbage on or removed from a means of conveyance is regulated garbage, if at the time the garbage is on or removed from the means of conveyance, the means of conveyance has moved during the previous 1-year period, either directly or indirectly, to the continental United States from any territory or possession or from Hawaii, to any territory or possession from any other territory or possession or from Hawaii, or to Hawaii from any territory or possession. There are, however, two exceptions to this provision. These exceptions are as follows:

(1) *Exception 1: Aircraft.* Garbage on or removed from an aircraft is exempt from requirements under paragraph (d) of this section if the following two conditions are met when the garbage is on or removed from the aircraft:

(i) The aircraft had been previously cleared of all garbage and all fresh fruits and vegetables, and the items previously cleared from the aircraft as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (d)(2) and (d)(3) of this section.

(ii) After the garbage and stores referred to in paragraph (c)(1)(i) of this section were removed, the aircraft has not moved to the continental United States from any territory or possession or from Hawaii; to any territory or possession from any other territory or possession or from Hawaii; or to Hawaii from any territory or possession.

(2) *Exception 2: Other conveyances.* Garbage on or removed from a means of conveyance other than an aircraft is exempt from requirements under paragraph (d) of this section if the following two conditions are met when the garbage is on or removed from the means of conveyance:

(i) The means of conveyance is accompanied by a certificate from an inspector stating that the means of conveyance had been cleared of all garbage and all fresh fruits and vegetables; and the items previously cleared from the means of conveyance as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (d)(2) and (d)(3) of this section.

(ii) After being cleared of the garbage and stores referred to in paragraph (c)(2)(i) of this section, the means of conveyance has not moved to the continental United States from any territory or possession or from Hawaii; to any territory or possession from any other territory or possession or from Hawaii; or to Hawaii from any territory or possession.

(d) *Restrictions on regulated garbage.* (1) Regulated garbage may not be disposed of, placed on, or removed from a means of conveyance except in accordance with this section.

(2) Regulated garbage is subject to general surveillance for compliance with this section by inspectors and to disposal measures authorized by the Plant Protection Act and the Animal Health Protection Act to prevent the introduction and dissemination of pests and diseases of plants and livestock.

(3) All regulated garbage must be contained in tight, covered, leak-proof receptacles during storage on board a means of conveyance while in the territorial waters, or while otherwise within the territory of the United States. All such receptacles shall be contained inside the guard rail if on a watercraft. Such regulated garbage shall not be unloaded from such means of conveyance in the United States unless such regulated garbage is removed in tight, covered, leak-proof receptacles under the direction of an inspector to an approved facility for incineration, sterilization, or grinding into an approved sewage system, under direct supervision by such an inspector, or such regulated garbage is removed for other handling in such manner and under such supervision as may, upon request in specific cases, be approved by the Administrator as adequate to prevent the introduction and dissemination of plant pests and animal diseases and sufficient to ensure compliance with applicable laws for environmental protection. *Provided that,* a cruise ship may dispose of regulated garbage in landfills at Alaskan ports only, if and only if the cruise ship does not have prohibited or restricted meat or animal products on board at the time it enters Alaskan waters for the cruise season, and only if the cruise ship, except for incidental travel through international waters necessary to navigate safely between ports, remains in Canadian and U.S. waters off the west coast of North America, and calls only at continental U.S. and Canadian ports during the entire cruise season.

(i) Application for approval of a facility or sewage system may be made in writing by the authorized representative of any carrier or by the official having jurisdiction over the port or place of arrival of the means of conveyance to the Administrator, Animal and Plant Health Inspection Service, U.S. Department of Agriculture, Washington, DC 20250. The application must be endorsed by the operator of the facility or sewage system.

(ii) Approval will be granted if the Administrator determines that the requirements set forth in this section are met. Approval may be denied or withdrawn at any time, if the Administrator determines that such requirements are not met, after notice of the proposed denial or withdrawal of the approval and the reasons therefor, and an opportunity to demonstrate or achieve compliance with such requirements, has been afforded to the operator of the facility or sewage system and to the applicant for approval. However, approval may also be withdrawn without such prior procedure in any case in which the public health, interest, or safety requires immediate action, and in such case, the operator of the facility or sewage system and the applicant for approval shall promptly thereafter be given notice of the withdrawal and the reasons therefor and an opportunity to show cause why the approval should be reinstated.

(e) The Plant Protection and Quarantine Programs and Veterinary Services, Animal, and Plant Health Inspection Service, will cooperate with other Federal, State, and local agencies responsible for enforcing other statutes and regulations governing disposal of the regulated garbage to the end that such disposal shall be adequate to prevent the dissemination of plant pests and livestock or poultry diseases and comply with applicable laws for environmental protection. The inspectors, in maintaining surveillance over regulated garbage movements and disposal, shall coordinate their activities with the activities of representatives of the Environmental Protection Agency and other Federal, State, and local agencies also having jurisdiction over such regulated garbage

§ 330.402 Garbage generated in Hawaii.

(a) *Applicability.* This section applies to garbage generated in households, commercial establishments, institutions, and businesses prior to interstate movement from Hawaii, and includes used paper, discarded cans and bottles, and food scraps. Such garbage includes, and is commonly known as, municipal solid waste.

(1) Industrial process wastes, mining wastes, sewage sludge, incinerator ash, or other wastes from Hawaii that the Administrator determines do not pose risks of introducing animal or plant pests or diseases into the continental United States are not regulated under this section.

(2) The interstate movement from Hawaii to the continental United States of agricultural wastes and yard waste (other than incidental amounts (less than 3 percent) that may be present in municipal solid waste despite reasonable efforts to maintain source separation) is prohibited.

(3) Garbage generated onboard any means of conveyance during interstate movement from Hawaii is regulated under § 330.401.

(b) *Restrictions on interstate movement of garbage.* The interstate movement of garbage generated in Hawaii to the continental United States is regulated as provided in this section.

(1) The garbage must be processed, packaged, safeguarded, and disposed of using a methodology that the Administrator has determined is adequate to prevent the introduction or dissemination of plant pests into noninfested areas of the United States.

(2) The garbage must be moved under a compliance agreement in accordance with § 330.403. APHIS will only enter into a compliance agreement when the Administrator is satisfied that the Agency has first satisfied all its obligations under the National Environmental Policy Act and all applicable Federal and State statutes to fully assess the impacts associated with the movement of garbage under the compliance agreement.

(3) All such garbage moved interstate from Hawaii to any of the continental United States must be moved in compliance with all applicable laws for environmental protection.

§ 330.403 Compliance agreement and cancellation.

(a) Any person engaged in the business of handling or disposing of garbage in accordance with this subpart must first enter into a compliance agreement with the Animal and Plant Health Inspection Service (APHIS). Compliance agreement forms (PPQ Form 519) are available without charge from local USDA/APHIS/Plant Protection and Quarantine offices, which are listed in telephone directories.

(b) A person who enters into a compliance agreement, and employees or agents of that person, must comply with the following conditions and any supplemental conditions which are listed in the compliance agreement, as deemed by the Administrator to be necessary to prevent the dissemination into or within the United States of plant pests and livestock or poultry diseases:

(1) Comply with all applicable provisions of this subpart;

(2) Allow inspectors access to all records maintained by the person regarding handling or disposal of garbage, and to all areas where handling or disposal of garbage occurs;

(3)(i) If the garbage is regulated under § 330.401, remove garbage from a means of conveyance only in tight, covered, leak-proof receptacles;

(ii) If the garbage is regulated under § 330.402, transport garbage interstate in packaging approved by the Administrator;

(4) Move the garbage only to a facility approved by the Administrator; and

(5) At the approved facility, dispose of the garbage in a manner approved by the Administrator and described in the compliance agreement.

(c) Approval for a compliance agreement may be denied at any time if the Administrator determines that the applicant has not met or is unable to meet the requirements set forth in this subpart. Prior to denying any application for a compliance agreement, APHIS will provide notice to the applicant thereof, and will provide the applicant with an opportunity to demonstrate or achieve compliance with requirements.

(d) Any compliance agreement may be canceled, either orally or in writing, by an inspector whenever the inspector finds that the person who has entered into the compliance agreement has failed to comply with this subpart. If the cancellation is oral, the cancellation and the reasons for the cancellation will be confirmed in writing as promptly as circumstances allow. Any person whose compliance agreement has been canceled may appeal the decision, in writing, within 10 days after receiving written notification of the cancellation. The appeal must state all of the facts and reasons upon which the person relies to show that the compliance agreement was wrongfully canceled. As promptly as circumstances allow, the Administrator will grant or deny the appeal, in writing, stating the reasons for the decision. A hearing will be held to resolve any conflict as to any material fact. Rules of practice concerning a hearing will be adopted by the Administrator. This administrative remedy must be exhausted before a person can file suit in court challenging the cancellation of a compliance agreement.

(e) Where a compliance agreement is denied or canceled, the person who entered into or applied for the compliance agreement may be prohibited, at the discretion of the Administrator, from handling or disposing of regulated garbage.

(Approved by the Office of Management and Budget under control numbers 0579–0015, 0579–0054, and 0579–0292)

Title 9—[AMENDED]

PART 94—RINDERPEST, FOOT-AND-MOUTH DISEASE, FOWL PEST (FOWL PLAGUE), EXOTIC NEWCASTLE DISEASE, AFRICAN SWINE FEVER, CLASSICAL SWINE FEVER, AND BOVINE SPONGIFORM ENCEPHALOPATHY: PROHIBITED AND RESTRICTED IMPORTATIONS

■ 4. The authority citation for part 94 continues to read as follows:

Authority: 7 U.S.C. 450, 7701–7772, 7781–7786, and 8301–8317; 21 U.S.C. 136 and 136a; 31 U.S.C. 9701; 7 CFR 2.22, 2.80, and 371.4.

■ 5. In § 94.0, a definition for *State* is added and the definition for *United States* is revised to read as follows:

§ 94.0 Definitions.

* * * * *

State. Any of the several States of the United States, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, the District of Columbia, Guam, the Virgin Islands of the United States, or any other territory or possession of the United States.

* * * * *

United States. All of the States.

* * * * *

■ 6. Section 94.5 is revised to read as follows:

§ 94.5 Regulation of certain garbage.

(a) *General restrictions*—(1) *Interstate movements of garbage from Hawaii and U.S. territories and possessions to the continental United States.* Hawaii, Puerto Rico, American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, Guam, the U.S. Virgin Islands, Republic of the Marshall Islands, and the Republic of Palau are hereby quarantined, and the movement of garbage therefrom to any other State is hereby prohibited except as provided in this section in order to prevent the introduction and spread of exotic plant pests and diseases.

(2) *Imports of garbage.* In order to protect against the introduction of exotic animal and plant pests, the importation of garbage from all foreign countries except Canada is prohibited except as provided in paragraph (c)(2) of this section.

(b) *Definitions—Agricultural waste.* Byproducts generated by the rearing of animals and the production and harvest of crops or trees. Animal waste, a large component of agricultural waste, includes waste (*e.g.*, feed waste, bedding and litter, and feedlot and paddock runoff) from livestock, dairy, and other animal-related agricultural and farming practices.

Approved facility. A facility approved by the Administrator, Animal and Plant Health Inspection Service, upon his determination that it has equipment and uses procedures that are adequate to prevent the dissemination of plant pests and livestock or poultry diseases, and that it is certified by an appropriate Government official as currently complying with the applicable laws for environmental protection.

Approved sewage system. A sewage system approved by the Administrator, Animal and Plant Health Inspection Service, upon his determination that the system is designed and operated in such a way as to preclude the discharge of sewage effluents onto land surfaces or into lagoons or other stationary waters, and otherwise is adequate to prevent the dissemination of plant pests and livestock or poultry diseases, and that is certified by an appropriate Government official as currently complying with the applicable laws for environmental protection.

Carrier. The principal operator of a means of conveyance.

Continental United States. The 49 States located on the continent of North America and the District of Columbia.

Garbage. All waste material that is derived in whole or in part from fruits, vegetables, meats, or other plant or animal (including poultry) material, and other refuse of any character whatsoever that has been associated with any such material.

Incineration. To reduce garbage to ash by burning.

Inspector. A properly identified employee of the U.S. Department of Agriculture or other person authorized by the Department to enforce the provisions of applicable statutes, quarantines, and regulations.

Interstate. From one State into or through any other State.

Person. Any individual, corporation, company, association, firm, partnership, society, or joint stock company.

Shelf-stable. The condition achieved in a product, by application of heat, alone or in combination with other ingredients and/or other treatments, of being rendered free of microorganisms capable of growing in the product under nonrefrigerated conditions (over 50 °F or 10 °C).

Sterilization. Cooking garbage at an internal temperature of 212 °F for 30 minutes.

Stores. The food, supplies, and other provisions carried for the day-to-day operation of a conveyance and the care and feeding of its operators.

Yard waste. Solid waste composed predominantly of grass clippings, leaves, twigs, branches, and other garden refuse.

(c) *Garbage generated onboard a conveyance*—(1) *Applicability.* This section applies to garbage generated onboard any means of conveyance during international or interstate movements as provided in this section and includes food scraps, table refuse, galley refuse, food wrappers or packaging materials, and other waste material from stores, food preparation areas, passengers' or crews' quarters, dining rooms, or any other areas on the means of conveyance. This section also applies to meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed.

(i) Not all garbage generated onboard a means of conveyance is regulated for the purposes of this section. Garbage regulated for the purposes of this section is defined as "regulated garbage" in paragraphs (c)(2) and (c)(3) of this section.

(ii) Garbage that is commingled with regulated garbage is also regulated garbage.

(2) *Garbage regulated because of movements outside the United States or Canada.* For purposes of this section, garbage on or removed from a means of conveyance is regulated garbage, if, when the garbage is on or removed from the means of conveyance, the means of conveyance has been in any port outside the United States and Canada within the previous 2-year period. There are, however, two exceptions to this provision. These exceptions are as follows:

(i) *Exception 1: Aircraft.* Garbage on or removed from an aircraft is exempt from requirements under paragraph (c)(4) of this section if the following conditions are met when the garbage is on or removed from the aircraft:

(A) The aircraft had previously been cleared of all garbage and of all meats and meat products, whatever the country of origin, except meats that are shelf-stable; all fresh and condensed milk and cream from countries designated in § 94.1 as those in which foot-and-mouth disease exists; all fresh fruits and vegetables; and all eggs; and the items previously cleared from the aircraft as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (c)(4)(ii) and (c)(4)(iii) of this section.

(B) After the garbage and stores referred to in paragraph (c)(2)(i)(A) of this section were removed, the aircraft has not been in a non-Canadian foreign port.

(ii) *Exception 2: Other conveyances.* Garbage on or removed in the United States from a means of conveyance other than an aircraft is exempt from requirements under paragraph (c)(4) of this section if the following conditions are met when the garbage is on or removed from the means of conveyance:

(A) The means of conveyance is accompanied by a certificate from an inspector stating the following:

(*1*) That the means of conveyance had previously been cleared of all garbage and of all meats and meat products, whatever the country of origin, except meats that are shelf-stable; all fresh and condensed milk and cream from countries designated in § 94.1 as those in which foot-and-mouth disease exists; all fresh fruits and vegetables; and all eggs; and the items previously cleared from the means of conveyance as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (c)(4)(ii) and (c)(4)(iii) of this section.

(*2*) That the means of conveyance had then been cleaned and disinfected in the presence of the inspector; and

(B) Since being cleaned and disinfected, the means of conveyance has not been in a non-Canadian foreign port.

(3) *Garbage regulated because of certain movements to or from Hawaii, territories, or possessions.* For purposes of this section, garbage on or removed from a means of conveyance is regulated garbage, if at the time the garbage is on or removed from the means of conveyance, the means of conveyance has moved during the previous 1-year period, either directly or indirectly, to the continental United States from any territory or possession or from Hawaii, to any territory or possession from any other territory or possession or from Hawaii, or to Hawaii from any territory or possession. There are, however, two exceptions to this provision. These exceptions are as follows:

(i) *Exception 1: Aircraft.* Garbage on or removed from an aircraft is exempt from requirements under paragraph (c)(4) of this section if the following two conditions are met when the garbage is on or removed from the aircraft:

(A) The aircraft had been previously cleared of all garbage and all fresh fruits and vegetables, and the items previously cleared from the aircraft as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (c)(4)(ii) and (c)(4)(iii) of this section.

(B) After the garbage and stores referred to in paragraph (c)(3)(i)(A) of this section were removed, the aircraft has not moved to the continental United States from any territory or possession or from Hawaii, to any territory or possession from any other territory or possession or from Hawaii, or to Hawaii from any territory or possession.

(ii) *Exception 2: Other conveyances.* Garbage on or removed from a means of conveyance other than an aircraft is exempt from requirements under paragraph (c)(4) of this section if the following two conditions are met when the garbage is on or removed from the means of conveyance:

(A) The means of conveyance is accompanied by a certificate from an inspector stating that the means of conveyance had been cleared of all garbage and all fresh fruits and vegetables, and the items previously cleared from the means of conveyance as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (c)(4)(ii) and (c)(4)(iii) of this section.

(B) After being cleared of the garbage and stores referred to in paragraph (c)(3)(ii)(A) of this section, the means of conveyance has not moved to the continental United States from any territory or possession or from Hawaii; to any territory or possession from any other territory or possession or from Hawaii; or to Hawaii from any territory or possession.

(4) *Restrictions on regulated garbage.* (i) Regulated garbage may not be disposed of, placed on, or removed from a means of conveyance except in accordance with this section.

(ii) Regulated garbage is subject to general surveillance for compliance with this section by inspectors and to disposal measures authorized by the Plant Protection Act and the Animal Health Protection Act to prevent the introduction and dissemination of pests and diseases of plants and livestock.

(iii) All regulated garbage must be contained in tight, covered, leak-proof receptacles during storage on board a means of conveyance while in the territorial waters, or while otherwise within the territory of the United States. All such receptacles shall be contained inside the guard rail if on a watercraft. Such regulated garbage shall not be unloaded from such means of conveyance in the United States unless such regulated garbage is removed in tight, covered, leak-proof receptacles under the direction of an inspector to an approved facility for incineration, sterilization, or grinding into an approved sewage system, under direct supervision by such an inspector, or such regulated garbage is removed for other handling in such manner and under such supervision as may, upon request in specific cases, be approved by the Administrator as adequate to prevent the introduction and dissemination of plant pests and animal diseases and sufficient to ensure compliance with applicable laws for environmental protection. *Provided that,* a cruise ship may dispose of regulated garbage in landfills at Alaskan ports only, if and only if the cruise ship does not have prohibited or restricted meat or animal products on board at the time it enters Alaskan waters for the cruise season, and only if the cruise ship, except for incidental travel through international waters necessary to navigate safely between ports, remains in Canadian and U.S. waters off the west coast of North America, and calls only at continental U.S. and Canadian ports during the entire cruise season.

(A) Application for approval of a facility or sewage system may be made in writing by the authorized representative of any carrier or by the official having jurisdiction over the port or place of arrival of the means of conveyance to the Administrator, Animal and Plant Health Inspection Service, U.S. Department of Agriculture, Washington, DC 20250. The application must be endorsed by the operator of the facility or sewage system.

(B) Approval will be granted if the Administrator determines that the requirements set forth in this section are met. Approval may be denied or withdrawn at any time, if the Administrator determines that such requirements are not met, after notice of the proposed denial or withdrawal of the approval and the reasons therefor, and an opportunity to demonstrate or achieve compliance with such requirements, has been afforded to the operator of the facility or sewage system and to the applicant for approval. However, approval may also be withdrawn without such prior procedure in any case in which the public health, interest, or safety requires immediate action, and in such case, the operator of the facility or sewage system and the applicant for approval shall promptly thereafter be given notice of the withdrawal and the reasons therefore and an opportunity to show cause why the approval should be reinstated.

(iv) The Plant Protection and Quarantine Programs and Veterinary Services, Animal, and Plant Health Inspection Service, will cooperate with other Federal, State, and local agencies responsible for enforcing other statutes and regulations governing disposal of the regulated garbage to the end that such disposal shall be adequate to prevent the dissemination of plant pests and livestock or poultry diseases and comply with applicable laws for environmental protection. The inspectors, in maintaining surveillance over regulated garbage movements and disposal, shall coordinate their activities with the activities of representatives of the U.S. Environmental Protection Agency and other Federal, State, and local agencies also having jurisdiction over such regulated garbage.

(d) *Garbage generated in Hawaii*—(1) *Applicability*. This section applies to garbage generated in households, commercial establishments, institutions, and businesses prior to interstate movement from Hawaii, and includes used paper, discarded cans and bottles, and food scraps. Such garbage includes, and is commonly known as, municipal solid waste.

(i) Industrial process wastes, mining wastes, sewage sludge, incinerator ash, or other wastes from Hawaii that the Administrator determines do not pose risks of introducing animal or plant pests or diseases into the continental United States are not regulated under this section.

(ii) The interstate movement from Hawaii to the continental United States of agricultural wastes and yard waste (other than incidental amounts (less than 3 percent) that may be present in municipal solid waste despite reasonable efforts to maintain source separation) is prohibited.

(iii) Garbage generated onboard any means of conveyance during interstate movement from Hawaii is regulated under paragraph (c) of this section.

(2) *Restrictions on interstate movement of garbage*. The interstate movement of garbage generated in Hawaii to the continental United States is regulated as provided in this section.

(i) The garbage must be processed, packaged, safeguarded, and disposed of using a methodology that the Administrator has determined is adequate to prevent the introduction and dissemination of plant pests into noninfested areas of the United States.

(ii) The garbage must be moved under a compliance agreement in accordance with paragraph (e) of this section. APHIS will only enter into a compliance agreement when the Administrator is satisfied that the Agency has first satisfied all its obligations under the National Environmental Policy Act and all applicable Federal and State statutes to fully assess the impacts associated with the movement of garbage under the compliance agreement.

(iii) All such garbage moved interstate from Hawaii to any of the continental United States must be moved in compliance with all applicable laws for environmental protection.

(e) *Compliance agreement and cancellation*—(1) Any person engaged in the business of handling or disposing of garbage in accordance with this section must first enter into a compliance agreement with the Animal and Plant Health Inspection Service (APHIS). Compliance agreement forms (PPQ Form 519) are available without charge from local USDA/APHIS/Plant Protection and Quarantine offices, which are listed in telephone directories.

(2) A person who enters into a compliance agreement, and employees or agents of that person, must comply with the following conditions and any supplemental conditions which are listed in the compliance agreement, as deemed by the Administrator to be necessary to prevent the introduction and dissemination into or within the United States of plant pests and livestock or poultry diseases:

(i) Comply with all applicable provisions of this section;

(ii) Allow inspectors access to all records maintained by the person regarding handling or disposal of garbage, and to all areas where handling or disposal of garbage occurs;

(iii)(A) If the garbage is regulated under paragraph (c) of this section, remove garbage from a means of conveyance only in tight, covered, leak-proof receptacles;

(B) If the garbage is regulated under paragraph (d) of this section, transport garbage interstate in sealed, leak-proof packaging approved by the Administrator;

(iv) Move the garbage only to a facility approved by the Administrator; and

(v) At the approved facility, dispose of the garbage in a manner approved by the Administrator and described in the compliance agreement.

(3) Approval for a compliance agreement may be denied at any time if the Administrator determines that the applicant has not met or is unable to meet the requirements set forth in this section. Prior to denying any application for a compliance agreement, APHIS will provide notice to the applicant thereof, and will provide the applicant with an opportunity to demonstrate or achieve compliance with requirements.

(4) Any compliance agreement may be canceled, either orally or in writing, by an inspector whenever the inspector finds that the person who has entered into the compliance agreement has failed to comply with this section. If the cancellation is oral, the cancellation and the reasons for the cancellation will be confirmed in writing as promptly as circumstances allow. Any person whose compliance agreement has been canceled may appeal the decision, in writing, within 10 days after receiving written notification of the cancellation. The appeal must state all of the facts and reasons upon which the person relies to show that the compliance agreement was wrongfully canceled. As promptly as circumstances allow, the Administrator will grant or deny the appeal, in writing, stating the reasons for the decision. A hearing will be held to resolve any conflict as to any material fact. Rules of practice concerning a hearing will be adopted by the Administrator. This administrative remedy must be exhausted before a person can file suit in court challenging the cancellation of a compliance agreement.

(5) Where a compliance agreement is denied or canceled, the person who entered into or applied for the compliance agreement may be prohibited, at the discretion of the Administrator, from handling or disposing of regulated garbage.

(Approved by the Office of Management and Budget under control numbers 0579–0015, 0579–0054, and 0579–0292)

Done in Washington, DC, this 17th day of August 2006.

Kevin Shea,

Acting Administrator, Animal and Plant Health Inspection Service.

[FR Doc. E6–13968 Filed 8–22–06; 8:45 am]

BILLING CODE 3410–34–P

DEPARTMENT OF AGRICULTURE

Animal and Plant Health Inspection Service

7 CFR Part 352

[Docket No. 00–086–2]

Untreated Oranges, Tangerines, and Grapefruit From Mexico Transiting the United States to Foreign Countries

AGENCY: Animal and Plant Health Inspection Service, USDA.

ACTION: Final rule.

SUMMARY: We are amending the regulations to allow untreated oranges, tangerines, and grapefruit from Mexico to be moved overland by truck or rail to Corpus Christi and Houston, TX, for export to another country by water. We

Attachment B — E-mail from Jim Hodges Regarding Transshipment of Honolulu MSW.

E-mail sent 12/14/2006 at 3:21 pm from Jim Hodges to Mark White, Subject: Summary

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Mark,

In summary of our conversation, a potential interim disposal alternative for the City of Honolulu is our export model to Roosevelt Landfill in Washington State with the following core/essential stipulations:

- HWS would be willing to limit our export to 100,000 – 150,000 tons per year
- the cost would be approximately $80/ton escalated annually by 80% of the CPI
- a five-year minimum commitment at the above stated volumes
- HWS would cooperate with the City on integrating our facility into the City's solid waste system. The mechanism for this integration would have to be determined with the City and HWS, but certainly could result in the City's managing the gate at HWS' processing facility

We feel that this could be, at the very least, an excellent interim measure for the City's solid waste system. Let me know if there is additional information that you need or further questions about anything we have discussed.

Thanks, Jim

Attachment C — Evaluation of CO2 Emissions from Disposal of Waste at Waimanalo Gulch Sanitary Landfill, H–POWER, and Washington State

Attachment D — Evaluations of Potential Landfill Sites Prepared as Part of the Report of the Mayor's Committee on Landfill Site Selection, December 2003

Evaluation of CO_2 Emissions from Disposal of Waste at Waimanalo Gulch Sanitary Landfill, H–POWER, and Washington State

Pacific Waste
CONSULTING GROUP

April 2008

Evaluation of CO_2 Emissions from Disposal of Waste at Waimanalo Gulch Sanitary Landfill, H–POWER, and Washington State

April 2008

Prepared by:

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Prepared for:

Waste Management of Hawaii, Inc.

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List of Figures and Tables

1 Introduction

This report is an evaluation of the greenhouse gas (GHG) emissions that would be produced by disposing of 100,000 tons per year (TPY) of municipal solid waste (MSW) in three different locations. The three disposal locations evaluated are:

1. Roosevelt Landfill at 500 Roosevelt Grade Road, Roosevelt, Washington (Roosevelt).
2. Waimanalo Gulch landfill at Waimanalo Gulch, Kahe Valley, Hawaii (Waimanalo Gulch).
3. H–POWER incinerator at 91-174 Hanua Street, Kapolei, Hawaii (H–POWER).

The transfer to Roosevelt would begin at the Hawaiian Waste Systems (HWS), LLC Transfer Station at 91-165 Kalaeloa Boulevard, Kapolei, Hawaii. HWS is one of the proponents of transshipment of the waste. Data in documents filed by HWS was used in this analysis because more information was available about its plans than the other options for transshipment.

The calculated emissions include indirect emissions from electricity use and direct emissions from mobile combustion (truck transportation, tugboat barging, and forklift operation), incineration of waste, and landfilling waste.

This summary is based on an evaluation of the emissions from readily available published sources or direct contact with representatives of firms that provide the services used (e.g., barging companies). The summary is not intended, nor is it appropriate to use, as an assessment of emissions that will satisfy the requirements for a verifiable greenhouse gas emissions inventory.

There are six primary GHGs. This review is concerned only with CO_2.

2 Calculation Envelope

The envelope for evaluating emissions at each of the three disposal sites starts at a base point, the intersection of H-1 and Kalaeloa Boulevard. This location is the point at which a decision is made to take the waste to Waimanalo Gulch, to H–POWER, or to the HWS Transfer Station for transshipment to Roosevelt. It provides a common point to start the evaluation.

The path for calculating the emissions was:

- Transporting the waste from the base point to the HWS Transfer Station, processing it there, transporting it to Roosevelt, and disposal at Roosevelt.
- Transporting the waste from the base point to Waimanalo Gulch and landfill disposal.
- Transporting the waste from the base point to H–POWER and incineration.

The emissions associated with collecting and transporting the waste to the base point would have occurred regardless of the disposal point and are not included in this evaluation.

2.1 Steps in Transporting Waste to Roosevelt

The emission sources associated with processing the waste at HWS and moving it to disposal at Roosevelt are summarized below.

1. Transport waste from base to HWS Transfer Station
2. Bale the waste
3. Plastic wrap the bales
4. Load flatbed trailers
5. Transport bales to Barbers Point port facility
6. Unload flatbed trailers
7. Load barge
8. Barge to the Port of Portland
9. Unload barge
10. Reposition bales
11. Load flatbed trailers for transport to Roosevelt
12. Unload flatbed trailers
13. Landfill waste

3 Basis for Emissions Calculations

This section discusses the information needed to quantify the source of emissions and the CO_2 emission factors. The emissions are calculated based on the quantity of resource consumed (diesel fuel for transportation and electricity for the equipment) and the emissions resulting from landfilling or incineration. The emissions are dependent on the amount of activity that results in the emissions being produced. For example, every mile a truck is driven carrying waste for disposal generates GHG emissions.

3.1 Emission Factors

The emission factors used are summarized in *Table 1, Emission Factors.* The source from which the factor was taken is also shown. The factors that are indicated as being taken from the California Climate Action Registry (CCAR)[1] are from that organization's *General Reporting Protocol*, Version 3.0, March 2008, the latest CCAR general guidance available. The *Protocol* is used to calculate greenhouse gas emissions from a wide variety of sources.

Table 1, Emission Factors

Emission Source	Emission Factor	Source
Indirect emissions from electrticity use	1,728.12 lb CO_2/MWh	CCAR Table C.2*
Direct emissions from mobile combustion using diesel fuel	10.15 kg CO_2/gallon	CCAR Table C.4 (Diesel)*
Direct emissions from mobile combustion using gasoline	8.81 kg CO_2/gallon	CCAR Table C.4 (Motor Gasosline)*
Waimanalo Gulch Landfill		EPA WARM model
Roosevelt Landfill		EPA WARM model
H–POWER	0.12 tonne/MWh	CCAR Registry
H–POWER Reduction	1,728.12 lb CO_2/MWh	CCAR Table C.2*

*CCAR is California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008

3.1.1 Incinerator Emissions

Covanta has chosen to register its emissions with CCAR. The blended emission factor for all of the Covanta plants was used to estimate the emissions for the H–POWER facility. The emission factor includes all six GHGs. As a result, the emissions indicated for incineration at H–POWER are higher than they would have been if only CO_2 was included. The emission factor used for Covanta was an average of all the plants they operate. It was not possible to disaggregate the CO_2 factor for H–POWER from the other plants and other five GHGs.

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[1] The CCAR registers emissions from companies and provide guidance for calculating the emissions.

By selling electricity produced from the incineration of waste to the grid, Covanta displaces CO_2 emissions that would otherwise have been generated using oil and coal. The blended emission factor for electricity on Oahu (from CCAR) was used to calculate the emissions reduction due to the generation by H–POWER.

3.1.2 Indirect Emissions from Electrical Use

The emissions from use of electricity shown by CCAR were calculated for utilities in different areas of the country. The emission factor for the electricity use at the HWS Transfer Station was the CCAR factor specifically for Oahu.

3.1.3 Direct Emissions from Mobile Combustion

The emission factor for diesel use was the CCAR value for diesel fuel and the factor for gasoline use was taken from CCAR for motor gasoline.

3.1.4 Landfill Emissions

The emissions from landfill disposal are assumed to be for a landfill compliant with Subtitle D, the federal regulations on landfill design and operations, and other federal regulations related to the capture and control of landfill gas. Both Roosevelt and Waimanalo Gulch are consistent with those assumptions.

Landfill emissions were calculated using the U.S. Environmental Protection Agency (EPA) Waste Reduction Model (WARM), which is used to calculate comparative emissions from a variety of solid waste management practices. The factors in the model were developed following a life-cycle assessment methodology using estimation techniques developed for national inventories of GHG emissions[2]. The model automatically applies emission factors to the quantity of MSW input. 100,000 TPY were input into the model to calculate landfill emissions. Both landfills have gas recovery systems.

- We calculated the emission factor for 100,000 tons of MSW at Waimanalo Gulch assuming a landfill gas control efficiency of 90 percent and a gas flare.
- We calculated the emission factor for 100,000 ton of MSW at Roosevelt assuming a landfill gas control efficiency of 79 percent[3] and the recovered gas being used to produce electricity.

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[2] EPA's report "Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks" describes their methodology in detail.

[3] Washington State Department of Ecology, Central Regional Air Quality Section. Roosevelt Regional Landfill, Regional Disposal Company Statement of Basis for Final Air Operating Permit No. 03AQ-C005 Second Revision. November 2005.

The emission factor includes all six GHGs. As a result, the emissions indicated for decomposition in the landfills are higher than they would have been if only CO_2 was included. It was not possible to disaggregate the CO_2 factor.

The emissions from the plastic wrapped waste in Roosevelt are assumed to be the same as the emissions from the non-wrapped waste at Waimanalo Gulch. The baled waste in Roosevelt will decompose and release GHG emissions at a slower rate than waste disposed in Waimanalo Gulch. The amount of delay in emissions occurring is unknown.[4] Two summary points from the reference report illustrate this situation:

- "The baling-wrapping system assures that emissions are highly reduced in the short term and half-term. This refers to both the emission of gases and the production of leachates, once the plastic wrapped bales have been deposited in a landfill where the current concepts of design and control are applied, or stored for their subsequent incineration."
- "Long term impacts of baling-wrapping remain uncertain."

3.2 Emission Calculations

The activities associated with disposal at H–POWER and Waimanalo Gulch involve two steps: transportation from the base point and disposal. In both cases, the amount of disposal was 100,000 TPY. For H-POWER, the disposal emissions were reduced by the estimated energy production from incinerating the waste. The amount of fuel used for transportation depends on the distance from the base point to the disposal point and was determined using Googlemaps©. The distance from HWS Transfer Station to the port was taken from the compliance agreement.

- From the base point to H–POWER — 2.4 miles one-way and 4.8 miles roundtrip.
- From the base point to Waimanalo Gulch — 2.5 miles one-way and 5.0 miles roundtrip.

The emissions resulting from disposal at Roosevelt involved several more steps, as listed in *Table 2, Unit Quantities Associated with Disposal at Roosevelt*, which shows the level of activity for each operation.

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[4] Baldasano, J.M., S. Gasso and C. Perez. "Environmental Performance Review and Cost Analysis of MSW Landfilling by Baling-Wrapping Technology Versus Conventional System." Waste Management 23.9 (2003): 795-806.

Table 2, Unit Quantities Associated with Disposal at Roosevelt

Activity	Quantity	Source
Transport raw waste from base to HWS (roundtrip)	4.40 miles	Googlemaps©
Baling waste	4.73 kWh/bale	Calculated
Plastic wrapping bales	9.75 kWh/bale	Estimates for Sierra International Macpresse wrapping machine
Loading flatbed trailer	0.94 gallons/flatbed	Beck Report*
Transport bales to Barbers Point (roundtrip)	5.00 miles	HWS Compliance Agreement, page 4
Unloading flatbed trailer	0.94 gallons/flatbed	Beck Report*
Loading barge	262.56 gallons	Beck Report*
Barging Port of Portland	14 days	Beck Report: confirmed with personal communication
Unloading barge	262.56 gallons	Beck Report*
Repositioning bales	262.56 gallons	Beck Report*
Loading flatbed trailer	1.22 gallons/flatbed	Beck Report*
Transport bales to Roosevelt (roundtrip)	282.00 miles	Beck Report*
Unload flatbed at landfill	1.22 gallons/flatbed	Beck Report*
Decomposition of waste	100,000 TPY	EPA WARM model

* Estimated from data provided in the Beck Report.

The calculation of the data in Table 2 is detailed in tables that follow.

3.2.1 Port Operations Information

Much of the information for the operations associated with disposal at Roosevelt was taken from the report *Draft Integrated Solid Waste Management Plan Update*, November 2007 by RW Beck that was prepared for the City and County of Honolulu. Appendix C in that report titled *Trans-Shipment of Waste Analyses* (Beck Report) was prepared with assistance from Transportation-Logistics Consulting and Mainline Management, Inc. (referred to in the Beck Report as TLC and MLM). We used portions of Appendix C as the source for details of the activities necessary to move the waste between the points of loading the barge at Barbers Point and unloading the trucks after transport to Roosevelt.

We relied on the Beck Report to identify the steps necessary to transport the waste after it was baled (particularly the steps in handling at the ports) because it seemed to be directed at identifying the reasonable cost to dispose of the bales at Roosevelt, given the physical constraints and cargo management practices at each port. The report indicated that:

- "The receiving parameters outlined by the Roosevelt Regional Landfill management that required that the bales be received on flatbed truck so "special handling procedures" were employed in compliance with USDA, Animal Health Inspection Regulatory guidelines."
- "Economics for intermodal rail line haul proved too costly, given minimal distance (150 miles one way) and equipment repositioning costs."

The Beck Report identified the amount of time and type of equipment required for each step in the transfer at the ports for 600,000 TPY of waste. This evaluation is for 100,000 TPY. The assumptions used from the Beck Report were:

- The amount of time used by forklifts to load and unload flatbeds, load barges, and reposition bales at Portland.
- The weight a barge can accommodate — 7,000 tons
- The time to barge the bales from Barbers Point to Portland — 14 days
- The acceptable load on a flatbed truck in Hawaii — 55,000 pounds
- The acceptable load on a flatbed truck in Oregon and Washington — 65,000 pounds

3.2.2 Emissions Occurring before Shipment from Honolulu

The pre-shipment emissions are created during the transportation of waste from the base point to the HWS Transfer Station, baling and shrink wrapping the waste, transport to Barbers Point, and moving the bales to the barge at Barbers Point.

Transportation estimates used a collection truck carrying 8 tons and fuel economy of 7 miles per gallon.[5]

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[5] CCAR General Reporting Protocol, v2.2, page 37.

The estimates of energy required to bale and shrink wrap the waste at HWS Transfer Station was taken from data provided by suppliers of that type of equipment (since we are not aware of the specific make and model of equipment that HWS proposes to use). The assumed baler was an American Baler Company RAM II-1124 series- 200 T9(B) that can process 53 TPH and the shrink wrapping machine was a Sierra Industries Macpresse model that can wrap 35 bales per hour[6].

The amount of fuel used to move the bales from the HWS Transfer Station to Barbers Point assumed use of a heavy truck with 50,000 pound load capacity and fuel economy of 7 miles per gallon.

3.2.3 Emissions Generated During Shipment from Honolulu to Portland

The barging emissions are dependent on the number of barge trips needed and the time required for each trip. The number of trips is dependent on the capacity of the barge. As noted earlier, the Beck Report stated that a barge can accommodate 7,000 tons and the trip takes 14 days.

The amount of fuel required to transport from Barbers Point to the Port of Portland was estimated from the following information provided by a barging company representative[7]:

- Two types of tugs are used to move cargo: an open wheel tug and a tug with an upgraded propulsion system. The upgraded tug uses less horsepower than an open wheel and can move the same load. For this evaluation, we used the tug with upgraded propulsion because they are widely used now because of their efficiency over a standard open wheel tug.

- The fuel usage ranges from 2,800 to 3,300 gallons per day, depending on the barge loading plan, the draft of the barge and other factors. We used an average value of 3,048 gallons per day.

The haul from Barbers Point to Portland can benefit from a backhaul of a second cargo, reducing the total trip distance associated with this operation by half. We assumed that backhaul was used and the trip would be one way at 14, not 28 days[8].

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[6] Data received from distributors of the equipment.

[7] Personal communication between PWCG staff member and expert staff member at Young Brothers, Ltd on February 28, 2008.

[8] Meeting on December 14, 2006, with Jim Hodge and Mark White held in Sacramento, California.

3.2.4 Emissions from Transporting from Portland to Roosevelt

The ground transportation emissions are created during the transportation of bales from the barge at the Port of Portland to a temporary dockside location, relocating the bales, loading the bales onto a flatbed for transport to Roosevelt, transporting to Roosevelt, unloading the bales at Roosevelt, and disposal. The load capacity of the flatbed truck was stated in the Beck Report as 65,000 pounds and that was the value we used to calculate emissions.

3.2.5 Emissions from Decomposition at Roosevelt

This analysis assumes that over the long term, the GHG emissions from waste decomposition are the same at Roosevelt and Waimanalo Gulch.

4 Summary of Results

Transshipping and disposing of waste at Roosevelt produced the most emissions of the three disposal locations evaluated. *Table 3, Total Emissions from Three Alternatives* shows the total emissions for each alternative. Emission details for each alternative are described in the sections that follow.

Table 3, Total Emissions from Three Alternatives

Disposal Location	Emissions ($MTCO_2e$ per year)
H–POWER	(28,711)
Waimanalo Gulch	(3,686)
Roosevelt	3,978

4.1.1 H-POWER Emissions

The emissions resulting from the transport of 100,000 TPY of waste to H–POWER and incineration were 3,978 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year. Approximately 41,631 $MTCO_2e$ per year would have been emitted if the energy created by H–POWER was produced by the local power generation resources (HECO and AES). H–POWER reduces 37,653 $MTCO_2e$ per year. The H–POWER alternative shows the lowest emissions (including and excluding the reduction) compared to the two landfill alternatives.

As described in Section 3.1.1, the emissions from the incineration are higher than they would have been if only CO_2 was included. Covanta reported its emissions of all six primary GHGs. We were unable to disaggregate the CO_2 emissions from other gases in the emission factor we used to calculate the emissions. *Table 4, Total Emissions from Transporting and Disposing at H-POWER*, details the emissions produced.

Table 4, Total Emissions from Transporting and Disposing at H-POWER

Activity	Quantity		Emission Factor		Emissions ($MTCO_2e$ per year)
Transport collected waste from base to H-POWER	8,571	gallons	10.15	kg CO_2/gallon	87
Incineration of waste	100,000	tons	0.12	tonne/MWh	6,373
Energy reduction	53,110	MWh	1,728.12	lb CO_2/MWh	(35,171)
Total Emissions					**(28,711)**

4.1.2 Waimanalo Gulch

The emissions resulting from the transport and disposal at Waimanalo Gulch of 100,000 TPY of waste is –3,686 $MTCO_2e$ per year. Most of the emissions are a result of decomposition of the waste in the landfill, but the 90 percent efficiency gas collection system reduces overall emissions significantly. As described in Section 3.1.4, the emissions from the landfill are higher than they would have been if only CO_2 was included. We were unable to disaggregate the gases from the emission factor we calculated using the WARM model. *Table 5, Total Emissions from Transporting and Disposing at Waimanalo Gulch* summarizes the emissions produced.

Table 5, Total Emissions from Transporting and Disposing at Waimanalo Gulch

Activity	Quantity		Emission Factor		Emissions ($MTCO_2e$ per year)
Transport collected waste from base to Waimanalo Gulch	8,929	gallons	10.15	kg CO_2/gallon	91
Decomposition of waste	100,000	tons			(3,777)
Total Emissions					**(3,686)**

4.1.3 Roosevelt

The emissions resulting from transshipping the waste and disposing it at Roosevelt were 3,978 $MTCO_2e$ per year and represents the greatest quantity of emissions of the three disposal locations evaluated. The emissions were significantly higher than disposal at Waimanalo Gulch due to processing and transportation..

The largest emissions from the Roosevelt alternative were from barging the waste from Honolulu to the Port of Portland. Barging the waste from Honolulu to Portland alone represented 72 percent of the mobile emissions. Transportation of bales from the Port of Portland to Roosevelt alone represented 15 percent of the mobile emissions. The emissions from *Table 6, Total Emissions from Transporting and Disposing at Roosevelt* details the emissions produced.

As described in Section 3.1.4, the emissions from the landfill are higher than they would have been if only CO_2 was included. We were unable to disaggregate the gases from the emission factor we calculated using the WARM model.

Table 6, Total Emissions from Transporting and Disposing at Roosevelt

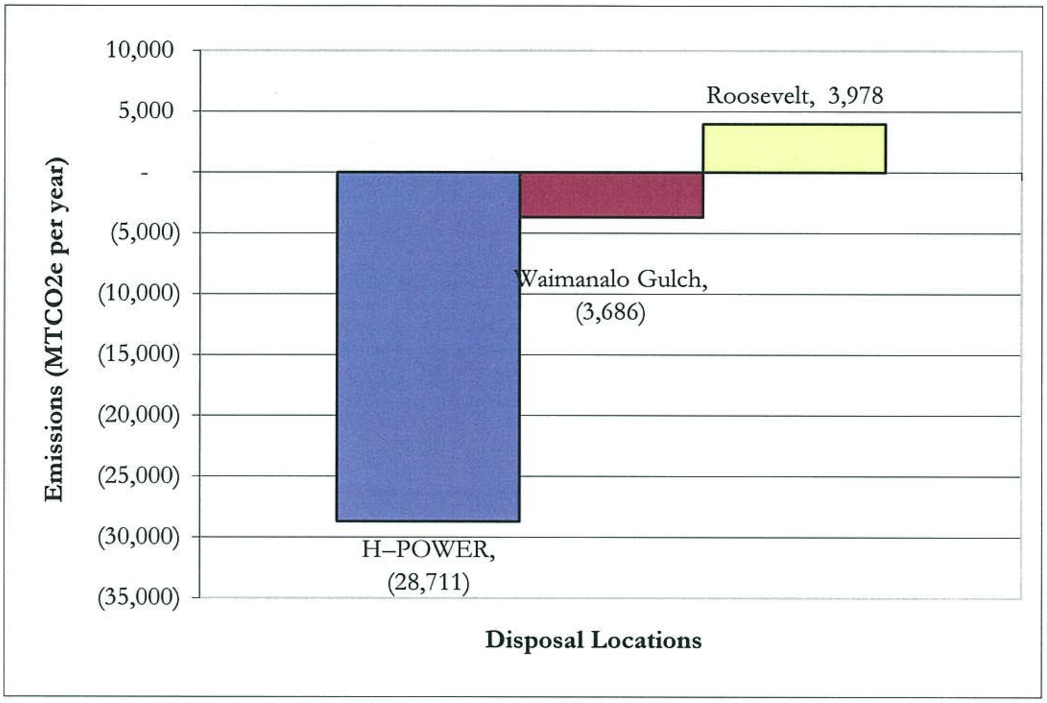
Activity	Quantity	Emission Factor	Emissions ($MTCO_2e$ per year)
Transport collected waste from base to HWS Transfer Station	7,857 gallons	10.15 kg CO_2/gallon	80
Baling waste	337,736 kWh	1,728.12 lbs/MWh	265
Plastic wrapping bales	666,279 kWh	1,728.12 lbs/MWh	522
Loading flatbed trailers	3,751 gallons	8.81 kg CO_2/gallon	33
Transport bales to Barbers Point	2,857 gallons	10.15 kg CO_2/gallon	29
Unloading flatbed trailers	3,751 gallons	8.81 kg CO_2/gallon	33
Loading barge	3,751 gallons	8.81 kg CO_2/gallon	33
Barging to Port of Portland	609,600 gallons	10.15 kg CO_2/gallon	6,189
Unloading barge	3,751 gallons	8.81 kg CO_2/gallon	33
Repositioning bales	3,751 gallons	8.81 kg CO_2/gallon	33
Loading flatbed trailers	3,751 gallons	8.81 kg CO_2/gallon	33
Transport bales to Roosevelt	123,956 gallons	10.15 kg CO_2/gallon	1,258
Unload bales at landfill	3,751 gallons	8.81 kg CO_2/gallon	33
Decomposition of waste (including gas recovery for energy)	100,000 tons		(4,596)
Total Emissions			**3,978**

4.1.4 Conclusion

The CO_2 emissions from transshipment to Roosevelt for disposal are significantly higher than either of the two on-island alternatives. The relative CO_2 emissions from landfill disposal are much higher, given the reduced emissions of avoiding generating energy without using fossil fuels with H–POWER.

The relative emissions at each disposal site are shown in the figure below *Figure 1, Relative Emissions at Each Location.*

Figure 1, Relative Emissions at Each Location



Report of the Mayor's Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection

December 1, 2003

Report of the
Mayor's Advisory Committee (Blue Ribbon Committee)
on Landfill Site Selection
Final

December 1, 2003

Prepared by
The Committee's Report Subcommittee
R.M. Towill Corporation
Pacific Waste Consulting Group

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Attachments

Attachment A – Planning Commission Recommendation and Land Use Commission Decision for State Special Use Permit for Waimanalo Gulch Sanitary Landfill Expansion

Attachment B – Mayor's Letter to Committee Members; List of Committee Members and Meeting Schedule; Meeting Sign-In Sheets; and Group Memory from the Meetings

Attachment C – Application of Preliminary Siting Criteria

Attachment D – Individual Site Evaluations (Provided on CD)

Attachment E – Correspondence

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1 EXECUTIVE SUMMARY

This report summarizes the efforts of the Mayor's Advisory Committee on Landfill Selection (Committee) to identify potential landfill site(s) for consideration by the Mayor and City Council when it prepares an Environmental Impact Statement for a new landfill site.

1.1 Need for a New Landfill

The Committee was convened by the Mayor pursuant to a proposal by the City and in response to a decision by the State Land Use Commission (LUC) which extended the use of the Waimanalo Gulch Sanitary Landfill until 2008 (**Attachment A**.) A major condition of the LUC, as part of the amendment to the City's State Special Use Permit, required that the City identify a new landfill site prior to closure of the existing site. Several Committee members noted that representatives of the current City Administration speaking at public meetings for the Waimanalo Gulch Sanitary Landfill Expansion committed to closure and to identify a new site by then.

The provision of municipal solid waste landfill capacity is a critical infrastructure element provided by the City to its citizens. A landfill is necessary for the disposal of non-combustible municipal solid waste and bulky items that cannot be recycled or reused. Further, a landfill provides for the disposal of municipal solid waste in a secure and economic manner. There are limited areas of Oahu where a landfill will have a *lesser* overall impact. Finding these locations and recommending *sites* was the task of the Committee.

1.2 Mayor's Landfill Site Selection Committee

The Mayor appointed a 15–member committee composed of citizens representing various communities on Oahu. Committee members provided experience and expertise from a broad range of backgrounds that included: public and community interests; state and City officials; environmental and health sciences; legal, financial, business, and education professions; and, corporate administration. The Committee was directed by the Mayor to recommend one or more landfill sites. (See **Attachment B** for a list of members and a copy of the Mayor's letter.) The Committee deliberated between June and December 1, 2003, identified four potential sites, and developed recommendations.

1.3 The Process

The process began with an inventory of 45 potential landfill sites identified by the Department of Environmental Services (ENV) and consultant from the City's previous studies and investigations (See Section 2.2 for a list of them). The Committee was also asked for nominations of new potential sites. No additional viable sites were recommended.

Landfill Siting Criteria to supplement those mandated by state and federal government agencies were developed to enable comparison of key considerations for a new landfill that were important to the Committee (e.g., proximity to residences, groundwater protection, and travel distances).

Various methods and criteria were applied to reduce the number of sites at each step. The methods and criteria included: application of the U.S. Environmental Protection Agency (USEPA) siting criteria; consideration of whether residential or other incompatible land uses had become developed near the proposed site; consideration of the location of the site in relation to potable groundwater resources; the minimum capacity criteria developed by the Committee; and finally, the 31 criteria developed by the Committee (which included the capacity criteria). The Committee evaluation was to review the site-specific factors that were important with respect to each of the site finalists. In this process, the Committee started with a list of eight sites distilled from the list of 45 sites after application of the criteria noted above and the minimum capacity criterion. The Committee reduced the list of eight sites to five as consensus could not be reached to remove any of the five sites from consideration. The five sites were at the last meeting reduced to four through a vote which prompted the resignation of four Committee members. The remaining Committee members are recommending four sites to the Mayor for forwarding to the City Council for further consideration.

The Committee in evaluating the remaining eight sites went through a process called a double blind evaluation. First, the Committee did not know the names of the sites to be evaluated until the criteria were developed and weighting was assigned. Second, the consultant did not know the weighting assigned by the Committee to the 31 criteria until they had finished their analysis and scoring of the sites using the 31 criteria. See Table 2 for a list of the criteria and their weighting factors.

Attachment C, provides the name, tax map key (TMK), and location of each of the 45 potential landfill sites.

1.4 Process Changes

The Committee removed one site from consideration at its December 1, 2003 meeting as a result of a vote, which was a change from the consensus process the Committee had employed up until this meeting. As a result of a successful motion to further limit the number of recommended sites through voting Bruce Anderson, Kathy Bryant-Hunter, Eric Guinther, and Representative Cynthia Thielen resigned from the Committee stating that they did not want to be part of a vote that would remove one or more sites from consideration. They felt that the Committee had done an excellent job and that the original five sites should go forward for the following reasons:

- That this Committee was not constituted to represent the interests of all the residents of the island of Oahu. Indeed, it was heavily weighted with members representing Leeward Oahu communities. Thus, it is inappropriate for the Committee to pretend that they represent these interests by voting to eliminate any site that, based on criteria developed by the

Committee, should be included just as it would be inappropriate to add sites based on a vote. The City Council, the duly elected legislative body representing the interest of all residents of Oahu, should make a final decision based on the best information that is available on all the alternatives.

- The Committee went as far as it could in reducing the list from eight sites to five sites with the limited information that was available to the Committee on each site. Unsolicited comments and information was received from developers and individuals who owned land adjacent to only three of the five sites. Further information is required on environmental, social and economic impacts associated with establishing a landfill at all five sites before a decision should be made to drop any of the sites from consideration. When the Land Use Commission made their decision only to extend the permit at Waimanalo Gulch landfill until 2008, they did not consider alternatives or the impacts at alternative sites. They need this information to make a good decision. Likewise, the City Council should be provided the best available information on all the alternatives to make a decision that best serves residents of the island of Oahu. Therefore, some members of the committee felt it was inappropriate and premature to eliminate any of the sites from further consideration by a vote.

- Waimanalo Gulch got the highest score in the Committee's double blind process

- It is an irresponsible land use decision to walk away from an operating landfill with 20 years of life left

- Some of the members felt that a letter sent by Ko Olina negated the integrity of the Committee's deliberations because it was perceived by some as threatening a lawsuit against individual Committee members (the letter can be found in Attachment E)

- The LUC made its order on the Waimanalo Gulch Landfill without the benefit of all the information the Committee had and without input as to the potential economic and other impacts that might result should a new site be chosen

- Although the City Administration had made a commitment to the Community, this commitment does not bind the City Council and the LUC has a process for revisiting its decision should the Waimanalo Gulch Landfill become the preferred site.

Members of the Committee requesting a vote to remove Waimanalo Gulch felt that the City had not made its commitment to the community lightly as implied by others. They felt strongly that the City had to honor that commitment and therefore the site should not be recommended by the Committee. They noted that the commitment to leave Waimanalo Gulch Landfill resulted from two years of study which occurred during the process to extend the Landfill for 15 years.

Todd Apo moved and Shad Kane seconded the motion to change the process from consensus to voting; the motion carried. Those voting for the motion were: Todd Apo, Shad Kane, Gary Slovin, Michael Chun, Gary Tomita, George Yamamoto, Cynthia Rezentes, Ted Jung, and Robert Tong.

Those opposed to the motion were: Cynthia Thielen, Kathy Bryant-Hunter, Eric Guinther, and Bruce Anderson.

Todd Apo then moved and Shad Kane seconded the motion to remove the Waimanalo Gulch Landfill from the list of sites. Prior to consideration of the motion, several of the members resigned, as noted above. Those voting for the motion were: Todd Apo, Shad Kane, Gary Slovin, Gary Tomita, Ted Jung, Cynthia Rezentes, George Yamamoto, Robert Tong, and Michael Chun. There were no votes in opposition.

1.5 Committee Recommendations

The four sites recommend by the remaining Committee members are listed in **Table ES–1, Recommended Sites**. The location of those sites is shown in **Figure ES-1, Location of Four Recommended Sites**. The sites are listed in alphabetical order and no prioritization of the sites was done by the Committee. The intent was that the sites would be evaluated through an Environmental Impact Statement (EIS) process.

Table ES – 1, Recommended Sites

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9	15
Maili	8-7-10:por. 03	200	9	15
Makaiwa	9-2-3: por. 02	338	15	25
Nanakuli B	8-7-9: pors. 1 & 7	432	9	16

The Committee evaluated the sites using a two-step process. The first step was to apply the criteria and weighting factor to come out with a numerical scoring of sites based on the data available to the Committee. The second step was to discuss the various positive and negative attributes of each site to arrive at a list of recommended sites. The summary of the pros and cons is presented in Section 5, Committee Evaluation and Analysis. The pros and cons were not arrived at by consensus but were a compilation of Committee members' individual thoughts and concerns.

The Committee's recommended list of sites started with five, including the existing Waimanalo Gulch Landfill. As part of its deliberations, the Committee considered whether to remove Waimanalo Gulch Landfill. Prior to this time, the Committee had made its determinations by consensus. In coming to a recommendation regarding the Waimanalo Gulch Landfill, the Committee decided to vote as noted in Section 1.4.

Other important recommendations of the entire Committee included: (1) the City Administration and City Council should not zone or permit any site unless a Host Community Benefits package is negotiated with the affected community where a landfill is sited; and, (2) the City is encouraged to Land Bank sites to reduce the potential for future land use conflicts when another landfill is needed.

1.6 Other Considerations of the Entire Committee

The entire Committee during its deliberations spent considerable time discussing costs and benefits of various options. This included discussion on the role of and need for the City to move quickly to develop alternative technologies to landfilling, the impact such technologies could have on the necessary size of the sites, and whether or not it would be appropriate to develop several smaller sites. The Committee strongly feels that whatever site is selected that the City maximize the life of the site through aggressive actions to remove and reduce waste from being disposed in a landfill. Further discussion on these issues can be found in Section 6, Committee Recommendations, and the meeting notes found in **Attachment B**.

With these considerations, the Committee anticipates that the City will prepare an Environmental Impact Statement to evaluate in detail the benefits and constraints of each site and determine which site should be the preferred alternative for a new landfill.

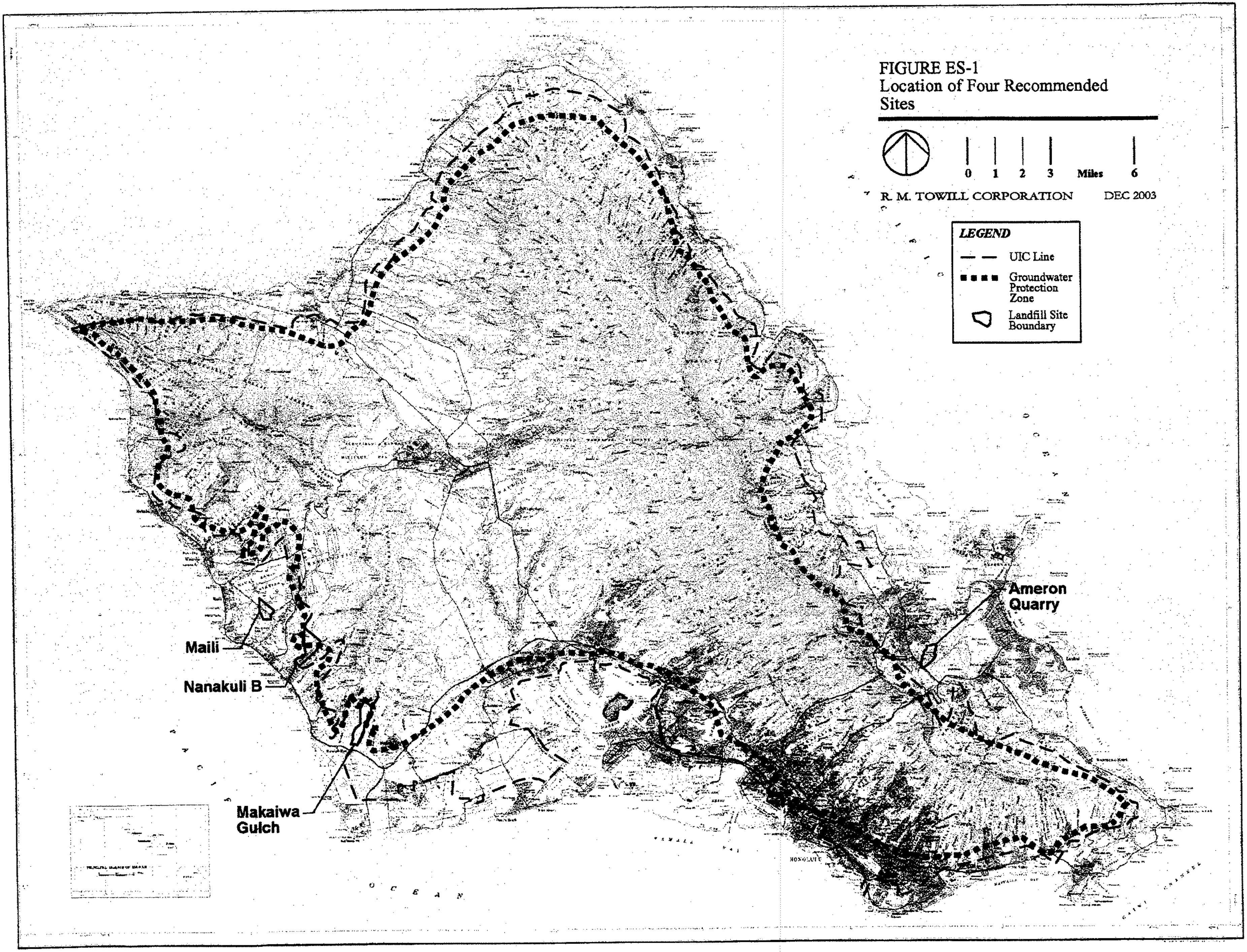

FIGURE ES-1
Location of Four Recommended Sites

2 INTRODUCTION

2.1 Background and Purpose of Committee

On June 5, 2003, the State Land Use Commission (LUC) approved an amendment to the Special Use Permit for the Waimanalo Gulch Sanitary Landfill Expansion, the only municipal solid waste landfill disposal site on Oahu. According to those attending, the City made a promise to close the Waimanalo Gulch Landfill within that timeframe. Based on this and community input, the LUC decision allows landfilling at the site for a period of five years, which will expire on May 1, 2008. The LUC decision also directed the City to achieve certain milestones in siting a new landfill. The LUC and Planning Commission decisions are in **Attachment A**.

The provision of disposal is one of the City's health and safety responsibilities. While H–POWER provides disposal capacity for the majority of the waste produced (generating electricity in the process), landfill disposal capacity is needed for municipal solid waste that cannot be further recycled or reused. The Mayor convened the Advisory Committee on Landfill Selection (Committee) in June 2003 to forward a recommendation for one or more potential sites to the Mayor before December 1, 2003. The Mayor's letter to the Committee is in **Attachment B**.

The Committee was made up of 15 appointed members. Participation was excellent from a majority of the members, with very few exceptions. The Committee consisted of representation from each geographic area of the Island with a possible municipal solid waste landfill site (see **Attachment B** for a list of members). The Committee worked by consensus until the December 1, 2003, meeting, at which point they voted to reduce the number of recommended sites resulting in the resignation of four Committee members. The Committee was assisted by the Department of Environmental Services (ENV), R.M. Towill Corporation as consultant, and a neutral facilitator. The group memories from each of the meetings, the meeting schedule, and the attendance lists are also in **Attachment B**.

An initial list of 45 sites was identified from a previous City EIS and other reports and processes completed between 1977 and 2002. The Committee was asked to nominate other sites that should be considered. No additional viable sites were suggested.

From the beginning the Committee had three concerns about the process. First, they recognized that no ideal site would be found and that any site would have community impacts. The Committee agreed that any site that was ultimately chosen would have to include a Host Community Benefits package (see **Attachment F**), and that the package should be negotiated with the affected community prior to the permitting of the site.

Second, the LUC decision created several problems. Some read the decision as requiring the Committee to forward only one site, while others felt that the decision allowed the Committee to forward more than one site for further analysis through an Environmental Impact Statement process. The City verbally requested that the Committee select from three to five sites as the basis for further evaluation. The City also agreed that if it was determined that the Committee was required to forward no more than one site, the Committee would be reconvened to identify that site.

Third, the LUC decision raised the question of whether or not the Committee could consider a new or second expansion of the Waimanalo Gulch Sanitary Landfill as a potential site. Some felt it was clear that they could not, and others felt that it was a viable or the best site under the criteria developed by the Committee, and that it should be considered. Some Committee members went so far as to say it would be irresponsible to not consider it. The Committee chose to keep a possible second expansion on the list of sites it reviewed, because consensus could not be reached to remove it or any of the other sites on the list. At the last Committee meeting, the Waimanalo Gulch Landfill was removed from the recommended list by vote. Four Committee members resigned because they did not wish to participate in a process (voting) which was not consensus based. The section on recommendations discusses the positive and negative features of the final sites and provides the reader a more complete analysis regarding the five consensus sites including the four recommended sites.

The Committee chose to work by consensus through some very difficult and potentially polarizing issues. It chose a two-step process. In the first step, the Committee developed and applied 31 siting criteria to sites remaining after EPA, developed areas, groundwater, and the Committee's capacity criteria were applied. The second step determined the recommended sites after a discussion of the positive and negative aspects of each of the finalist sites. This process is described in further detail within this document.

It is important to recognize that the Committee focused on evaluating the potential sites from the perspective of the community. Therefore, many of the criteria developed reflect community–based considerations. Technical issues were also considered, but the Committee placed most of its emphasis on those impacts of a landfill that have the greatest effect on the community in which the site is located.

As the Committee progressed to the most difficult part of their charge (i.e., determining the final recommended sites), there was agreement that the time spent by the Committee and the objectivity with which they developed the criteria and applied the site analyses provided a high degree of confidence in the Committee's recommendations. It also recognized that its final recommendations would be based more importantly on its deliberations and not solely on the application of the siting criteria. The Committee's decision to forward four sites is the result of careful deliberation and a final vote to reduce the number of recommended sites to four. This vote led to polarization among some Committee members. Four members resigned from the Committee preferring to send a consensus report forward rather than a report that used voting to narrow the sites.

With this report the Committee concludes its charge.

2.2 Work Plan

The identification of sites selected for evaluation started with a review of prior work completed by the City in the siting and evaluation of municipal solid waste landfills. ENV and the consultant assembled a list of 45 sites from the following City sources:

1. *Inventory of Potential Sanitary and Demolition Landfill Sites,* August 1977.
2. *Supplement to Inventory of Potential Sanitary and Demolition Landfill Sites,* November 1979.
3. *Revised Environmental Impact Statement for Leeward Sanitary Landfill at Waimanalo Gulch Site and Ohikilolo Site,* 1984.
4. *Solid Waste Integrated Management Plan Update, Final Report,* 1995.
5. *Final Supplemental Environmental Impact Statement, Waimanalo Gulch Sanitary Landfill Expansion,* December 2002.

The Committee was next asked to nominate additional sites. Since no additional viable sites were nominated, the sites initially evaluated were the 45 identified from the sources indicated. The names and location of sites are provided in **Attachment C**.

After identification of the list of sites to evaluate, ENV and the consultant reviewed the sites against the most restrictive siting criteria. These criteria included: Environmental Protection Agency (USEPA) siting criteria as promulgated in the rules of the Resource and Conservation Recovery Act Subtitle D (RCRAD); sites located in areas which have since been developed or are closed landfills with no further expansion potential; Honolulu Board of Water Supply evaluation governing whether a site should be protected in consideration of proximity to the Groundwater Protection Zone and Underground Injection Control Line (UIC) zone; and, the Committee's capacity criterion that the site have a minimum life of more than 10 years.

During the preliminary evaluation by ENV and the consultant, the Committee undertook extensive discussion and deliberation to develop 31 Siting Criteria and Weighting Factors to be applied following the ENV and consultant evaluation of remaining sites (Section 3 provides more detail about the process). After applying the criteria, the Committee used the numerically weighted scores for the sites that enabled comparison of one site to another on the basis of community, economic, land use, and technical considerations. Finally, the Committee applied its own insights regarding each site to develop the list recommended to the Mayor. The reduction in the number of sites at each step is shown in **Table 1, Attrition of Sites During the Evaluation Process**.

Table 1, Attrition of Sites During the Evaluation Process

Phase of Evaluation	Number of Sites Before Application of Criteria	 After Application of Criteria
ENV/Consultant Evaluation Process		
RCRA Subtitle D Criteria	45	40
Sites in Developed Areas or Closed Landfills w/No Expansion Potential	40	34
Board of Water Supply Staff Review and Evaluation	34	16
Committee Evaluation Process		
Landfill Capacity Requirement 1	16	8
31 Criteria	8	8
Committee Consensus Deliberations	8	5
Committee Vote (four members resigned in protest over voting)	5	4

2.3 Considerations Regarding the Waimanalo Gulch Landfill and This Process

Some of the Committee members recognized that the City committed to no further expansion of the Waimanalo Gulch Sanitary Landfill and that the LUC decision required the City to close the landfill by 2008. Other members felt: the landfill had significant remaining capacity (20 years); the landfill was a known usable resource; the landfill should be used to its fullest capacity to conserve Oahu's precious and finite land resources; and, that it would be irresponsible to not continue with further examination of the site.

The Committee removed one site from consideration at its December 1, 2003 meeting as a result of a vote, which was a change from the consensus process the Committee had employed up until this meeting. As a result of a successful motion to further limit the number of recommended sites through voting Bruce Anderson, Kathy Bryant-Hunter, Eric Guinther, and Representative Cynthia Thielen resigned from the Committee stating that they did not want to be part of a vote that would remove one or more sites from consideration. They felt that the Committee had done an excellent job and that the original five sites should go forward for the following reasons:

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1 The capacity evaluation was completed before the Committee's site evaluations.

- That this Committee was not constituted to represent the interests of all the residents of the island of Oahu should be a consideration. Indeed, it was heavily weighted with members representing Leeward Oahu communities. Thus, it is inappropriate for the Committee to pretend that they represent these interests by voting to eliminate any site that, based on criteria developed by the Committee, should be included just as it would be inappropriate to add sites based on a vote. The City Council, the duly elected legislative body representing the interest of all residents of Oahu, should make a final decision based on the best information that is available on all the alternatives.

- The Committee went as far as it could in reducing the list from eight sites to five sites with the limited information that was available to the Committee on each site. Unsolicited comments and information was received from developers and individuals who owned land adjacent to only three of the five sites. Further information is required on environmental, social and economic impacts associated with establishing a landfill at all five sites before a decision should be made to drop any of the sites from consideration. When the Land Use Commission made their decision only to extend the permit at Waimanalo Gulch landfill until 2008, they did not consider alternatives or the impacts at alternative sites. They need this information to make a good decision. Likewise, the City Council should be provided the best available information on all the alternatives to make a decision that best serves residents of the island of Oahu. Therefore, some members of the committee felt it was inappropriate and premature to eliminate any of the sites from further consideration by a vote.

- Waimanalo Gulch got the highest score in the Committee's double blind process

- It is an irresponsible land use decision to walk away from an operating landfill with 20 years of life left

- Some of these members felt that a letter sent by Ko Olina negated the integrity of the Committee's deliberations because it was perceived by some members as threatening a lawsuit against individual Committee members (the letter can be found in **Attachment E**)

- That the LUC made its order on the Waimanalo Gulch Landfill without the benefit of all the information the Committee had and without input as to the potential economic and other impacts that might result should a new site be chosen

- That although the City Administration had made a commitment to the Community, this commitment does not bind the City Council and that the LUC has a process for revisiting its decision should the Waimanalo Gulch Landfill become the preferred site.

Members of the Committee requesting a vote to remove the Waimanalo Gulch landfill felt that the City had not made its commitment to the community lightly as implied by others. They felt strongly that the City had to honor that commitment and therefore the site should not go forward. They noted that the commitment to leave the Waimanalo Gulch Landfill resulted from two years of study that occurred during the process to extend the Landfill for 15 years.

Todd Apo moved and Shad Kane seconded to change the process from consensus to voting the motion carried. Those voting for the motion were: Todd Apo, Shad Kane, Gary Slovin, Michael Chun, Gary Tomita, George Yamamoto, Cynthia Rezentes, Ted Jung, and Robert Tong. Those opposed to the motion were: Cynthia Thielen, Kathy Bryant-Hunter, Eric Guinther, and Bruce Anderson.

Todd Apo then moved and Shad Kane seconded the motion to remove the Waimanalo Gulch landfill from the list of sites. Several of the members resigned from the Committee, prior to the vote, as noted above. Those voting for the motion were: Todd Apo, Shad Kane, Gary Slovin, Gary Tomita, Ted Jung, Cynthia Rezentes, George Yamamoto, Robert Tong, and Michael Chun. No votes were cast opposing the motion.

3 CONSULTANT'S APPLICATION OF PRELIMINARY SITING CRITERIA

This section includes a description of preliminary siting criteria. The preliminary siting criteria were applied by ENV and the consultant to the initial list of 45 potential landfill sites. The results of application of these criteria are provided in **Attachment C**.

The preliminary siting criteria includes: Environmental Protection Agency (USEPA) exclusionary criteria; restrictions on developed areas where a new landfill cannot be sited (included in these criteria are closed landfills with no further capacity); ground water restrictions as identified by the Board of Water Supply (BWS); and, the Committee's minimum capacity requirement of more than 10 years for a new landfill.

3.1 Environmental Protection Agency (USEPA) Exclusionary Criteria

The USEPA enforces six siting criteria that were adopted as part of the Resource Conservation and Recovery Act, subpart D (RCRAD). The six criteria are:

1. **Airport Restriction** — If a proposed landfill is located within 10,000 feet of the end of any airport runway used by turbojet aircraft, or within 5,000 feet of any airport runway used only by piston driven aircraft, the proponent must demonstrate that the landfill will not constitute a bird hazard and must notify the Federal Aviation Administration.

2. **Floodplains** — Potential landfill sites located within a 100-year floodplain cannot restrict storm flows within the floodplain, reduce the temporary water storage capacity of the floodplain, or allow the washout of solid waste.

3. **Wetlands** — Proposed landfills may not be built or expanded into wetlands; exceptions are allowed.

4. **Fault Areas** — New landfills or landfill expansions are generally prohibited within 200 feet of fault areas that have shifted since the last Ice Age; exceptions are allowed.

5. **Seismic Impact Zones** — If a landfill is to be located in a seismic impact zone, the proponent must demonstrate that the facility and its environmental and engineering features have been designed to resist the effects of ground motion due to earthquakes.

6. **Unstable Areas** — All owners/operators must demonstrate that the structure of their units will not be compromised during geologically destabilizing events.

A total of five sites were eliminated by application of the RCRAD criteria, which brought the potential site list from 45 to 40.

3.2 Developed Areas

In the 30 years that have elapsed since most of the sites on the list were identified, many of original landfill locations have been developed, primarily with residential housing. Some locations that were previously considered possible landfill sites may either have buildings on-site, or are so close to developed areas that a landfill would now be an incompatible land use. The City therefore determined in these instances that it would not propose new landfills within developed areas.

The City also reviewed potential sites that were expansions of closed landfills. Landfills on the original list that have been filled to capacity and closed were removed from further consideration.

This step brought the potential site list from 40 to 34.

3.3 Ground Water Restrictions

The State Department of Health has established an Underground Injection Control (UIC) Line and the BWS established a Ground Water Protection Zone (No Pass Line) around the island of Oahu that preclude the siting of certain types of facilities mauka of these areas. The lines were developed to identify inappropriate locations for injection wells and septic or cesspool development. The City Council in 2003 by Resolution 03-09, applied these criteria to protect Oahu's groundwater, by precluding the siting of landfills in these areas. However, the delineation of lines shown on a map is not as useful as having input from the BWS on the water development potential of these locations.

ENV and the consultant chose a less conservative, but more accurate approach to determining whether a potential site was appropriate by interviewing BWS staff responsible for ensuring future safety and sufficiency of Oahu's water supply. BWS staff identified sites, which they believe are important for future potable water supply or which are critical to protection of the groundwater resource. Sites, which did not meet BWS review, were eliminated from further consideration.

This step brought the site list from 34 to 16 sites remaining for further evaluation.

3.4 Committee Decision on Minimum Capacity

The Committee decided to limit its consideration to sites that had more than 10 years of capacity based on: the assumption that demand projections from the City remain unchanged; the City's experience with the length of time needed to implement new and feasible waste reduction technologies; and the cost and time required to identify and permit a new landfill site. The annual capacity demand was determined based on the amount of municipal solid waste disposed at the Waimanalo Gulch Landfill in fiscal year 2002/2003, adding the amount of cover material needed, and including an allowance for growth in municipal solid waste disposal demand.2 The capacity needed was divided into the expected disposal volume at the site, as determined in earlier studies. The result was the number of years of landfilling capacity available at the site.

Of the 16 sites at the beginning of the minimum capacity analysis, 8 remained for further evaluation.

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[2] The capacity calculation did not assume the addition of another unit to H–POWER, implementation of alternative technologies, or implementation of additional recycling programs.

4 COMMITTEE SITING CRITERIA

The criteria discussed in Section 3 related to general limitations on locating landfills. The Committee recognized that there are local community concerns that may not be adequately reflected in the criteria in Section 3. The Committee Siting Criteria were employed to numerically compare potential sites using factors considered important to the Committee. The evaluation of the Criteria had two parts and the Criteria themselves were in five categories. This Section summarizes the Committee Siting Criteria to measure community, environmental, engineering, and cost considerations related to a landfill site. The Committee developed these criteria and weighting factors independent of knowledge of the identity of the sites. During this time, the remaining eight sites were only identified by number. The purpose was to avoid influencing the evaluation of any specific sites.

4.1 Methodology

The general approach to developing local Siting Criteria involved identifying the impacts a landfill could have on a region and then developing measures to enable the Committee to compare the magnitude of local impacts for each of the potential landfill sites. The Siting Criteria also included operational and economic considerations.

The site evaluations were done with a "double blind" process. That is, the Committee assigned the Weighting Factors without the City or consultant's knowledge and the consultants evaluated the sites and assigned point values without the Committee's knowledge of which sites were being evaluated. When the two parts of the evaluation were combined, the resulting site scores were insulated from undue influence or bias from any party.

The Committee recognized that the data needed to evaluate all factors thoroughly was not readily available and that the time schedule precluded additional data collection and analysis. As a result, the Siting Criteria used existing data. All potential sites were evaluated with data of the same age and extent although some of the data used were not as recent as the Committee would have preferred. The evaluations were all fairly and evenly done.

No site was subjected to a different level of analysis or evaluated with a different quality of data than another.

The Committee also recognized that further detailed evaluation would be done on the sites recommended in the Environmental Impact Statement (EIS) that is to be prepared. The EIS has specific requirements for assessing the environmental and social impacts of sites, and those evaluations are subjected to extensive public scrutiny.

It is important to restate that the Committee Siting Criteria were developed by the Committee independent of the consultant's site elimination process outlined in Section 3.

4.2 Development of Siting Criteria

The Committee's Siting Criteria were organized in two parts:

- The measure of how well a potential site satisfied the criterion. This measure was the Point Value assigned to a site for a criterion.
- The Committee's assessment of how important one criterion was compared to the others. This measure was the Weighting Factor, which was multiplied by the Point Value to arrive at the score for each site and each criterion.

Each criterion included Point Values between one and three. The point values assigned were completed after the range of possible conditions across each of the sites were determined. The higher the number of points the better a site met the needs for a municipal solid waste landfill. For example, a good landfill should be in an area with low rainfall. A site with annual rainfall of more than 60 inches received one point; a site with 20 to 60 inches of rain received two points; and a site with less than 20 inches of rain received three points. For the criteria that measured physical parameters such as rainfall, the measure used was the range found on the island for the criterion; the values used were specific to this situation.

The Point Value was multiplied by a Weighting Factor to obtain a final score for a criterion. The higher the final scores received for a site, the more appropriate it was for a landfill site.

4.3 Weighting Factors

All Siting Criteria are not equally important. The difference in importance is reflected in the Weighting Factor, which varied from one to three.

The Weighting Factors were determined by the Committee members. Each member had ten votes to assign to the criteria they felt were most important. There were 31 criteria. Criteria that received the most votes were assigned a Weighting Factor of three. The votes fell into three distinct groupings. Six criteria received the most votes and were assigned a Weighting Factor of three; seven had a Weighting Factor of two; and 18 had the fewest votes and a Weighting Factor of one. Several criteria received no votes and were assigned a Weighting Factor of one. The higher the product of the Weighting Factor and the Point Value, the better the site's characteristics are for use as a landfill.

It is also important to acknowledge that the Committee requested that the City and the consultant team that supported the evaluation be excused while the Weighting Factors were developed. The Committee did not want more analytical effort to be devoted to a criterion with a greater Weighting Factor than to one that had a lesser Factor.

The final Siting Criteria with the Weighting Factors are listed in **Table 2, Siting Criteria**. The Siting Criteria were divided into categories as a convenience to the Committee. The number of criteria in any category was not selected, but the number of criteria within categories does indicate the Committee's general focus in this process. The higher the value of the site score, which is the

Weighting Factor multiplied by the Point Value, the better a site is for use as a landfill.

Table 2, Siting Criteria

	Criterion	Weighting Factor
	Community	
1	Displacement of residences and businesses	1
2	Distance to nearest residence, school or business	3
3	Wind direction relative to populated areas	2
4	Population density near the site	3
5	Proximity to parks and recreational facilities	1
	Environmental and Land Use	
6	Zoning	1
7	Compatibility with/distance to existing land uses	1
8	Visibility from a general use public road	1
9	Visibility from residences and/or schools.	2
10	Groundwater	3
11	Wetlands	3
12	Flora and fauna habitat	2
13	Site aesthetics	1
14	Residential units along access road	1
15	Schools or hospitals along access road	1
16	Final use of the site when the landfill is closed	1
17	Archeological and/or historical significance	3
	Economic	
18	Cost of site acquisition	3
19	Cost of development	3
20	Cost of operations	3
21	Impact of removal of site on tax base	1
22	Haul distance from H–POWER	2
	Technical	
23	Landfill capacity or site life	3
24	Annual precipitation	2
25	Adequacy of drainage	1
26	Access to fire protection	1
27	Length of haul	2
28	Geology	1
29	Closure and post-closure cost	1
	Other Considerations	
30	Employment	1
31	Access	2

4.4 Committee Siting Criteria Application

The Committee Siting Criteria was applied to the list of remaining sites following application of the Preliminary Siting Criteria. At this point in the evaluation, the Committee did not know the name of the sites.

The evaluation of the eight sites required extensive time to review the factors relevant to each criterion and to assemble the results. A compendium of data was prepared for each site detailing the evaluation for each criterion and, in many cases, included the back-up information used to determine the point value for the criterion. The individual site compendia with the details of the evaluations are in **Attachment D**.

4.5 Results of Committee's Application of Siting Criteria

Table 3, Sites for Committee Consideration, lists the sites to which the Siting Criteria were applied. The scores for each of the criteria and for each of the sites are shown in **Table 4, Site Scores**. These scores are the result of multiplying the Weighting Factors (shown in Table 2) and the point values for the criterion. The possible values for one site for one criterion ranged from one to nine, depending on the point value assigned (ranging from one to three) and the Weighting Factor (ranging from one to three). As noted, the higher the site's score, the better the site characteristics are for a municipal solid waste sanitary landfill.

Table 3, Sites for Committee Consideration

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9	15
Bellows	4-1-15: por. 01	173	8	12
Maili	8-7-10:por. 03	200	9	15
Makaiwa	9-2-3: por. 02	338	15	25
Nanakuli B	8-7-9: pors. 1 & 7	432	9	15
Ohikilolo	8-3-1: 13	353	8	13
Waimanalo Gulch New Exp.	9-2-3: 72 & 73	60	12	20
Waimanalo North	4-1-8: 13	171	10	16

e 4, Site res 1

		Cri	n			A	on	ellows	Mai	Ma	/a	anal	B	ikilc	Wa	nal Sulcl	Wai	alo rth
		Co	unit															
Dis	men	esid	and	iness			3	1			3		3					3
Dis	to r	st re	ce, s	l or	ess		3	3			3		3					3
Wir	ectic	lative	opul	area			6	2			2		2					6
Por	on d	y nea	site				3	3			3		6					3
Pro	y to	s anc	eatic	acilit			2	1			1		2					1
	En	nme	and	d Us														
Zor							1	1			3		3					3
Cor	ibility	/dist	to e	g la	ses		2	1			1		1					1
Visi	fron	ener	e pul	oad			2	3			2		1					3
Visi	fron	idenc	nd/o	ools.			6	6			2		2					4
Gro	vater						9	9			9		9					9
We	ls						3	6			6		6					9
Flo	d fau	abita					6	6			6		2					6
Site	thetic						2	2			1		2					2
Res	tial u	along	ess r				3	1			3		3					3
Sch	or h	als al	acces	ad			3	3			3		3					3
Fina	e of t	ite w	he la	l is c	l		1	1			1		1					1
Arc	gica	/or h	ical s	icanc			6	3			3		6					3
		E	mic															
Cos	site a	sition					6	3			6		9					6
Cos	devel	ent					6	3			6		6					3
Cos	opera	s					3	3			9		3					6
Imp	of rer	l of s	n tax	e			1	3			1		1					3
Hau	tance	n H–	ER				4	2			6		6					2
		T	ical															
Lan	capa	r site					6	6			9		6					6
Anr	preci	on					2	4			4		4					4
Ade	y of	age					1	1			2		2					1
Acc	o fire	tectic					1	1			2		3					1
Len	f ha						4	2			6		4					4
Geo							2	3			2		2					3
Clo	and	closu	st				3	2			2		1					3
		er C	dera	s														
Em	nent						1	2			2		3					2
Acc							6	2			4		4					2
Tot	e Sc						7	89	10		3		9	1		131		109

high score e rece the b its ch ristic for u land

5 COMMITTEE EVALUATION AND ANALYSIS

5.1 Committee's Brainstorming Positive and Negative Features of Sites

After evaluating the eight sites using the Committee Siting Criteria, the Committee reviewed each to identify features that may or may not have been measured by the criteria and to reflect other local concerns and considerations relative to the sites.

A summary of positive and negative site attributes listed by the individual Committee members is provided below. It is important to note that the comments are not the consensus of the Committee, but a compilation of the brainstorming efforts of the various individual Committee member's thoughts and concerns. There was no discussion or evaluation of the listed site attributes. Further information regarding these comments is in **Attachment B** (see Group Memory of November 7, 2003).

AMERON QUARRY

Positives

- Pretty good access
- Has existing ground cover
- Proximity to former landfill
- The quarry operation has created a hole in the ground that will need to be filled
- Potentially compatible for co-existence of landfill and quarry

Negatives

- Site not viable given its importance as rock quarry, cost of acquisition, and relatively limited capacity
- Increased operational cost if it coexists with landfill
- Economic impacts
    - 59 years lost lease revenue to landowner
    - Phase 1 – active for next 10-20 years
    - Loss of income and excise taxes paid to State and County, plus income taxes paid to

Federal government

- Environmental consequences – existing permits and stormwater retention lost
- Difficult to resite quarry
- Impacts construction industry/other businesses/government projects including roads and government building
- Distance from population centers / H-POWER
- Proximity to Kawainui Marsh; federal protection issues
- Highest level of precipitation of any sites on the list
- Access road substandard; private owners
- Visibility from Kailua town

BELLOWS AFB

Positives

- Federal land – use of government land is cheap if the government entity cooperates
- High unemployment area
- Two access routes to landfill
- Not super environmentally sensitive area – no wetlands

Negatives

- Federal land – cannot be condemned
- Bellows is an environmentally protected area
- Relatively small capacity – 12 ½ years
- Two access routes poor – two lane road
- Coastal area; probably was wetland

MAILI

Positives

- Approximately 20 years life
- Onsite cover
- Onsite brackish well for dust control
- Consistent zoning

- Utilities onsite
- Low precipitation

Negatives

- Traffic
- Hazardous rockfalls on highway to site (#11 out of 117 potential rockfall sites studied by DOT)
- Planned highway/drainage projects
- Traffic accidents cause major delays; one road
- Significant pedestrian cross-traffic
- Access road privately owned – Lonestar- use by farmers only
- Upwind of Maili Elementary School and major subdivision
- Schools and medical facilities along the route
- Only coral quarry on island
- Loss of taxes – income and excise

MAKAIWA GULCH

Positives

- Potential access available off main highway
- Large capacity – 25 years
- Zoning consistent
- Property currently not being used
- Shortest distance from H-POWER and close to service population (short haul distance)
- Extensive archeological/flora/fauna surveys completed
- Low precipitation

Negatives

- Acquisition Costs (see letter in **Attachment E**)
- Upwind from heavily populated residential and resort area
- No onsite utilities or access road
- Not consistent with development plan, planned for upscale residential development
- Close to transition between H-1 and Farrington Highway

- Power lines (138 KV) transit site
- View planes readily seen
- Major economic impact that would close down residential and resort development according to developer's representative
- Close to center of population growth
- Archeological information (i.e., Hawaiian cultural sites)

NANAKULI B

Positives

- Zoning Consistent
- Low precipitation
- Proximity to existing C&D landfill
- Utilities readily accessible
- Currently not being used
- Site acquisition costs relatively low
- Brackish wells for dust control
- 22.3 year life span

Negatives

- Traffic, planned highway and drainage projects
- Bad access
- Hazardous rockfalls on highway to site (#11 out of 117 potential rockfall sites studied by DOT)
- Traffic accidents cause major delays
- Pedestrian cross traffic
- Ownership of NAV-MAG road may necessitate the City paying for access
- Upwind of Maili Elementary School and residences behind Pacific Mall – potential odors could wipe out businesses

- Dust problems
- Pass schools, medical facilities to get there

OHIKILOLO

Positives

- Low precipitation
- Far removed from most residences
- Large acreage
- Access road already onsite
- Utilities onsite
- Zoning consistent
- Acquisition cost low

Negatives

- Most remote – one of the last remote coastal areas on Oahu
- Access will be bad; numerous churches, schools, medical facilities along the route
- Hazardous rockfalls on highway to site
- Numerous known archeological sites
- Traffic
- Pedestrian cross traffic
- Construction and planned future highway improvements
- 13-year lifespan – smaller capacity site
- Operation cost high
- Potential Native Hawaiian land title issue

WAIMANALO GULCH

Positives

- Least cost site to acquire and operate
- Lifespan of 20+ years
- Proximity to existing landfill; H-POWER
- All factors of site are known

- Road access reasonably good
- Close to the service population centers – short haul distance
- Low precipitation

Negatives

- Land Use Commission, Planning Commission and current City Administration are on record as not supporting continued use of the site (see **Attachment A**)
- Upwind and visible from major resort area
- Control of operations/management improved, but need further improvement (escaping waste)
- Based on past experience and slope makes site hard to hide
- Major economic impact that would close down residential development at resort and resort development, according to developer's representative
- Truck visibility – lineups onsite and along Farrington Highway
- Traffic – projected increase in traffic
- Road access problem
- Close to center of population growth

WAIMANALO NORTH

Positives

- Life capacity higher then other sites
- Moderate precipitation

Negatives

- City can not condemn state land (See **Attachment E,** DLNR letter)
- Traffic problems
- Long haul distance

5.2 Final List of Sites

The Committee decided that the following four sites should be eliminated from further consideration; three were eliminated by consensus and one by voting. The letters and other correspondence related to the sites are in **Attachment E**. The Committee decided by consensus to remove the following sites.

- The Bellows AFB site is in federal control and cannot be condemned. A reply from the Marine Corps further indicated that the site is not available.

- The Ohikilolo site has the strong possibility of significant archeological and cultural resources (although the studies have not yet been done to confirm the resources), is remote, and would require trucks to pass through a long stretches of road through the Leeward Coast Communities (where frequent accidents have occurred) to get to the site. The potential for Native Hawaiian title issues regarding use of this site was also a reason for its removal. It is also one of very few remote coastal areas left on Oahu.

- The Waimanalo North site has been designated as a State Forest Preserve, according to a letter the City received from the State Department of Natural Resources. The State will not support its use for landfill and the City cannot condemn state land.

The Committee voted to eliminate the Waimanalo Gulch Landfill from the list of recommended sites. As a result of the voting on the final site list (other than voting on procedural matters, all other Committee decisions were made by consensus), four of the 15 Committee members resigned (prior to the vote).

6 COMMITTEE RECOMMENDATIONS

6.1 List of Sites Recommended

The Committee evaluated the remaining five sites to determine if any of them should be removed from the list recommended to the Mayor for forwarding to the City Council. The final determination was made at the last Committee meeting. The members of the Committee present at the last meeting were Anderson, Apo , Bryant-Hunter, Chun, Guinther, Jung, Kane, Rezentes, Slovin, Thielen, Tomita, Tong, and Yamamoto. Holmes and Paty were not present. The Committee's earlier determinations had all been arrived at by consensus. A motion was made by Todd Apo and seconded by Kane to move the process from consensus to voting. The motion passed with Todd Apo, Chun, Jung, Kane, Rezentes, Slovin, Tomita, Tong, and Yamamoto voting in favor. Anderson, Bryant-Hunter, Guinther, and Thielen voted against.

Another motion was made by Todd Apo and seconded by Kane to remove the Waimanalo Gulch Landfill from the list of recommended sites. Prior to a vote, four Committee members (Anderson, Bryant-Hunter, Guinther, and Thielen) resigned because they did not want to be part of a recommendation that was decided by voting rather than by consensus. There were nine votes in favor of removing the Waimanalo Gulch Landfill from the list of recommended sites (Todd Apo, Chun, Jung, Kane, Rezentes, Slovin, Tomita, Tong, and Yamamoto). There were no votes against the motion.

Table 5, Sites Recommended to the Mayor, lists the four sites forwarded by the Committee to the Mayor.

Table 5, Sites Recommended to the Mayor

Site Name	TMK	Acreage	Million Tons Capacity	Years of Capacity
Ameron Quarry	4-2-15:01	391	9	15
Maili	8-7-10:por. 03	200	9	15
Makaiwa	9-2-3: por. 02	338	15	25
Nanakuli B	8-7-9: pors. 1 & 7	432	9	16

6.2 Other Recommendations of the Entire Committee

6.2.1 Host Community Benefits

Host Community Benefits (HCB) is a benefits package designed to address local impacts to the siting of landfills, which are essential to meet the City and County's future infrastructure needs. This section discusses the concept and summarizes the Committee's feelings regarding the use of such benefits in siting a new landfill for Oahu. **Attachment F** provides more information about the use of HCB in other jurisdictions on the mainland. These points include:

- HCB can generate a significant amount of revenue to help meet local needs.
- HCB can be used for any type of project, in addition to landfill impact mitigation projects.
- HCB are not unusual. States that have them include New Jersey, Pennsylvania, Illinois, Iowa, Georgia, Michigan, West Virginia, Tennessee, California, and North Carolina.

The Committee recommends that the City Administration and City Council should not zone or permit any site unless a Host Community Benefits package is negotiated with the affected community where a landfill is sited. These benefits should be an integral part of the mitigation measures included in the EIS for the site.

The Committee further notes that HCB should not be mistaken for basic improvements that must be completed prior to operating a landfill, e.g., necessary highway or infrastructure improvements.

6.2.2 Land Banking Sites

The Committee agreed that the selection of the next landfill site will serve a critical public purpose. At the same time, the effort needed to select and develop a landfill site is high, and the list of potential sites so short, that future landfill sites should be land-banked well in advance of their need. Land banking has the potential to reduce land use conflicts and minimize siting difficulties.

The Committee recommends that the City Council take steps to identify sites that address future landfill needs taking into consideration: the development of new technologies; the reduction in the waste stream that may result from such technologies and from current technologies; and the demand for landfill space. The Committee further recommends that land banking should be part of a process separate from the work of this Committee, and not limit the sites considered to those identified in this report.

6.2.3 Underground Injection Control Line and Groundwater Protection Zone

The evaluation done for the criterion related to groundwater illustrates a potential concern with the application of the UIC line and the Groundwater Protection Zone to the siting of landfills. These delineations are not precise enough to clearly identify areas that are appropriate or inappropriate for siting a landfill, nor were they intended to be used for this purpose when introduced. As previously noted, the City Council in 2003 by Resolution 03-09, applied these criteria to protect Oahu's groundwater, by precluding the siting of landfills in these areas. In this site evaluation, the Committee consultants relied on BWS staff expertise to accurately determine whether a potential site might be a problem with respect to current or future groundwater considerations.

The Committee expressed that there may be a need for the State and the City to revisit the protection that the UIC line and the Groundwater Protection Zone provide.

6.3 Continued Gathering of Information

The Committee recognized that the time allowed for gathering information was limited and that more information is needed for each site before a final decision is made. The Committee suggested direct contact with the landowners or facility operators. Those parties will have important information that needs to be considered in locating the landfill that will serve the City in the future. The Committee recommends that these parties be contacted and their input be considered.

7 OTHER ENTIRE COMMITTEE CONSIDERATIONS

The entire Committee spent considerable time and effort in its deliberations discussing the following issues.

7.1 Landfill Costs

The Committee noted that while landfill associated costs were a very important issue, and should be given significant attention in the siting process, the Committee focused on community related criteria. The Committee also noted that host community impacts were important. They recognized that the siting and EIS processes both involve a cost/benefit analysis. However, these processes do not always apply the same importance and depth of consideration to host community impacts.

After reviewing the Siting Criteria, the Committee noted that the economic costs had been weighted low compared to other factors. While the committee eventually agreed not to make any changes to the weighting factors, the Committee agreed that costs are a very significant factor and have a larger impact on the taxpayer. The Committee considered these issues in the brainstorming deliberations on the strengths and weaknesses of each site.

7.2 Alternative Technologies

The Committee strongly feels that the City Administration must pursue all viable alternative technologies, existing technologies, and landfill reduction strategies as expeditiously as possible to reduce the volume of material requiring landfill disposal. The Committee adds that as alternative technologies are identified and brought on-line, some of the factors that were considered key in the current landfill siting process might change. These factors included the anticipated annual volume of waste generated and its relationship to the amount of landfill space that will be needed in the future. The Committee urges the City Administration to regularly and diligently examine the need for municipal sanitary landfills in this light and to identify viable sites to preserve for future use.

7.3 Multiple Sites

Although the Committee's focus was on locating a single municipal solid waste landfill site, it is noted that advances in technology and reductions in the waste stream could have the potential for making smaller landfill sites economically viable. This could allow for the development of more than one site to handle the municipal waste disposal needs of the many communities on Oahu.

The Committee also notes that locating and permitting two municipal solid waste landfills is likely to result in significantly more controversy, require significantly more time, and cost more than following the process for just one landfill. Having two landfills, where one is adequate, would be counter to good stewardship of the land.

Attachment A – Planning Commission Recommendation and Land Use Commission Decision for State Special Use Permit for Waimanalo Gulch Sanitary Landfill Expansion

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (FKA DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 86.5 Acres Of Land Within The State Land Use Agricultural District At Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, TMK No: 9-2-03: Portion 72 and Portion 73 (fka TMK No: 9-2-03: Portion 2 and Portion 13)	)	DOCKET NO. SP87-362 DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

On January 17, 2003, the Department of Environmental Services, City and County of Honolulu ("Applicant"), formerly known as the Department of Public Works, City and County of Honolulu, filed an application to amend an existing special use permit ("Amendment") with the Department of Planning and Permitting, City and County of Honolulu ("DPP"), pursuant to section 205-6, Hawai`i Revised Statutes ("HRS"), and sections 15-15-95 and 15-15-96, Hawai`i Administrative Rules ("HAR"). The Applicant proposes to expand the existing Waimanalo Gulch Sanitary Landfill on approximately 21 acres of land within the State Land Use Agricultural District at

Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, identified as TMK No: 9-2-03: portion 72 and portion 73 ("Property").[1] The Property is owned by the City and County of Honolulu and is under the jurisdiction of the Applicant.

On January 22, 2003, the DPP accepted the Amendment.

On March 5, 2003, the Planning Commission, City and County of Honolulu ("Planning Commission"), conducted a hearing on the Amendment, pursuant to a public notice published on January 31, 2003. After due deliberation, the Planning Commission recommended approval of the Amendment to the Land Use Commission ("LUC"), subject to the existing nine conditions and two additional conditions.

On March 13, 2003, the LUC received a copy of the decision and record of the Planning Commission's proceedings on the Amendment.

The LUC has jurisdiction over the Amendment. Section 205-6, HRS, and sections 15-15-95 and 15-15-96, HAR, authorize the LUC to approve special use permits and amendments thereto for areas greater than 15 acres where application for LUC approval is made within 60 days after the decision is rendered on the request to the Planning Commission.

On March 27, 2003, the LUC met in Waipahu, O`ahu, to consider the Amendment.[2] Frank Doyle and Maile R. Chun, Esq., appeared on behalf of the

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[1] The actual landfill expansion is planned on approximately 14.9 acres. Accessory structures and uses, including, but not limited to berms and detention basins, are planned on the remaining acreage.

Applicant. David K. Tanoue, Esq.; Eric G. Crispin; Barbara Kim-Stanton; and Raymond Young appeared on behalf of the DPP. Russell Y. Tsuji, Esq., and Abe Mitsuda were also present on behalf of the Office of Planning. At the meeting, the Applicant presented a chart entitled "Mayor's Blue Ribbon Landfill Site Selection Committee, New Landfill Timeline, March 27, 2003," which the LUC accepted as Exhibit Number 33 to the record in this proceeding. The Applicant represented, among other things, that it would continue to seek alternate disposal sites and other technologies and waste recovery programs to reduce the amount of waste that is disposed of in landfills.

Conformance With Special Use Permit Criteria

Following discussion by the Commissioners, a motion was made and seconded to grant the Amendment, subject to the conditions as reflected in the minutes of the meeting, including, among other requirements, that if a new landfill site is not selected by December 31, 2003, the special use permit would immediately expire. An amendment clarifying this motion was then made and seconded to amend the date to December 1, 2003, by which the Blue Ribbon Landfill Site Selection Committee is to recommend a new landfill site and to further specify that if the City Council fails to select the new site by June 1, 2004, the special use permit would immediately expire. The LUC found that i) By Order dated April 20, 1987, the LUC approved a special use

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[2] Pursuant to section 92-3, HRS, Ernest Adaniya, Greg Perry, Darrell Bussell, Paul B. Kekina, Lieutenant Commander Chuck Lewis, Richard Payne, Gail Butchart, Todd Apo, Cynthia K.L. Rezentes, and Kevin Mizuno presented oral testimony, and State Senator Brian Kanno and Councilmember Nestor Garcia submitted written testimony.

permit to establish the Waimanalo Gulch Sanitary Landfill on approximately 60.5 acres. By Order dated October 31, 1989, the LUC approved an amendment to the special use permit to expand the landfill by approximately 26 acres; ii) The current expansion is consistent with the solid waste handling and disposal policies of the `Ewa Development Plan and will serve all of O`ahu's residents and visitors; iii) The Property is currently in open space and is located adjacent to the existing landfill; iv) No agricultural production occurs on the Property; v) There are no historic sites on the Property and there are no traditional cultural practices that have been identified that are specific to the Property; vi) There are no threatened or endangered species of flora and fauna nor are there any species of concern on the Property; vii) The expansion of the landfill will not adversely affect surrounding properties provided mitigation measures and all applicable government rules and requirements are followed; viii) The Applicant will comply with Federal and State regulations governing siting, design standards, operating requirements, groundwater monitoring and corrective action, closure, post-closure care, and financial assistance; ix) The Property will be restricted from handling or treating toxic hazardous waste material; x) Permanent and temporary fencing will be utilized to control litter in the expansion cells; xi) Vacuum equipment will be employed to clean the litter from the fences, and cleanup crews will be deployed when notice is received that litter has drifted offsite; xii) The Applicant will implement odor and gas emission control measures including a gas recovery and monitoring system, regular use of odor misters, regular use of cover material, early onsite queuing of waste haulers, and diversion of sewage sludge offsite for drying and processing at the Sand Island Wastewater Treatment Plant; xiii) The expansion is not expected to result in noise levels greater than produced from current activities; xiv) Most of the short-term noise generated will be during operation and mobilization of heavy construction equipment; xv) The Applicant will comply with State noise regulations to mitigate short-term impacts; xvi) Longer term measures to ensure noise abatement include properly muffling equipment with noise attenuation devices, scheduling rock crushing during normal landfill operation hours, and landscaping with vegetation; xvii) Upon closure of the landfill, the Applicant and Waste Management of Hawaii, Inc., the operator of the landfill, will be responsible for capping the entire landfill, monitoring groundwater, methane gas, and leachates for 30 years; xviii) Exposed areas will be seeded or hydromulched, as appropriate, using plants similar to those found around the landfill; xix) Fabric to mimic rock outcrops will also be strategically placed to break up the homogenous appearance of the filled areas relative to the surrounding hillside; xx) The impact of the landfill on `Ewa and Nanakuli residential values was studied; xxi) Proximity to the landfill is not a consistent contributor to property values and does not adversely affect property values; xxii) The existing landfill has been in operation since 1989 and the relevant support infrastructure and services for the proposed expansion are adequate; xxiii) The approved capacity of the landfill is rapidly approaching its maximum; xxiv) The landfill receives on a daily basis 600 tons of ash residue from the Honolulu Program on Waste Energy Recovery and 800 tons of municipal solid waste for a total of 1,400 tons per day; xxv) The Applicant evaluated alternative sites and technologies for the disposal of municipal solid waste; xxvi) The expansion of the landfill is the only feasible alternative that can be implemented in time to dispose of municipal solid waste after the approved landfill capacity is exhausted; and xxvii) The Property has extremely rocky soils and is not conducive to crop production, and the steep terrain is not appropriate for pasture use.

Following discussion by the Commissioners, a vote was taken on the amendment to the motion. There being a vote tally of 7 ayes, 1 nay, and 1 absent, the amendment carried. A vote was then taken on the main motion, as amended. There being a vote tally of 7 ayes, 1 nay, and 1 absent, the motion carried.

ORDER

Having duly considered the complete record of the Amendment and the oral arguments presented by the parties in the proceeding, and a motion and amendment thereto having been made at a meeting conducted on March 27, 2003, in Waipahu, O`ahu, and the motion and amendment having received the affirmative votes required by section 15-15-13, HAR, and there being good cause for the motion and amendment, the Commission hereby APPROVES the Amendment granted by the Planning Commission to expand the existing Waimanalo Gulch Sanitary Landfill on approximately 21 acres of land within the State Land Use Agricultural District at Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, identified as TMK No: 9-2-03: portion 72 and portion 73, and approximately identified on Exhibit "A," attached hereto and incorporated by reference herein, subject to the following conditions:

1. The Blue Ribbon Site Selection Committee shall make its recommendation for a new landfill site to the City Council by December 1, 2003. The City Council shall select a new site by June 1, 2004. If a new site is not selected by June 1, 2004, this Special Use Permit shall immediately expire.

2. In the event that Condition No. 1 is satisfied, Condition No. 14 shall become effective.

3. That an earth berm shall be installed prior to the commencement of any waste disposal operations.

4. The landscaping plans which would include plant names, sizes, quantities and location shall be submitted to the Department of Planning and Permitting for approval and shall be implemented within 90 days of completion of the berm work.

5. The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.

6. The Applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, Commission on Water Resource Management, and Board of Water Supply for all on-site and off-site improvements

involving access, storm drainage, leachate control, water, well construction, and wastewater disposal.

7. The Planning Commission or Director of the Department of Planning and Permitting may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

8. The Applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action or disposition of the permit.

9. In accordance with Chapter 11-60, "Air Pollution Control," Hawai`i Administrative Rules, the Applicant shall be responsible for ensuring that effective dust control measures during all phases of development, construction, and operation of the landfill expansion are provided to minimize or prevent any visible dust emission from impacting surrounding areas. The Applicant shall develop a dust control management plan that identifies and addresses all activities that have a potential to generate fugitive dust.

10. That the City and County of Honolulu shall indemnify and hold harmless the State of Hawai`i and all of its agencies and/or employees for any lawsuit or legal action relating to any groundwater contamination and noise and odor pollution relative to the operation of the landfill.

11. The Applicant shall coordinate construction and operation of the landfill with the Hawaiian Electric Company.

12. Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

13. Prior to commencing land filling in the 21-acre expansion area, the Applicant shall submit to the Director of the Department of Planning and Permitting for review and approval, a metes and bounds description and map of the approved landfill area as permitted by this Special Use Permit and amendments thereto. Any minor modifications to allow reasonable adjustments of the approved area due to engineering and/or health and safety requirements may be approved by the Director of the Department of Planning and Permitting; provided that there is no net increase to the approved area of 107.5 acres. A copy of the metes and bounds description and map shall be provided to the Land Use Commission.

14. The Applicant shall promptly provide, without any prior notice, annual reports to the Department of Planning and Permitting and the Land Use Commission in connection with the status of the landfill expansion and the Applicant's progress in complying with the conditions imposed herein. The annual report shall be submitted in a form prescribed by the Executive Officer of the Commission.

15. The City and County of Honolulu shall select a new landfill site. The recommendation for a new site shall be forwarded to the Planning Commission and City Council no later than December 1, 2003.

16. The City and County of Honolulu shall ensure that funding for design and planning is included in the FY05 budget to demonstrate the City's commitment to the new site and to ensure that no further extensions are necessary.

17. The City and County of Honolulu shall initiate the public comment and environmental review process for the new site no later than December 31, 2004.

18. The City and County of Honolulu shall, to the extent feasible, use alternative technologies to provide a comprehensive waste stream management program that includes H-Power, plasma arc, plasma gasification, and recycling technologies.

19. The City and County of Honolulu shall appropriately implement by executive order or ordinance the seven bullet points identified in the Applicant's Exhibit 3, Appendix H, page 1-3, regarding the third boiler at H-Power, wood recovery, metal recovery, gypsum recovery, enhanced enforcement of landfill bans, implementation of the bottle bill, and establishment of user fees.

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (FKA DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU

For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 86.5 Acres Of Land Within The State Land Use Agricultural District At Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, TMK No: 9-2-03: Portion 72 and Portion 73 (fka TMK No: 9-2-03: Portion 2 and Portion 13)

DOCKET NO. SP87-362

DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

This is to certify that this is a true and correct copy of the document on file in the office of the State Land Use Commission, Honolulu, Hawaii.

6/9/03 by
Date **Executive Officer**

DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

ADOPTION OF ORDER

The undersigned Commissioners, being familiar with the record and the proceedings, hereby adopt and approve the foregoing ORDER this 5th day of June, 2003 The ORDER and its ADOPTION shall take effect upon the date this ORDER is certified and filed by this Commission.

LAND USE COMMISSION
STATE OF HAWAIʻI

By ______________________
LAWRENCE N. C. ING
Chairperson and Commissioner

By ______________________
P. ROY CATALANI
Vice Chairperson and Commissioner

By ______________________
STANLEY ROEHRIG
Vice Chairperson and Commissioner

By ______________________
BRUCE A. COPPA
Commissioner

By ______________________
PRAVIN DESAI
Commissioner

By Isaac Fiesta Jr
ISAAC FIESTA, JR.
Commissioner

By Steven Montgomery
STEVEN MONTGOMERY
Commissioner

By
RANDALL SAKUMOTO
Commissioner

By OPPOSED
PETER YUKIMURA
Commissioner

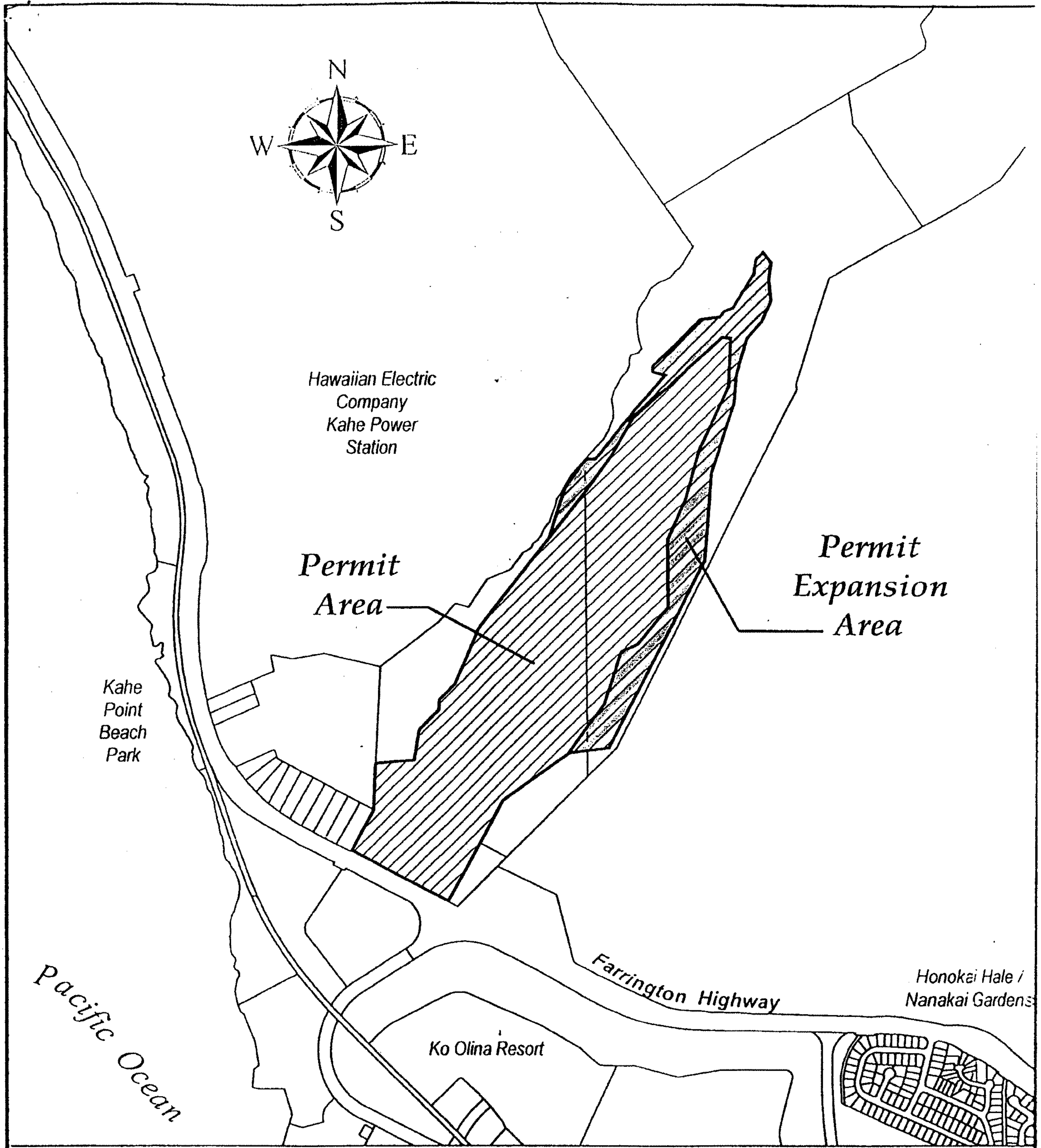
APPROVED AS TO FORM:

Diane Erickson
Deputy Attorney General

Filed and effective on
June 9, 2003

Certified by:

Anthony J H Ching
Executive Officer

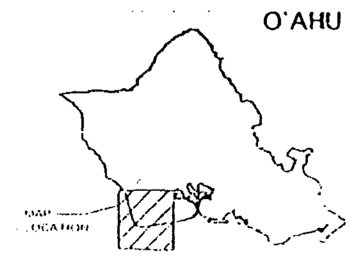


SP87-362 DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU
(fka Department of Public Works, City and County of Honolulu)

LOCATION MAP

TMK No.: 9-2-3: portion 72 and portion 73
Waimanalo Gulch, Honouliuli, 'Ewa, O'ahu, Hawai'i
Scale: 1: 1,000 ft.

EXHIBIT "A"



BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (FKA DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU

For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 86.5 Acres Of Land Within The State Land Use Agricultural District At Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, TMK No: 9-2-03: Portion 72 and Portion 73 (fka TMK No: 9-2-03: Portion 2 and Portion 13)

DOCKET NO. SP87-362

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Decision and Order Approving Amendment to Special Use Permit was served upon the following by either hand delivery or depositing the same in the U.S. Postal Service by regular or certified mail as noted:

DEL. MARY LOU KOBAYASHI
Office of Planning
P.O. Box 2359
Honolulu, Hawaii 96804

CERT. JOHN CHANG, ESQ.
Deputy Attorney General
Hale Auhau
425 Queen Street
Honolulu, Hawaii 96813

CERT. ERIC G. CRISPIN, DIRECTOR
Department of Planning and Permitting
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

CERT. FRANK DOYLE, DIRECTOR
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

CERT. DAVID ARAKAWA, ESQ.
Corporation Counsel
City & County of Honolulu
530 South King Street
Honolulu, Hawaii 96813

DATED: Honolulu, Hawaii, this 9th day of June, 2003.

Anthony J H Ching

ANTHONY J. H. CHING
Executive Officer

PLANNING COMMISSION OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION)
)
OF)
)
DEPARTMENT OF)
ENVIRONMENTAL SERVICES) 2002/SUP-6
)
FOR AN AMENDMENT TO A)
STATE SPECIAL USE PERMIT)

FINDINGS OF FACT, CONCLUSIONS, AND DECISION

I. PROPOSAL

The Planning Commission, at its public hearing held on March 5, 2003, pursuant to Section 205-6, Hawaii Revised Statutes and Subchapter 4, Rules of the Planning Commission, City and County of Honolulu, considered the application of Department of Environmental Services to amend Special Use Permit (SUP) File No. 86/SUP-5. The applicant proposes a 21-acre, 5-year capacity expansion to the existing 86.5-acre landfill to allow continued disposal of municipal solid waste (MSW). The proposed expansion includes 4 cells (E1 through E4) for disposing MSW, berms, detention and stilling basins, drainage channels, and access routes located within the State Land Use Agricultural District in Waimanalo Gulch, Honouliuli, Ewa, Oahu. The project area is identified by Tax Map Key 9-2-3: portion of 72 and portion of 73.

II. FINDINGS OF FACT

On the basis of the evidence presented, the Commission hereby finds that:

1. The subject expansion area is identified by Tax Map Key 9-2-3: portion of Parcel 72 and portion of Parcel 73 and is owned by the City & County of Honolulu.
2. The site is located in Waimanalo Gulch, Honouliuli, Ewa, Oahu.
3. The site is within the State Land Use Agricultural District, is partially within the Urban Growth Boundary of the Ewa Development Plan, and is zoned AG-2 General Agricultural District.
4. The landfill is not classified by the State Agricultural Lands of Importance to the State of Hawaii classification system. The University of Hawaii Land Study Bureau overall master productivity rating for the property is "E" which indicates very poor crop productivity potential.
5. The site is adjacent to Hawaiian Electric Company's Kahe Power Plant and Kahe Point Homes on its northwestern boundary; to the proposed Makaiwa Hills residential and commercial community on its southeastern boundary; and to Farrington Highway on its southwestern boundary. Across Farrington Highway from the site is the Ko Olina Resort, which contains resort and residential units, a golf course and marina. Honokai Hale and Nanakai Gardens residential subdivisions are located about 4,000 feet to the southeast of the site.
6. The Waianae Coast Neighborhood Board No. 24 recommended that Cell E1 be relocated to minimize litter, odor, and visual impacts; that the 5-year deadline to terminate landfill

operations be clarified, and that community members be on the landfill siting team. The Honokai Hale/Makakilo/Kapolei Neighborhood Board No. 34 opposed the placement of refuse towards the front of the landfill.

7. The Department of Planning and Permitting (DPP) accepted the Final Supplemental Environmental Impact Statement (FSEIS) on January 10, 2003. Notice of the DPP's acceptance of the FSEIS was published in the January 23, 2003 issue of the Environmental Notice, in accordance with the Environmental Impact Law, Chapter 343, Hawaii Revised Statutes.

8. The Planning Commission received a Report and Recommendation dated February 28, 2003 from the Director of Planning and Permitting providing an analysis of the Special Use Permit amendment request and its recommendation for approval with 2 additional conditions.

9. At the public hearing of March 5, 2003, 3 persons testified and one written testimony was received. Councilmember Mike Gabbard, representing Council District 1, supported the request with conditions relating to closure of the landfill and to inclusion of community members on a proposed alternative site selection committee. Councilmember Nestor Garcia, representing Council District 9, supported the expansion with conditions relating to closure, alternative site selection, inclusion of community members in the site selection committee, and encouragement of use of alternative technologies and waste recovery programs. State Senator Brian Kanno opposed the expansion request. A member of the Waianae community indicated that there are concerns on impacts to the neighborhood and the environment and opposed the expansion request.

10. The Planning Commission considered the public testimony and recommended that:

   a. The applicant submit to the City Council, an alternative landfill site(s) by December 31, 2003, and

   b. Community members be included on the alternate site selection committee.

Items 10a and 10b are recommendations to the applicant and are not included as conditions of approval of the SUP amendment.

III. CONCLUSIONS OF LAW

The Planning Commission hereby concludes that:

1. The proposed use would not be contrary to the objectives of the State Land Use Law. The landfill and proposed expansion are located on soils that have very poor potential for crop production.

2. The proposed expansion would not adversely affect surrounding property if operated in accordance with relevant governmental approvals and requirements, including conditions of the Special Use Permit. Concerns relating to impacts on the surrounding community and the environment have been adequately disclosed in the FSEIS. Mitigation measures should be implemented in accordance with the applicant's representations as documented in the FSEIS.

2. The proposal will not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, school improvements, and police and fire protection. Government agencies did not object to the proposed SUP amendment.

3. Unusual conditions, trends and needs have arisen since the Agricultural District boundaries and regulations were established. The landfill is quickly approaching its

maximum capacity, and there is no feasible alternative that can be implemented in time to dispose MSW after the approved landfill capacity is exhausted. At the time the original SUP was granted, the Planning Commission and the Land Use Commission found that the proposal met all 5 guidelines for issuing an SUP. Also at that time, plans for the development of Kapolei as the Second City and development of support housing, Ko Olina Resort, industrial, and support infrastructure in proximity to the landfill were being implemented.

4. The site's soil quality is not conducive crop production and the steep terrain does not lend itself to pasture use. Prior SUP approvals have allowed the removal of the property from agricultural use. Circumstances relating to use of the property for agriculture have not changed since the original SUP was granted. The State Department of Agriculture has not objections to the proposal.

IV. DECISION AND ORDER

Pursuant to the foregoing Findings of Fact, Conclusions and attachment, it was the decision of the Planning Commission, at its meeting of March 5, 2003, to approve Special Use Permit No. 2002/SUP-6, subject to the following additional conditions:

10. Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

11. Prior to commencing land filling in the 21-acre expansion area, the applicant shall submit to the Director of Planning and Permitting for review and approval, a metes and bounds

description and map of the approved landfill area as permitted by this Special Use Permit and amendments thereto. Any minor modifications to allow reasonable adjustments of the approved area due to engineering and/or health and safety requirements may be approved by the Director of Planning and Permitting, providing there is no net increase to the approved area of 107.5 acre.

Dated at Honolulu, Hawaii this 13th day of March, 2003.

PLANNING COMMISSION
CITY AND COUNTY OF HONOLULU

By Brian Yahata for
CHARLIE RODGERS, Chair

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, HONOLULU, HAWAII 96813
Phone: (808) 523-4414 • Fax: (808) 527-6743
Web site: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

ERIC G. CRISPIN, AIA
DIRECTOR

BARBARA KIM STANTON
DEPUTY DIRECTOR

86/SUP-5(RY)

March 13, 2003

Mr. Lawrence N. C. Ing, Chairperson
State Land Use Commission
P. O. Box 2359
Honolulu, Hawaii 96804-2359

Dear Chairperson Ing:

Subject: Amendment of Special Use Permit File No. 86/SUP-5 for an Expansion to
Waimanalo Gulch Sanitary Landfill
Department of Environmental Services
Tax Map Key 9-2-3: Portion 72 and Portion 73

On March 5, 2003, the City and County of Honolulu Planning Commission approved the application of the Department of Environmental Service, City and County of Honolulu, for an amendment to State Special Use Permit (SUP) File No. 86/SUP-5 to allow a 21-acre expansion to the existing 86.5-acre Waimanalo Gulch Sanitary Landfill for a total area of 107.5 acres. The approval was subject to 2 additional conditions to the existing 9 conditions, which relates to a 5-year deadline to close the landfill and the submittal of a metes and bounds survey showing the approved SUP area.

Because the expansion is in excess of 15 acres, the Planning Commission's Findings of Fact, Conclusions, and Decision and Order, and one original and 15 copies of the entire record of the proceedings, are attached for the State Land Use Commission's review and decision.

If you have any questions, please contact Raymond Young of the Department of Planning and Permitting at 527-5839.

Sincerely,

Brian Yahata for

CHARLIE RODGERS, Chair
Planning Commission

FORWARDED:

Eric G. Crispin

ERIC G. CRISPIN, AIA
Director of Planning and Permitting

CR:ry

Attachments

Attachment B – Mayor's Letter to Committee Members; List of Committee Members and Meeting Schedule; Meeting Sign-in Sheets; Group Memory from the Meetings

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
REFUSE DIVISION
1000 ULUOHIA STREET, SUITE 212, KAPOLEI, HAWAII 96707
Phone: (808) 692-5358 Fax: (808) 692-5404

JEREMY HARRIS
MAYOR

FRANK J. DOYLE, P.E.
DIRECTOR

JOHN C.T. LEE, P.E.
ACTING CHIEF

IN REPLY REFER TO:
RE 03-092 ✓

July 3, 2003

«FirstName»
«Address1»
«Address2»

Dear «FirstName»:

Subject: Landfill Selection Committee

Thank you for agreeing to serve on the Mayor's Landfill Selection Committee. This advisory group will help the City establish site selection criteria and recommend one or more sites to the City Council for approval of the location of the next municipal solid waste landfill. Your training, experience, and leadership make you imminently qualified to deliberate the complex, interrelated issues that bear upon landfill siting, and we expect committee discussions to be well-considered and productive.

The next meeting will be on July 11, 2003, at 10:00 a.m. in the Mayor's conference room on the third floor of City Hall. Enclosed are the meeting agenda and a list of committee members.

There will be much information to assimilate, and committee members may wish to discuss issues with their constituencies to identify and add sites that meet minimum criteria to the list of potential landfill sites. For these reasons, the subsequent meeting is scheduled for August 8, same time and place.

Should there be any questions, please call Wilma Namumnart at 692-5378.

Sincerely,

John C.T. Lee

JOHN C.T. LEE, P.E.

Enclosures

cc: Brian Takeda, R.M. Towill
DeeDee Letts, Resolutions Hawaii

Mayor's Advisory Committee on Landfill Selection
Committee Members and Meeting Schedule

The following members served on the Mayor's Advisory Committee:

- Anderson, Bruce
- Apo, Peter
- Apo, Todd
- Bryant Hunter, Kathy
- Chun, Michael
- Guinther, Eric
- Holmes, Steve
- Jung, Ted
- Kane, Shad
- Paty, William
- Rezentes, Cynthia
- Slovin, Gary
- Thielen, Cynthia
- Tomita, Gary
- Tong, Robert
- Yamamoto, George

The Committee worked between June and November, 2003. Meetings held during this period were on the following dates:

- July 25, 2003
- August 8, 2003
- August 23, 2003
- August 29, 2003
- October 3, 2003
- October 10, 2003
- October 24, 2003
- November 7, 2003
- November 21, 2003

MAYOR'S ADVISORY COMMITTEE ON LANDFILL SITING 2003

Name	12/1	8/8	8/22	8/29	10/3 ~~9/26~~	10/10	10/24	11/7	11/21
Anderson, Bruce									
Apo, Peter		PKA	RESIGNED						
Apo, Todd									
Bryant Hunter, Kathy	KB	KB	KB	KB	KB	KB	KB	KB	KB
Chun, Michael	MC			MC					
Guinther, Eric									
Holmes, Steve		SH	SH				SH	SH	SH
Jung, Ted									
Kane, Shad									
Paty, William									
Rezentes, Cynthia									
Slovin, Gary									
Thielen, Cynthia									
Tomita, Gary									
Tong, Robert									
Yamamoto, George									

LANDFILL SITING COMMITTEE

10:00 A.M., FRIDAY, JULY 11, 2003
MAYOR'S OFFICE CONFERENCE ROOM

NAME	MAILING ADDRESS	TELEPHONE FAX	E-MAIL
ROBERT L.P. TONG	92-616 MAKAKILO DR Kapolei, HI 96707	672-3354	tongr002@hawaii.rr.com
Rep. Cynthia Thielen	State Capitol/ Rm 443 415 So. Beretania St.	586-6480 x 6481	repthielen@Capitol.hawaii.gov
steve Holmes	530 S. King St. #306 Honolulu, HI 96813	523-4714 550-6199	sholmes@co.honolulu.hi.us
TED JUNG	1825 LAUKAHI PL. HNO 96821	383-2461 - c 521-3423	jungt002@hawaii.rr.com
Bruce S. Anderson	~~3452 Kahawalu Dr.~~ ~~Honolulu, HI 96817~~ JABSOM 1960 East-West Rd., Honolulu, HI 96817	956-5776	bsa@hawaii.edu
Gary Slovin	1099 Alakea St. #1800 96813	547-5746, 5880	gslovin@goodsill.com
Brian Takeda	RMTC	842-1133/842-1937	

LANDFILL SITING COMMITTEE

10:00 A.M., FRIDAY, JULY 11, 2003
MAYOR'S OFFICE CONFERENCE ROOM

NAME	MAILING ADDRESS	TELEPHONE FAX	E-MAIL
MARK WHITE	5714 FOLSOM BLVD #240 SACRAMENTO, CA 95819	916/387-9277 916/387-9802	MARK@PWCG.NET
Wilma Namumnart			
Eric Guinther	45-309 Akimala PL. Kaneohe Hi 96744	808-247-4906	
GARY K. TOMITA	94-1117 HUAKAI ST. WAIPAHU, HI 96797-3726	808-677-4546(wo) 808-677-4546 *51	igtwink@aol.com
SHAD KANE	92-1309 UAHANAI ST KAPOLEI, HI 96707	808-692-4765	KIHA@HAWAII.RR.COM
George Yamamoto	92-1539 Aliinui Dr. #H Kapolei, HI 96707	~~692~~ 6790414 692-4253	GeorgeS.Yamamoto@alumni.usc.edu
~~Cynthia Thielen~~			

LANDFILL SITING COMMITTEE

5:30 P.M., FRIDAY, JUNE 13, 2003
MAYOR'S OFFICE CONFERENCE ROOM

NAME	MAILING ADDRESS	TELEPHONE FAX	E-MAIL
SHAD KANE	92-1309 Uahanai St.	672-4765	KiHA@Hawaii.rr.com
Cynthia K.L. Rezentes	87-149 Maipela St. Waianae 96792	696-0131	rezentesc@aol.com
GARY K. TOMITA	94-1117 Huakai St. Waipahu, HI96797	677-4546 (wk) 535-8538 (cfc)	igtwink@aol.com
George Yamamoto	92-1539 Aliinui Dr. # Kapolei, HI 96707	679 0414	GeorgeS.Yamamoto@alumni.usc.edu
Ted Jung	1825 Laukahi Pl 96821	383-2461	~~theodore.g.jung~~ Jungt002@hawaii.rr.com.
Eric Guinther	45-309 Akimala Pl Kaneohe 96744	247-3426 236-1782	guinther@hawaii.rr.com
steve Holmes	530 S. King St. #306 Honolulu, HI 96813	523-4714	sholmes@co.honolulu.hi.us

LANDFILL SITING COMMITTEE

5:30 P.M., FRIDAY, JUNE 13, 2003

MAYOR'S OFFICE CONFERENCE ROOM

NAME	MAILING ADDRESS	TELEPHONE FAX	E-MAIL
Barbara Marshall	530 S. King Honolulu 96813	547-7003	bmarshall@ co.honolulu.hi.us
Bruce Anderson	John A. Burns School of Medicine 1960 East-West Road Honolulu HI 96822	956-5775	bsa@hawaii.edu
KAREN ONISHI	R.M. TOWILL Corp. 420 WAIAKAMILO Rd #411 Hon 96817	842-1133	
Kathy Bryant Hunter	248 Uilama St Kailua 96734	2626012	kathybryant@ dpr4adr.com
Gary Slovin	1099 Alakea St. Suite 1800 Honolulu 96813	547-5746 547-5880	gslovin@goodsill.com

Group memory
Mayor's Advisory Committee on Landfill Siting
Friday, July 11, 2003
10:00AM to 11:30AM
Mayor's Conference Room

Attendance

Present:

Bruce Anderson
Todd Apo
Ted Jung
Eric Guinther
Steve Holmes
Shad Kane
Cynthia Rezentes
Gary Slovin
Cynthia Thielen
Gary Tomita
Robert Tong
George Yamamoto

Wilma Namumnart (Refuse Division, Dept. of Environmental Services)
Brian Takeda (RM Towill)
Mark White (Pacific Waste Consulting Group)
Roy Tsutsui (RM Towill)

Puni Chee (Representative for Council member Nestor Garcia)
Nancy Crittenden (Representative for Council member Barbara Marshall)
Roc Riggs (Representative for Council member Michael Gabbard)
Dee Dee Letts (Facilitator)
Karen Takahashi (Recorder)

Absent: Michael Chun, Bill Paty, Kathy Bryant-Hunter

Introductions, Overview, Purpose and Guideline Adoption

Facilitator Dee Dee Letts welcomed and thanked members of the Mayor's Advisory Committee on Landfill Siting for attending and asked them to introduce themselves. Wilma Namumnart then asked members to fill out parking request form and send her an e-mail with missing information.

An overview of the meeting agenda was posted and reviewed by Dee Dee Letts. Agenda items for the meeting included the following:

- Introductions, Overview, Purpose, and Guideline Adoption
- Purpose
- Outcome
- Site Overview
- Criteria Overview
- Additional Criteria Discussion
- Additional Sites Identification Discussion
- Next Steps

The following meeting guidelines were explained by Dee Dee Letts:

- Be respectful of people's time. Meetings will start and end on time.
- Meetings are 90 minutes unless otherwise agreed to by the group.
- Each member is responsible for the success of the group.
- All meetings will have a clear objective and agenda.
- Members will be responsible for getting caught up on missed meetings.
- Issues not people are criticized. Courtesy shall prevail.
- It's okay to disagree.
- Members will do agreed upon homework in a timely manner.
- All members are equal and will participate in a manner that does not monopolize the process.

Group memories that include items as recorded on the newsprint will be provided to group members for each meeting. Committee members will be responsible for the accuracy of what is on the newsprint and were asked to offer corrections during the meeting to insure the accuracy of the group memory. Committee members agreed to the meeting guidelines.

Purpose

It was explained that the purpose of the Mayor's Advisory Committee on Landfill Siting is to provide feedback and recommendations to the administration, consultant and others involved in the process from a committee perspective about the various issues involved in siting a landfill and proposed sites.

Outcome

It was also explained that the desired outcome is to develop an optimum list of community issues and concerns regarding siting that need to be addressed and to recommend several sites to be examined in the EIS process.

Site Overview (Brian Takeda)

Consultant Brian Takeda provided an overview of the landfill siting process. He explained that the consultants are seeking guidance from the Committee in identifying 3-5 landfill sites by the December 2003 timeframe. He noted the following:

July 2003 -	Develop criteria and conduct site review LUC notification
August through October 2003 -	Research and Analysis
November 2003 -	Recommend sites
December 2003 -	Report to Land Use Commission
January 2004 -	Additional sub-consultant studies on sites (e.g., hydrology, flora/fauna, etc.) Analysis of sub-consultant studies

The following information was identified as useful in helping Committee members understand the process and will be provided to Committee members:

- Copy of the original LUC order (Wilma Namumnart)
- The internet site to obtain a copy of the EIS alternatives (Mark White)
- Copy of Oahu Landfill Selection Committee, Informational Materials (Brian Takeda)

Criteria Overview (Wilma Namumnart)

Wilma explained that in 1977, a report was issued relating to an investigative study conducted on alternative potential landfill sites for Oahu. Land to be considered was non-prime land that no one wanted (e.g., large, deep, able to be filled). In the informational materials provided to Committee members, reference was made to potential landfill sites in Section 5, Table of Landfill Sites and Projected Capacity. It was noted that numbers 16 (Kalaheo) and 19 (Kapaa No. 2 and 3) were closed while numbers 6 (Ewa No. 2), 9 (Heeia Kai), 31 (Olomana), and 34 (Sand Island) were lost to housing developments and a state park. It was also noted that there were development plans for number 4 (Diamond Head Crater) and that number 22 (Koko Crater) had endangered and endemic species which needed to be considered.

Other factors that should be considered include:

- City wants 15 year landfill life.
- It takes about 7 years to go through the permitting and construction process before the first load can be accepted at the landfill.

- Sites should have at least a 5 year capacity. A site with at least 10 years capacity is desirable and more realistic and as noted above the city would prefer a 15 year life.
- An estimated rate of 500 tons per day was used to develop the capacity for the original list.
- Landfill life may be decreased or increased. Through operations/other means, there may be an opportunity to expand the capacity of any particular site for landfill expansion.
- In order to determine the total capacity, further research needs to be done.

Questions raised included the following:

- Should sites with less than 5 years capacity be taken off the list? It was suggested that the Committee should determine whether to do this.
- What is the remaining capacity at the Waimanalo Gulch? Based on the area permitted, there is enough capacity for only 5 more years. However, the area available could allow a longer period of use. There is more potential to expand, but a better number of what it could be expanded to needs to be determined. The actual landfill footprint is 84 acres; better numbers are needed. **(Subsequent to the meeting the city provided the information that beyond the 5 year permitted area, the site could accept waste for another twenty (20) years to completely fill the valley)**
- Is there potential for other sites to be expanded? Yes, there is more potential. More research would need to be conducted.

Additional Criteria Discussion

Brian Takeda referenced the following criteria which is used to guide the landfill siting process:

- ***Code of Federal Regulations (CFR), Part 258***, governs the development, operation and closure of landfills. This Federal regulation is administered by the Environmental Protection Agency (EPA), and is delegated to the State of Hawaii, Department of Health (DOH). The State's implementation of 40 CFR 258 is through the DOH Solid Waste Permit Program.

  There are six location restrictions applicable to the siting of landfills (See Informational Materials, Section 6, Identification of New Landfill Sites Worksheet, Worksheet Instructions #1-6):

  - Airport restriction
  - Floodplains
  - Wetlands
  - Fault areas
  - Seismic impact zones

  - Unstable areas

- ***Capacity Requirement*** - The City has identified a benchmark regarding capacity. The desired landfill capacity requirement is 10 years and is based on projected and current rates of waste generation. The total airspace requirement will be 8 million cubic yards.

- ***Technical and Resource Criteria*** - There are a total of seven criteria for the siting of a landfill which have been previously considered by the City. They include the following:

  - *Protection of Natural Resources*
    - City Council Resolution 03-09 establishes a policy that municipal solid waste landfills should not be located anywhere above the Department of Health's Underground Injection Control line, within the Board of Water Supply's groundwater protection zone, or over any of the City's drinking water sources.

  - *Compatibility with Area Land Use*
    - Discussion and dialogue with the affected area population to incorporate community concerns and address issues associated with landfill developments.

  - *Protection of Natural Habitat*
    - Landfills should not be sited in locations which serve as habitat for Federal or State listed threatened or endangered species.

  - *Protection of Cultural Resources*
    - Landfills should not be located in places with known significant archaeological or historic cultural sites (e.g., archaeological items, burial sites, sites used for cultural and religious practices, etc.).

  - *Technical viability*
    - Technical viability includes site evaluation of engineering feasibility, cover availability, site access, and availability of utilities.

  - *Economic Development Costs*
    - This refers to what it costs to develop the site, analysis of haul distances, and material import costs. It also includes costs associated with construction of administrative and operational facilities.
    - The Committee needs to determine if it will add ash to the proposed landfill site; if so, it should look at ash monofill at the

same time that it looks for a site for municipal solid waste.

- Land Acquisition Issues
  - Ownership issue: is it privately or publicly owned land? If land is privately owned, acquisition issues such as purchase cost, condemnation costs need to be considered.
  - Other factors: community issues, public use issues, location of the landfill in relation to existing or proposed future development.

The following questions were raised relating to this criteria:

- Are the criteria for an ash monofill significantly different than that for a municipal solid waste landfill?
- What is the proximity to H-POWER for hauling purposes? Wilma will provide this information to Committee members at the next meeting.
- What community issues need to arranged: characteristics of landfill operations, effects/impacts?

- Is the haul distance to H-power: significant economic and environmental criteria?
- How much material (ash and other materials) leaves H-Power to be landfilled?
- What are our assumptions regarding what is going into the landfills?
- Should C&D (construction debris) continue to be accepted at landfills? Wilma Namumart will provide list of banned materials to Committee members.

Wilma explained that the City is looking at alternatives to reduce the wastestream and also decrease its dependency on landfills (e.g., Plasma Request-for-Proposals, recycling, expansion of H-POWER, organics composting, etc.).

The following questions and comments were provided by Committee members:

- Is the Advisory Committee wasting its time if the City Council has already taken a position via Resolution 03-9? Due to this resolution, only 7 sites are available for the Committee to consider. Shouldn't the Committee start with the strictest criteria first and eliminate those sites which are behind the red/green lines?

- Does the Committee want to look at other sites?

- The Committee will still need to narrow down the choices to 2-3 sites.

- Rather than focus on all technical issues, should the effort start with sites that meet Resolution 03-9 criteria? The Committee needs to know if there is a hard restriction by the City Council, Department of Health, Board of Water Supply, and community groups.

- Resolution reflects the Council's desire/intent. Believe that the sites should not be eliminated and that the review process should proceed.

- Another item for review by the Committee: Overview of landfill operations, economics of running a landfill, what it costs – should be provided to Committee members.

Additional criteria discussion:

Brian Takeda asked Committee members to review the informational materials provided along with the criteria listed and to identify any additional sites using the worksheets provided in the informational materials provided. He asked that Committee members return their worksheets by faxing them to Wilma no later than Friday, 7/25/03. Upon receipt, a compilation will be created and provided to Committee members at the next meeting.

Additional sites identification worksheets

Committee members were asked to identify additional sites that could be considered for landfill. It was noted that if a site were suggested for consideration and that based on federal criteria that it could not be permitted as a municipal landfill, that the site would have to be eliminated from further consideration. We expect this may be an exception to the rule since in most cases we would need to do the research first and then confirm whether or not the site should be further evaluated.

Next Steps

The following items will be provided to Committee members:

- Executive Summary for the Alternatives expansion report (website address; hard copy upon request)
- Where C&D wastes are going
- Overview of landfill operations – economics of running landfill, what it costs
- List of banned materials

Other issues to be discussed at the next meeting include:

- Expanding criteria
- Should C&D continue to be accepted at landfills? % to be provided by Wilma.
- Are criteria monitoring significantly different for ash as solid waste?

Next Meeting

The next meeting of the Mayor's Advisory Committee on Landfill Siting is scheduled for Friday, August 8, 2003 from 10:00 AM to 11:30 AM in the Mayor's Conference Room.

Mayor's Advisory Committee on Landfill Siting
Friday, August 8, 2003
10:00AM to 11:45AM
Mayor's Conference Room

Attendance

Present:

Bruce Anderson
Kathy Bryant-Hunter
Michael Chun
Eric Guinther
Steve Holmes
Shad Kane
Cynthia Rezentes
Gary Slovin
Cynthia Thielen
Gary Tomita
Robert Tong

Wilma Namumnart (Refuse Division, Dept. of Environmental Services)
Brian Takeda (RM Towill)
Roy Tsutsui (RM Towill)

Nancy Crittenden (Representative for Council member Barbara Marshall)
Roc Riggs (Representative for Council member Michael Gabbard)
Dee Dee Letts (Facilitator)
Karen Takahashi (Recorder)

Absent: Todd Apo, Ted Jung, Bill Paty, George Yamamoto

Agenda Overview

Facilitator Dee Dee Letts welcomed members of the Mayor's Advisory Committee on Landfill Siting and asked them to introduce themselves. Dee Dee then provided an overview of the meeting agenda which included the following items:

- Distribute Group Memory for 7/11/03 meeting
- Homework
- Description of Landfill Operations
- Economics of Operating Waimanalo Gulch
- Landfill Selection Criteria
- Next Steps

Committee members were provided with a meeting timetable which outlined the schedule of meetings, including optional meetings, if needed. Advisory Committee members were reminded that the focus of the schedule is to have a list of three sites by December 2003. The meeting timetable is as follows:

8/8/03	Discuss Draft Criteria
8/22/03	Discuss Final Criteria / Sites Discussion
8/29/03	(Optional) Discuss Final Criteria / Sites Discussion
9/26/03	Analysis of Viable Sites
10/10/03	Discuss Analysis of Viable Sites and Select Short Listed Sites
10/24/03	(Optional) Discuss Analysis of Viable Sites and Select Short Listed Sites
11/7/03	(Optional) Discuss Analysis of Viable Sites and Select Short Listed Sites

Distribute Group Memory

Copies of the group memory from the July 11, 2003 meeting were distributed and members were asked to note the discussion printed in bold on page 4 relating to capacity at the Waimanalo Gulch which reads as follows:

> **"(Subsequent to the meeting the city provided the information that beyond the 5 year permitted area, the site could accept waste for another twenty (20) years to completely fill the valley.)"**

Homework

The following responses were provided as follow-up to the last meeting:

- Copies of the Executive Summary for the Alternatives expansion report were provided to Task Force members.
- Where are C&D wastes going? C&D wastes are going to the Nanakuli landfill (PVT Land Company).
- A list of banned materials was provided to Advisory Committee members.
- Should C&D continue to be accepted at landfills? Per Wilma Namumnart, less than 5% is being accepted.
- Are criteria monitoring significantly different for ash as compared to solid waste? Per Wilma Namumnart, if ash is from municipal solid waste, the criteria for monitoring is the same.

- An overview of landfill operations was provided by Joe Hernandez.

Description of Landfill Operations

Joe Hernandez, Environmental Manager, Waste Management of Hawaii, provided a description of landfill operations to Advisory Committee members.

- At Waimanalo Gulch, the Environmental Manager monitors compliance with regulations.
- Operations directs trucks to City and County Scalemaster.
- Waste is screened to ensure banned waste not going into landfill.
- Waste goes to active phase (commercial and residential wastes) where it is backed-up into landfill. Equipment pushes/compacts waste.
- Landfill operators are trained to identify hazardous waste.
- Special waste program is a multi-tiered system. Program seeks to ensure that wastes are dumped properly, after being screened, and tested to determine if it is hazardous or non-hazardous waste.
- Process includes compaction.
- At end of the day, operator is required to cover with a minimum of 6 inches of soil.
- Samples of liners used for landfill were distributed to Task Force members to give them an idea of the type of material used.
- On average, 3-4 acres are lined with liner, covered with gravel, then a fabric material cover, and 18-24 inches of protective layer of soil.
- Question: Aside from cost, are there are state-of-the-art things that can be done? Cover the landfill, set up portable fencing to prevent litter from blowing. When the site is finished, landscape the most visible areas.
- Question: Is the landfill covered every day? Yes; landfill is covered with soil that has been screened. Some contaminated soil is used. Contaminated soil falls under a special waste criteria but a test is done to make sure that it is not classified as hazardous according to RCRA, Subtitle D.
- Question: Does monitoring require an assessment of impacts to the surrounding area and are monitoring reports required? Monitoring reports look at gas, leaking

of the liner, leaching, etc. and are provided semi-annually to the Department of Health. Waste Management samples the wells and submits result to an outside laboratory for testing.

- Question: Is the City aware of the Navy's efforts at Kalaeloa where they have moved lead and other heavy metals which breakdown and require redoing liners? Monitoring has determined that migration of heavy metals is not occurring at Waimanalo Gulch.
- Question: Have there been any impact studies regarding impact to the ocean? HECO does chemical analysis at Kahe Point in addition to long-term studies of outfall to the ocean.
- Question: How do other places handle their waste? In some places, big berms are put up to shield landfills visually. Berms in Hawaii are small and visible. Big berms could act as a visual shield, help contain or catch litter, and also control odor. Berms will also help to minimize the view of landfill operations. In some places, large berms are used as active parks by the public, traffic is not visible, and also do not back up on the roads. The aesthetics/visibility issues can also be addressed by changing the color of the liner (e.g., green). It was recommended that instead of little berms for each cell, that a large berm be constructed to shield the entire area.
- Need to know the state-of-the-art, what could be done to make it more aesthetically pleasing (e.g., hydromulching will lead to green areas.)
- Question: How do you deal with materials above/outside of the liner that goes downhill? Example given of ash-like waste found outside of the liner. Waste Management and the City were unaware of this situation. Ash is filled behind the berm and Waste Management is required to be sure that the ash does not runoff.
- Joe will look at the ash onsite from Waimanalo to the ocean to follow through on the above-mentioned situation.
- Joe will also check to see if the liner material is available in green.

Economics of Operating Waimanalo Gulch

A handout on the Economics of Operating Waimanalo Gulch were provided to Task Force members from Wilma Namumnart.

- Disposal fee per ton multiplied by the total MSW tons provides the potential revenue. For Fiscal Year 2003, this amount was $18,321,346.
- There are two types of tonnage: non-revenue tonnage and revenue tonnage.

- Actual revenue tonnage has two different rates: (1) other city agencies @$16.50 per ton; (2) Commercial entities @$72.25 per ton.

- Recyclers get an 80% discount and pay only 20% of the commercial rate.

- Transfer Stations collect from other city agencies @$50 per ton and commercial entities @$98.75 per ton.

- Fee paid to Waste Management for MSW operations (i.e., excavation, lining, tonnage) reduces that actual revenue for landfill and transfer stations.

- Total amount collected less than potential revenue.

Landfill Selection Criteria

Advisory Committee members were provided copies of letters from the United States Environmental Protection Agency Landfill Selection Criteria(US EPA) and Department of Health relating to landfills located above the Underground Injetion Control Line. Members were also provided with copies of a "Draft Technical Siting Criteria and Evaluation Approach for the City and County of Honolulu Blue Ribbon Landfill Siting Committee" prepared by Pacific Waste Consulting Group. The siting criteria provide a basis for judging one potential landfill site relative to all the others.

Consultant Brian Takeda explained that the six criteria that the US EPA identifies as landfill siting requirements are applied before the siting criteria. Of the six US EPA requirements (i.e., airports, floodplains, wetlands, fault areas, seismic impact zones, unstable areas), the last three do not always apply to Hawaii.

The siting criteria are organized into five categories and each category has criteria that are assigned a point value, ranging from zero to five. The five categories are as follows: (1) Community; (2) Environmental and Land Use; (3) Administrative; (4) Economic; and (5) Technical. On page 19 of the draft, an example of application of weighting criteria is provided. Advisory Committee members will advise what kind of weight is needed for the various criteria. Advisory Committee members were asked to look at the criteria closely, determine whether they like the criteria and the point values associated with the criteria, and advise of changes that will need to be made. Once the criteria is finalized, it can then be applied to the various landfill sites. The Consultant will collect the data, give its best judgment, and then bring it back to the Committee.

The following questions were asked regarding the criteria:

- Will the criteria require massive amounts of data for each site? The process is composed of two parts. The first phase will be to look at all possible sites and narrow it down to three to five sites over the next few months. Data will be provided by the Consultant.

- Is it possible to look at past criteria that was used? (e.g., Waimanalo Gulch) Per Wilma Namumnart, the EIS report from the past study is available.
- Was this done with the siting of Waimanalo Gulch and its placement? Can it be made available for use as a guide in this process? Concern was raised that we should not go back since laws have changed and that this criteria should suffice.
- A suggestion was made that a criteria be added to minimize the proximity of landfills to nearshore waters. **(Subsequent to the meeting, the Consultant provided the information that Criteria No. 36 addresses distance from surface water bodies.)**
- What would be the increased economic costs of developing a landfill more than the 12 mile radius from H-POWER if ash had to be hauled there for disposal? The City was unable to answer the question because this would become part of the contract negotiations.

Concerns were raised about the need to go back to their respective constituency or community to review the draft siting criteria and to determine if it is the right criteria, with the right weighting for each of the criteria. There was also some discussion about possible moving of the August 29th meeting into September to allow for appropriate input. A suggestion was made that a community briefing could be held to provide information and solicit input. This issue will be revisited at the August 22nd meeting.

The Group Memory will be posted on the City and County of Honolulu Refuse Division's website located at www.opala.org.

Next Steps

For those who are interested, a landfill tour has been arranged for Thursday, August 14, 2003 from 8:30 a.m to 11:30 a.m. Those interested in attending were asked to meet Wilma Namumnart at Kapolei Hale. Transportation will be provided.

It was suggested that at the next meeting, the following items be discussed:

- Feedback from Joe regarding ash wastes near Waimanalo Gulch landfill and whether green liners are available.
- Regulator's perspective regarding landfills (i.e., DOH, US EPA) when permitting a landfill. To accommodate this discussion, Advisory Committee members agreed to a half-hour extension of the next meeting.
- Discuss and finalize siting criteria.

- Discuss and finalize criteria weighting system.

Next Meeting

The next meeting of the Mayor's Advisory Committee on Landfill Siting is scheduled for Friday, August 22, 2003 from 10:00 AM to 12:00 PM in the Mayor's Conference Room.

Mayor's Advisory Committee on Landfill Siting
Friday, August 21, 2003
10:00AM to 11:45AM
Mayor's Conference Room

Attendance

Present:

Todd Apo
Kathy Bryant-Hunter
Eric Guinther
Steve Holmes
Ted Jung
Shad Kane
Cynthia Rezentes
Cynthia Thielen
Gary Tomita
Robert Tong
George Yamamoto

Wilma Namumnart (Refuse Division, Dept. of Environmental Services)
Brian Takeda (RM Towill)
Roy Tsutsui (RM Towill)
Mark White (Pacific Waste Consulting Group)

Nancy Crittenden (Representative for Council member Barbara Marshall)
Dee Dee Letts (Facilitator)

Absent: Bruce Anderson, Peter Apo, Michael Chun, Bill Paty, Gary Solvin

Guests:

Gary Siu, State Department of Health, Office of Solid Waste
Lene Ichinotsubo, State Department of Health, Office of Solid Waste
Joe Hernandez, Waste Management of Hawaii
David Fuiawa, Waste Management of Hawaii

Agenda Overview

- Requested presentation by State Department of Health, Gary Siu
- Response to questions from previous meeting by Joe Hernandez, Waste Management of Hawaii

- Criteria Discussion
- Weighting of Criteria

State Department of Health

Gary Siu from DOH went over the key concerns about siting from a DOH perspective. He noted that the group had already gone over the federal criteria which DOH would also have to see satisfied. He noted that one of DOH's key concerns would be that the chosen site does not impact ground water resources. Other concerns or things they might look at:

- The shortness of the haul from HPOWER to minimize the accidental spilling of ash
- Buffers to shield the activity from other land uses

He also noted that permitting would take at least one year.

C: Should address the safety of ash transport now and require the safest transport method instead of worrying about distance.

Q: If you increase haul distance don't you increase deadhead time and wouldn't that create a higher economic cost?
A: Probably but we are looking at safety issues

Joe Hernandez

Per the questions the committee asked last time the liner does come in green but regulations require us to cover it with black felt material so nothing would be gained visually by buying green. Joe also shared pictures on how water flow is handled on site to minimize any mix between landfill byproducts and water flowing to the ocean.

Q: My concern is windblown ash getting into the ocean and control of this.
A: The ash is damp when delivered and solidifies like cement so that we have to use a dozer to move it around – it is not a substance subject to being blown by the wind.

Q: Did you ever test for ash in water?
A: Yes. The only elevated levels found in the water were iron and this is probably because of the red iron rich soil.

Landfill Selection Criteria

The committee asked if the score will be the highest or lowest to be the most suitable landfill site. The highest score will denote the more preferred landfill site. The consultant will review the criteria for consistency throughout as far as the ratings alternative. The group requested that where measurements were changes criteria with similar measurement features also be changed so that measurements would be consistent. The consultant agreed to do this.

The group next went through the criteria and measurements one at a time the following comments were received. Criteria needing continued discussion at the next meeting are noted in **bold**.

Criteria 1: OK

Criteria 2: distance is measured from the property line to the property line. The group suggested that the measure be less the ¼ mile a ¼ to ½ mile and over ½ mile

Criteria 3: there was some discussion on including wind direction toward the ocean but the group decided to take this up later

Criteria 4: This will be revisited at the next meeting – need more discussion and definition how density will be determined and what boundaries will be used.

Criteria 5: Make measures consistent with 2

Criteria 6: Reflect that the zoning on the majority of the site should be consistent

Criteria 7: Make consistent

Criteria 8: Tinker with it to make it consistent and possible remove it and add to 6.

Criteria 9: Define high use road as a road with a state route number

Criteria 10: Change it to residences and schools and revisit the question of businesses.

Criteria 11: OK fist measurement replace or with and and clean up language in the rest of the measurements.

Criteria 12: add "or adjacent to" and define wetlands with the Fish and Wildlife definition

Criteria 13: add "or adjacent to"

Criteria 14: OK

Criteria 15: Needs discussion

Criteria 16: OK

Criteria 17: Add schools

Criteria 18: The group wants to see a list of optional uses for closed land fills

Criteria 19 & 20: Combine and add "or adjacent to" – use SHPO definition of significance

Criteria 21 & 22: Delete

Criteria 23 & 24: Combine and again check consistency – use annual amortized cost

Criteria 25 & 26 & 27: Check for consistency

Criteria 28: Change distance to less the 12 miles and 12.1 and above

Criteria 29: Look at standard versus substandard road conditions as defined by county standards and also look at the road ownership issue some are private.

Criteria 30: Check consistency

Criteria 31: OK

Criteria 32: Change to soil available or soil not available on site

Criteria 33: OK

Criteria 34: Look at using isohyets for measurements

Criteria 35: OK – need to look outside footprint

Criteria 36: Add Ocean to surface water

Criteria 37: Use response time not distance

Criteria 38: Look at turning needs for vehicle sizes and acceleration and deceleration needs

Criteria 39 – 42: These need tweaking and 42 needs quantification

The consultant agreed to get a new draft to the group prior to the next meeting.

The following criteria will be revisited during the August 29th meeting. 4, 10, 15, 28, 29. Additional criteria to be looked at will be sent to the consultant prior to the meeting. One developed for discussion at that meeting was wind direction toward the ocean. The group also needs to look at a definition of populated area.

Next Steps

- Discuss and finalize siting criteria.
- Discuss and finalize criteria weighting system.

Next Meeting – Note change in Place

The next meeting of the Mayor's Advisory Committee on Landfill Siting is scheduled for Friday, August 29, 2003 from 10:00 AM to 12:00 PM in the Second Floor Conference Room at the Honolulu Municipal Building.

Mayor's Advisory Committee on Landfill Siting
Friday August 29, 2003
10:00 AM to 12:30 PM
2nd Floor Municipal Building

Attendance

Present:

Bruce Anderson
Todd Apo
Kathy Bryant-Hunter
Michael Chun
Eric Guinther
Ted Jung
Shad Kane
Cynthia Rezentes
Gary Slovin
Cynthia Thielan
Robert Tong

Wilma Namumnart (Refuse Division, Dept. of Environmental Services)
Brian Takeda (RM Towill)
Mark White (Pacific Waste Consulting Group)

J. Ikaika Anderson (Representative for Council member Barbara Marshall)
Dee Dee Letts (Facilitator)

Absent Peter Apo, Steve Holmes, Bill Paty, Gary Tomita, George Yamamoto

Agenda Overview

- Criteria Discussion
    - Last meeting
    - Requested language changes, measures and consistency issues
    - Definitions
    - Errors
- Prioritization

Discussion

All criteria numbers and adoptions are done from the August 28th draft passed out at the August 29th meeting.

Criteria 4 (population density) – was adopted with the deletion of the phrase "living within 0.5 miles of the [footprint] property" in all measures

Criteria 9 (visibility from residences, schools, and visitors) – this criterion was change to be a general visibility criterion to read "Visibility of Landfill for residents, visitors and school populations – the measure should be changed to reflect the angle of visibility to the ocean.

Criteria 11 (wetlands) – this criteria will use the Fish and Wildlife definition of wetlands and aquatic sites which includes oceans – the word adjacent will be added and the references to mitigation in the measures will be removed – these measures will reflect the change of this criteria from and economic to an impact criteria and the distances will be standardized the distances used in other criteria and approved by the group

Criteria 12 (flora and fauna) – adjacent will be added and the measures will be distance standardized and critical habitat will be added

Criteria 14 (oceans) is removed as it is now covered by criteria 11 (wetlands)

Criteria 18 (archeological and historical significance, now criterion 17) – adjacent will be added and it will be standardized for distance

Criteria 25 (haul distance from H-POWER) will stay however one member suggested that we look at different ash sites especially old holes at Kalaeloa that might be suitable for this use – he was asked to get together with the consultant so that this could be looked at

Criteria 26, 27 and 28 were combined into one set of access road considerations

Criteria 37 (traffic safety, now criterion 28) – needs to look at the impact on safety of potential haul distances – the measures will be reworked to assess haul distances for city vehicles and some estimates will be made from central areas of private pick ups

Errors
- Criteria 3 first measure needs to read 50 to 80% - change will be made
- Criteria 8 the measures should high visibility, moderate visibility and low visibility – the word public needs to be inserted before road in measure 3
- Criteria 17 the measure values need to be reversed
- Criteria 26 – in the first line "haul" needs to be replaced with "access" for consistency

All of the other criteria were Ok as presented in the draft.

The group discussed that there could be positive criteria such as employment opportunities that were not looked at. Employment, restoration of degraded sites and a decrease in the community of roadside dumping were mention as examples. The consultant stated that they could come up with measures for the first two but that quantifying roadside dumping impacts would be hard. The group asked the consultants to do the first two and then to run the sites twice once with just the approved criteria and once adding the new positive criteria and bring the results back to the group at their September meeting.

The group moved forward to the prioritizing exercise and some combining of criteria was done in preparation for this exercise.

- Numbers 26, 27, and 28 were combined into access road considerations criteria.
- Numbers 21, 24, 29, 31 and 32 were combined into a cost of operations criteria
- Numbers 20, 23, and 29 were combined into a cost of development criteria

The group next asked the consultants and City staff to leave the room while they prioritized the criteria so the results of the prioritization would not influence the consultant's evaluation of the sites. The sites will be presented at the September meeting with no weighting by priority – the results of today's exercise will be shared at that meeting and applied to the site list.

The next meeting will be September 26th from 10 to 11:30 at the Mayor's Conference Room.

Meeting adjourned at 12:30

1Mayor's Advisory Committee on Landfill Siting
Friday, October 3, 2003
10:00AM to 11:45AM
Mayor's Conference Room

Attendance

Present:	Kathy Bryant-Hunter Eric Guinther Shad Kane Cynthia Rezentes Gary Slovin Cynthia Thielen Robert Tong
	Wilma Namumnart (Refuse Division, Dept. of Environmental Services) Brian Takeda (RM Towill) Mark White (Pacific Waste Consulting Group)
	Nancy Crittenden (Representative for Council member Barbara Marshall) Roc Riggs (Representative for Council member Michael Gabbard) Dee Dee Letts (Facilitator) Karen Takahashi (Recorder)
Absent:	Bruce Anderson, Todd Apo, Michael Chun, Steve Holmes, Ted Jung, Bill Paty, Gary Tomita, George Yamamoto

Agenda Overview

Facilitator Dee Dee Letts welcomed members of the Mayor's Advisory Committee on Landfill Siting and provided an overview of the meeting agenda which included the following items:

- Discussion - Benefit Criteria
  - Employment Opportunity
  - Restoration of Degraded Sites
- Discussion - Possible Community Benefit Concept
  - Ko Olina Presentation with Questions and Answers
  - Mark White, Presentation on Host Community Benefit Concepts Research with Questions and Answers
  - Privatization
- Discussion - Landfill Capacity
- Adjournment

Discussion of Benefit Criteria

Dee Dee asked Mark White to address positive benefit criteria in the areas of (1) Employment / Jobs and (2) Restoration of Degraded Sites / Remediation. Mark White indicated that, irrespective of site, approximately 25 would be employed at the landfill. The Committee agreed to add a criteria on employment but to also factor in the % unemployment present in the proposed host community.

It was also suggested that the potential for employment should include employment numbers factoring in any resulting secondary employment. It was pointed out that this might be difficult to assess. To illustrate this suggestion, the University of Hawaii's location of its West Oahu campus was provided. Based on President Evan Dobelle's projections, 150 acres will be used for the university campus, 100 acres for future expansion, and 100 acres for commercial businesses. Similarly, if the landfill is sited somewhere, could it become a magnet for other potential businesses (e.g., composting businesses, etc.)? The Committee decided to revisit this matter when the discussion of specific sites occurs.

Mark explained that remediation/rehabilitation of degraded sites would only be applicable in quarry situations – so the only site would be Ameron. The beneficial use of the landfill when closed is covered under the criteria on landfill closure. The Committee agreed that remediation should be deleted as a criteria.

Dee Dee asked the Committee if they were okay with the consultants conducting a single run using all of the criteria since the Committee had the opportunity to discuss all the criteria. The Committee agreed that a single run was sufficient.

Regarding Host Community Benefits, it was noted that benefits occur primarily when there are private interests involved. A question was raised asking if there was a benefit to privatization the landfill operations (i.e., a community, municipal-owned operation versus a private entity)?

Committee members were provided a compilation of articles researched by Pacific Waste Consulting Group entitled *Host Community Benefit Concepts*. The handout included the full text of one report on Host Community Benefits (HCB), an article from a national publication, and two other articles that illustrate the actual benefit as applied by different communities. Mark noted that the Cornell summary was helpful because it explained the conditions necessary for host community benefits. Todd Apo had indicated that he was not able to make the meeting and that someone from KoOlina would be present to make the presentation. No one from KoOlina was present.

The Committee discussed the possibility of the community determining their own controls and oversight on mitigation for an operating site. It was noted that a survey may help to suggest ideas and identify opportunities for benefits. If constructed well, surveys may provide useful information and get more responses than a public hearing. When the community identifies sites, it is possible to present recommendations that link host community benefits with site recommendations. It was noted that there could also be financial benefits for the community (i.e., make recommendations that a surcharge on dump fees could go to the community).

The Committee agreed that when the committee identifies potential site recommendations, these need to strongly include the recommendation that no proposed site shall be permitted until a community benefit package specific to the selected community is agreed to.

Some in the Committee believe that the landfill is a short-term solution and that other issues contribute to the problem (e.g., population increase). It was suggested that a short-term landfill site be selected and that alternative technology be explored.

The Committee discussed the issue of privatization briefly. Wilma Namumnart explained that the landfill property is owned by the City while the landfill operator is contracted by the City. The City currently manages the scale house and sets the tip fees. If it was a private landfill, tip fees would need to be set up. She also explained that research was conducted to determine if it is more economical to operate the landfill with city employees or to privatize the landfill. It was noted that host community benefit articles provided by the consultant illustrate private landfill operations.

One of the Committee members asked for information on the City's RFP on plasma technology.

Capacity

Dee Dee noted that after reviewing the group memories, there was ambiguity regarding the minimum number of years for sites to be considered. The number of years ranged from 10 years to 25 years. A question was raised as to what will be used as the basis -- today's estimated capacity or revised numbers based on successful alternatives as they are implemented. It was explained that any successful alternative would lengthen the site life by the same amount at any site and that the current capacity numbers would be used. Another question was raised as to when the Committee decides on a new landfill, whether there would be two sets of equipment. It was explained that the equipment at the current landfill that belongs to the city is minimal – weigh station etc. The new landfill would have to have its own infrastructure as most of what is at the old one will still be in use and is not moveable.

Fiscal Year 2002-2003 tonnage is used to determine capacity. Household and commercial wastes to H-POWER. It is assumed that 600,000 cubic yards per year, including cover, should be used to calculate the life of the landfill. This also includes MSW and ash. The current tonnage per year is 490,000 tons per year to 550,000 cubic yards. It was noted that the basis for calculation is very conservative and could be less depending on recycling efforts. This figure would be applied to all sites.

It was suggested that one approach would be favor a lower capacity landfill in order to apply pressure on the City to find alternative technologies. It was explained that the City's philosophy has always been to save landfill capacity (e.g., plasma technology RFP's recently put out to bid and are currently being evaluated, H-POWER).

Another question was raised regarding what makes up the 600,000 cubic yards? It was suggested that there needs to be an explanation from legitimate scientists regarding this issue. Consultant Mark White noted that the composition can be identified (e.g., metal, glass, asphalt, roofing materials, etc.) but indicated that it is a conservative estimate, and until the design is completed, precise capacity would be difficult to ascertain. He also explained that alternative technologies are often costly (e.g., plasma arch technology costs $4 per pound).

The Committee agreed that 10 years minimum size should be used to maximize the number of sites to be looked at.

It was also clarified that the costs to develop a land fill as far as equipment are generally minimal compared to the cost of land acquisition.

Next Steps

Wilma Namumnart explained the following:

(1) The consultant will be finishing the evaluation criteria and will bring the criteria to the next meeting.

(2) A draft generic press release will be e-mailed to Committee members for their review and discussion at the next meeting.

(3) The website will be made current with minutes and updated criteria

Next Meeting

The next October meetings of the Mayor's Advisory Committee on Landfill Siting are scheduled 10/10/03 and 10/24/03 from 10:00 am to 11:30 am in the Mayor's Conference Room.

1Mayor's Advisory Committee on Landfill Siting
Friday, October 3, 2003
10:00AM to 11:45AM
Mayor's Conference Room

Attendance

Present:	Bruce Anderson Todd Apo Kathy Bryant-Hunter Michael Chun Eric Guinther Ted Jung Shad Kane Cynthia Rezentes Gary Slovin Cynthia Thielen Robert Tong George Yamamoto
	Wilma Namumnart (Refuse Division, Dept. of Environmental Services) Brian Takeda (RM Towill) Mark White (Pacific Waste Consulting Group)
	Nancy Azeri (Representative for Council member Barbara Marshall) Roc Riggs (Representative for Council member Michael Gabbard) Dee Dee Letts (Facilitator) Karen Takahashi (Recorder)
Absent:	Steve Holmes,_Bill Paty, Gary Tomita_

The consultant presented the scoring on the various sites on the agreed to criteria. The site locations and names were not noted at this time to maintain the anonymity during weighting and ranking. The previous weighting of criteria that the committee had done and not shared with the consultant was unveiled. One of the criteria that the committee had combined as they weighted the criteria did not get translated to the consultant and therefore no scoring was available on Access Road. The consultant will compute this and bring it to the next meeting. The access road criterion was to cover such issues as condition of the road and ownership.

The committee again confirmed that high numbers in the consultants scoring denoted the most favorable or preferred sites and low numbers indicated the least desirable sites. The weighting that the committee had done ranged from a score of 0 to 10, with 6 items receiving 0, 5 items 1, 5 items2, 1 item 3, 1 item 4, no items 5, 6 items 6, 2 items 7, 1 item 8, 1 item 9, and 2 items 10. The committee grouped them into high, medium and low with low being assigned 1 points, medium 2 points and high 3 point. Criteria receiving 0 to 3 votes were considered low, those receiving 4 to 6 votes were considered medium and those receiving 7 to 10 votes were considered high.

After reviewing the results there were several discussions which the results prompted. One was that costs were underweighted in the calculation and that the group needed to take another look at the cost issues and decide how and if to weight them differently than the original weighting. The point was made that the costs to the tax payers was a key issue and that the group would be remiss in not addressing this issue in the weighting scheme. As the weighting currently stood all cost criteria were ranked low in the weighting scheme.

The other discussion was a revisit of the discussion had at the last meeting regarding the minimum number of years for a site to be considered. Several members felt that the ten year minimum set by the group was too short and that 15 or 20 years should be the minimum. Some members of the group wanted to vote on changing the minimum. After allowing everyone a chance to express their opinions the group decided to wait until the next meeting and asked the consultant to be prepared to present one final product that included 10 and more year sites and a second one that included 15 and more year sites.

There was also discussion about the LUC special use permit which stated that the Blue Ribbon Committee should pick one site. Wilma explained that the City was in the process of requesting an amendment to the permit as the City has consistently asked this committee to recommend 3 – 5 sites for study in the EIS process which would determine the preferred site. There was disagreement around the table that the EIS would do this as the committee felt that most EIS documents they were familiar with included a preferred site at the beginning of the process. The committee will select 3 to 5 sites and if the amendment to the LUC is not successful then the committee will be reconvened to choose the preferred site.

It was agreed that the consultant will send out the methodology used in scoring the sites by October 15, 2003. The committee members would submit any questions they had by October 22, 2003 in order to give the consultant time to look at the concern prior to discussion at the next meeting. Committee members also would express via email their preference for a 10 or 15 year minimum for the site. Those speaking in favor of the larger site discussed length of time and difficultly in permitting and that no matter how well the City implemented alternatives a landfill site was still going to be needed. Those in favor of the 10 year minimum noted their desires to force the City to move more quickly to alternatives and also to allow for banking of future sites as the City has not done this in the past and therefore has lost several viable sites to development.

A draft press release was distributed for comment and input at the next meeting. It was noted that it would be up to the committee if a press release goes out and what it says. The concern noted was that if the committee does not do a press release then the work of the committee will be subject to interpretation by whoever wants to talk to the press.

The next meeting is October 24th 10AM to 12PM at the Mayor's Conference Room.

Mayor's Advisory Committee on Landfill Siting
Friday, October 24, 2003
10:00AM to 11:45AM
Mayor's Conference Room

Attendance

Present:

Bruce Anderson
Todd Apo
Kathy Bryant-Hunter
Eric Guinther
Steve Holmes
Shad Kane
Cynthia Rezentes
Gary Slovin
Gary Tomita
Cynthia Thielen
Robert Tong
George Yamamoto

Wilma Namumnart (Refuse Division, Dept. of Environmental Services)
Brian Takeda (RM Towill)
Mark White (Pacific Waste Consulting Group)

Ikaika Anderson (Representative for Council member Barbara Marshall)
Roc Riggs (Representative for Council member Michael Gabbard)
Dee Dee Letts (Facilitator)

Absent: Bill Paty, Ted Jung, Michael Chun

The meeting began at 10. Several members arrived between 10:15 and 10:30. The first item for discussion was the methodology document distributed via e-mail to the group. The consultant asked if there were any questions to the methodology as none had been received via e-mail. The group had no questions on the methodology.

A letter was shared from DLNR, the landowner of the Waimanalo North site, stating that they would not entertain its use as a landfill site. The group agreed that for the integrity of the work done the Waimanalo North site would stay on the list and the report that went forward would state that DLNR would not consider it for this use and that the letter would be attached to whatever was forwarded by the committee.

Next on the agenda was a revisiting of the minimum capacity questions for the landfill. Group members had been asked to register their preference via e-mail for a minimum of 10 or 15 years. Eleven members chose to register their preferences regarding this issue.

Two voted for 15 years or longer and nine expressed a preference for 10 years or stated that they did not think the smaller sites should be removed at this time. A total of eight sites remained after removing those that did not provide at least 10 years of life.

The consultant passed out the ranking of the various sites with the weighting and scoring filled in for discussion purposes. The consultant noted that they had summarized the site scores grouped by categories of criteria (community, environmental and land use, economic, technical and other considerations). No matter whether the criteria categories were considered individually or as a group, the order of the top sites did not change significantly – the top 4 to 5 remained the top 4 to 5. A table was passed out showing this. Some members of the group after receiving the information felt that there had been an agreement to talk about the cost-based criteria and discuss re-prioritizing the cost criteria prior to knowing the site names. The discussion on the cost criteria was held after the sites were identified. Dee Dee apologized for any confusion on this. The discussion on weighting and costs was extensive. Some felt that costs should be given a higher weighting value as they felt the committee would look less then credible if they did not rank costs as important. They noted that costs are a major concern of taxpayers in general and to not reflect that made them feel uncomfortable with the work of the group. Others felt that the committee composition had been set up to ascertain what the most important factors were to the communities that might host a landfill and therefore felt the weighting that was done was appropriate. After much discussion it was decided that the integrity of what the group felt was a good process would be jeopardized if the group chose to start tinkering with any of the criteria or weighting factors. Group members noted that this product was only one thing the committee would be looking at it in making its final recommendations and that the ranking of the sites through this process did not necessarily mean that this ranking would be the preferred order.

The group then proceeded to look at the various sites. The consultants noted that they had brought all the background information for the committee members to take with them and rather than try to absorb it today. They wanted to pass it out at the end of the meeting and have a discussion around it on November 7th after committee members had had a chance to look at it.

There were several general concerns noted by the group:

- No criteria addresses the impact on the construction industry on the removal of Ameron as a quarry site – it was noted that these costs could be significant.
- The archaeological criteria, No. 17, does not take into account undocumented burials that are completely missed by the current research effort. The consultant concurred this would be case until the 3-5 sites are decided upon by the committee at which time a detailed study would be done as part of the EIS effort.
- There was also a question as to why Ameron and Bellows received different scores as regards Haul distance from H-Power as they are both on the windward side. The consultant noted that Ameron was off a major highway and that the distance to Bellows was significantly farther as regards haul.
- There was a question about the assumption that Ohikilolo and Nanakuli B would have low purchase costs. There is a belief that Ohikilolo would result in a lawsuit

and past history indicates this is a possibility. The consultant noted that it is difficult to assign numbers or weights to things that might or might not happen.

- It was also noted that using the tax base as a way to set value is not valid or accurate as the tax base is always low. The consultant noted that the tax base would be equally low for each site so relatively speaking the spread would be the same.
- It was noted that the only site that would not require condemnation is Waimanalo Gulch as the City already owns it.
- It was also noted that as discussions continue criteria 18,19 and 20 need to be grouped and dealt with appropriately as the cost criteria (some of this went back to whether or not to re-weight these criteria or separate them out – which the group decided not to do)
- The committee noted a lack of clarity on the part of the City as to whether Waimanalo Gulch is on the table. Members noted the LUC hearing where the 5 year extension approval was predicated on the City closing the Gulch site. Even though the City has talked about filing a request to amend this decision those present at the hearing felt that based on the testimony this is not an option. They also site statements from both the Mayor and Frank Doyle to the effect that the Gulch would be closed. Others noted that it would be irresponsible to throw it out as there is significant capacity remaining, is owned by the City, and is already a landfill.
- There is still concern about recommending 3 to 5 sites as the LUC order asks the committee for one and it has not been amended.
- Members of the group pointed out that there are always going to be costs that can't be quantified at this point. An example was archeological sites: we can only compute costs for what we know now and when a survey is done we might find others that either raise costs or make the site not feasible.

The group discussed what its final report would look like. Some members wanted to just send the matrix of how all the sites scored. Others felt that this was not acceptable because as they had previously stated they felt the matrix was only one thing the committee would look at. Others felt that the group should just send their recommendations and no explanation of the process the committee went through to arrive at their recommendations. The group for the time being agreed to have the consultant prepare a report for their input that would have the following contents:

- Introduction
    - Background and purpose
    - Workplan (Approach rationale, criteria etc.)
- Results
    - Criteria evaluation, matrix etc.
- Discussions and issues raised
- Recommendations

Meeting adjourned at 12. The next meeting is November 7, 9:30 to 12 at the Mayor's Conference Room.

Mayor's Advisory Committee on Landfill Siting
Friday, November 7, 2003
9:30AM to 12:30PM
Mayor's Conference Room

Attendance

Present:

Todd Apo
Kathy Bryant-Hunter
Eric Guinther
Steve Holmes
Ted Jung
Shad Kane
Cynthia Rezentes
Gary Slovin
Gary Tomita
Cynthia Thielen
Robert Tong
George Yamamoto

Wilma Namumnart (Refuse Division, Dept. of Environmental Services)
Brian Takeda (RM Towill)
Mark White (Pacific Waste Consulting Group)

Roc Riggs (Representative for Council member Michael Gabbard)
Ikaika Anderson (Representative for Council member Barbara Marshall)
Dee Dee Letts (Facilitator)
Karen Takahashi (Recorder)

Absent: Bruce Anderson, Michael Chun, Bill Paty

Agenda Overview

Facilitator Dee Dee Letts explained that the purpose of the meeting is to surface the top sites. She explained that Advisory Committee members were emailed instructions to review the eight sites and identify pros/cons/questions for each site.

Pros/Cons/Questions – Eight Sites

Ameron

Pros:

- Pretty good access

- Has existing ground cover
- Proximity to former landfill
- Hole in ground; needs to be filled
- Potentially compatible

Cons:
- Site not viable given its importance as rock quarry, cost of acquisition, and relatively limited capacity (Bruce Anderson)
- Lost revenue to Ameron
- Increased operational costs
- 59 years lost lease revenue to landowner
- Cost of equipment
- Value of lost reserves
- Phase 1 – active for next 10-20 years
- Economic impact
- Loss of income and excise taxes paid to State and County, plus income taxes paid to Federal government
- Environmental consequences – existing permits and stormwater retention
- Impacts construction industry/other businesses/government projects including roads and government buildings
- Difficult to resite quarry
- Distance from population centers / H-POWER
- Proximity to Kawainui Marsh; federal protection issues
- Highest level of precipitation of any sites on the list
- Access road substandard; private owners
- Visibility from Kailua town

Questions:
- 15 years filling up phase 1
- Can a landfill and quarry coexist?
- Can you place safely in a rock cup with that much rainfall close to an environmental sensitive site (Kawainui Marsh)?
- Capacity seems low with potential site providers

Bellows

Pros:
- Federal land
- High unemployment area
- Two access routes to landfill
- Not super environmentally sensitive area – no wetlands

Cons:
- Federal land – cannot be condemned
- Bellows an environmentally protected area

- Relatively small capacity – 12 ½ years
- Two access routes poor – two lane road
- Coastal area; probably was wetland

Maili

Pros:

- Approximately 20 years
- Onsite fill
- Onsite brackish well for dust control
- Consistent zoning
- Utilities onsite
- Below UIC pass/no pass lines
- Viable site (Bruce Anderson)
- Dry area

Cons:

- Traffic
- Hazardous rockfalls
- Planned highway/drainage projects
- Traffic accidents cause major delays; one road
- Significant pedestrian cross traffic
- Access road privately owned – Lonestar- use by farmers only
- Upwind Maili Elementary School and major subdivision
- Schools and medical facilities along the route
- Only coral quarry on island
- Loss of taxes – income and excise

Questions:

- What is the status of the Department of Health's review of quarry operation for taking coal ash?
- 0-5 feet above water - would need fill prior to liner – added cost / diminished volume.
- How is capacity calculated?

Makaiwa Gulch

Pros:

- Next best site (#2) (Bruce Anderson)
- Access
- Large capacity – 25 years
- Zoning consistent
- Property currently not being used
- Below UIC line
- Shortest distance from H-POWER and center of population growth (short haul distance)

- Extensive archeological/flora/fauna surveys completed
- Dry area

Cons:

- Cost (i.e. Campbell Estate's objections)
- Upwind from heavily populated residential and resort area
- No onsite utilities and access road
- Close to transition between H-1 and Farrington Highway
- Planned for residential, upscale residential development
- View plains readily seen
- Major economic impact that would close down residential development at resort and resort development according to developers looking at the area
- Close to center of population growth
- Archeological information (i.e., Hawaiian cultural sites)

<u>Nanakuli B</u>

Pros:

- Already zoned
- Dry area
- Viable site (top 3 sites – Bruce Anderson)
- Proximity to existing landfill
- Utilities readily accessible
- Currently not being used
- Site acquisition costs relatively low
- Brackish wells for dust control
- Below UIC line
- 22.3 year life span

Cons:

- Very similar to Maili – Traffic
- Bad access
- Hazardous rockfalls (#11 of 117 potential rockfall sites studied)
- Planned highway projects i.e. construction
- Traffic accidents cause major delays – one road
- Pedestrian cross traffic
- Status of NAV-MAG road
- Upwind of residences behind Pacific Mall, Pacific Mall – potential odors would wipe out businesses
- Dust problems
- Passes schools, medical facilities to get there

Questions:

- Need to clarify the impact of the Waianae Coast Emergency route

Ohikilolo

Pros:

- Precipitation – dry area
- Far removed from most residences
- Large acreage – 660 acres
- Access road already onsite
- Utilities onsite
- AG-2 zoning appropriate
- Below UIC line
- Landfill traffic slow
- Acquisition cost low

Cons:

- Most remote
- Access will be bad; numerous churches, schools, medical facilities along the route
- Hazardous rockfalls
- Numerous known archeological sites
- Traffic/informal raceway (majority at night)
- Pedestrian cross traffic
- Construction and planned future highway improvements
- 13 year lifespan – smaller capacity site
- Operation cost high

Questions:

- Unreported cultural sites in central portion said to include heiau
- Question on water table/ fishponds
- If condemned, potential lawsuit relating to ownership; Hawaiian ancestry issues

Waimanalo Gulch

Pros:

- Should be on final list because least costly site to acquire and operate; with proper management, lifespan of 20+ years (Bruce Anderson)
- Proximity to existing landfill; H-POWER
- All factors of site known
- Road access reasonably good
- Close to population centers
- Precipitation – dry area

Cons:

- Land Use Commission, Planning Commission and current Administration are on record as not supporting continued use of the site
- Upwind and visible of major resort area
- Control of operations/management improved, but need further improvement (escaping waste)
- Based on past experience and slope, hard to hide
- Economic impact (see Makaiwa Gulch)
- Truck visibility – lineups onsite and along Farrington Highway
- Traffic
- Road access problem
- Projected increase in traffic

Questions:

- Is technology available to make it invisible?

Waimanalo North

Pros:

- Life capacity higher than other sites
- Moderate precipitation

Cons:

- State says No
- City cannot condemn State land
- Traffic problems
- Long haul distance

Final Recommendations:

The Committee eliminated by consensus the following three sites: Bellows, Ohikilolo, and Waimanalo North. The following five sites emerged because there was no consensus to take any other sites off of the list. The five sites include: Ameron, Maili, Makaiwa, Nanakuli B, and Waimanalo Gulch.

It was agreed that a document review subcommittee would be created to work with the consultants to develop the final report. The following Advisory Committee members volunteered to serve on the subcommittee: Todd Apo, Kathy Bryant-Hunter, Eric Guinther, Cynthia Rezentes. Subcommittee members will review the report outline and work with the consultants on the final report.

Advisory Committee members agreed that it would not issue a press release explaining their recommendations.

It was also recommended that the report include some discussion about community benefits, landbanking multiple sites, and the reason why Waimanalo Gulch was not eliminated as a potential landfill site. The question of requesting that the Board of Water supply review the UIC/no pass line was raised. There was significant support for making this recommendation although consensus was not reached.

The consultants will be drafting the report and distribute copies to Advisory Committee members by November 18th. Advisory Committee members were asked to submit their comments to the consultants if they were unable to attend the final meeting scheduled to November 21st from 10:00 a.m. to 12:00 p.m. at the third floor conference room at Kapolei Hale.

November 7, 2003

Notes Submitted by
Cynthia Rezentes, Advisory Committee Member

MA`ILI

PROS

- Approximately 20 acre site ready for filling and another significant area already being quarried.
- Onsite cover material
- Onsite permitted brackish water well for dust control
- Within an area already zoned for landfill use (Agriculture-2)
- Utilities already onsite
- Below the artificial UIC and Pass-No Pass lines

CONS

- "Rockfall Protection Study At Various Locations on the Island of Oahu" (Final Report) dated November 2002 prepared by Earth Tech, Inc. for State of Hawai`i Department of Transportation refers to a traffic volume of 24786 AVT (Average Daily Traffic) at the entrance to Nanakuli (Black Rock)
- Traffic volume as reported for the Waimanalo Gulch Sanitary Landfill Expansion FSEIS dated December 2002 page 4.2 (prepared by R.M. Towill for the C&C of Honolulu Department of Environmental Services) reports per long-range projections from the Oahu Regional Transportation Plan done by OMPO in 1995, the "morning peak traffic along Farrington Highway at Kahe Point will increase from the current 2,000 vehicles per hour to 2,880, or from 36,000 to 70,000 vehicles per day (about 45%)."
- From the rockfall study, Black Rock is the number 11 priority out of 117 sites ranked or within the top 10% of sites ranked.
- Farrington Highway is currently scheduled for significant construction. Current plans call for construction to begin 1Q04 for safety upgrades including, converting sidewalks in Nanakuli to meet ADA standards, placing "zip-type" barriers along Ma`ili Point (temporary barrier with further permanent design/construction projected), drainage upgrades in Nanakuli at two separate locations.
- Any incident causes huge backups of traffic along Farrington Highway. Example 1: October 23, 2003-construction at Sack n Save driveway in Nanakuli into one lane of Farrington Highway was not managed well from a traffic perspective. The final result was a traffic backlog at 4:15-4:30 p.m. to the Campbell Industrial Park Interchange. Example 2: November 3, 2003-An accident at 5:30 a.m. involving an oil spill resulted in a traffic backlog at 8:00 a.m. to Kaukamana Road in Ma`ili, a distance of approximately five (5) miles. November 6, 2003-a traffic accident involving a fuel spill (Wai`anae bound direction) caused lookie-loos to cause a traffic backup to Hakimo Road, a distance of approximately two (2) miles. It is not unusual to have one fairly major traffic tie-up per month on Farrington Highway.
- There is significant pedestrian traffic along Farrington Highway laterally and cross-wise (access to bus stops and the beach).
- Pa`akea Road is a private road owned by Lone Star Hawaii. It is one road that the farmers depend upon for access from one area to another without having to license their farm vehicles. This status should not change but then who would be responsible to upgrade Pa`akea Road to handle the increased truck volume on a road currently not adequate for regular heavy vehicular traffic?
- Upwind of Ma`ili Elementary School which has fought for relief from farm odors, flies, etc. already. Even though the classrooms are air-conditioned what happens during recess, etc.?
- Upwind from numerous residences (old Lualualei Homesteads, "Manu" streets subdivision), Ho`okele subdivision)
- Upwind from Ma`ili Kai subdivision which already recognizes odors from nearby husbandry operations and have disclosures in sales documents per a Unilateral Agreement with the City. The area is currently undergoing a new area expansion with more, probably, planned in the future.
- Passes: 4 churches, 1 pre-school, 1 school and 2 medical facilities if Lualualei Naval Magazine Road is used. If Ma`ili`ili`i Road is used as access then the numbers become: 8 churches, 1 pre-school, 2 schools, and 3 medical facilities.

MISSING INFORMATION

- State DOH reviewing whether to require a formal permit to allow the continued placement of AES coal ash onsite. (AES coal ash has a high level of arsenic and may need to be placed in a lined area.)
- State DOH also believes that the depth which can be used any landfill is approximately 8-10 feet above the water table. This level could mean the landfill could only be approximately 30 feet below surrounding grade.

Cynthia K.L. Rezentes 11/07/03

NANAKULI B

PROS

- Within an area already zoned for landfill use (Agriculture-2)
- Utilities readily accessible
- Property currently not being used
- Near brackish water sources (wells drilled further inland reveal brackish water readily available within the area)
- Below the artificial UIC and Pass-No Pass lines

CONS

- "Rockfall Protection Study At Various Locations on the Island of Oahu" (Final Report) dated November 2002 prepared by Earth Tech, Inc. for State of Hawai`i Department of Transportation refers to a traffic volume of 24786 AVT (Average Daily Traffic) at the entrance to Nanakuli (Black Rock)
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- From the rockfall study, Black Rock is the number 11 priority out of 117 sites ranked or within the top 10% of sites ranked.
- Farrington Highway is currently scheduled for significant construction. Current plans call for construction to begin 1Q04 for safety upgrades including, converting sidewalks in Nanakuli to meet ADA standards, placing "zip-type" barriers along Ma`ili Point (temporary barrier with further permanent design/construction projected), drainage upgrades in Nanakuli at two separate locations.
- Any incident causes huge backups of traffic along Farrington Highway. Example 1: October 23, 2003-construction at Sack n Save driveway in Nanakuli into one lane of Farrington Highway was not managed well from a traffic perspective. The final result was a traffic backlog at 4:15-4:30 p.m. to the Campbell Industrial Park Interchange. Example 2: November 3, 2003-An accident at 5:30 a.m. involving an oil spill resulted in a traffic backlog at 8:00 a.m. to Kaukamana Road in Ma`ili, a distance of approximately five (5) miles. November 6, 2003-a traffic accident involving a fuel spill (Wai`anae bound direction) caused lookie-loos to cause a traffic backup to Hakimo Road, a distance of approximately two (2) miles. It is not unusual to have one fairly major traffic tie-up per month on Farrington Highway.
- There is significant pedestrian traffic along Farrington Highway laterally and cross-wise (access to bus stops and the beach) including children who walk to school.
- Upwind of nearby residences behind Pacific Mall (abutting the property being proposed). There is already a significant dust problem with houses downwind of the current PVT landfill (Wai`anae side of LLL NavMag Road).
- Upwind of Sack n Save, KFC, McDonald's, Chinese restaurant, Korean restaurant, Nanakuli Giant (grocery store), Nanaikeola Clinic (Kaiser), WCCHC Clinic, Tongan/Samoan foodstore, 2Go minimart, Baskins-Robbins.
- Passes: 4 churches, 1 pre-school, 1 school and 2 medical facilities.

MISSING INFORMATION

- Property makai of this parcel or on the makai portion of this parcel is being proposed for a part of the Wai`anae Coast Emergency Access Route project.

Cynthia K.L. Rezentes 11/07/03

`OHIKILOLO

PROS

- Far removed from most residential areas of Wai`anae (only a few homes located nearby)
- Large acreage
- Access road already onsite
- Some utilities already onsite, electric, water, telephone
- Within an area already zoned for landfill use (Agriculture-2)
- Below the artificial UIC and Pass-No Pass lines

CONS

- Numerous churches, schools, pre-schools and medical facilities along the route.
- "Rockfall Protection Study At Various Locations on the Island of Oahu" (Final Report) dated November 2002 prepared by Earth Tech, Inc. for State of Hawai`i Department of Transportation refers to a traffic volume of 24786 AVT (Average Daily Traffic) at the entrance to Nanakuli (Black Rock)
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- Farrington Highway is currently scheduled for significant construction. Current plans call for construction to begin 1Q04 for safety upgrades including, converting sidewalks in Nanakuli to meet ADA standards, placing "zip-type" barriers along Ma`ili Point (temporary barrier with further permanent design/construction projected), drainage upgrades in Nanakuli at two separate locations.
- Any incident causes huge backups of traffic along Farrington Highway. Example 1: October 23, 2003-construction at Sack n Save driveway in Nanakuli into one lane of Farrington Highway was not managed well from a traffic perspective. The final result was a traffic backlog at 4:15-4:30 p.m. to the Campbell Industrial Park Interchange. Example 2: November 3, 2003-An accident at 5:30 a.m. involving an oil spill resulted in a traffic backlog at 8:00 a.m. to Kaukamana Road in Ma`ili, a distance of approximately five (5) miles. November 6, 2003-a traffic accident involving a fuel spill (Wai`anae bound direction) caused lookie-loos to cause a traffic backup to Hakimo Road, a distance of approximately two (2) miles. It is not unusual to have one fairly major traffic tie-up per month on Farrington Highway.
- There is significant pedestrian traffic along Farrington Highway laterally and cross-wise (access to bus stops and the beach) including children who walk to school.
- This portion of Farrington Highway has been the scene of numerous fatal traffic accidents. Accidents were typically the result of speeding, drinking under the influence, "dangerous" highway conditions, etc.

MISSING INFORMATION

- Unrecorded cultural sites are said to be located in the lower central portion of the valley including a suspected heiau not listed.
- There is a suspicion that a portion of the valley was used as fishponds (prior to Farrington Highway and the railroad being located in its present location). If this is true, then there needs to be a determination as to the water table and the potential porosity of the soils.
- Verification needs to be made regarding all owners of the parcel in question. Alika Silva claims to have been the one to have claimed 2 acres were given to him by his grandmother in a centralized portion of the property and his holding out on selling to Alpha Kai is what doomed the proposed golf course at the initial sale. If Alika still believes he owns 2 acres, there will be a contentious lawsuit.

Cynthia K.L. Rezentes 11/07/03

MAKAIWA

PROS

- Below the artificial UIC and Pass-No Pass lines
- Within an area already zoned for landfill use (Agriculture-2 and Preservation-2)
- Property currently not being used

CONS

- Upwind from heavily populated area (specifically, Honokai Hale and Nanakai Gardens)
- No onsite utilities or access road
- Close to transition of H1 freeway and Farrington Highway (previous vehicular and pedestrian accidents in the vicinity)
- Future plans for the area per the 'Ewa Sustainable Communities Plan (Development Plan) include upper-scale housing as part of total Makakilo-Kapolei development
- View planes to the site would be like Waimanalo Gulch, readily seen from a highly traveled road and residences and part of KoOlina Resort

MISSING INFORMATION

- Unknown

WAIMANALO GULCH

PROS

- Already being used for a landfill
- "All" factors known regarding the site
- Capacity available greater than that permitted

CONS

- Upwind of a major resort area (KoOlina)
- Better control but still not 100% control on operations, visual and odor
- Economic impacts to a major resort (KoOlina)
- Not be a site to be considered per statements made by Mayor Harris, Frank Doyle, Order 12 by the Land Use Commission and Decision and Order 10 from the Planning Commission

MISSING INFORMATION

- Verification that this is no longer a site to be considered based on statements made during the request for permit modification for expansion to May 2008

Cynthia K.L. Rezentes 11/07/03

November 7, 2003

Notes Submitted by
Linda Goldstein, Ameron

AMERON QUARRY SITE

Kapaa Quarry is slated to be a quarry through 2052. Phase I (the current active pit) is an essential part of that operation, and will be for at least the next 10 to 20 years. Beyond this major, important, and existing use, the following is provided:

1. Economic Impact

   - Cost to acquire: City & County appraised property value of $768,200, **plus** some or all of the equipment appraised at $2,416,000, **plus** value of lost rock reserves and related items such as lost lease revenue to landowner, Castle Trust
   - Loss of taxes paid to State and County: Portion of $785,000 annual General Excise and Use Tax (based upon 2003 projections), **plus** portion of income taxes paid to State and Federal governments
   - Financial impact to Ameron Hawaii: Lost revenue on 5 million tons of rock reserves in Phase I, increased operations costs and reduced production for Phase II, increased cost to dispose of water and Phase II dirt (700,000 cubic yards annually)

2. Environmental Consequences

   - Reduction of Ameron Hawaii's positive stewardship of Kawainui Marsh: A zero-discharge NPDES permit results in Ameron Hawaii containing all stormwater that falls on the quarry and the need to contain 6.3 million cubic yards (1.3 billion gallons) of water in the Phase I pit
   - Ameron Hawaii's active and financial participation in environmental and educational projects in Hawaii would be severely reduced: Resources would need to be redirected to bolster impacted operations because continued use of the Phase I pit beyond extraction of the rock reserves is essential for effective operations in Phase II

3. Effect on Construction Industry

   - Ameron Hawaii is one of two major suppliers of ready-mix concrete and one of two Grade A rock quarries on Oahu: Without Phase I as part of the viable operation of Kapaa Quarry, scheduled projects, such as massive military housing (7700 units) and municipal and State road construction projects, will take significantly longer to complete and cost much more than originally planned
   - Loss of production from Grace Pacific's asphalt plant at Phase I will result in a reduction of asphalt production for Oahu, and similarly result in more expensive and delayed projects
   - Three small trucking companies are also now located at Phase I and could need new locations, difficult to find on the Windward side of Oahu
   - With a decrease in rock products available on Oahu, and the resulting negative impacts on project timing and costs, other members of the construction industry will be forced to adjust accordingly

Group Memory
Mayor's Advisory Committee on Landfill
Friday November 21, 2003
Kapolei Conference Room

Attendance

Present:	Bruce Anderson Todd Apo Kathy Bryant-Hunter Eric Guinther Steve Holmes Shad Kane Cynthia Rezentes Gary Slovin Cynthia Thielen Gary Tomita George Yamamoto
	Wilma Namumnart (Refuse Division, Dept. of Environmental Services) Brian Takeda (RM Towill) Mark White (Pacific Waste Consulting Group) Dee Dee Letts (Facilitator)
Absent:	Michael Chun, Bill Paty, Ted Jung, Robert Tong

The Committee began by going over the proposed final report of the Committee. The sections regarding recommendations were put on hold pending discussion about another meeting to further try to reduce the five recommended sites. Several edits and changes to the report were made that the consultant will incorporate. The report without the recommendation sections was approved as long as the edits are made.

The Committee next took up the issues of whether to add to the agenda a discussion on reducing the number of proposed sites from 5 to 1. It was noted that under Sunshine such a move would take a vote by 2/3 of the members that the Committee was entitled to. Since the Committee has 15 members that met 10 votes were needed. The motion to place the issue on the agenda failed.

The Committee next discussed whether or not to schedule another meeting and if such a meeting were scheduled what the agenda for the meeting would be. An informal poll of the entire Committee had been taken via email as a member of the report drafting subcommittee stated their intent to push for a vote for one site in the last five minutes of the final drafting meeting. A deadline of close of business November 20 was set for registering your view. At the deadline there were 6 in favor of a meeting, one abstention and 7 opposed. On the morning of this meeting Wilma received an email from one member to change his vote from opposed to favor. There was much discussion around this issue. The key points are bulleted below:

- A question was asked of those proposing to reduce the sites what process they intended for the Committee to use to do this, as consensus had not worked to reduce the list of 5. Those in favor of reducing the sites stated that the only way they could see to do it was to vote.
- Some members felt that voting at this stage would only polarize the membership and that after working for five months by consensus this was unnecessary as what was currently on the table for a recommendation met the charge given to the Committee by the City.
- Several members felt that voting would be inappropriate due to the unfair makeup of the Committee for voting i.e. more leeward than windward residents, and special interests advocating against some sites with other special interests not being at the table.
- Two members claimed that the LUC at its Maui meeting today had reconfirmed its prior order. The Committee and City will wait to be notified in writing and wait for the City to clarify whether the order changes the mandate to the Committee. Members pointed out that this was a City Committee and that the LUC had no jurisdiction over what the Committee does.
- Some Committee members felt that efforts by a Committee member to move things in a particular way outside the Committee deliberations were disrespectful to the Committee and the process. This included the circulation of petitions to some not all Committee members with no discussion at the table. One petition requested the removal of Waimanalo Gulch from consideration and the other chose the site of Nanakuli B. Several members of the Committee felt that this was unfair and that decisions of the Committee had to be made at the table through discussion and not behind the backs of Committee members. They also felt that this action violated Sunshine.
- Some Committee members felt that with the lack of information available about the various sites to push forward to vote one site would discredit all the work the Committee had done thus far.
- There was a question of whether the member pushing to pick one site really wanted to pick one site or just get Waimanalo Gulch off the list. The member maintained that he felt the Committee needed to come up with one site despite the City's charge to the contrary.

The Committee voted 6 to 5 to hold another meeting to discuss further reductions of the five sites. The meeting will be December 1 from 9 to 10:30 at the Kapolei Third Floor Conference Room. The agenda will be to finalize the site recommendations and the recommendations section of the report should changes to the final recommendations be needed based on the first item on the agenda.

A motion was made that should this meeting not take place or that no agreement be reached, then the current draft report would go forward with no recommendations. The report would have a statement of where the Committee ended up and that it could go no further. The motion carried 6 to 5. (One vote was gotten via email as one member had had to leave as the meeting was running over time.)

The meeting adjourned at 12:15.

Group Memory
Mayor's Advisory Committee on Landfill
Monday December 1, 2003
9AM to 10:30 AM
Kapolei Conference Room

Attendance

Present:	Bruce Anderson Todd Apo Kathy Bryant-Hunter Michael Chun (arrived 10:10) Eric Guinther Ted Jung Shad Kane Cynthia Rezentes Gary Slovin Cynthia Thielen Gary Tomita Robert Tong George Yamamoto
	Wilma Namumnart (Refuse Division, Dept. of Environmental Services) Brian Takeda (RM Towill) Mark White (Pacific Waste Consulting Group) via phone Dee Dee Letts (Facilitator)
Absent:	Steve Holmes, Bill Paty

This meeting was an extra meeting scheduled by the Committee to 1) see if there was any correspondence from the LUC that the committee could not recommend multiple sites and that Waimanalo Gulch could not be considered, 2) to see if the list of 5 sites arrived at by consensus could be further narrowed and 3) to make changes to the recommendations section of the plan should the sites be narrowed.

Wilma reported that no correspondence had been received by the City from the LUC and that she had verbally contacted Tony Ching who had reiterated his earlier statements that the LUC had no jurisdiction over the Committee and therefore it can consider any sites it feels are appropriate and, that the Committee will have met its charge if it recommends several sites. If Waimanalo Gulch was recommended and selected, the State Land Use Commission's Decision and Order must be amended before May 1, 2008. The Committee also received several pieces of correspondence one from Jeff Stone at Ko Olina and the other from Frank Doyle Director of Environmental Services for the County stating that the City Administration would not consider Waimanalo Gulch and that the Committee was free to recommend whatever it decided as the City Council would select the site.

Cynthia Thielen handed out a letter she had sent to the Honorable Mark Bennet (AG), Leslie Kondo (Director OIP) and Peter Carlisle (Prosecuting Attorney) regarding what she viewed as illegal activities under Sunshine taken by Todd Apo. She stated that she feels that the petitions that were circulated to selected Committee members for signature in support of removal of Waimanalo Gulch from the list of recommended sites and the choosing of Nanakuli B as the final site violated the open decision making intent of the Sunshine Law.

Discussion was then open regarding further reductions to the list of five proposed sites. Bruce Anderson made the following points in a written statement:

- That this Committee was not constituted to represent the interests of all the residents of the island of Oahu. Indeed, it was heavily weighted with members representing Leeward Oahu communities. Thus, it is inappropriate for the Committee to pretend that they represent these interests by voting to eliminate any site that, based on criteria developed by the Committee, should be included just as it would be inappropriate to add sites based on a vote. The City Council, the duly elected legislative body representing the interest of all residents of Oahu, should make a final decision based on the best information that is available on all the alternatives.

- The Committee went as far as it could in reducing the list from eight sites to five sites with the limited information that was available to the Committee on each site. Unsolicited comments and information was received from developers and individuals who owned land adjacent to only three of the five sites. Further information is required on environmental, social and economic impacts associated with establishing a landfill at all five sites before a decision should be made to drop any of the sites from consideration. When the Land Use Commission made their decision only to extend the permit at Waimanalo Gulch landfill until 2008, they did not consider alternatives or the impacts at alternative sites. They need this information to make a good decision. Likewise, the City Council should be provided the best available information on all the alternatives to make a decision that best serves residents of the island of Oahu. Indeed, they deserve this information.

- Waimanalo Gulch got the highest score in the Committee's double blind process

- It is an irresponsible land use decision to walk away from an operating landfill with 20 years of life left

- That although the City Administration had made a commitment to the Community this does not bind the City Council and that the LUC has a process for revisiting its decision should Waimanalo Gulch become the preferred site.

Other Committee members expressed that the Administration had made a commitment to the Leeward Community to close Waimanalo Gulch and they should honor this commitment. The LUC order says that Waimanalo Gulch will be closed in 2008 and the City agreed. These members felt that this was not a decision that was made lightly but that the City had the benefit of two years of study and was aware of the severe impact expansion of the site would have on Ko Olina.

A Committee member asked Wilma if the Committee would fulfill its obligation if it forwarded multiple sites. Wilma stated that she had checked with Corporation Counsel and that they had said multiple sites would fulfill the mandate.

A Committee member voiced that we should proceed by consensus as the Committee has operated this way for five months and that we have done our best to reduce the number of sites to a reasonable list. They noted that the Committee has several opinions that forwarding multiple sites fulfills their mandate and that there is nothing to the contrary from the LUC. Nor is there anything from the LUC prohibiting Waimanalo Gulch from being on the list.

It was noted by some members that they felt that the letter received from Ko Olina, Jeff Stone was written in a way to threaten legal action against them individually and therefore further fair and open deliberations were not possible, and that the continuing Committee process under these circumstances could not be perceived as fair.

A motion was put on the floor by Todd Apo to change the Committee process from consensus to voting – it was seconded by Shad Kane – For: Gary S., Gary T., George Y., Mike C., Cynthia R., Todd A., Robert T., Ted J., Shad K., – opposed Kathy, Bruce, Eric G., and Cynthia T.

During the discussion on the motion several members stated that they felt strongly about forwarding a consensus report and that if the process were changed to voting due to the unbalanced nature of the Committee as previously noted they would not put their names on the final recommendations. Some also felt that due to threatening nature of Jeff Stone's letter they could not participate in a process that included voting. Mike Chun arrived during this discussion.

When the motion passed Bruce Anderson, Cathy Bryant-Hunter, Eric Guinther and Representative Cynthia Thielen resigned from the Committee and left the meeting. They noted that they did not want their names associated with any section of the final report that changed due to a vote by the remaining Committee members.

Todd Apo moved and Shad Kane seconded to remove Waimanalo Gulch from the recommended sites. For: Todd, Mike, George, Gary S., Gary T., Robert, Shad, Cynthia R., and Ted. All other Committee members had resigned so there were no opposing votes.

The recommendations section of the report will be amended to reflect sending 4 sites forward and the resignations of the Committee members concerning this action will be included.

Meeting adjourned at 10:40.

December 1, 2003

Notes Submitted by
Dr. Bruce Anderson, Advisory Committee Member

Comments by Bruce Anderson Concerning the Site Selection Process
Read to the Committee on December 1, 2003

Our Committee has come very close to succeeding–beyond my expectations--in making a sound, objective recommendation to the City on where the next municipal landfill should be on the Island of Oahu. I was pleased that Frank Doyle was not closed-minded and said at our first meeting that the City would accept whatever the recommendation the committee developed. It was on this basis that I agreed to continue as a committee member and, until recently, I was very proud top be part of the effort.

I remember looking around the room at our first meeting and wondering how such a group could possibly come up with a recommendation that would consider all the interests of the residents on the island of Oahu. As everyone introduced themselves, it was obvious the committee was appointed with political expediency in mind to include a disproportionate number of representatives of communities most likely be impacted by the decision, those from Leeward and Windward Oahu. A handful of others were appointed because of their experience, expertise or because of a history of dealing with difficult issues. After working for over 20 years at the State Health Department on environmental health issues and problems, including solid waste management, I hoped I could be helpful.

After the first few meetings, I was pleasantly surprised with the process that our Committee agreed to follow. Despite not having a Chair, Dee Dee has done an outstanding job in facilitating a process that has served us well. After coming up with a list of over 40 potential sites, our Committee developed comprehensive criteria to rank sites. Although we did not have anyone with landfill management experience on the committee, we did come up with valid criteria based on input from those the concerned about potential impacts on their communities and comments from others who were generally aware of problems and issues associated with landfills.

Both environmental and social criteria were considered and incorporated into a method of objectively ranking potential landfill sites. Environmental criteria included such factors as the presence or absence of potable groundwater and capacity and social criteria considered factors such as the proximity of nearby residents and schools. We even included some rough estimates of costs as criteria for ranking the sites. It was only then that I become cautiously optimistic that our Committee's recommendations would be objective and based on the best information available. On reflection, there seemed to be some wisdom in selecting members of the Committee from communities who have hosted landfills in the past who know what the impacts may be based on their experience. Based on criteria developed by the committee, the list was rapidly narrowed to eight sites for detailed evaluation by the City's consultant.

The consultant did a fine job in gathering information that was available on the eight sites and applying this to the siting criteria without the committee knowing before hand how the criteria would be applied. Weighting factors were subsequently developed by the Committee and applied to the sites. This assured that biases were not introduced in the process by the consultants or by the Committee to skew the final rankings.

I must admit that I was skeptical that we could weigh the criteria–giving emphasis to factors that were most important--in a manner that was objective given the make-up of the committee. It seemed to me that people were emphasizing criteria that would make the landfill least likely to be in their community. However, I was pleasantly surprised at that even when weighting factors, such as the cost of acquisition, development and operations, were varied, the relative ranking of sites did not change. This gave me confidence that the criteria were not only appropriate, they were robust enough to endure changes and not significantly affect the ranking of sites.

When the ranking of actual sites were first revealed by the consultant, we all had the opportunity to scrutinize how the criteria were applied to each site. Again, the presence of representatives from potentially affected areas helped to assure that the consultants were fair and impartial in making their assessments and applying the criteria appropriately to the individual sites. In fact, there was little argument from the community representatives as it relates to the application of criteria to specific sites. The consultants have done a good job, too.

Finally, based on federal land-ownership and other factors that are beyond the control of the City or the State, we narrowed the number to sites from eight to five. Although there still may be some argument that the criteria has not been fairly applied to the sites that remain, there is no apparent disagreement that these are the five best sites based on the criteria developed. We now have five sites for the City to further evaluate. Our committee is poised to make a recommendation–a sound recommendation--based on criteria we developed, not political promises or any other factors that should be excluded from the process

Last week, the process turned ugly. One member of the committee proposed throwing out all of what had been accomplish over the last few months and selecting a single site by vote from committee members–at least those that remain active–ignoring the fact that the committee was never intended to represent the interests of the people who live on Oahu. This would eliminate the two sites that ranked highest on the list, Waimanalo Gulch and Makaiwa Gulch, based on environmental and social criteria developed by the committee. In fact, the site he recommended, Nanakuli B, ranked number 4 on the list.

This negates all that we have gone through for the past five months. Farrington Highway is already extremely congested, many residents already live immediately adjacent to this site in Nanakuli and it is the logical extension of the existing PVT construction and demolition debris landfill next door. I can only presume that this site was felt to be most politically viable because nearby residents would complain the least. It certainly is not the best site based on the criteria our committee has developed that has been uniformly applied to each site.

To my surprise, other members of this committee seem to support this recommendation, throwing out everything we have discussed, previously agreed to, and worked so hard to accomplish. I will have no part of it. The residents of our island deserve better.

I urge that we stick to the process we all agreed to at the outset and the criteria we have developed over the past few months to rank sites with the best information that is available. Let the City take our recommendation–a recommendation of the five most viable landfill sites on Oahu–and continue with the process of further evaluating these sites. Much more information is needed on all five sites before a good decision can be made. If any or all of the sites is found to be untenable for political or other reasons, so be it. Ultimately, the City Council, the duly elected body legislative body representing all the residents of this island, should make a final decision based on the best information they have at the time.

Thank you for listening.

Attachment C – Application of Preliminary Siting Criteria

ATTACHMENT C

APPLICATION OF PRELIMINARY SITING CRITERIA

1. INTRODUCTION

This attachment describes the process used by ENV and the consultant to analyze the 45 preliminary landfill sites against the following siting criteria:

1. Environmental Protection Agency (USEPA), Resource Conservation Recovery Act Subtitle D (RCRAD) Regulations;
2. Restrictions on developed areas where a landfill cannot be sited;
3. Board of Water Supply groundwater restrictions; and,
4. A minimum capacity requirement of more than 10 years for a new landfill site.

2. ORIGINAL SITES LIST

Table A, Original Site List and **Figure A, Alternative Landfill Sites,** identifies the original 45 sites which were obtained from previous literature and work completed by ENV for the siting of landfills. The list represents sites which were previously considered or used over an approximately 30 year period.

Table A, Original Site List

Site Name	TMK	Total Acreage	Million Cubic Yds Capacity*	Years Lifespan*
Auloa	4-2-14:por 1	55	2.8	4.7
Ameron Quarry	4-2-15:01	391	9.0	15.0
Barbers Point	9-1-16:18, por 1	15	0.7	1.2
Bellows	4-1-15: por. 01	173	7.5	12.5
Diamond Head Crater	3-1-42:por 6	115	4.3	7.2
Ewa No. 1	9-1-17	-	-	
Ewa No. 2	9-1-10	-	-	
Halawa A	9-9-10:8,9,por 10 & 26	40	1.5	2.5
Halawa B	9-9-10:27, por 10	60	2.2	3.7
Heeia Kai	4-6	-	-	
Heeia Uka	4-6-14:01	163	2.4	4.0
Honouliuli	9-1-17:por 4	22	1.7	2.8
Kaaawa	5-1	150	5.6	9.3
Kaena	6-9-1:por 3, 33 & 34	40	1.5	2.5
Kahaluu	4-7	-	-	
Kahe	9-2-3:por 27	200	7.4	12.3

Table A, Original Site List, Continued

Kalaheo (landfill reuse)	4-2-15:por 1 & 6	134	4.3	7.2
Kaloi	9-2-02:por 1; 9-2-3:por 2; 9-2-4:por 5	400	24.3	40.5
Kapaa No. 1	4-4-14:por 2	60	3.0	5.1
Kapaa No. 2 & 3 (closed)	4-2-15:por 1, 3, 4, 7	-	-	
Kaukonahua	7-1	34	1.3	2.2
Keekee	6-9-1:por 3 & 4, 6-9-3: por 2	40	1.2	2.0
Koko Crater	3-9-12: por 1	140	5.5	9.2
Kunia A	9-4-4: por 4	150	5.6	9.3
Kunia B	9-4-3: por 19	190	7.0	11.7
Maili	8-7-10:por. 03	200	9.2	15.3
Makaiwa	9-2-3: por. 02	338	15.0	25.0
Makakilo Quarry	9-2-3:82	175	10.0	16.7
Makua	8-1-1, 8-2-1	600	7.4	12.3
Mililani	9-5	34	2.2	3.7
Nanakuli A	8-7-9:1 &3 and 8-7-21:26	179	4.0	6.7
Nanakuli B	8-7-9: pors. 1 & 7	432	9.4	15.6
Ohikilolo	8-3-1: 13	706	15.6	26.0
Olomana	4-2	-	-	
Poamoho	7-1	5	0.7	1.2
Punaluu	5-3	200	7.4	12.3
Sand Island	1-5-41	150	5.6	9.3
Waiahole	4-8	60	2.3	3.8
Waianae Expansion	8-5-3 and 6	140	6.8	11.3
Waihee	4-7	61	2.3	3.8
Waikane	4-8	200	9.0	15.0
Waimanalo Gulch New Exp.	9-2-3: 72 & 73	60	12.0	20.0
Waimanalo North	4-1-8: 13	171	9.6	16.0
Waimanalo South	4-1	355	14.0	23.3
Waipio	9-3-2	60	2.5	4.2

*Capacity is based on analysis of site characteristics, slope, and area available for development by ENV.

**Lifespan is based on capacity divided by disposal rate of 600,000 cubic yards MSW per year.

See Table E in this Attachment.

Note: Based on Final EIS for Waimanalo Gulch Expansion, December 2002.

3. ANALYSIS OF PRELIMINARY SITING CRITERIA

A. Resource Conservation and Recovery Act (RCRAD) Criteria

Volume 40 of the Code of Federal Regulations (CFR), Part 258, governs the development, operation and closure of landfills. This Federal regulation is administered by the EPA, and delegated to the State of Hawaii, Department of Health (DOH). The State DOH, Solid Waste Permit Program, which incorporates the Federal Municipal Solid Waste Landfill (MSWLF) Criteria, identifies six criteria related to the location of existing and new municipal solid waste landfills. The criteria and a brief summary are provided below:

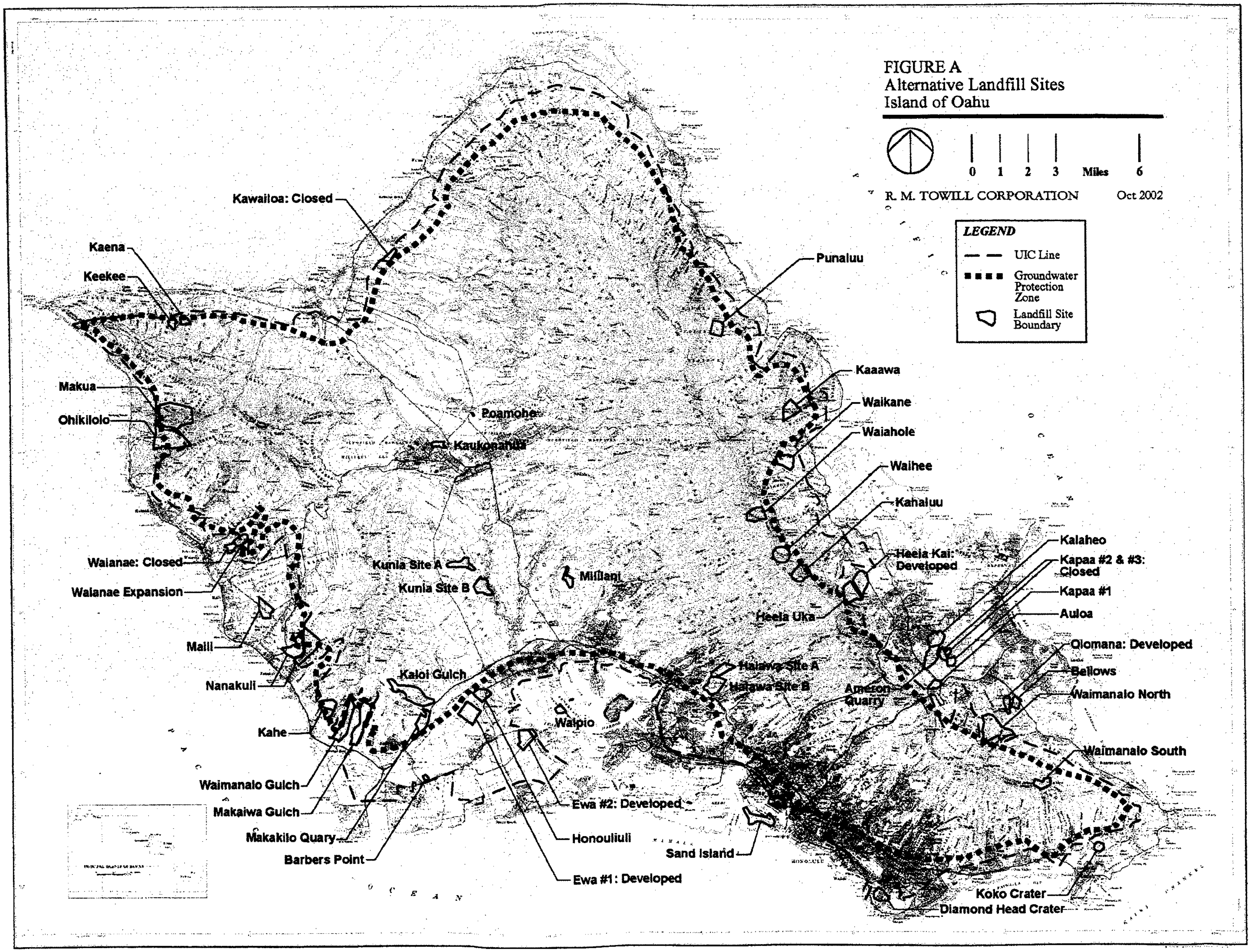

FIGURE A
Alternative Landfill Sites
Island of Oahu

R. M. TOWILL CORPORATION Oct 2002

Overview - Operators and owners must comply with each of the six criteria and maintain records in the facility operating record demonstrating that each of the criteria has been met. These criteria include the following:

Restriction No. 1: Airport Restriction - Owners/operators must demonstrate that the landfill does not constitute a bird hazard if the facility is located within 10,000 feet of the end of any airport runway used by turbojet aircraft, or within 5,000 of any airport runway used only by piston driven aircraft. If the owner/operator proposes construction of a landfill or expansion of an existing landfill within 5 miles of any airport, the airport and the Federal Aviation Administration (FAA) must be notified.

Restriction No.2: Floodplains - Landfills located within a 100 year floodplain cannot restrict stormflows within the floodplain, reduce the temporary water storage capacity of the floodplain, or allow the washout of solid waste.

Restriction No. 3: Wetlands - Owners/operators of a new or existing landfill may not build or expand into wetlands. An exception to this rule may be permitted by EPA-approved permitting programs to construct or expand a landfill only if the following can be demonstrated:

- No other siting alternative is available;
- Construction and operation of the landfill will not violate applicable State regulations governing water quality or discharges of toxic or hazardous effluent; jeopardize threatened or endangered species, or critical wildlife habitat; or, violate protection of a marine sanctuary;
- The landfill will not contribute to the significant deterioration of the wetland;
- Steps are taken to achieve no net loss of wetlands by avoiding potential for impacts where possible, sufficiently minimizing unavoidable impacts; or, making proper compensation for example, through the restoration of damaged wetlands or the creation of manmade wetlands;

Restriction No. 4: Fault Areas - New landfills or landfill expansions are generally prohibited within 200 feet of fault areas that have shifted since the last Ice Age. However, the director of an authorized EPA permitting program may permit an alternative setback distance of less than 200 feet if the owner or operator can demonstrate that the landfill will maintain structural integrity in the event of a fault displacement.

Restriction No. 5: Seismic Impact Zones - Landfills located in a seismic impact zone must demonstrate that the facility including, but not limited to, its liners, leachate collection system, surface water control system, et. al., has been designed to resist the effects of ground motion due to earthquakes.

Restriction No. 6: Unstable Areas - All owners/operators must demonstrate that the structure of their units will not be compromised during geologically destabilizing events including:

- Debris flows resulting from heavy rainfall or storm conditions;
- Fast formation of sinkholes caused by excessive groundwater withdrawal;
- Rockfalls which are initiated by explosives or sonic booms; and,
- The sudden liquefaction of soil after prolonged periods of repeated wetting and drying.

The results of comparing the sites to the USEPA criteria are shown in **Table B, Application of USEPA Criteria**.

Table B, Application of USEPA Criteria

Site Name	Sites Failing EPA Criteria					
	1. Airport Restriction	2. Flood Plain	3. Wetlands	4. Fault Areas	5. Seismic Impact Zone	6. Unstable Area
Auloa						
Ameron Quarry						
Barbers Point	X					
Bellows						
Diamond Head Crater			X			
Ewa No. 1						
Ewa No. 2						
Halawa A						
Halawa B						
Heeia Kai						
Heeia Uka						
Honouliuli						
Kaaawa						
Kaena	X					
Kahaluu						
Kahe						
Kalaheo (landfill reuse)						
Kaloi						
Kapaa No. 1						
Kapaa No. 2 & 3 (closed)						
Kaukonahua						
Keekee	X					
Koko Crater						
Kunia A						
Kunia B						
Maili						
Makaiwa						
Makakilo Quarry						
Makua						
Mililani						
Nanakuli A						

Table B, Application of USEPA Criteria, Continued

Nanakuli B						
Ohikilolo						
Olomana						
Poamoho						
Punaluu						
Sand Island	X	X				
Waiahole						
Waianae Expansion						
Waihee						
Waikane						
Waimanalo Gulch New Exp.						
Waimanalo North						
Waimanalo South						
Waipio						

Application of the USEPA criteria resulted in the removal of five sites from the original list of 45 sites. 40 sites remained for further evaluation.

B. Developed Areas

This criteria includes the evaluation of developed areas where a landfill cannot be sited. Included in this criteria are closed landfills with no further capacity available.

Table C, Application of Developed Area Criteria, shows the 40 sites left after the USEPA criteria and the application of the Developed Areas Criteria.

Table C, Application of Developed Area Criteria

Site Name	**Sites Failing Criteria for**	
	Developed Area	**Closed Landfill**
Auloa		
Ameron Quarry		
Bellows		
Ewa No. 1	X	
Ewa No. 2	X	
Halawa A		
Halawa B		
Heeia Kai	X	
Heeia Uka		

Table C, Application of Developed Area Criteria, Continued

Honouliuli		
Kaaawa		
Kahaluu	X	
Kahe		
Kalaheo (landfill reuse)		
Kaloi		
Kapaa No. 1		
Kapaa No. 2 & 3 (closed)		X
Kaukonahua		
Koko Crater		
Kunia A		
Kunia B		
Maili		
Makaiwa		
Makakilo Quarry		
Makua		
Mililani		
Nanakuli A		
Nanakuli B		
Ohikilolo		
Olomana	X	
Poamoho		
Punaluu		
Waiahole		
Waianae Expansion		
Waihee		
Waikane		
Waimanalo Gulch New Exp.		
Waimanalo North		
Waimanalo South		
Waipio		

Application of the Developed Areas criteria resulted in the removal of six sites from the list of 40 sites. 34 sites remained for further evaluation.

C. Board of Water Supply Groundwater Restrictions

There were 34 sites remaining after application of the developed area and closed landfill criteria. The remaining sites were reviewed with BWS staff to identify areas believed to be useful for water supply or which should be protected based on groundwater concerns. **Table D, Results of Review by BWS Staff,** lists the sites, comments, and indicates sites that were eliminated.

Table D, Results of Review by BWS Staff

Site Name	BWS Evaluation Notes	Sites Failing Review
Auloa	Very little to no groundwater resources. Within a rock complex. BWS does not consider feasible for potable water use.	
Ameron Quarry	Dike type rocks associated with caldera complex. Very little groundwater resources.	
Bellows	No potable resources. Non-potable irrigation developed. BWS does not consider feasible for potable water use.	
Halawa A	Site within BWS groundwater resource.	X
Halawa B	Site within BWS groundwater resource.	X
Heeia Uka	Site outside BWS designed groundwater resource zone.	
Honouliuli	Site just outside BWS designated groundwater resource zone, but within an area considered subject to groundwater impact.	X
Kaaawa	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Kahe	BWS plans to use site for future desalination facility.	X
Kalaheo (landfill reuse)	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Kaloi	Groundwater resources present or nearby.	X
Kapaa No. 1	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Kaukonahua	Site within BWS groundwater resource.	X
Koko Crater	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Kunia A	Groundwater resources present or nearby.	X
Kunia B	Groundwater resources present or nearby.	X
Maili	Brackish groundwater present but BWS does not consider feasible for potable water use.	
Makaiwa	No potable resources. BWS does not consider feasible for potable water use.	
Makakilo Quarry	Groundwater resources present or nearby.	X
Makua	Groundwater resources present or nearby.	X
Mililani	Site within BWS groundwater resource.	X
Nanakuli A	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Nanakuli B	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Ohikilolo	Only half of site available for development where there are very little to no groundwater resources in the lower half of property. BWS does not consider feasible for potable water use.	
Poamoho	Groundwater resources present or nearby.	X
Punaluu	Groundwater resources present or nearby.	X
Waiahole	Groundwater resources present or nearby.	X
Waianae Expansion	Groundwater resources present or nearby.	X
Waihee	Groundwater resources present or nearby.	X
Waikane	Groundwater resources present or nearby.	X
Waimanalo Gulch New Expansion	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	

Table D, Results of Review by BWS Staff, Continued

Waimanalo North	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	
Waimanalo South	Groundwater resources present or nearby.	X
Waipio	Very little to no groundwater resources. BWS does not consider feasible for potable water use.	

Application of the BWS Groundwater Restriction criteria resulted in the removal of 18 sites from the list of 34 sites. 16 sites remained for further evaluation.

Table E
Disposal Capacity Needed
Based on Waimanalo Gulch Sanitary Landfill

Material or Item	Amount	Notes
H-POWER Ash	101,665 Tons	1
H-POWER Residue	94,549 Tons	2
Rubbish that is weighed	225,370 Tons	
Rubbish that is not weighed	22 Tons	3
Total rubbish to be compacted	225,392 Tons	
Compaction ratio	1,600 Pounds/Cubic Yard	
Compacted rubbish volume	180,314 Cubic Yards	
Volume of rubbish and residue to be covered	274,863 Cubic Yards	
Percent of rubbish and residue that is cover	20%	4
Volume of cover	54,973 Cubic Yards	
Volume of rubbish, residue, and cover	329,836 Cubic Yards	
Volume of rubbish, residue, cover, and ash	431,500 Cubic Yards	
Volume of rubbish, residue, cover, and ash	0.43 Million Cubic Yards	
Allowance for growth in the amount of material disposed over the life of the landfill.	20%	
Annual volume demand used to estimate life of the landfill (includes cover)	0.6 Million Cubic Yards	

1. This material is not required to be covered.
2. This material is covered, but does not compact.
3. Rubbish is not weighed when the scale is down. Assumed density of 1,000 pounds/cubic yard.
4. Includes volume of cover only; volume of liners would reduce site capacity.

Attachment D – Individual Site Evaluations

See Attached Under Separate Cover

Attachment E – Correspondence

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
Phone: (808) 692-5159 Fax: (808) 692-5113

JEREMY HARRIS
MAYOR

FRANK J. DOYLE, P.E.
DIRECTOR

TIMOTHY A. HOUGHTON
DEPUTY DIRECTOR

IN REPLY REFER TO:
RE 03-125

September 12, 2003

Commanding General
Attention: Assistant Chief of Staff G4
Building 216
Box 63002
Marine Corps Base Hawaii
Kaneohe, Hawaii 96863-3002

Dear Commanding General:

Subject: Request for Use of Land for a Municipal Solid Waste Landfill at Bellows Air Force Station, Waimanalo, Hawaii

The City and County of Honolulu is examining the potential for use of land at various locations on Oahu for landfill purposes due to the scheduled closure of Waimanalo Gulch Sanitary Landfill in five years, or 2008. Bellows Air Force Station has been identified as one of several locations with potential space for a new municipal landfill. We have attached a description of the site location and request your consideration and reply concerning the feasibility for use of this site.

Thank you in advance for your consideration of this important matter. If further information is required, please call Wilma Namumnart at 692-5378.

Sincerely,

For FRANK J. DOYLE, P.E.
Director

Attach.

cc: Mayor's Advisory Committee on Landfill Siting
Brian Takeda, R.M. Towill Corporation

10. BELLOWS FIELD LANDFILL SITE

The Bellows Field Landfill Site is situated at the north end of Waimanalo Community and Bellows Air Force Base. See Plate II-A-1. Keolu Hills Subdivision is adjacent but over a hill north of the site. Site is not over ground water source. The total area is approximately 173 acres, with usable area of 133± acres.

The site is approximately 2,500 ft. wide and 3,500 ft. long, capacity is 7,510,000± cubic yards and life is 15.4± years. Cover material is available on the site.

Temporary destruction of vegetation will be necessary. The site will be returned to a green area. A buffer strip with heavy landscaping will be required to screen the landfill activity from Bellows Field Air Base and the Olomana Golf Course.

Prevailing trade wind direction is away from the residential area and is favorable.

A drainage system must be constructed on and off site to control runoff and infiltration, soil erosion and flooding of lower areas.

Approximately 2,000 ft. of access road and utilities from Kalanianaole Highway to the site must be constructed.

Site preparation and improvement costs will be moderate and will include a new access road; drainage system; water, electric power and telephone connection; a sanitary waste disposal system; permanent operation and maintenance facilities.

With proper screening and buffer areas, this site can be a desirable site. However, according to the military, the site is needed to maintain military preparedness and is not available for sanitary landfill purposes.

UNITED STATES MARINE CORPS
FACILITIES DEPARTMENT
MARINE CORPS BASE HAWAII
BOX 63082
KANEOHE BAY, HAWAII 96863-3082

RECEIVED

'03 NOV -4 P2:01

IN REPLY REFER TO:
11000
Ser G-4/
29 October 2003

Mr. Frank J. Doyle, PE
Director, Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, HI 96707

Dear Mr. Doyle,

In response to your letter of 17 September 2003 requesting consideration by Marine Corps Base Hawaii to allow the City use of approximately 173 acres of Marine Corps Training Area Bellows (MCTAB) for siting of a Municipal Solid Waste Landfill. We commend your proactive search for a viable location to replace the Waimanalo Gulch Sanitary Landfill. We regret that Marine Corps Base Hawaii will not be able to accommodate your request for siting of a new landfill at MCTAB.

Through recent events, both on a local and international level, it is clear that the Hawaiian Islands are becoming of greater strategic military significance and will remain, a focal point for training and operations throughout the Pacific. MCTAB is a critical element to the training and readiness of Marine and Naval forces assigned throughout the Pacific Rim. Marines and Sailors stationed in Hawaii, and those going to or from hot spots throughout the world regularly train at MCTAB. MCTAB affords military forces a realistic amphibious and littoral training environment that cannot be matched anywhere on US soil in the Pacific. MCBH hosted sixty separate units, consisting of over 13,000 Marines, sailors, soldiers, airmen and civilians throughout the course of FY 2003 at MCTAB, during which all areas of MCTAB were fully utilized. Hawaii Army National Guard units also routinely use MCTAB for their training on weekends. Your request for utilization of approximately 16% of the MCBH owned land at MCTAB would impede regularly conducted training today, and negatively impact on our plans for development of MCTAB into a world class training area. These plans include a $21 million Military Operations on Urban Terrain (MOUT) Training Facility on 38 acres of land in the close proximity to the parcel you are requesting.

My point of contact is Commander Ian Lange, Public Works Officer, at 257-2171 extension 223. Again, we commend and applaud your proactive efforts to replace Waimanalo Gulch.

Sincerely,

KENT MURATA
Director, Installations and Logistics
Marine Corps Base Hawaii

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
Phone: (808) 692-5159 Fax: (808) 692-5113

JEREMY HARRIS
MAYOR

FRANK J. DOYLE, P.E.
DIRECTOR

TIMOTHY A. HOUGHTON
DEPUTY DIRECTOR

IN REPLY REFER TO:
RE 03-124

September 16, 2003

Mr. Anthony J.H. Ching, Executive Officer
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Dear Mr. Ching:

Subject: Notification Concerning Docket No. SP87-362, Decision and Order Approving Amendment to State Special Use Permit

We are providing the following update and notice concerning Condition No. 1 of the Decision and Order, which states,

> "The Blue Ribbon Site Selection Committee shall make its recommendation for a new landfill site to the City Council by December 1, 2003. The City Council shall select a new site by June 1, 2004. If a new site is not selected by June 1, 2004, this Special Use Permit shall immediately expire."

We are moving expeditiously to identify the recommended landfill site(s), but believe that it is necessary to comply with Chapter 343, Hawaii Revised Statutes (HRS), which requires the completion of full and complete environmental review and disclosure prior to selection of a preferred site. We therefore propose the following schedule to meet the spirit of Condition No. 1:

1. Phase 1: June - August 2003. The Mayor's Advisory Committee on Landfill Siting (Blue Ribbon Site Selection Committee) has completed a series of meetings starting on June 27, 2003, with subsequent meetings held on July 11th, and August 8th, 22nd, and 29th. Site selection criteria have been established, and the next phase will be to review alternative sites in the light of the selection criteria.

2. Phase 2: September 2003 - October - 2003. This phase will involve the review of alternative sites with regard to EPA and Site Selection Committee criteria. As required, preliminary research will be undertaken to facilitate the work of the committee. The conclusion of this effort will be the recommendation of not less than three landfill sites subject to environmental review.

3. Phase 3: November 2003 - December 1, 2003. The third phase will involve preparing a summary Report and Recommendation of the Mayor's Advisory Committee on Landfill Siting. The report and recommendation identifying the sites will be forwarded to the State Land Use Commission and Honolulu City Council by December 1, 2003.

4. Phase 4: December 2003 - February 2004. This phase will involve preparation and publication of the EIS Preparation Notice (EISPN). The EISPN will document the work of the Mayor's Advisory Committee on Landfill Siting, and the proposed analysis of alternative landfill sites.

5. Phase 5: March 2004 - September 2004. A Draft EIS (DEIS) will be prepared to address requirements of Chapter 343, HRS, and the Office of Environmental Quality Control (OEQC). The DEIS will identify the preferred landfill sites and document the basis for selection of one or more landfill sites. Information used for preparation of the DEIS shall be forwarded to the Honolulu City Council for their appropriate action in accordance with Condition No. 1.

6. Phase 6: October 2004 - January 2005. The Final EIS (FEIS) will be prepared to address public comments in the DEIS and serve to complete the Chapter 343, HRS, process.

We understand that the proposed schedule is a modification of our current approved permit. However, we hope that you and the Commission will agree that it is correct and appropriate to meet the spirit of Condition No. 1, involving identification of a selected site(s) through use of the Chapter 343, HRS, process.

Thank you in advance for your consideration of this important matter. Should you or your staff have any questions, please contact Ms. Wilma Namumnart at 692-5378.

Sincerely,

For FRANK J. DOYLE, P.E.
Director

cc: Mayor's Advisory Committee on Landfill Siting
Brian Takeda, R.M. Towill Corporation

Statement of Anthony Ching, Executive Officer of the State Land Use Commission

November 17, 2003

Disclaimer – The executive officer of the Land Use Commission is a non-voting member of the commission. Nothing in this statement should be construed to be anything other than the non-binding opinion of the executive officer. Among other duties, the executive officer certifies orders as to their accuracy, assists the chair in establishing the Commission's calendar, supervises staff of the agency and serves at the pleasure of the Commission.

1. With respect to the recommendation and submission by the Blue Ribbon Site Selection of **multiple sites for a new landfill** to the City Council for their consideration.

   The operative part of Condition #1 of the Commission's Decision and Order Approving Amendment to Special Use Permit says that the Blue Ribbon Site Selection Committee shall make **its recommendation** to the City Council by December 1, 2003.

   I believe that the order is silent with respect to the scope or nature of any recommendation by the Site Selection Committee. The committee's recommendation is their own choosing and device and is not specifically governed by the Commission's order. It is my personal opinion and hope that if multiple sites are provided to the City Council by the site selection committee, that they be at a minimum, ranked in priority order.

   I believe instead that the critical deadline specified in the Commission's order is that the City Council shall select a new site no later than June 1, 2004 or suffer immediate expiration of the LUC special permit.

2. With respect to the inclusion of Waimanalo Gulch as one of the recommended sites for the new landfill.

   Condition #12 of the Commission's Decision and Order clearing specifies that no later than May 1, 2008, that the Waimanalo Gulch Landfill will be restricted from accepting any additional waste material and will be closed in accordance with an approved closure plan. Should the City Council choose to expand rather than close the Waimanalo Gulch Landfill, they would have to petition the Land Use

Commission for relief prior to May 1, 2008. The Commission may approve, or not, any such petition for relief on the merits of the presentations made to it.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
Phone: (808) 692-5159 Fax: (808) 692-5113

JEREMY HARRIS
MAYOR

FRANK J. DOYLE, P.E.
DIRECTOR

TIMOTHY A. HOUGHTON
DEPUTY DIRECTOR

IN REPLY REFER TO:
RE 03-132

September 23, 2003

Mr. Peter T. Young, Chairperson
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Chairperson Young:

Subject: Inquiry Concerning Potential for Use of Land for Municipal Landfill at TMK: 4-1-8: Parcel 13, Waimanalo North, Waimanalo, Oahu, Hawaii

The City and County of Honolulu is examining the potential for use of land at various locations on Oahu for landfill purposes. As you may be aware, the pending closure of the Waimanalo Gulch Sanitary Landfill in approximately five years, or 2008, requires that we consider all options with the potential to benefit the broader Oahu island community.

One of the potential landfill sites that the Mayor's Oahu Landfill Site Selection Committee has included for evaluation is the Waimanalo North site. That location has been identified as one of only a few locations with the capacity and location characteristics that could support a landfill. The City has set an aggressive schedule for review and evaluation of potential sites. In that effort, we are asking if your office has any reasons that the Waimanalo North site should not be considered a potential site for the our siting analysis. Given the short time we have for analysis, we would appreciate your response by October 10, 2003.

Thank you for your attention to this important matter. We look forward to your response.

Sincerely,

Frank J. Doyle

FRANK J. DOYLE, P.E.
Director

cc: Oahu Landfill Site Selection Committee
Brian Takeda, R.M. Towill Corporation

WAIMANALO NORTH LANDFILL SITE

A. BASIC DATA OF SITE

1. Location: South of Kailua urban areas, west of Olomana Golf Course and Bellows Air Force Station, northwest of Waimanalo urban areas, north of Waimanalo farm lands and approximately one mile southeast of Olomana Peak.

2. Tax Map Key: 4-1-08:13

3. Total Area: 171±acres

4, Owner: State of Hawaii

5. Present Use of Land: Open

6. City Zone District: Agriculture

7. City General Plan Land Use: Agriculture

8. State Land Use District: Agricultural

9. Adjacent Land Uses, Zones, etc.: Agriculture and Residential

10. Restrictions and Setbacks: Special permit required from State for construction in Agricultural District

11. Historical and Archeological Significance: No sites known to exist

12. Proximity to Population and Refuse Centers: Between Waimanalo and Kailua urban areas (about 500 ft. from the closest residents of north Waimanalo community)

B. DESCRIPTION OF SITE

1. Accessibility: Access from Kalanianaole Highway

2. Topography: The site consists of two defined gullies. Approximately a third of the lower area rises at 5 to 15% slope, half of the area lies between 15 to 30±% slope and the balance of the area greater than 30+% slope. The width at its widest point is 3000± ft. and is 2500±ft. from the lower limit to the ridge line.

3. Soil Classification: Site consists of the following soils taken from the SCS Soil Survey:

   0 to 6% slopes, Hanalei silty clay
   15 to 35% slopes, Alaeloa silty clay

Refuse# 37969
via Dir/Dep

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 8, 2003

RECEIVED
'03 OCT 15 P2:25

Mr. Frank Doyle, P.E., Director
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Mr. Doyle:

Subject: Inquiry Concerning Potential for Use of Land for Municipal Landfill at TMK 4-1-8: Parcel 13, Waimanalo North, Waimanalo, Oahu

Thank you for your letter dated September 23, 2003 regarding the proposed use of the subject State land for use as a municipal landfill. We offer the following comments.

On June 26, 1992, the Board of Land and Natural Resources approved the set aside of the subject parcel to the Division of Forestry and Wildlife (DOFAW) as an addition to the Waimanalo Forest Reserve. As a forest reserve, the area will benefit from management activities that include protection and enhancement in watershed, fire protection, erosion control, forest management, unique native plant and animal habitat, and public recreation through the Na Ala Hele trail and access program. DOFAW is working on scheduling a public hearing for the proposed addition. As such, the parcel has already been committed for forest reserve program.

Also, we note that the majority of the subject parcel is in the Conservation District.

Please feel free to contact my staff Barry Cheung at 587-0430 if you have any questions. Thank you.

Sincerely,

Peter T. Young
Chairperson

cc Land Board Member
DOFAW (Attn.: Mr. Earl Pawn)
District File (PSF 97OD-308)

THE ESTATE OF JAMES CAMPBELL

November 6, 2003

Mr. Frank J. Doyle, P.E.
Director
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

Mr. Brian Takeda
R. M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817

Dear Messrs. Doyle and Takeda:

Makaiwa Gulch

It has come to our attention that Makaiwa Gulch is under active consideration as a Municipal Refuse Facility. In that regard, we believe it is necessary to clarify certain misrepresentations and acquaint you with several points for your consideration.

The subject property is owned by the Estate of James Campbell. Contrary to the "Alternatives Analysis for Disposal of Municipal Refuse" by R. M. Towill Corporation dated March 2001, the property is in the State Urban District, not the State Agricultural District. Furthermore, it is an integral part of the overall Makaiwa Hills Residential Project which is designated on the City and County Ewa Development Plan as residential and is actively being planned for near term development.

If a condemnation action is initiated on this property for a Municipal Refuse Disposal facility, it would be vigorously opposed by the Estate. The Estate would seek, in addition to the value of the land condemned, direct and indirect economic damages caused by the adverse impact that such a facility would have on the value and marketability of its surrounding lands that have already been entitled for residential and commercial development.

We understand that the Mayor's Advisory Committee on Landfill Siting committee is to meet Friday. We feel it is important for the committee members to have this information and I have forwarded a copy of this letter to each of them.

Sincerely,

Stephen H. MacMillan
Chief Executive Officer

mga:01001900\K12074

1001 Kamokila Boulevard, Kapolei, Hawaii 96707 Phone (808) 674-6674 Facsimile (808) 674-3111 Website: www.kapolei.com

Ko Olina
RESORT & MARINA
HONOLULU

November 20, 2003

Mr. Frank Doyle
Director
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

Ms. Wilma Namumnart
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

Deedee Letts
c/o Wilma Namumnart
Department of Environmental Services
City & County of Honolulu
1000 Uluohia Street, Suite 212
Kapolei, Hawaii 96707

Mr. Brian Takeda
R.M. Towill Corporation
420 Waikamilo Road, Suite 411
Honolulu, Hawaii 96817

Re: Waimanalo Gulch Landfill Replacement Site

Ladies and Gentlemen:

We are writing in regards to the status of the Blue Ribbon Panel currently working on selecting a new landfill to replace the Waimanalo Gulch Landfill. We are appalled that the Panel is even considering having Waimanalo Gulch on any list for consideration. It has been made clear by the City, through statements by the Mayor, Ben Lee and Mr. Doyle, that Waimanalo Gulch Landfill will close no later than May 1, 2008, and that no further expansion would occur.

We assume that we need not remind you of the sworn statements of Mr. Doyle at the State Land Use Commission hearings on March 27, 2003, where he repeatedly confirmed the City's commitment and promise to be out of the Waimanalo Gulch Landfill within five years.

We further point out that when Land Use Commission Chair Ing asked Mr. Doyle, "This proposed Blue Ribbon committee, could they come out with a recommendation that this Waimanalo Gulch landfill be expanded?" the response was a simple and pointed "No." (page 177 of hearing transcript, lines 21-25)

These facts and promise by the City are confirmed in both the City's Planning Commission Order and the State Land Use Commission Order concerning the recent permit for the 5 year expansion of Waimanalo Gulch Landfill. Both the Planning Commission and Land Use Commission orders specifically state that Waimanalo Gulch Landfill will close by May 1, 2008. Based on these statements, the City must instruct the Panel that it cannot select Waimanalo Gulch as a potential new landfill site.

As you are aware from our previous discussions with you, Mr. Doyle, the numerous existing, new and potential owners at the Ko Olina Resort have relied heavily on these statements and promises by the City concerning the closure of the Waimanalo Gulch Landfill. These owners, from large corporations owning and developing hotel, timeshare and commercial projects and operations to individual home owners have placed significant and justified reliance on the City's promises. And this is not the first time.

As was discussed in various community meetings in 2001 and 2002, the City had previously promised the leeward region that the Waimanalo Gulch Landfill would not be expanded and that it would be closed upon reaching its then current capacity, which was expected to between 2000-2002. As we argued during the initial attempts to expand the landfill for 15 years, our initial purchase of the bankrupt Ko Olina Resort in 1999 was done in reliance on City promises that the landfill would be closing in a few years, and those expectations fueled our opposition to any expansion of the Waimanalo Gulch Landfill. Similarly, Fortune 500 companies like Mass Mutual and Marriott International invested in the Resort based on their reliance that the landfill would soon close. We have documented well the impact that the landfill has on the Resort.

Our efforts to be the economic engine for the revitalization of the leeward coast is also well known. Two different state legislatures passed bills recognizing that:

> The legislature finds that further development planned by the State and the city and county of Honolulu to enhance the west side of Oahu and develop the second city of Kapolei and Ko Olina Resort and Marina would bring extensive economic benefits and result in the creation of thousands of construction and permanent jobs. The legislature believes that Ko Olina can play a pivotal role in regenerating Oahu's tourism economy.

As you know, the most recent version (SB377 – Act 100) was recently signed by Governor Lingle.

The attempt to even begin to consider the expansion of Waimanalo Gulch Landfill (or to consider the neighboring Makaiwa Gulch), is a direct insult to the joint efforts we have made with the State to resurrect the leeward coast and to help boost Hawaii's visitor industry.

The mere naming of the Waimanalo Gulch Landfill site as a possible "next" landfill will have a significant and real economic impact on the Ko Olina Resort and the entire region. Ko Olina Resort's role as an economic engine, providing jobs and infusing new money into our local economy, would be severely damaged. As was presented to the Panel, it is clear that even the *possible* expansion of the Waimanalo Gulch Landfill would impact future development at the Resort. The lands where these projects are to occur are already zoned and entitled for planned construction. Damages caused by such a turn of events would run in the billions of dollars. Deals completed and being finalized, planned construction and existing operations all have been embarked upon in reliance upon the City's promise that Waimanalo Gulch Landfill would close no later than May 2008. A change in this promise would be the direct cause of these economic damages.

We understand that some members of the Panel have rationalized that they could leave Waimanalo Gulch on the list of potential sites because the City Administration has not instructed them otherwise. We demand that you correct this situation immediately and instruct the Panel that it cannot name the Waimanalo Gulch as a potential site. We trust that you will forward this letter to each of the Panel members and convey to them the potential liabilities that exist by continuing to consider Waimanalo Gulch as a potential new landfill site. You must instruct the Panel to comply with the Land Use Commission Order and Planning Commission Order, and to act in accordance with the promises made by the City. Failure to do so, we believe, would be immediately actionable, and would risk the loss of the City's permit to operate the landfill. If the Waimanalo Gulch site is named, this would cause most, if not all, Resort landowners to seek immediate protection through the enforcement of the Land Use and Planning Commission Orders and to seek appropriate damages.

We have worked in good faith, and have attempted to help the City find solutions to the island's landfill needs. Even today, we are attempting to put together a solution for the Panel to select a new landfill site that will comply with the Land Use and Planning Commission Orders. We justifiably relied on the City's promises and we fully expect to City to live up to those promises. Mr. Doyle, you were fully aware of our position from the Resort and knew the development plans we had that were dependent on the landfill closing. With this information, you continued to make statements regarding the City's promise to close the Waimanalo Gulch Landfill. All we ask is that those promises be kept.

Finally, we share Campbell Estate's concerns regarding the potential use of Makaiwa Gulch as a landfill site and assure you that its use would have the same economic impact on the Resort and region as expanding Waimanalo Gulch. The Resort's role in the region is too important to lose, when other viable landfill sites are available.

We look forward to your immediate action and resolution of this matter.

Sincerely,

Jeffrey R. Stone

KAMEHAMEHA SCHOOLS
KAPĀLAMA CAMPUS
OFFICE OF THE PRESIDENT AND HEADMASTER

November 21, 2003

Wilma Namumnart
ENV/Refuse Division
City and County of Honolulu
Honolulu, Hawaii

Dear Wilma:

First of all, my commendations to you and your staff for your professionalism and patience in overseeing these very difficult landfill discussions. The task presented to the Blue Ribbon Committee has been daunting. Yet, with so many divergent views, you brought calm and thoughtfulness to the process. After so many years, it was good working with you once again. Thank you.

I am also impressed with the focused effort that members of the Committee directed to this important task. For my part, I apologize for not participating fully during these latest critical meetings. Despite my inability to attend all of these meetings, the electronic communications among members have helped to keep me abreast of the work that has taken place. So, while I apologize for not being present at the recent meetings, I do feel comfortable in providing my input.

After our recent conversation, I felt it important to share my thoughts with others on the Committee. As you recall, I do not want to meet again to select a single site. I believe it is in the City's best interest to have several legitimate sites to consider. Final determination rests with engineering and environmental impact studies, which together will help identify the most desirable among those we believe are suitable at this time.

Secondly, I do not believe Waimanalo Gulch should be offered at this time. Admittedly, my conclusion ignores any engineering or environmental

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considerations. However, I cannot ignore the agreements and stipulations reached with the Land Use Commission that precludes this site in the long term.

Finally, I have serious concerns about offering the Ameron site. This site has serious economic implications, not only in terms of landfill operational costs but in terms of impacts on an on-going economically viable quarrying operation as well.

Given these comments, I recommend that the Committee seriously consider offering the three remaining sites for further planning and implementation by the City.

I hope my last minute comments do not muddy the waters. Please contact me with your questions, telephone, 842-8231.

Me ke aloha pumehana,

Michael J. Chun, Ph.D.
President and Headmaster
Kamehameha Schools

HOUSE OF REPRESENTATIVES

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

November 25, 2003

BY FAX AND POST

The Honorable Mark Bennett
Attorney General
Department of the Attorney General
Hale Auhau
425 Queen Street
Honolulu, HI 96813

Leslie Kondo
Director
Office of Information Practices
No. 1 Capitol District Building
250 South Hotel Street, Room 107
Honolulu, HI 96813

Peter Carlisle
Prosecuting Attorney
Department of the Prosecuting Attorney
1060 Richards Street
Honolulu, HI 96813

Dear Attorney General Bennett, Director Kondo, and Prosecuting Attorney Carlisle:

I am writing this letter to inform each of you of a possible violation of Hawaii Revised Statutes chapter 92, otherwise referred to as the "Sunshine Law". I am also writing to request a formal investigation into this matter by the Office of Information Practices to determine whether a violation of the "Sunshine Law" has occurred, and to forward such case to the proper authorities should the Office of Information Practices determine that a violation of the "Sunshine Law" has occurred.

As background information, at the request of the City and County of Honolulu, I agreed to serve on the Mayor's Landfill Selection Committee in my capacity as a state representative. Please see the attached appointment letter dated July 3rd, 2003. According to the Department of Environmental Services letter that informed me of my appointment to this Committee, this Committee was described as an "advisory group [that] will help the City establish site selection criteria and recommend one or more sites to the City Council for approval of the location of the next municipal solid waste landfill." The Committee has met over the past five months in an effort to accomplish this goal. The Committee has operated its meetings pursuant to chapter 92 of the Hawaii Revised Statutes, publishing timely notice of

415 SOUTH BERETANIA STREET, ROOM 443 • HONOLULU, HI • 96813
PHONE: 586-6480 • FAX: 586-6481

open meetings and affording the opportunity for community input and discussion.

We have yet to reach consensus on our report to the City. The current draft report includes a list of five potential landfill sites that have been reported in both daily newspapers. At the November meeting of the Committee, no consensus could be reached as to reducing the number of sites below five to be forwarded to the City Council.

At some time when the Committee was not in open meeting, Committee member Todd Apo solicited signatures from other Committee members on two documents related to the decision making function of the Committee. Specifically, the first document called for the undersigned members of the Committee to make a statement clarifying their understanding of the undertaking they were assigned to perform, and that they "require[d] that Waimanalo Gulch be removed from any further consideration by the Committee as a potential landfill site, in accordance with the Land Use Commission Order." Adoption of such a document would result in altering the product of work done in open meetings, preparing a draft report that reduces the number of potential sites to five with Waimanalo Gulch included. The Committee members that signed on to the document were: Todd Apo, Shad Kane, Cynthia Rezentes, Gary Tomita, William Paty, and 4 others.

The second document calls for the recommendation of the site referred to as Nanakuli B as the decision of the Committee. This would clearly alter the work of the committee accomplished in open hearing as referred to above. The signatories to this document are: Todd Apo, Shad Kane, Gary Tomita, William Paty, and 3 others.

In light of the aforementioned actions, as part of the requested formal investigation, I also would like clarification as to whether a Committee member who solicits a vote or solicits promises to vote a certain way from Committee members outside of an open meeting situation violates the "Sunshine Law". Additionally, if such action represents a violation of the "Sunshine Law", I would like clarification as to whether a willful violation of the "Sunshine Law" is a misdemeanor, a criminal act.

Your prompt investigation of this matter would be greatly appreciated. Our next properly noticed meeting is December 1st, 2003.

Sincerely,

Cynthia Thielen

Representative Cynthia Thielen
Assistant Minority Floor leader
50th District, Kailua – Kaneohe Bay

Encls.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
REFUSE DIVISION
1000 ULUOHIA STREET, SUITE 212, KAPOLEI, HAWAII 96707
Phone: (808) 692-5358 Fax: (808) 692-5404

JEREMY HARRIS
MAYOR

FRANK J. DOYLE, P.E.
DIRECTOR

JOHN C.T. LEE, P.E.
ACTING CHIEF

IN REPLY REFER TO:
RE 03-092

July 3, 2003

The Honorable Cynthia Thielen
State Representative
State of Hawaii
State Capitol, Room 443
Honolulu, Hawaii 96813

Dear Representative Thielen:

Subject: Landfill Selection Committee

Thank you for agreeing to serve on the Mayor's Landfill Selection Committee. This advisory group will help the City establish site selection criteria and recommend one or more sites to the City Council for approval of the location of the next municipal solid waste landfill. Your training, experience, and leadership make you imminently qualified to deliberate the complex, interrelated issues that bear upon landfill siting, and we expect committee discussions to be well-considered and productive.

The next meeting will be on July 11, 2003, at 10:00 a.m. in the Mayor's conference room on the third floor of City Hall. Enclosed are the meeting agenda and a list of committee members.

There will be much information to assimilate, and committee members may wish to discuss issues with their constituencies to identify and add sites that meet minimum criteria to the list of potential landfill sites. For these reasons, the subsequent meeting is scheduled for August 8, same time and place.

Should there be any questions, please call Wilma Namumnart at 692-5378.

Sincerely,

John C. T. Lee

JOHN C.T. LEE, P.E.

Enclosures

cc: Brian Takeda, R.M. Towill
DeeDee Letts, Resolutions Hawaii

To the Blue Ribbon Site Selection Committee:

The persons signing below are members of the Blue Ribbon Site Selection Committee which was convened to make a recommendation for a new landfill site to the Honolulu City Council by December 1, 2003. We make this statement to clarify our understanding of the undertaking we were assigned to perform. We understood the Committee was charged with making a recommendation for a new landfill by December 1, 2003, and that this recommendation could not be the Waimanalo Gulch landfill site No decision, either by consensus or vote, has been made to recommend five landfill sites or to include the Waimanalo Gulch as a recommended site. We require that Waimanalo Gulch be removed from any further consideration by the Committee as a potential landfill site, in accordance with the Land Use Commission Order.

Cynthia K.L. Rezentes

To the Blue Ribbon Site Selection Committee

The persons signing below are members of the Blue Ribbon Site Selection Committee which was convened to make a recommendation for a new landfill site to the Honolulu City Council by December 1, 2003. We understand the Committee was charged with making a recommendation for a single landfill by December 1, 2003, and that this single recommendation could not be the Waimanalo Gulch landfill site. Consistent with this understanding, we recommend Nanakuli B as the new landfill site.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
Phone: (808) 692-5159 Fax: (808) 692-5113

JEREMY HARRIS
MAYOR

FRANK J. DOYLE, P.E.
DIRECTOR

DEPUTY DIRECTOR

IN REPLY REFER TO:

November 26, 2003

VIA FACSIMILE AND MAIL

Jeffrey R. Stone
Ko Olina Resort & Marina
55 Merchant Street, Suite 1500
Honolulu, Hawaii 96813

Re: Waimanalo Gulch Landfill Replacement Site

Dear Mr. Stone:

This letter is in response to your letter dated November 20, 2003. When the Mayor's Blue Ribbon Site Selection Committee ("Committee") met for the first time, the City made clear to the Committee that it intends to comply with the State Land Use Commission Decision and Order dated June 9, 2003 ("Order"), including condition #12, which requires the City to close Waimanalo Gulch Sanitary Landfill no later than May 1, 2008. We reiterate that commitment in this letter.

As you know, the Committee was formed for the purpose of discussing and analyzing potential sites in order to make its recommendations for one or more locations for a new landfill site to the City Council by December 1, 2003. Neither the City Administration nor the Land Use Commission can dictate what the City Council may or may not consider as a potential site. Therefore, the City Administration has not interfered with or tried to dictate what the Committee may or may not recommend. The City hired a consultant who provided the Committee with technical support. We understand the Committee's role is to provide an independent appraisal of potential landfill sites. Therefore, the City has not interfered with the Committee's process or decision in arriving at its recommendations. However, as stated above, the Committee is fully aware that the City will comply with the Order and close the Waimanalo Gulch Site Landfill no later than May 1, 2008.

The City administration anticipates receiving the Committee's recommendations on December 1, 2003, which we will transmit said recommendation to the City Council so it may select a new site by June 1, 2004 pursuant to the State Land Use Commission's Decision and Order.

Thank you for your concerns. Please call me at 692-5159 if you have any further questions or concerns.

Very truly yours,

Frank J. Doyle

FRANK J. DOYLE, P.E.
Director

FJD:MRC:mw

cc: Mayor's Blue Ribbon Site Selection Committee
Wilma Namumnart, P.E.
Brian Takeda
Dee Dee Letts

ENV-WAIMANALO GULCH.MRC

COMMITTEE E-MAIL LOGS

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:00 PM
To: Brian Takeda (E-mail)
Subject: FW: Landfill Siting Committee - More Thoughts on Criterion

-----Original Message-----
From: Rezentesc@aol.com [mailto:Rezentesc@aol.com]
Sent: Friday, August 22, 2003 3:36 PM
To: Namumnart, Wilma
Subject: Landfill Siting Committee - More Thoughts on Criterion

Aloha Wilma,

I thought the meeting went well today and it was very lively indicating continuing interest in attempting to put a decision making process together that makes sense and covers most if not all of our individual concerns.

In addition to what was covered today other thoughts I had are:

Question 15: In addition to the change from populated areas to ocean, it may also be a good idea to consider adding whether or not the downstream wind pattern could be directly over conservation/preservation lands thereby potentially causing at least the need to address operationally the collection of windblown trash in more difficult areas to retrieve the materials.

Another approach to the question regarding wind direction towards the ocean might be to consider a distance measurement scheme. E.g. 0 points is >10 miles, 5 points if <1 mile (numbers are for illustration only). Something on this order should take into consideration any potential for windblown trash making it so far or not.

Additional thought should also be given to traffic considerations. I understand the difficulty in structuring a criteria or measurement but somehow we should consider the amount of traffic the refuse/ash trucks will be traveling in. How much traffic are they running with on H-1 or less adequate routes. Also, how can we take into consideration the condition of the roadways and current safety concerns. I mention this because access to some of the proposed sites would mean trucks would be traversing known high safety hazard roads.

Other than these additional thoughts (for now on a quicktime basis) I believe I got more than my two cents worth in regarding the measurements covered today (until I can digest more of the discussions we already had).

Again, thanks for hosting and having DeeDee facilitate and I believe that in the end we will at least have something we can all defend even though it may not be popular to some.

Mahalo and have a great weekend.

Cynthia

From: Mark White [MarkWhite01@comcast.net]
Sent: Tuesday, December 02, 2003 7:09 AM
To: 'Takeda Brian'
Subject: FW: Criteria

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Monday, August 25, 2003 12:27 AM
To: Mark White
Subject: FW: Criteria

i think we add this as suggestions from the committee members for consideration.
-----Original Message-----
From: Todd K. Apo [mailto:tka@hawaii.rr.com]
Sent: Saturday, August 23, 2003 11:13 AM
To: Namumnart, Wilma
Subject: Criteria

Please have them add a section(s) regarding economic impact of the new landfill site. As you know, that analysis is required by the EIS process, and should be a factor in determining the next site.

I don't have my list in front of me, but I would also suggest a section on compatibility with adjacent properties (if it doesn't already exist).

Thanks.

Aloha -
Todd K. Apo

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:01 PM
To: Brian Takeda (E-mail)
Subject: FW: Landfill COmmittee Criteria suggestions

-----Original Message-----
From: Kathy Bryant [mailto:kathybryant@dpr4adr.com]
Sent: Monday, August 25, 2003 11:55 AM
To: Namumnart, Wilma
Cc: mark@pwcg.net
Subject: Landfill COmmittee Criteria suggestions

Wilma:

Thank you for the opportunity to provide input on the criteria we reviewed on Friday. I apologize for having to leave early. I have the following suggestions:

1. I thought the DOH presentation was very helpful and provided some excellent criteria for our consideration. I would recommend that all the criteria presented in his handout be included particularly the section on siting and other considerations (pages 3-4 of handout). Some of the considerations are already included and I would recommend we add the others, particularly if DOH will be looking closely at those same considerations.

2. I would recommend that we add another criteria in the Economic Section(or expand an existing one) to include "Business elimination or permanent disruption". Will the siting of the landfill cause the elimination of or permanent disruption to existing businesses?

3. Criteria #29, could we add to access road considerations: "road improvements to meet state and county codes and standards". Some of the sites may be accessed by roads that may not be to county road standards and road improvements may be required which would be a cost to operations. (May also fit with Criteria #38 Traffic Safety for safety reasons.)

4. In the PWCG background material I reviewed, a number of the reports discussed "community benefits" in conjuntion with siting a landfill. Communities that were selected received additional funds for community projects such as parks, community centers, road improvements, etc. AS part of our discussion of siting a landfill we should discuss what the city and county can do for the impacted community to offset the obvious impacts of a landfill. Perhaps the Consultant can provide some background on how that has been most effective in other communities.

Thanks again,

Kathy Bryant
262-6012
kathybryant@dpr4adr.com

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:02 PM
To: Brian Takeda (E-mail)
Subject: FW: additional technical siting criteria

-----Original Message-----
From: Rep. Cynthia Thielen [mailto:repthielen@Capitol.hawaii.gov]
Sent: Monday, August 25, 2003 4:06 PM
To: Namumnart, Wilma
Subject: additional technical siting criteria

Wilma,
Please add the following (ok to reword):
1. Impact on environment and on public health of long hauls from HPower to landfill. 2. Impact on nearby property values, which would lower City's tax base.

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:02 PM
To: Brian Takeda (E-mail)
Subject: FW: next meeting 9/26

-----Original Message-----
From: Peter Apo [mailto:papo@hawaii.rr.com]
Sent: Monday, September 22, 2003 8:58 AM
To: Namumnart, Wilma
Subject: Re: next meeting 9/26

Aloha Wilma:

I regret that I have to decline continuing serving on the committee. Some family considerations have curtailed my availability to serve our community. Please convey my regrets to the Mayor.

Peter Apo

> From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
> Date: Wed, 17 Sep 2003 17:12:36 -1000
> To: "Brian Takeda (E-mail)" <briant@rmtowill.com>, "Bruce Anderson (E-mail)" <bsa@hawaii.edu>, "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>, "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>, "DeeDee Letts (E-mail)" <ddletts@lava.net>, "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>, "Gary Slovin (E-mail)" <gslovin@goodsill.com>, "Gary Tomita (E-mail)" <igtwink@aol.com>, "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>, "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>, "Mark/Carol White (E-mail)" <mark@pwcg.net>, "Michael Chun (E-mail)" <michun@ksbe.edu>, "Peter Apo (E-mail)" <papo@hawaii.rr.com>, "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>, "Shad Kane (E-mail)" <kiha@hawaii.rr.com>, "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>, "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>, "Todd Apo (E-mail)" <todd@koolina.com>, "William Paty (E-mail)" <bill@martroffice.com>
> Cc: "Brian Takeda (E-mail)" <briant@rmtowill.com>, "DeeDee Letts (E-mail)" <ddletts@lava.net>, "Mark/Carol White (E-mail)" <mark@pwcg.net>
> Subject: next meeting 9/26
>
> please note the next meeting will be in the corporation counsel's conference room on the first floor of city hall. please go to the ewa side of city hall in the corridor behind the open function room and stairway to the second and third floors. if you need further directions, please call me. i will be waiting at the doorway to let you into the room. see you all at 10 a.m. on friday, september 26th.
>
> Wilma Namumnart
> ENV/Refuse Division
> Phone 692-5378
> FAX 692-5402
>

From: Mark White [mark@pwcg.net]
Sent: Tuesday, December 02, 2003 7:09 AM
To: briant@rmtowill.com
Subject: FW: meeting postponed

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Thursday, September 25, 2003 4:52 PM
To: Todd K. Apo; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark White; Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); William Paty (E-mail)
Subject: RE: meeting postponed

i am sorry you will not be here to attend the meeting on 10/3. do you have anything written that can be given to the committee members? would you like to send a representative to give a presentation? we will be talking about host community benefits at the 10/3 meeting.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

-----Original Message-----
From: Todd K. Apo [mailto:todd@koolina.com]
Sent: Thursday, September 25, 2003 9:16 AM
To: Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); William Paty
(E-mail)
Subject: Re: meeting postponed

Unfortunately, I will be out of town next week Friday. Based on last meeting, I had planned to present the proposal regarding "regionalizing" the MSW and looking at ways to compensate communities impacted by accepting landfills. Also, we are obviously at an important point in the process. Therefore, while I know it is a big thing to ask, I need to ask that we try to identify a time where everyone will be available. As we discussed from the beginning of this process, commitment to the panel is important, which was at least part of the reason the meeting schedule was set out in advance, so that we could all secure those dates and times for meetings. While we all know that last minute changes are unavoidable at times, I hope we can find a way to reschedule the meeting to meet everyone's calendars.

Thanks for considering this request.

Aloha,
Todd Apo

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Sent: Wednesday, September 24, 2003 10:55 AM
Subject: meeting postponed

our friday,september 26th meeting is postponed until friday, october 3rd. the meeting will be in the mayor's conference room on the third floor of city hall from 10:00 a.m. - 11:30 a.m.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

From: Mark White [mark@pwcg.net]
Sent: Tuesday, December 02, 2003 7:11 AM
To: briant@rmtowill.com
Subject: FW: draft press release, project update, benefits criteria

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Tuesday, October 07, 2003 7:39 PM
To: Slovin, Gary M.
Cc: DeeDee Letts (E-mail); Mark White; briant@rmtowill.com
Subject: RE: draft press release, project update, benefits criteria

it was prepared by carol costa, mark white, brian takeda, dee dee letts, suzanne jones, and me. we can discuss release or non-release at the meeting and make any revisions.

i am very concerned that once the sites are known, someone either on the committee or off will leak to the press. we may be able to get the committee members to agree to a gag order, but what about people off the committee? we can discuss this.

-----Original Message-----
From: Slovin, Gary M. [mailto:gslovin@goodsill.com]
Sent: Tuesday, October 07, 2003 4:29 PM
To: Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Subject: RE: draft press release, project update, benefits criteria

Wilma: My thoughts are that the press release is important enough to discuss at the next meeting before it is released. (Until a couple of days ago I didn't know there was going to be a press release and I'm not convinced this is a good time to be releasing one.) Email comments don't work very well for important documents because you don't get the discussion and give and take of a live meeting. In its present form, I am not comfortable with it.

Can you let us know who prepared it?

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Tuesday, October 07, 2003 4:13 PM
To: Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Slovin, Gary M.; Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Subject: draft press release, project update, benefits criteria

<<draftpress.doc>> <<projectupdate.doc>> <<Employment Criterion and capacity table1.doc>> since the draft press release is late, please submit any comments by email to me before close of business, Thursday, 10/9. Also please note that the criteria for the employment benefit will be revised to reflect actual conditions of unemployment in the census tracts affected. the 2% and 3% are just place holders until research is completed.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

From:	Mark White [mark@pwcg.net]
Sent:	Tuesday, December 02, 2003 7:13 AM
To:	briant@rmtowill.com
Subject:	FW: draft press release, project update, benefits criteria

BRIAN,
THIS IS THE ONE WITH THE COMPLETE THREAD. IT WOULD BE THE BEST TO US.

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, October 08, 2003 12:57 PM
To: Slovin, Gary M.
Cc: Brian Takeda (E-mail); DeeDee Letts (E-mail); Mark White
Subject: RE: draft press release, project update, benefits criteria

mark white is with pacific waste consulting group, who are subbed to rm towill, our consultant.

the press release can come from the committee alone. we added the mayor's name as a courtesy, but he is being asked if he even wants to be part of the press release. he may ask that his name be deleted.

you are correct. no vote or extensive discussion was held on the press release. it is on the agenda for 10/10. we didn't want to start with a blank sheet of paper and 10+ ideas, so we did a draft that can be marked up. you can initiate another draft, if you want to.

isn't life fun!!

-----Original Message-----
From: Slovin, Gary M. [mailto:gslovin@goodsill.com]
Sent: Wednesday, October 08, 2003 9:50 AM
To: Namumnart, Wilma
Subject: RE: draft press release, project update, benefits criteria

Because your message asked for comments by 10/9, I was concerned. Thanks for the clarification. Who is Mark White with? I'm not sure it is a good idea to have so much involvement in the press release by the administration. I am also not sure it is a good idea to have it issued by the Mayor and the Committee--I think it should come from the committee alone, if we do it at all. As a committee member, I doubt I will feel comfortable with a number of the statements since I don't feel I have to reach these conclusions yet. I'm not concerned about leaks--that is preferable to a premature press release, which I think this is. There is a pressure here, as I noted at the last meeting, to move us along to conclusions we have not reached yet.

I don't recall that the committee took a vote to do a press release; nor did we have input as to who would draft it. Perhaps that all came up at the meeting I missed but I don't recall that.

I understand the concern about doing this on time but it seems to me this is the committee's responsibility. I also feel 'that things are progressing very well and that we will finish on time. Your support and that of the consultants has been terrific and a great help and, despite my efforts to hold back Dee Dee from time to time, she has also done a great job as well.

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Tuesday, October 07, 2003 4:39 PM
To: Slovin, Gary M.
Cc: DeeDee Letts (E-mail); Mark/Carol White (E-mail); briant@rmtowill.com
Subject: RE: draft press release, project update, benefits criteria

it was prepared by carol costa, mark white, brian takeda, dee dee letts, suzanne jones, and me. we can discuss release or non-release at the meeting and make any revisions.

i am very concerned that once the sites are known, someone either on the committee or off will leak to the press. we may be able to get the committee members to agree to a gag order, but what about people off the committee? we can discuss this.

-----Original Message-----
From: Slovin, Gary M. [mailto:gslovin@goodsill.com]
Sent: Tuesday, October 07, 2003 4:29 PM
To: Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Subject: RE: draft press release, project update, benefits criteria

Wilma: My thoughts are that the press release is important enough to discuss at the next meeting before it is released. (Until a couple of days ago I didn't know there was going to be a press release and I'm not convinced this is a good time to be releasing one.) Email comments don't work very well for important documents because you don't get the discussion and give and take of a live meeting. In its present form, I am not comfortable with it.

Can you let us know who prepared it?

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Tuesday, October 07, 2003 4:13 PM
To: Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Slovin, Gary M.; Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty
(E-mail)
Subject: draft press release, project update, benefits criteria

<<draftpress.doc>> <<projectupdate.doc>> <<Employment Criterion and capacity table1.doc>> since the draft press release is late, please submit any comments by email to me before close of business, Thursday, 10/9. Also please note that the criteria for the employment benefit will be revised to reflect actual conditions of unemployment in the census tracts affected. the 2% and 3% are just place holders until research is completed.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

From: Mark White [mark@pwcg.net]
Sent: Tuesday, December 02, 2003 7:14 AM
To: briant@rmtowill.com
Subject: FW: Press Release

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Thursday, October 09, 2003 12:18 PM
To: Slovin, Gary M.; Todd K. Apo; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark White; Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); William Paty (E-mail)
Subject: RE: Press Release

i don't want to belabor the point, but i remember distinctly that you asked the we have professional help on the press release. i did not interpret that to mean an outside the City professional. if you had asked for that specifically, i would have responded that we have no one outside the city on contract, so i would not be able to provide that kind of professional help. we can talk more about this on friday.

-----Original Message-----
From: Slovin, Gary M. [mailto:gslovin@goodsill.com]
Sent: Wednesday, October 08, 2003 3:37 PM
To: Todd K. Apo; Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); William Paty (E-mail)
Subject: RE: Press Release

Since Todd has responded to my comment regarding the authorship of the press release, I thought I should explain my concern which I raised at the last meeting.

My impression was that we would have professional help on the press release and I assumed when the consultant said at the last meeting that there was funding for that function that it meant an outside-of-the-City professional. Carol is certainly a professional public relations person but she is obviously part of the City. The other folks are not public relations people. While the committee is certainly independent, the appearance of independence is just as important as the reality. The circumstances of the press release may not support the appearance of independence. Therefore, in addition to the text of the press release we might want to discuss this aspect as well.

-----Original Message-----
From: Todd K. Apo [mailto:todd@koolina.com]
Sent: Tuesday, October 07, 2003 5:21 PM
To: Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Slovin, Gary M.; Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); William Paty

(E-mail)
Subject: Press Release

To the Committee, I am sorry that I was unable to attend the rescheduled meeting last week. As I previously emailed, I would have liked to have tried to find a way to be more accommodating for the last minute date change. Nonetheless, without knowing the details of what was discussed last week, I concur with Gary and Cynthia regarding the need to discuss the press release at Friday's meeting. It is an important message that we all want to make sure is correct both in content and in timing.

I also echo Gary's questions regarding the author of the draft release.

Todd Apo
Ko Olina Resort & Marina

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Sent: Tuesday, October 07, 2003 4:15 PM
Subject: agenda for 10/10 meeting

<<Agenda10-10-03.doc>> please note we have two more meetings in october on the 10th and 24th. we have an optional meeting scheduled for 11/7. we are grateful for your continued participation. see you on october 10th. mayor's conference room, third floor, city hall.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:07 PM
To: Brian Takeda (E-mail)
Subject: FW: Landfill Life Expectancy

-----Original Message-----
From: Bruce Anderson [mailto:bsa@hawaii.edu]
Sent: Tuesday, October 14, 2003 12:35 PM
To: Namumnart, Wilma
Subject: Landfill Life Expectancy

Wilma,

It is noted in your group memory of our last meeting that we should "express via email (our) preference for a 10 or 15 year minimum for the site" but you did not say to whom we should express our preference. As I mentioned at the meeting, I think it would be a irresponsible from a land-use and cost standpoint to pick a site that has an expected life of less than 20 years. However, I would strongly recommend that any site with a expected lifetime of less than 15 years be excluded from future consideration. The Committee has few if any people who are focused on the cost side of the equation and it seems that nobody is thinking about the difficulty of finding a contractor who would be willing to bid on operating a site with a short life-expectancy. Despite more aggressive recycling and waste diversion practices, we'll be lucky if the net volume of solid waste does not increase over the next 10 years as our population and the total amount of wastes they generate increase. I hope this is not the case, but it is prudent to assume that it will be so. Any other position is wishful thinking. If we choose a site that has only a10 year life expectancy, you will need to reconvene another site selection committee immediately after we conclude our deliberations to start the process for selecting yet another site. I estimate that it will take about 10 years to go through the process again of selecting a site, getting the necessary county and state land use approvals, design, construction, bidding for operational contract, and permitting--if you're lucky. Anyway, I would vote for a minimum of 15 years--20 years would be more appropriate. Please pass this on to whomever is tallying the votes. Thanks.

Bruce

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Cc: "Win, Zarli" <zwin@co.honolulu.hi.us>
Sent: Tuesday, October 14, 2003 10:36 AM
Subject: group memory for 10/10/03 meeting

<<gm10-10-03.doc>>
Wilma Namumnart
ENV/Refuse Division
Phone 692-5378

FAX 692-5402

From: Mark White [mark@pwcg.net]
Sent: Tuesday, December 02, 2003 7:15 AM
To: briant@rmtowill.com
Subject: FW: Landfill Life Expectancy

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, October 15, 2003 7:17 PM
To: Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark White; Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Subject: FW: Landfill Life Expectancy

forwarded to you per dr anderson's request.

-----Original Message-----
From: Bruce Anderson [mailto:bsa@hawaii.edu]
Sent: Wednesday, October 15, 2003 4:15 PM
To: Namumnart, Wilma
Subject: Re: Landfill Life Expectancy

Wilma,

I thought about sending my comments to all the other committee members, but I didn't have all their email addresses. Obviously, I feel quite strongly that we should take a conservative approach toward estimating the wastes generated and that costs should be a very important criteria. Can you forward my comments (below) for me?

Bruce

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Bruce Anderson" <bsa@hawaii.edu>
Sent: Wednesday, October 15, 2003 1:26 PM
Subject: RE: Landfill Life Expectancy

i concur. you make some good points. would you be willing to share your comments with the whole committee?

-----Original Message-----
From: Bruce Anderson [mailto:bsa@hawaii.edu]
Sent: Tuesday, October 14, 2003 12:35 PM
To: Namumnart, Wilma
Subject: Landfill Life Expectancy

Wilma,

It is noted in your group memory of our last meeting that we should "express via email (our) preference for a 10 or 15 year minimum for the site" but you did not say to whom we should express our preference. As I mentioned at the meeting, I think it would be a irresponsible from a land-use and cost standpoint to pick a site that has an expected life of less than 20 years. However, I would strongly recommend that any site with a expected lifetime of less than 15 years be excluded from future consideration. The Committee has few if any people who are focused on the cost side of the equation and it seems that nobody is thinking about the difficulty of finding a contractor who would be willing to bid on operating a site with a short life-expectancy. Despite more aggressive recycling and waste diversion practices, we'll be lucky if the net volume of solid waste does not increase over the next 10 years as our population and the total amount of wastes they generate increase. I hope this is not the case, but it is prudent to assume that it will be so. Any other position is wishful thinking. If we choose a site that has only a10 year life expectancy, you will need to reconvene another site selection committee immediately after we conclude our deliberations to start the process for selecting yet another site. I estimate that it will take about 10 years to go through the process again of selecting a site, getting the necessary county and state land use approvals, design, construction, bidding for operational contract, and permitting--if you're lucky. Anyway, I would vote for a minimum of 15 years--20 years would be more appropriate. Please pass this on to whomever is tallying the votes. Thanks.

Bruce

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Cc: "Win, Zarli" <zwin@co.honolulu.hi.us>
Sent: Tuesday, October 14, 2003 10:36 AM
Subject: group memory for 10/10/03 meeting

<<gm10-10-03.doc>>
Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:09 PM
To: Brian Takeda (E-mail)
Subject: FW: meeting agenda for 11/7

-----Original Message-----
From: Bruce Anderson [mailto:bsa@hawaii.edu]
Sent: Tuesday, November 04, 2003 4:21 PM
To: Namumnart, Wilma
Cc: Dee Dee Letts
Subject: Re: meeting agenda for 11/7

Wilma,

I will not be able to attend on Friday as I will be in San Diego.

The issue that I'm afraid will surface again is whether Waimanalo Gulch should remain on the list of options. I feel very strongly that it should be on our final list of recommended sites. Frankly, I can't think of any good reasons (other than those that are political in nature) why it shouldn't. It ranked highest based on the criteria developed by the Committee and it would be the least costly site to acquire and operate. Perhaps most important, it is irresponsible from a land use standpoint to walk away from this site (or any other existing landfill) on an island with such limited options and take up the valuable land at another site before fully utilizing the existing site. With proper management, Waimanalo Gulch can serve Oahu's municipal landfill needs for at least 20 more years.

I would strongly support that Makaiwa Gulch be on the final list of three, too. It was second in ranking and I think would be the next best site for a new landfill after Waimanalo Gulch has been fully utilized. I don't have any strong preference strong feeling about Maili or Nanakuli site. They were both tied in the latest rankings. Either would be viable. In my opinion, the Ameron Quarry site is not viable given it's continued importance as a rock quarry, the cost of acquisition, and it's relatively limited capacity. Other sites ranked lower. So, my top three choices would be Waimanalo Gulch, Makaiwa Gulch, and either Nanakuli or Maili (in that order). If you think it is appropriate, please don't hesitate to share this position with others.

If you have a draft report and/or draft press release ready for review before the meeting, I would like to have a copy and I will try to provide my comments before the meeting. Thanks.

Bruce

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Sent: Tuesday, November 04, 2003 10:57 AM
Subject: meeting agenda for 11/7

just a reminder that the meeting will start at 9:30 a.m. <<Agenda 11 7.doc>>

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

Brian Takeda

From: Dee Dee [ddletts@lava.net]
Sent: Tuesday, December 02, 2003 9:13 AM
To: Brian Takeda
Subject: FW: Press Inquiries

Dee Dee

-----Original Message-----
From: Rep. Cynthia Thielen [mailto:repthielen@Capitol.hawaii.gov]
Sent: Monday, November 17, 2003 2:08 PM
To: 'Slovin, Gary M.'; kathybryant@dpr4adr.com; Dee Dee; Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Rep. Cynthia Thielen; Eric Guinther (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Subject: RE: Press Inquiries

I was contacted too and refused to give the names of the five sites. But someone evidently released the names. Who?? We reached a final decision on Nov. 7, and selected those five sites to go forward to Mayor Harris. I am not happy that Ameron is among the names, and I still believe we should not jeopardize our major quarry, but we made that group decision. It was hard, but we came to that FINAL decision, and five sites were selected. We all knew that that the final decision had been made on November 7, and we adjourned and left the room. The only purpose for our November 21 meeting is to give final approval to the cover document, transmitting the names of the five sites.
I now understand that some people are trying to reopen the decision. I am unalterably opposed to doing that and believe it is unacceptable dirty politics. If those members succeed in reopening what was a final decision, so they can push their special interest to remove Waimanalo Gulch, then I officially quit this highjacked Advisory Committee on Landfill Siting.
Rep. Cynthia Thielen

\> -----Original Message-----
\> From: Slovin, Gary M. [SMTP:gslovin@goodsill.com]
\> Sent: Monday, November 10, 2003 4:26 PM
\> To: kathybryant@dpr4adr.com; Dee Dee; Namumnart, Wilma; Brian Takeda
\> (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia
\> Thielen (E-mail); Eric Guinther (E-mail); Gary Tomita (E-mail); George
\> Yamamoto (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail);
\> Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted
Jung
\> (E-mail); Todd Apo (E-mail); William Paty (E-mail)
\> Subject: RE: Press Inquiries
\>
\> I guess I should feel hurt that I was not contacted. Terrific
response.
\> I'll just read the email if I get a call.
\>
\> -----Original Message-----
\> From: Kathy Bryant [mailto:kathybryant@dpr4adr.com]
\> Sent: Monday, November 10, 2003 3:49 PM
\> To: Dee Dee; 'Namumnart, Wilma'; 'Brian Takeda (E-mail)'; 'Bruce
\> Anderson (E-mail)'; 'Cynthia Rezentes (E-mail)'; 'Cynthia Thielen

> (E-mail)'; 'Eric Guinther (E-mail)'; Slovin, Gary M.; 'Gary Tomita
> (E-mail)'; 'George Yamamoto (E-mail)'; 'Mark/Carol White (E-mail)';
> 'Michael Chun (E-mail)'; 'Robert Tong (E-mail)'; 'Shad Kane (E-mail)';
> 'Steve Holmes (E-mail)'; 'Ted Jung (E-mail)'; 'Todd Apo (E-mail)';
> 'William Paty (E-mail)'
> Subject: RE: Press Inquiries
>
>
> I too was contacted and provided the same information as Cynthia.
>
> Kathy
>
> -----Original Message-----
> From: Dee Dee [mailto:ddletts@lava.net]
> Sent: Monday, November 10, 2003 3:21 PM
> To: 'Namumnart, Wilma'; 'Brian Takeda (E-mail)'; 'Bruce Anderson
> (E-mail)'; 'Cynthia Rezentes (E-mail)'; 'Cynthia Thielen (E-mail)';
> 'Eric Guinther (E-mail)'; 'Gary Slovin (E-mail)'; 'Gary Tomita
> (E-mail)'; 'George Yamamoto (E-mail)'; 'Kathy Bryant Hunter (E-mail)';
> 'Mark/Carol White (E-mail)'; 'Michael Chun (E-mail)'; 'Robert Tong
> (E-mail)'; 'Shad Kane (E-mail)'; 'Steve Holmes (E-mail)'; 'Ted Jung
> (E-mail)'; 'Todd Apo (E-mail)'; 'William Paty (E-mail)'
> Subject: RE: Press Inquiries
>
>
> Aloha,
>
> Cynthia Rezentes just called me to say that she has been contacted by
> the Advertiser about Friday's meeting. She is unable to send this
email
> now and has asked me to send it for her. Her response to the reporter
> is that the committee is finalizing their report and when it is
> forwarded to the Mayor in the next two weeks it will be public and
> available to the press until then she has no further comment on the
work
> of the committee. She hopes that anyone else who gets contacted will
> respond in similar fashion.
>
>
> Dee Dee
>
>
>
>
>

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:28 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments

-----Original Message-----
From: Todd Apo [mailto:todd@koolina.com]
Sent: Tuesday, November 18, 2003 5:17 PM
To: Namumnart, Wilma; 'Brian Takeda (E-mail)'; 'Bruce Anderson (E-mail)'; 'Cynthia Rezentes (E-mail)'; 'Cynthia Thielen (E-mail)'; 'DeeDee Letts (E-mail)'; 'Eric Guinther (E-mail)'; 'Gary Slovin (E-mail)'; 'Gary Tomita (E-mail)'; 'George Yamamoto (E-mail)'; 'Kathy Bryant Hunter (E-mail)'; 'Mark/Carol White (E-mail)'; 'Michael Chun (E-mail)'; 'Robert Tong (E-mail)'; 'Shad Kane (E-mail)'; Holmes, Steve; 'Ted Jung (E-mail)'; 'William Paty (E-mail)'
Cc: lkakazu@goodsill.com; olchun@ksbe.edu
Subject: RE: various developments

While I obviously have more expansive comments to this email (which I will address later - as I believe there are some mis-statements in Wilma's email), the key point I want to address first is that I disagree that "the Committee had agreed to recommend the five sites." The Committee has not made any final decision. I raised this issue numerous times at the last meeting, including when I asked that we take a vote on selecting sites. The Committee never made a decision to recommend five sites. All that was done was that we eliminated three sites by consensus. I continue my objection to submitting 5 sites.

Deciding to recommend 5 sites is very different from not being able to eliminate any more sites. Until we either have complete agreement to recommend 5 sites (by consensus) or we take a vote to recommend any specific sites (whether it be 1, 2 or 5), we, as the Committee, have not made any decision or recommendation.

As many of you know, I have been seeking a way for us, the Committee, to reach an actual decision. Given the differing views, the reality is that it is unlikely that such a decision will be by consensus. Therefore, I have been searching for a resolution that more than just a mere majority can agree upon. The bottom line is that we must make an actual recommendation decision.

On an additional technical note, in looking at the sunshine law requirements, no decision making was ever noticed in the agenda for the previous (Nov 7) meeting - all that was on the agenda was "discussion of sites." Therefore, even if we attempted to make decisions at that meeting, it would have been invalid. Additionally for this Friday, while we may review, comment and attempt to finalize the report on Friday, the Committee's final report must be actually accepted by the Committee. This act of accepting the report was not noticed in the Agenda for Friday.

Therefore, it is imperative that we schedule a meeting for next week, with proper notification that the Committee will be conducting decision making on recommending sites, and that we will be acting to accept the final report.

While I understand that some members believe that we made a final decision at the last meeting, that is not the case. We clearly didn't do so by consensus, and we clearly did not take a vote on anything. All we did was eliminate 3 out of 8 sites. I made this point at the last meeting as well as at the sub-committee meeting yesterday.

Therefore, I ask that the City properly notice a decision making meeting for next week. Given the timing that exists relative to the Thanksgiving holiday and the Dec 1 deadline, I ask that the meeting be scheduled and noticed as soon as possible (I believe that if it is noticed tomorrow, it can be scheduled for Tuesday), and that we not wait until Thursday to schedule it. If it is determined that the meeting is not necessary, we can cancel the meeting. However, I don't want us to lose the opportunity to get this done correctly.

Todd Apo

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Tuesday, November 18, 2003 1:19 PM
To: Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Cc: lkakazu@goodsill.com; olchun@ksbe.edu
Subject: various developments

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The Sub-committee has been working diligently on the Committee's behalf to craft a report the Committee can be proud of. The Sub-committee met twice, the second meeting occurring this past Monday (11/17) for three hours. As the Sub-committee was ending this meeting a member of the sub-committee announced an intent to re-open the process on Friday (11/21) to remove Waimanalo Gulch from the list of recommended sites. It was pointed out that the Committee made its final recommendation at the last meeting on 11/7, and the only item on the 11/21 agenda is finalizing the report with the recommendation of five sites. This member continued to maintain that a vote should be taken even, when reminded that the Committee had agreed to recommend the five sites, as consensus could not be reached on removing any of them.
Other members of the Committee were unhappy with other sites staying on the list and put their differences aside in favor of not polarizing the Committee. This individual stated that they had talked with Anthony Ching, Executive Officer of the LUC, and that Anthony had said the Committee needed to come up with one site and that it could not be Waimanalo Gulch. The City, when informed of this comment, requested clarification from Anthony Ching. I sent his clarification by email to the Committee. In case anyone has not received a copy of his response, it is duplicated below. Basically Anthony states that the recommendation of the Committee can include multiple sites and that if the City decides to go back to Waimanalo Gulch, the City would have to file for and receive relief from the prior LUC ruling by May 1, 2008.

Statement of Anthony Ching, Executive Officer of the State Land Use Commission

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1. With respect to the recommendation and submission by the Blue Ribbon Site Selection of multiple sites for a new landfill to the City Council for their consideration.

The operative part of Condition #1 of the Commission's Decision and Order Approving Amendment to Special Use Permit says that the Blue Ribbon Site Selection Committee shall make its recommendation to the City Council by December 1, 2003.

I believe that the order is silent with respect to the scope or nature of any recommendation by the Site Selection Committee. The committee's recommendation is their own choosing and device and is not specifically governed by the Commission's order. It is my personal opinion and hope that if multiple sites are provided to the City Council by the site selection committee, that they be at a minimum, ranked in priority order.

I believe instead that the critical deadline specified in the Commission's order is that the City Council shall select a new site no later than June 1, 2004 or suffer immediate expiration of the LUC special permit.

2. With respect to the inclusion of Waimanalo Gulch as one of the recommended sites for the new landfill.

Condition #12 of the Commission's Decision and Order clearing specifies that no later than May 1, 2008, that the Waimanalo Gulch Landfill will be restricted from accepting any additional waste material and will be closed in accordance with an approved closure plan. Should the City Council choose to expand rather than close the Waimanalo Gulch Landfill, they would have to petition the Land Use Commission for relief prior to May 1, 2008. The Commission may approve, or not, any such petition for relief on the merits of the presentations made to it.

End of statement.

The City from the beginning of this committee process has requested multiple sites from the Committee to go forward to an EIS process. A multiple-site recommendation addresses the allegation that a site has been predetermined prior to completion of an EIS. Multiple sites offer the opportunity for detailed studies during the EIS process that could assist in identifying the optimum site for a landfill.

Subsequent to Anthony's letter, a member of the Sub-committee has asked me to schedule another meeting for next week to select a single site. The meeting agenda must be posted six calendar days before the meeting to comply with the Sunshine Law requirement. The meeting would be to reconsider the Committee's intent to recommend five sites. For all the reasons stated above, as well as the views of at least one of the Committee members who has shared these views with everyone on the Committee, the City does not believe that this is the proper way to proceed. However, this is the Committee's process so I am requesting that you all respond to this email by letting me know if you wish to schedule another meeting to discuss further reduction to the list of 5 recommended sites. Please let me know either by phone or by email before close of business tomorrow (11/19). The deadline to forward a final report by December 1, 2003, is still firm.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:28 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments

-----Original Message-----
From: Ted Jung [mailto:jung002@hawaii.rr.com]
Sent: Tuesday, November 18, 2003 7:07 PM
To: Namumnart, Wilma
Subject: Re: various developments

i think we cud be a serious conflict if we were to "re-vote " on something that was duly voted on. can we go back on other items that we previous voted on?it's not our pick anyway, the mayor will forword on to the council who will make the final decision. i think we will come under intense critisism if we were to revote, keep the five in place.

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@HAWAII.RR.COM>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@HAWAII.RR.COM>; "Shad Kane (E-mail)" <kiha@HAWAII.RR.COM>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@HAWAII.RR.COM>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Cc: <lkakazu@goodsill.com>; <olchun@ksbe.edu>
Sent: Tuesday, November 18, 2003 1:18 PM
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End of statement.

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Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:26 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments

-----Original Message-----
From: Bruce Anderson [mailto:bsa@hawaii.edu]
Sent: Tuesday, November 18, 2003 3:09 PM
To: Namumnart, Wilma; Brian Takeda (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Cc: lkakazu@goodsill.com; olchun@ksbe.edu
Subject: Re: various developments

Wilma,

As discussed, I am opposed to meeting again to reconsider dropping Waimanalo or any other site from the list.

I was not able to attend the last meeting because I was giving a presentation on the mainland. However, I understand the Committee as a whole agreed to recommend five sites to the City for further evaluation. Although I would have preferred that the list be narrowed down to three sites, I defer to the judgment of the Committee at large and support this recommendation. I realize that it would be difficult at best to narrow the options. Further, it would be inappropriate given the limited amount of information that is available on each site. I think the City has a recommendation that will allow them to proceed through the next steps to more thoroughly evaluate the sites. Should the City ultimately choose to expand rather than close the Waimanalo Gulch Landfill, they would need to request approval of the Land Use Commission (LUC) just as they would for any other site that would require LUC approval. The deadline for asking for relief from the LUC (May 1, 2008) allows the City over four years to carefully evaluate the options and to go through the EIS process. This is all very reasonable and it does not preclude any of the five sites from further consideration.

Our commission was charged with a very difficult and thankless task. Given the potentially volatile and controversial nature of the issue, I am comfortable that we have done our job--and done it well. We have a recommendation we all agreed to and we should stick with it.

Respectfully submitted,

Bruce

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>

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Sent: Wednesday, December 03, 2003 1:26 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments

-----Original Message-----
From: Rep. Cynthia Thielen [mailto:repthielen@Capitol.hawaii.gov]
Sent: Tuesday, November 18, 2003 1:43 PM
To: Namumnart, Wilma; Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Rep. Cynthia Thielen; DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Holmes, Steve; Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
Cc: lkakazu@goodsill.com; olchun@ksbe.edu
Subject: RE: various developments

My objection to reopening the FINAL decision still stands. No, no, no to a meeting to reduce the 5 sites. I still am appalled that some people who are unhappy with Waimanalo Gulch being on the list now want to hammer away until it is taken off. I do understand that some of this pressure comes from political person(s) not on the committee. That makes it even more unacceptable political manipulation. As I said before, I will not demean myself and participate in that political game. Rep. Cynthia Thielen

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> From: Namumnart, Wilma [SMTP:WNamumnart@co.honolulu.hi.us]
> Sent: Tuesday, November 18, 2003 1:19 PM
> To: Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
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> executive officer. Among other duties, the executive officer
> certifies orders as to their accuracy, assists the chair in
> establishing the Commission's calendar, supervises staff of the agency
> and serves at the pleasure of the Commission.
>
> 1. With respect to the recommendation and submission by the
> Blue Ribbon Site Selection of multiple sites for a new landfill to the
> City Council for their consideration.
>
> The operative part of Condition #1 of the Commission's Decision and
> Order Approving Amendment to Special Use Permit says that the Blue
> Ribbon Site Selection Committee shall make its recommendation to the
> City Council by December 1, 2003.
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> I believe that the order is silent with respect to the scope or
> nature of any recommendation by the Site Selection Committee. The
> committee's recommendation is their own choosing and device and is not
> specifically governed by the Commission's order. It is my personal
> opinion and hope that if multiple sites are provided to the City
> Council by the site selection committee, that they be at a minimum,
> ranked in priority order.
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> I believe instead that the critical deadline specified in the
> Commission's order is that the City Council shall select a new site no
> later than June 1, 2004 or suffer immediate expiration of the LUC
> special permit.
>
> 2. With respect to the inclusion of Waimanalo Gulch as one of
> the recommended sites for the new landfill.
>
> Condition #12 of the Commission's Decision and Order clearing
> specifies that no later than May 1, 2008, that the Waimanalo Gulch
> Landfill will be restricted from accepting any additional waste
> material and will be closed in accordance with an approved closure
> plan. Should the City Council choose to expand rather than close the
> Waimanalo Gulch Landfill, they would have to petition the Land Use
> Commission for relief prior to May 1, 2008. The Commission may
> approve, or not, any such petition for relief on the merits of the
> presentations made to it.
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> End of statement.
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> The City from the beginning of this committee process has requested
> multiple sites from the Committee to go forward to an EIS process. A
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> meeting to comply with the Sunshine Law requirement. The meeting
> would be to reconsider the Committee's intent to recommend five sites.

> For all the reasons stated above, as well as the views of at least one
> of the Committee members who has shared these views with everyone on
> the Committee, the City does not believe that this is the proper way
> to proceed. However, this is the Committee's process so I am
> requesting that you all respond to this email by letting me know if
> you wish to schedule another meeting to discuss further reduction to
> the list of 5 recommended sites. Please let me know either by phone
> or by email before close of business tomorrow (11/19). The deadline
> to forward a final report by December 1, 2003, is still firm.
>
>
> Wilma Namumnart
> ENV/Refuse Division
> Phone 692-5378
> FAX 692-5402

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:27 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments-2

-----Original Message-----
From: Robert Tong [mailto:tongr002@hawaii.rr.com]
Sent: Tuesday, November 18, 2003 4:27 PM
To: Namumnart, Wilma
Subject: Re: various developments-2

Wilma,
I vote to leave the 5 sites with all comments and criteria as discussed on 11/7 on the report to be sent to the City Council. Bob Tong
----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Cc: <olchun@ksbe.edu>; <lkakazu@goodsill.com>
Sent: Tuesday, November 18, 2003 3:32 PM
Subject: FW: various developments-2

to clarify the email below, the question you are being asked to email or phone me about is "do you wish to schedule another meeting for next week to select a single site or do you wish to have the five recommended sites go forward?" for those of you who have already emailed me, please disregard this email unless you did not understand the question and wish to change your vote.

> -----Original Message-----
> From: Namumnart, Wilma
> Sent: Tuesday, November 18, 2003 1:19 PM
> To: Brian Takeda (E-mail); Bruce Anderson (E-mail); Cynthia Rezentes (E-mail); Cynthia Thielen (E-mail); DeeDee Letts (E-mail); Eric Guinther (E-mail); Gary Slovin (E-mail); Gary Tomita (E-mail); George Yamamoto (E-mail); Kathy Bryant Hunter (E-mail); Mark/Carol White (E-mail); Michael Chun (E-mail); Robert Tong (E-mail); Shad Kane (E-mail); Steve Holmes (E-mail); Ted Jung (E-mail); Todd Apo (E-mail); William Paty (E-mail)
> Cc: 'lkakazu@goodsill.com'; 'olchun@ksbe.edu'
> Subject: various developments
>
> This email addresses a recent development within the Committee> '> s Sub-committee on drafting the final report and asks you to vote your preference by email before close of business on Wednesday, November 19, 2003.
>
> The Sub-committee has been working diligently on the Committee> '> s behalf to craft a report the Committee can be proud of. The Sub-committee met twice, the second meeting occurring this past Monday (11/17) for three hours. As the Sub-committee was ending this meeting a member of the sub-committee announced an intent to re-open the process on Friday (11/21) to remove Waimanalo Gulch from the list of recommended sites.

It was pointed out that the Committee made its final recommendation at the last meeting on 11/7, and the only item on the 11/21 agenda is finalizing the report with the recommendation of five sites. This member continued to maintain that a vote should be taken even, when reminded that the Committee had agreed to recommend the five sites, as consensus could not be reached on removing any of them.
> Other members of the Committee were unhappy with other sites staying
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the list and put their differences aside in favor of not polarizing the Committee. This individual stated that they had talked with Anthony Ching, Executive Officer of the LUC, and that Anthony had said the Committee needed to come up with one site and that it could not be Waimanalo Gulch. The City, when informed of this comment, requested clarification from Anthony Ching. I sent his clarification by email to the Committee. In case anyone has not received a copy of his response, it is duplicated below. Basically Anthony states that the recommendation of the Committee can include multiple sites and that if the City decides to go back to Waimanalo Gulch, the City would have to file for and receive relief from the prior LUC ruling by May 1, 2008.
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> Statement of Anthony Ching, Executive Officer of the State Land Use
Commission
>
> Disclaimer - The executive officer of the Land Use Commission is a
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Site Selection of multiple sites for a new landfill to the City Council for their consideration.
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any recommendation by the Site Selection Committee. The committee> '> s recommendation is their own choosing and device and is not specifically governed by the Commission> '> s order. It is my personal opinion and hope that if multiple sites are provided to the City Council by the site selection committee, that they be at a minimum, ranked in priority order.
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>
>
> Wilma Namumnart
> ENV/Refuse Division
> Phone 692-5378
> FAX 692-5402
>

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:29 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments

-----Original Message-----
From: Shad Kane [mailto:kiha@hawaii.rr.com]
Sent: Tuesday, November 18, 2003 9:35 PM
To: Namumnart, Wilma
Cc: Michael Chun (E-mail); Eric Guinther (E-mail); Bryant, Kathy; Yamamoto, George; Mark/Carol White (E-mail); Tong, Robert; Cynthia Thielen (E-mail); Brian Takeda (E-mail); Cynthia Rezentes (E-mail); Gary Slovin (E-mail); William Paty (E-mail); DeeDee Letts (E-mail); Ted Jung (E-mail); Holmes, Steve; Todd Apo (E-mail); Bruce Anderson (E-mail); Gary Tomita (E-mail)
Subject: Re: various developments

I think that I need to restate something that I have said a number of times. It amazes me how something so elementary is so difficult to understand by people with colorful resumes. The whole reason this process was put in place is simply because a substantial number of people said NO to Waimanalo Gulch. The Director of the Department of Environmental Services said that Waimanalo Gulch is not an option. He subsequently backed down under the abrasive behavior of several well placed, politically motivated members. This abrasive attitude is supported by some of these individuals identifying themselves by their political office held. Is it even okay to have politicians serve on this committee??? It is suprising that we have politicians (who hold paid positions) accusing volunteer community representatives (who are unpaid) of being political!

I constantly read in all these email communications that the "Committee of the Whole" in consensus agreed to moving 5 sites forward. Let me repea twhat I have said before that seems difficult for some of our members to understand. There was no consensus. The decision is divided. If the decision goes forward recommending 5 sites it needs to go forward with a statement that a substantial number of members disagree with the inclusion of Waimanalo Gulch.

I am in support of another meeting to resolve this issue and bring it in compliance with the reason for the establishment of the Blue Ribbon Landfill Committee.

Shad Kane
Volunteer Community Representative

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@HAWAII.RR.COM>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@HAWAII.RR.COM>; "Shad Kane (E-mail)" <kiha@HAWAII.RR.COM>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@HAWAII.RR.COM>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Cc: <lkakazu@goodsill.com>; <olchun@ksbe.edu>
Sent: Tuesday, November 18, 2003 1:18 PM
Subject: various developments

This email addresses a recent development within the Committee's Sub-committee on drafting the final report and asks you to vote your preference by email before close of business on Wednesday, November 19, 2003.

The Sub-committee has been working diligently on the Committee's behalf to craft a report the Committee can be proud of. The Sub-committee met twice, the second meeting occurring this past Monday (11/17) for three hours. As the Sub-committee was ending this meeting a member of the sub-committee announced an intent to re-open the process on Friday (11/21) to remove Waimanalo Gulch from the list of recommended sites. It was pointed out that the Committee made its final recommendation at the last meeting on 11/7, and the only item on the 11/21 agenda is finalizing the report with the recommendation of five sites. This member continued to maintain that a vote should be taken even, when reminded that the Committee had agreed to recommend the five sites, as consensus could not be reached on removing any of them. Other members of the Committee were unhappy with other sites staying on the list and put their differences aside in favor of not polarizing the Committee. This individual stated that they had talked with Anthony Ching, Executive Officer of the LUC, and that Anthony had said the Committee needed to come up with one site and that it could not be Waimanalo Gulch. The City, when informed of this comment, requested clarification from Anthony Ching. I sent his clarification by email to the Committee. In case anyone has not received a copy of his response, it is duplicated below. Basically Anthony states that the recommendation of the Committee can include multiple sites and that if the City decides to go back to Waimanalo Gulch, the City would have to file for and receive relief from the prior LUC ruling by May 1, 2008.

Statement of Anthony Ching, Executive Officer of the State Land Use Commission

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1. With respect to the recommendation and submission by the Blue Ribbon Site Selection of multiple sites for a new landfill to the City Council for their consideration.

The operative part of Condition #1 of the Commission's Decision and Order Approving Amendment to Special Use Permit says that the Blue Ribbon Site Selection Committee shall make its recommendation to the City Council by December 1, 2003.

I believe that the order is silent with respect to the scope or nature of any recommendation by the Site Selection Committee. The committee's recommendation is their own choosing and device and is not specifically governed by the Commission's order. It is my personal opinion and hope that if multiple sites are provided to the City Council by the site selection committee, that they be at a minimum, ranked in priority order.

I believe instead that the critical deadline specified in the Commission's order is that the City Council shall select a new site no later than June 1, 2004 or suffer immediate expiration of the LUC special permit.

2. With respect to the inclusion of Waimanalo Gulch as one of the recommended sites for the new landfill.

Condition #12 of the Commission's Decision and Order clearing specifies that no later than May 1, 2008, that the Waimanalo Gulch Landfill will be restricted from accepting any additional waste material and will be closed in accordance with an approved closure plan. Should the City Council choose to expand rather than close the Waimanalo Gulch Landfill, they would have to petition the Land Use Commission for relief prior to May 1, 2008. The Commission may approve, or not, any such petition for relief on the merits of the presentations made to it.

End of statement.

The City from the beginning of this committee process has requested multiple sites from the Committee to go forward to an EIS process. A multiple-site recommendation addresses the allegation that a site has been predetermined prior to completion of an EIS. Multiple sites offer the opportunity for detailed studies during the EIS process that could assist in identifying the optimum site for a landfill.

Subsequent to Anthony's letter, a member of the Sub-committee has asked me to schedule another meeting for next week to select a single site. The meeting agenda must be posted six calendar days before the meeting to comply with the Sunshine Law requirement. The meeting would be to reconsider the Committee's intent to recommend five sites. For all the reasons stated above, as well as the views of at least one of the Committee members who has shared these views with everyone on the Committee, the City does not believe that this is the proper way to proceed. However, this is the Committee's process so I am requesting that you all respond to this email by letting me know if you wish to schedule another meeting to discuss further reduction to the list of 5 recommended sites. Please let me know either by phone or by email before close of business tomorrow (11/19). The deadline to forward a final report by December 1, 2003, is still firm.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

Brian Takeda

From: Dee Dee [ddletts@lava.net]

Sent: Tuesday, December 02, 2003 9:10 AM

To: Brian Takeda

Subject: FW: various developments

Dee Dee

-----Original Message-----
From: Rezentesc@aol.com [mailto:Rezentesc@aol.com]
Sent: Wednesday, November 19, 2003 8:43 AM
To: WNamumnart@co.honolulu.hi.us; briant@rmtowill.com; bsa@hawaii.edu; repthielen@capitol.hawaii.gov; ddletts@lava.net; guinther@hawaii.rr.com; gslovin@goodsill.com; IGTWINK@aol.com; georges.yamamoto@alumni.usc.edu; kathybryant@dpr4adr.com; mark@pwcg.net; michun@ksbe.edu; tongr002@hawaii.rr.com; kiha@hawaii.rr.com; SHolmes@co.honolulu.hi.us; jungt002@hawaii.rr.com; todd@koolina.com; bill@martroffice.com
Cc: lkakazu@goodsill.com; olchun@ksbe.edu
Subject: Re: various developments

I have no objections to holding another meeting to settle the concerns expressed regarding clarifying whether we clearly are forwarding the five sites by consensus and would encourage it to get a full committee position.

Also, although I am no attorney and I understand that opinions, commitments and positions sometimes change on the winds and with whomever is in charge, I believe the City and County has made a verbal contract with the West Coast community, KoOlina, the PC and LUC by stating, not once but many times, they will not operate Waimanalo Gulch Sanitary Landfill beyond May 1, 2008. (My definition of a contract, verbal or written, remembered from my 500 level Business Law Class, is that both sides get something for something. In this case the City got their permit extension for another five years to operate Waimanalo Gulch Sanitary Landfill and the community and KoOlina got the commitment for closure after those five years were up.)

Cynthia Rezentes

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:30 PM
To: Brian Takeda (E-mail)
Subject: FW: various developments

-----Original Message-----
From: Shad Kane [mailto:kiha@hawaii.rr.com]
Sent: Wednesday, November 19, 2003 10:40 AM
To: Namumnart, Wilma
Subject: Re: various developments

Aloha Wilma,

I am in support of another meeting next week after this Fridays meeting. The purpose of this meeting to reduce the 5 sites to 1 site. Mahalo, Shad

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@HAWAII.RR.COM>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@HAWAII.RR.COM>; "Shad Kane (E-mail)" <kiha@HAWAII.RR.COM>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@HAWAII.RR.COM>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
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End of statement.

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Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]

Sent: Wednesday, December 03, 2003 1:31 PM

To: Brian Takeda (E-mail)

Subject: FW: Various developments

-----Original Message-----
From: Robert Tong [mailto:tongr002@hawaii.rr.com]
Sent: Wednesday, November 19, 2003 2:08 PM
To: Namumnart, Wilma
Subject: Various developments

Wilma,
I would like to change my vote to send the five sites to the city council. If the majority wishes to meet next week I am available on Monday, 11/24, Tuesday, 11/25, or Wednesday, 11/26, to meet.

Bob Tong

Brian Takeda

From: Dee Dee [ddletts@lava.net]
Sent: Tuesday, December 02, 2003 9:08 AM
To: Brian Takeda
Subject: FW: Landfill Panel

Dee Dee

-----Original Message-----
From: Todd Apo [mailto:todd@koolina.com]
Sent: Monday, November 24, 2003 4:36 PM
To: 'DeeDee Letts (E-mail)'; Wilma Namumnart
Subject: Landfill Panel

Wilma and DeeDee,

I want to confirm that part of the agenda for Monday's meeting is to confirm the vote taken at last Friday's meeting that Waimanalo Gulch will be taken off from any further consideration and from any report of the Committee. This will confirm that after we took the vote on "what to do if we do not reach a decision on Monday, Dec 1," we then voted to remove Waimanalo Gulch from any further consideration. The vote was 7-3 (Apo, Gunthier, Kane, Rezentes, Slovin, Tomita, and Yamamoto in favor; Holmes, Hunter, and Thielen opposed) in favor of taking Waimanalo Gulch off. Additionally, I passed out copies with 9 signatures to take Waimanalo Gulch off – this included the signature of Bob Tong, Ted Jung and William Paty. I also understand that Mike Chun sent in a letter confirming his agreement that Waimanalo Gulch should be removed from further consideration. Therefore, there are 11 (of 15) committee members on record as opposing Waimanalo Gulch from any further consideration.

While this will be a part of finalizing site selection, we would like, to avoid any confusion or procedural problems, to have the agenda specifically reflect that this will be officially decided upon at Monday's meeting – either as a sub-matter under finalizing site selection or as a separate agenda item.

I would appreciate hearing back from you on this.

Aloha,
Todd

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:11 PM
To: Brian Takeda (E-mail)
Subject: FW: meeting, 12/1

-----Original Message-----
From: Bruce Anderson [mailto:bsa@hawaii.edu]
Sent: Monday, November 24, 2003 8:59 AM
To: Namumnart, Wilma
Cc: Dee Dee Letts
Subject: Re: meeting, 12/1

Wilma,

I think we all need some further clarification on the purpose(s) of another meeting.

As you know, I think the Committee has gone as far as it can given its constituency in recommending five sites for the City to consider. Others on the Committee share this opinion. We simply don't have enough information to narrow the list further at this point and would be inappropriate to do so by vote. If the purposes of the meeting is to vote on a preferred site or to vote on eliminating Waimanalo Gulch (the top choice based on criteria agreed to by the Committee) or any other site, I will be no part of this meeting.

Did you find out if the Land Use Commission provide further direction at their last meeting as represented by Todd Apo? If so, I would check to see if there was a public notice that this topic would be on the agenda. If the Commission did not provide adequate notice, this topic should not been discussed. I certainly would have commented at their meeting had I known this would be a topic of discussion--as would others. I would check on that and press the issue (through the AG), if necessary. That's what the public notice issue is all about. In any event, our Committee is an "advisory committee" to the City and is not beholden to the Commission or anyone else.

It would be helpful to everyone to have some further guidance before the meeting on exactly what would be discussed. Please check with Dee Dee.

Thanks.

Bruce

----- Original Message -----
From: "Namumnart, Wilma" <WNamumnart@co.honolulu.hi.us>
To: "Brian Takeda (E-mail)" <briant@rmtowill.com>; "Bruce Anderson (E-mail)" <bsa@hawaii.edu>; "Cynthia Rezentes (E-mail)" <rezentesc@aol.com>; "Cynthia Thielen (E-mail)" <repthielen@capitol.hawaii.gov>; "DeeDee Letts (E-mail)" <ddletts@lava.net>; "Eric Guinther (E-mail)" <guinther@hawaii.rr.com>; "Gary Slovin (E-mail)" <gslovin@goodsill.com>; "Gary Tomita (E-mail)" <igtwink@aol.com>; "George Yamamoto (E-mail)" <georges.yamamoto@alumni.usc.edu>; "Kathy Bryant Hunter (E-mail)" <kathybryant@dpr4adr.com>; "Mark/Carol White (E-mail)" <mark@pwcg.net>; "Michael Chun (E-mail)" <michun@ksbe.edu>; "Robert Tong (E-mail)" <tongr002@hawaii.rr.com>; "Shad Kane (E-mail)" <kiha@hawaii.rr.com>; "Steve Holmes (E-mail)" <SHolmes@co.honolulu.hi.us>; "Ted Jung (E-mail)" <jungt002@hawaii.rr.com>; "Todd Apo (E-mail)" <todd@koolina.com>; "William Paty (E-mail)" <bill@martroffice.com>
Sent: Saturday, November 22, 2003 9:03 AM
Subject: meeting, 12/1

our meeting will be at kapolei hale in the third floor conference room from 9 - 10:30 a.m. attached is the agenda. <<Agenda 12 1.doc>>

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Friday, November 28, 2003 8:38 AM
To: Brian Takeda (E-mail); DeeDee Letts (E-mail); Mark/Carol White (E-mail)
Subject: FW: Landfill Committee on behalf of Bill Paty

-----Original Message-----
From: Susan Gall [mailto:susan@martroffice.com]
Sent: Wednesday, November 26, 2003 11:44 AM
To: Namumnart, Wilma
Cc: Wm W. Paty
Subject: Landfill Committee on behalf of Bill Paty

Wilma,

I regret that due to continuing family illness I have been unable to attend committee meetings. I have been following the minutes; I support the removal of Waimanalo gulch from further consideration.

Bill Paty

(the preceding msg is being sent on behalf of Bill Paty. His direct email is bill@martroffice.com)

Brian Takeda

From: Dee Dee [ddletts@lava.net]
Sent: Tuesday, December 02, 2003 9:15 AM
To: Brian Takeda
Subject: FW: Response to Todd Apo's email

Dee Dee

-----Original Message-----
From: Dee Dee [mailto:ddletts@lava.net]
Sent: Friday, November 28, 2003 4:04 PM
To: 'bsa@hawaii.edu'; 'Rep. Cynthia Thielen'; 'Eric Guinther (E-mail)'; 'Gary Slovin (E-mail)'; 'Gary Tomita (E-mail)'; 'George Yamamoto (E-mail)'; 'Kathy Bryant Hunter (E-mail)'; 'Michael Chun (E-mail)'; 'Robert Tong (E-mail)'; 'Shad Kane (E-mail)'; 'Steve Holmes (E-mail)'; 'Ted Jung (E-mail)'; 'Todd Apo (E-mail)'; 'William Paty (E-mail)'
Cc: Wima Namumnart (wnamumnart@co.honolulu.hi.us); Brian Takeda (BrianT@rmtowill.com); 'Mark White'
Subject: Response to Todd Apo's email

TO: Members of the Mayor's Blue Ribbon Committee on Landfill

FR: Dee Dee

RE: Email received from Todd Apo

I have duplicated below Todd's email sent to Wilma and myself and am via this email sending it to the entire Committee as I feel it concerns the entire Committee. I would request that any email sent to myself be sent to the entire Committee as I am responsible to the Committee as whole not individual members.

My responsibility is the process by which the Committee moves forward not the substance that the Committee considers or recommends. All substantive questions belong to the Committee as a whole not me. As far as process goes one member or one group of members can not change the agenda or group memories of the group. Agenda items are generally agreed to at the end of one meeting for the next and once posted require a 2/3 vote of all Committee members to change. In this case the agenda items for the December 1 meeting are a discussion about further narrowing the recommendations. Under this item a discussion of removal of Waimanalo Gulch can take place. The second item allows the group to change the recommendations section in the final report, if the first item results in changes.

This Committee has operated under the Sunshine Law, thus decisions must be made in the open at Committee meetings. There are no provisions for accepting petitions or email votes on substantive items. Votes for process items such as whether to have another meeting are OK but substantive decisions are not.

In regards to the meeting on November 24 there were three votes taken at that meeting. The first to put the discussion of site reduction on the agenda which required 2/3 of the entire Committee to amend the agenda under Sunshine and failed to get the 10 votes required. The second to hold the December 1 first meeting which passed, and the third which was to forward the report with no recommendations and just a list of the sites currently in the report if the December 1 meeting did not happen or resolution on the issue of reducing the number of sites could not be achieved which passed.

I hope this clears up any confusion around process. I look forward to seeing you all on December 1. Should the group decide to vote at that time it will be a change from the process the Committee has employed for five months and even if the Committee decides to do this, process questions will continue to be handled by consensus.

Mahalo for all your hard work and efforts toward forwarding a thoughtful set of recommendations to this point.

_Todd's email follows below

Wilma and DeeDee,

I want to confirm that part of the agenda for Monday's meeting is to confirm the vote taken at last Friday's meeting that Waimanalo Gulch will be taken off from any further consideration and from any report of the Committee. This will confirm that after we took the vote on "what to do if we do not reach a decision on Monday, Dec 1," we then voted to remove Waimanalo Gulch from any further consideration. The vote was 7-3 (Apo, Gunthier, Kane, Rezentes, Slovin, Tomita, and Yamamoto in favor; Holmes, Hunter, and Thielen opposed) in favor of taking Waimanalo Gulch off. Additionally, I passed out copies with 9 signatures to take Waimanalo Gulch off – this included the signature of Bob Tong, Ted Jung and William Paty. I also understand that Mike Chun sent in a letter confirming his agreement that Waimanalo Gulch should be removed from further consideration. Therefore, there are 11 (of 15) committee members on record as opposing Waimanalo Gulch from any further consideration.

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I would appreciate hearing back from you on this.

Aloha,
Todd

Brian Takeda

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Wednesday, December 03, 2003 1:34 PM
To: Brian Takeda (E-mail)
Subject: FW: Response to Todd Apo's email

-----Original Message-----
From: Todd Apo [mailto:todd@koolina.com]
Sent: Saturday, November 29, 2003 12:04 AM
To: 'Dee Dee'; bsa@hawaii.edu; 'Rep. Cynthia Thielen'; 'Eric Guinther (E-mail)'; 'Gary Slovin (E-mail)'; 'Gary Tomita (E-mail)'; 'George Yamamoto (E-mail)'; 'Kathy Bryant Hunter (E-mail)'; 'Michael Chun (E-mail)'; 'Robert Tong (E-mail)'; 'Shad Kane (E-mail)'; Holmes, Steve; 'Ted Jung (E-mail)'; 'William Paty (E-mail)'
Cc: Namumnart, Wilma; 'Brian Takeda'; 'Mark White'
Subject: RE: Response to Todd Apo's email

Dee Dee,

Thank you for the response email, and the confirmation that we will address the Waimanalo Gulch issue under the current agenda. As my email started off, I was trying to confirm my understanding of "the process" for Monday's meeting, which is why I emailed you and Wilma initially, and not the whole committee. From your email, I understand that we will be making all substantive decisions at the meeting with those present, and not via email or petition.

From your email, I have two remaining questions:

1) Please confirm your understanding of the 7-3 vote that I referenced in my previous email below.
2) How do we make changes to the group memories?

Thank you again Dee Dee for your work on effort in keeping our group moving through this difficult task.

Aloha,
Todd

From: Dee Dee [mailto:ddletts@lava.net]
Sent: Friday, November 28, 2003 4:04 PM
To: bsa@hawaii.edu; 'Rep. Cynthia Thielen'; 'Eric Guinther (E-mail)'; 'Gary Slovin (E-mail)'; 'Gary Tomita (E-mail)'; 'George Yamamoto (E-mail)'; 'Kathy Bryant Hunter (E-mail)'; 'Michael Chun (E-mail)'; 'Robert Tong (E-mail)'; 'Shad Kane (E-mail)'; 'Steve Holmes (E-mail)'; 'Ted Jung (E-mail)'; 'Todd Apo (E-mail)'; 'William Paty (E-mail)'
Cc: Wima Namumnart; Brian Takeda; 'Mark White'
Subject: Response to Todd Apo's email

TO: Members of the Mayor's Blue Ribbon Committee on Landfill

FR: Dee Dee

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Aloha,
Todd

From: Namumnart, Wilma [WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 11:29 AM
To: Brian Takeda (E-mail)
Subject: FW: addition to section 7.1 landfill costs

-----Original Message-----
From: Mark White [mailto:mark@pwcg.net]
Sent: Monday, December 01, 2003 11:18 AM
To: Namumnart, Wilma
Subject: RE: addition to section 7.1 landfill costs

Thank you.

Mark White
Pacific Waste Consulting Group
916/387-9777 (Voice)
916/387-9802 (Fax)
916/996-9777 (Cell)
mark@pwcg.net (reply email address)

-----Original Message-----
From: Namumnart, Wilma [mailto:WNamumnart@co.honolulu.hi.us]
Sent: Monday, December 01, 2003 12:58 PM
To: Mark White
Subject: addition to section 7.1 landfill costs

from kathy bryant

After reviewing the matrix, the Committee noted that the economic costs had been weighted low compared to other factors. While the committee eventually agreed not to make any changes to the weights, the Committee agreed that costs are a very significant factor and have a larger impact on the taxpayer. The Committee considered the issues in the brainstorming deliberations on the strengths and weaknesses of each site.

Wilma Namumnart
ENV/Refuse Division
Phone 692-5378
FAX 692-5402

Attachment F – Host Community Benefit Summary

Host Community Benefit Concepts

September 2003

Prepared by
Pacific Waste Consulting Group

Pacific Waste
CONSULTING GROUP

Host Community Benefit Concepts

Host Community Benefits (HCB) can help address local opposition to the siting of landfills to needed to meet the City and County's future solid waste management needs. Some key advantages of using HCBs are

- HCB can generate a significant amount of revenue to help meet local needs.
- HCB can be used for any type of project, in addition to landfill impact mitigation projects.
- HCB have been established over a range of costs, with the most prevalent being $1.00 per ton of material handled at the landfill site. Communities have customized the fee schedule to match their needs.
- HCB can be split between local jurisdictions.
- HCB has helped ease the resistance to being the host to a new or expanded landfill.
- HCB are very common. States that have them include New Jersey, Pennsylvania, Illinois, Iowa, Georgia, Michigan, West Virginia, Tennessee, California, and North Carolina.

This document provides the full text of one report on HCBs, an article from national publication, and two other documents on the topic. The fee schedule is provided to illustrate one level of fee compared to the tip fees that are charged at that site. The information provides a general discussion of the use of the benefit and how it has instrumental in improving key aspects of the local environment.

It is important to recognize that the material provided here represents a broad range of HCBs. These arrangements were crafted to address the local situation and each is adopted based on local conditions. The information provided here is only for example.

Table of Contents

General Information

1. **Cornell Waste Management Institute**

   Winning When You Have Lost:

   Cutting Your Losses With Host Community Benefits

   http://www.cfe.cornell.edu/wmi/WastRed/HCB5.pdf

   Comprehensive report with case studies from two communities.

   Clearly defines and outlines benefit and mitigation plans.

2. **WasteAge.com**

   Toronto's Trash To Call Michigan Home

   http://www.wasteage.com/ar/waste_torontos_trash_call/

   Community would like to increase use of landfill to increase revenue for other municipal projects.

   The last two paragraphs of the article, which are in italics, discuss HCB.

Examples of Fees

3. **Lycoming County Resource Management Services**

   Landfill Disposal Facility Fee Schedule

   http://www.lcrms.com/RMSWebPa.nsf/0/bd02c4061ebdfe9485256d3b0046c4a0/$FILE/2003%20Fee%20Schedule%20Landfill%20as%20of%20Jul%201.pdf

   This fee schedule is a detailed set of tables that show community benefit fees for various material types.

4. **DailyAdvance.com**

   Roundtree: Landfill To Aid Schools

   http://www.dailyadvance.com/news/newsfd/auto/feed/news/2002/11/25/1038243575.03162.1237.3787.html

   County Commissioners look to host community benefits to fund new school.

   The information about HCB is in the middle of the article and is in italics.

CORNELL
WASTE MANAGEMENT
INSTITUTE

Center for the Environment Rice Hall Ithaca, NY 14853-3501 (607) 255-1187

WINNING WHEN YOU HAVE LOST:
Cutting Your Losses With Host Community Benefits

Lyle S. Raymond, Jr., Kenneth H. Cobb and Clifford W. Scherer
Cornell University

Since few communities volunteer to host a new landfill, usually a government or private entity outside the impacted neighborhood decides where the new site will be and imposes its decision on an unwilling community. Perceived fears provide the basis for opposition: decline of property values and community image; groundwater contamination; loss of development potential; uncertainty about future environmental problems; distrust of technology; increased truck traffic and consequent road deterioration and littering, to name a few. Compounding the problem are a lack of trust in promises of safety, lack of faith in governmental regulations and oversight, and fear that officials are neither sensitive to nor understand neighborhood concerns.

The arguments for and against a site polarize communities. One wins if the landfill is located in another neighborhood; one loses if it is forced to accept the site. Rarely are issues of fairness and equity discussed, such as how all those who use the new landfill benefit from it and therefore should share its potential detriments. And conversely, how those who shoulder the burden to a greater extent are entitled to fair and equitable treatment and some consideration for potential impacts.

This Fact Sheet examines a method investigated or adopted by many communities in New York and elsewhere to address this controversy and provide some way for affected residents to face the reality of compromise in resolving a common problem.

Are you in the midst of siting a waste disposal facility? Is the facility being sited in your back yard? Or are you breathing a sigh of relief because the facility is going elsewhere? If you answered yes to any of these questions, you need to know more about **Host Community Benefits**.

How your community disposes of your garbage can be one of the most controversial issues debated today. Nobody wants garbage dumped in their back yard. The situation can become even more contentious when waste from other communities is also involved. These controversies have become more strident as regulations have become stricter, thus forcing many facilities to close. Public awareness and concern has heightened over perceived environmental, economic and social problems. Siting new waste disposal facilities has become costly as irate citizens block all attempts by others to discuss, inform or convince them that the facility not only will be safe, but is the best solution to an ever-growing waste problem.

Unfortunately, siting conflicts do not have a "win-win" solution for any involved parties—the local community, county or local government, or private industry. Host Community Benefits is an emerging concept to reduce the losses to all parties in the resolution of the siting controversy.

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Host Community Benefits

The cornerstones of Host Community Benefits (HCB's) are **compensation** and **mitigation**. The moral and logical goals of the concept are **equity** and **fairness**. The attempt is to balance the need for safe disposal of solid waste with the sacrifices borne by a solid waste disposal facility's host community. Additionally, such programs give citizens a participatory role in the process.

To understand how HCB programs work, one must determine their personal stake. Here's how:

For those in the impacted neighborhood who feel powerless and threatened, the stake is the perceived risk of siting a facility in the vicinity. "Winning" means only one thing—to stop the siting of the facility. If they cannot stop it, they have "lost." Or have they? Initiation of an HCB package after a site has been chosen is the only method of cutting losses. It ensures that you, your neighbors and your community will receive at least some compensation for the losses you feel are important.

For the county or private corporation, the primary stake is to succeed in siting the facility. If they alienate the public while accomplishing this goal, they will have "won the battle but lost the war" for the trust they need for future decision making, expansion or image building. Entering good-faith negotiations with affected citizens in the development of an HCB package can help restore some of the trust. Even if a site is "lost," perceived sensitivity and openness in working with community representatives by responding to their fears will help maintain credibility for siting decisions and relations in the future and elsewhere.

For the citizens of the rest of the community or county who escaped the site, an HCB plan is the mechanism for reimbursing—through taxes or user fees—the host neighborhood for the sacrifices it will bear.

Therefore, no matter what the situation, everyone is involved in one way or another; everybody both wins and loses. An equitable balance is sought.

Benefit programs are unrelated to specific site selection. Rather they focus on helping the community at large fairly and equitably manage its solid waste without penalizing a host community.

This discussion focuses on landfills, but the concepts can be applied to all waste management facilities.

A Balancing Act

Simply stated, the concept of Host Community Benefits aims to balance the *sacrifices* a local neighborhood and its individual citizens must bear in hosting the site of a waste management facility against the *"reverse" benefits* received by users of the facility who escape having it in their neighborhood. Various benefits can counterbalance perceived and real threats to public health; the social, economic and physical environment and individual rights.

In return for hosting a new landfill and accepting negative impacts,

Preferred Benefits

This table lists the benefits preferred and those rejected by citizens responding to public opinion surveys undertaken in Tompkins and Onondaga Counties, New York.

Tompkins County Landfill (Dryden)

Top 10 Choices

Benefit	Percent Favoring
Free Water Tests	95%
Guarantee to Replace Water	92
Enforce Speed Limits	92
Hire Own Property Appraiser	92
Monitoring Well Reports	90
Property Value Protection	89
Landscaping	88
Restricted Operating Hours	87
Local Inspector	83
Special Contingency Fund	82

Bottom 10 Choices

Community Festival	26
Neighborhood Pool	27
College Scholarships	29
Park/Playground	30
Support Community Center	41
Public Sewer Lines	45
Payments to Town	47
Landfill Job Priority	50
Public Water (by opening date)	50
No Private Construction Disposal	53

Onondaga County Landfill (Van Buren)

Top 10 Choices

Benefit	Percent Favoring
Guarantee to Replace Water	88%
Extend Public Water Lines	88
Hire Own Property Appraiser	87
Control Litter	87
Free Water Tests	83
Landscaping	82
Monitoring Well Reports	80
Restricted Operating Hours	77
Local Inspector	75
Enforce Speed Limits	75

Bottom 10 Choices

College Scholarships	19
Free Water	21
Wildlife Ponds	26
Housing Loans	31
Reduce County Taxes	34
More Landfill Entrances	38
Support Ambulance	41
Free Town Garbage	41
Payments to Town	44
Support Fire Service	48

the host community is entitled to certain benefits. Hence, the concept of benefit sharing applies to the whole community: the neighborhood near the landfill is given benefits to ameliorate the impact of the nearby landfill, while the rest of the community receives the benefits of a new landfill without having it close by.

Mitigation

Mitigation refers to reducing problems and impacts that the host community believe may be caused by the landfill. Acting as a preventative maintenance incentive, it is also a way of encouraging compliance by the operators of the landfill with agreed-upon protective measures and operating procedures. Mitigative measures involve guarantees of costly remedial actions that do not kick in unless contamination occurs due to sloppy management. To avoid this possibility, landfill operators are stimulated to manage it so as to avoid these costs kicking in.

Mitigation addresses the dangers and fears of drinking water contamination, deterioration of highways, littering, odors, noise, visual eyesores, vermin, and reduced property values. By providing free water testing and guaranteed replacement if contamination is found is one example of how drinking water contamination can be mitigated.

Compensation

Compensation means providing some kind of direct payment (usually money or services) to offset the intangible effects of the landfill, such as a blemished community image and lower quality of life.

Compensation benefits can be in the form of cash payments to the host community's government, tax breaks, extra support for fire and ambulance services, free garbage pickup, new parks, and offering landfill jobs to local residents. Often, however, such benefits are perceived as bribes to buy off the community.

Flexibility

The process of determining an HCB plan is inherently flexible. It is as individual as each host community. Since each community has its own unique demographics, geography, and economic climate, the benefits to be gained are negotiated depending on the needs and character of that community. No two HCB packages are alike. Examples of preferred benefits are shown in the table to the left.

It is crucial to remember that negotiating HCB's will not remove opposition to landfill siting. It is better if HCB's are negotiated separately from the siting controversy itself. Otherwise HCB's may become entangled in the siting process, and used as weapons during an antagonistic process, making negotiation futile. Opponents may view HCB's as unacceptable bribes, undermining their opposition to a landfill site. Still, pursuing an HCB program is useful since opponents can use HCB's as a contingency plan should their efforts to prevent siting fail.

Citizens Advisory Committee

Citizens Advisory Committees (CAC) are a *critical part* of Host Community Benefits. Through them, citizens feel recognized and respected; they understand that they are part of the process and thus are empowered to participate. Two types of CAC's are important: **generic and site-specific**. This two-track system is attuned to the needs of both the larger community and the affected neighborhood, as well as to the different stages of the siting process.

A generic CAC is useful in the early stages of siting, before a specific site is chosen. It should have broad membership providing general citizen input to all aspects of the siting process, including the site search.

The CAC develops a generic HCB plan as a starting point for negotiating a more specific HCB program with the impacted community after a site is chosen. The generic CAC becomes the vehicle for providing public information on benefits to be considered and how they might be applied. Public opinion surveys may be conducted to obtain or verify public attitudes on solid waste issues, including HCB's.

After a site has been selected, the formation of a site-specific CAC can refine the generic HCB program to reflect the concerns of the affected neighborhood, who too often feel shut out, ignored or devalued. Frustration over feelings of impotence in the decision-making process is an important component of public reaction in the impacted community. To maintain credibility, the affected neighborhood should have dominant representation on this CAC.

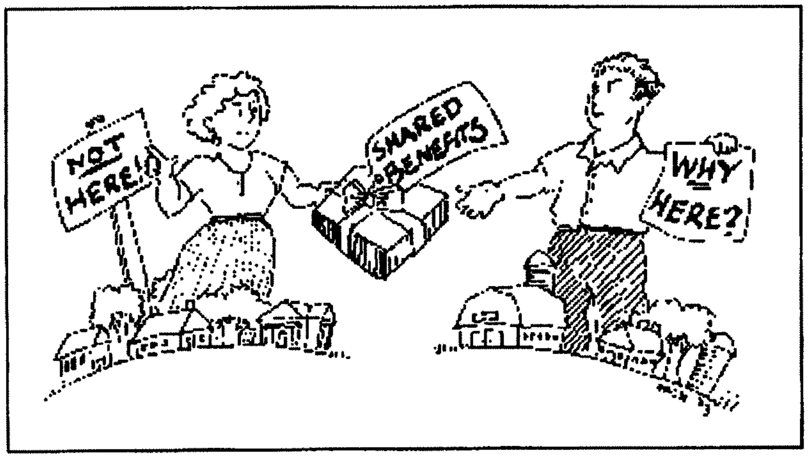
Both types of CAC's must be officially recognized and have membership from, or at least access to, governmental planning, public works and health department staff to benefit from their expertise. If this is not possible or desired—the CAC may feel these experts' interests conflict with those of the committee—funds can be provided to the CAC, or directly to the affected community, to hire their own technical experts and conduct their own studies of the proposed site.

Public Opinion Surveys

Surveying residents and property owners in the vicinity of the proposed landfill provides data useful in assessing community feelings and perceptions and determining preferred benefits. Usually commissioned by the sponsoring entity or a CAC and conducted by a neutral third party, the survey asks residents and property owners what they think of proposed benefits, what course of action they recommend, and their opinion of solid waste issues. The data generated should be freely shared to build trust and encourage open communications.

Such surveys demonstrate that the facility sponsor or local government will seriously consider local concerns. They are also an effective public education tool to inform people about HCB's since these are usually poorly understood; people are often suspicious of their purposes.

Public opinion surveys also provide another mechanism for citizen input. Public meetings are often the only source of direct public input. However, public meetings require that those who participate actively by speaking have confidence in their speaking ability and the courage to stand up in public. Also, due to time constraints, only a limited number of people can speak at any one meeting, thus limiting the public's input into decision-making. A well-designed survey gives everyone equal opportunity to provide input unhampered by the pressures of public speaking.



Judging by surveys taken in various communities around New York State, the public's views are remarkably similar. For example, surveys undertaken in Chenango, Onondaga and Tompkins counties—which have markedly different characteristics—indicated that people shared the same attitudes about host community benefits.

The conclusions of the public opinion survey concerning the proposed Van Buren Landfill in Onondaga County are indicative of statewide public opinion. "An examination of the responses to the questions leads to one conclusion," states the survey's Final Report. "Respondents to this study present an overall picture of rational concern: They are interested in preserving their environment as it now is—both natural and economic. They (like all of us) desire some control over the events which are impacting on their lives. Their belief in technology (technical safeguards to prevent water contamination, for example) is limited. But their approach to solving the problem is, for the most part, a rational one." (Some results of the survey are shown in the table on page 2.)

Negotiation

To avoid suspicion of impropriety, negotiation of HCB's should be informal and open. Again, it is crucial that negotiations represent the community's feelings.

Sensitivity to local perceptions and fears is vital to the success of negotiations. Specific benefits can be targeted in response to specific fears.

Equally important in the negotiating process is determining who will be eligible to receive benefits. The impact area can be rigidly defined by drawing lines on a map or more loosely defined depending on meeting certain criteria in order to receive benefits, regardless of location. In the latter case, different criteria can be applied to different benefits. For example, threats of water pollution are more critical downhill from the site as opposed to uphill, while loss of property values may depend on access roads or wind patterns.

Administration

After negotiations have produced an HCB agreement some entity must be designated to administer it. This could be the sponsoring entity, the local community, a separate body specifically formed for the purpose, or some combination of these. Whatever the composition of the administering body, to be successful, it must have **credibility** within the affected community. Following a protracted or contentious dispute or litigation, the impartiality and credibility of the administering agency becomes all the more important.

Benefits of HCB Programs

A Host Community Benefits program can accomplish several goals

Case History

The experience of **Tompkins County**, NY illustrates the HCB concept. This Central New York county (located midway between Syracuse and Binghamton) began consideration of a new county-operated landfill in 1985. A site was selected by the county in 1987 and implementation of benefits in the affected community began in 1989.

Initially the HCB concept was introduced to county officials, who were receptive to the concept and supported further discussion. HCB's were introduced to the public at several meetings on solid waste disposal issues.

Following a year and a half of quiet discussion and networking about the concept, one town supervisor (whose town included potential sites preliminarily identified by the county) proposed a detailed HCB program to the county solid waste committee. Subsequently, other towns proposed HCB plans.

The county Board of Representatives passed a resolution committing the county to negotiate a benefits program with the selected community. The resolution contained provisions for off-site well monitoring, creation of a citizens advisory committee, guaranteed potable water, property-owner compensation against adverse impacts, property value protection, financial compensation for the host town, and recycling and waste reduction programs. This resolution was passed six months before a site was selected.

Once a site was selected a Citizens Advisory Committee was created by the county from a list of people identified by community residents, citizen leaders and local officials. The committee was composed of 11 voting members: 2 selected by the affected town, 1 selected by a neighboring village, 5 selected by the county to represent landfill neighbors, 1 representative of the county board, and 2 selected by the county as at-large members. In addition, the county appointed the planning commissioner, public works commissioner, solid waste manager, assessment director, and environmental health director as nonvoting members.

A compensation task group was created to draft a more detailed HCB program. One of their first recommendations was to undertake an opinion survey of the affected neighborhood. The survey, paid for by the county and conducted by Cornell University, polled all property owners on the assessment rolls and all renters who could be identified within two miles of the proposed site—67% of property owners and 23% of rental households responded. In addition to gathering data on the affected community, the survey informed residents about the benefits program and guided the county in developing an acceptable plan.

The benefits preferred by respondents to the Tompkins County survey are listed in the table on page two.

Cornell Cooperative Extension of Tompkins County developed a countywide educational program on solid waste issues, including HCB's. County residents gave the presentations, not county officials (though a county official was on hand to answer questions), to several towns at well-attended public meetings.

A Neighborhood Protection Committee was created to implement the HCB program. The committee reviewed all requests for benefits and recommended appropriate action. The landfill was delayed due to wetland issues and continued reevaluation of priorities, and has now been abandoned on the basis of cost changes. Property value protection had been only benefit in effect.

Other New York counties have taken action on HCB programs, including Broome, Chenango, Dutchess, Monroe and Onondaga. Interest in the concept is being expressed by officials in a growing number of other New York counties. The New York State Department of Environmental Conservation, in a technical assistance guidance document for siting waste facilities, emphasizes that an HCB program should be strongly considered.

but does have *limitations.* It provides a more equitable and fair response to affected residents. It opens communication channels between residents and decision makers and involves those who are impacted in the process.

Limitations of an HCB program must be kept in mind. It will not stop opposition to a particular site nor will it stop lawsuits, although this may become part of the negotiations. Since it is best considered as a separate issue, it has little effect on the selection of a specific site.

Perhaps the greatest benefits of HCB programs are that they promote sensitive consideration of residents' fears and foster better, more equal relationships between residents and decision makers. In his book *The Community Development Process*, William Biddle found that shared decisions are usually more actively supported by the community at large as well as being less prone to criticism or counter action by opposing groups.

The cost of HCB programs are low relative to the total cost of developing a landfill, particularly where mitigation (triggered by specific negative events) is favored over compensation (where funds are spent regardless of specific events).

A Host Community Benefits program directly addresses the fairness of competing interests between those who benefit from the new landfill and those who must live as its neighbors.

Lyle S. Raymond, Jr. is Extension Associate and Water Resources Specialist with the Local Government Program and the New York State Water Resources Institute in the Center for the Environment at Cornell University; Kenneth H. Cobb is Senior Extension Associate with the Waste Management Institute in the Center for the Environment at Cornell University; and Clifford W. Scherer is an Associate Professor in the Department of Communication at Cornell University.

This Fact Sheet was produced by Kenneth T. Marash and Susan A. Marash with Ghostwriters, inc. of Ithaca, NY.

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The Cornell Waste Management Institute
Cornell University
Rice Hall
Ithaca, NY 14853-5601

WasteAge.com

Toronto's Trash to Call Michigan Home

Brook Raflo

Waste Age, Dec 1, 2000

With the closure of its Keele Valley landfill looming on the horizon, the city of Toronto has spent more than a decade searching for a home for the 1.5 million annual tonnes of garbage it produces. Finally, the search is over. In the wake of a failed deal with Rail Cycle North, the city awarded municipal and private sector disposal contracts on October 30 to Republic Services, Ft. Lauderdale, Fla.

Until October 13, Rail Cycle North, a North Bay, Ontario-based consortium of waste management and transport companies, was set to dispose of Toronto's municipal waste after Keele Valley closes. But when Rail Cycle introduced a clause passing unforeseeable costs to the city, "our council found that would be too much liability for the city to take on," says Lawson Oates, manager of strategic planning for Toronto's solid waste management services.

Like New York City, Toronto has looked outside its borders for disposal capacity, and Oates says he and his team have watched New York's predicament closely. To avoid a similar predicament, Toronto has devised a three-part plan, which includes signing new disposal contracts, extending an existing disposal contract and implementing an ambitious diversion program, Oates says.

During each of the first two years of Republic's five-year contract with the city, Toronto-based Wilson Logistics will transport at least 300,000 tonnes of Toronto's garbage from city-owned transfer stations to Republic's Carleton Farms landfill in Wayne County, Mich. This will allow Toronto's Keele Valley landfill, which currently takes in nearly 1.35 million annual tonnes of the city's waste, to remain open until the end of 2002.

"By initiating the Republic contract in 2001, we will get continued waste settlement and decomposition of organics [at Keele Valley], which will allow us to create some additional capacity ... saving the city money," Oates says. Tipping fees at city-owned Keele Valley, he explains, are significantly lower than those at Carleton Farms.

Toronto also will seek to extend its five-year contract with Miami-based Onyx North America, the company that currently disposes of 450,000 tonnes of Toronto's waste per year at its Arbor Hills landfill in Northville, Mich. Because of a cap on Arbor Hills' foreign waste intake, however, the landfill cannot accept more than 500,000 tonnes of Toronto's waste annually, Oates says.

Perhaps the most surprising aspect of Toronto's solid waste plan is its goal to divert 80 percent of the city's refuse from the waste stream by 2006.

The city's ambitious diversion plan includes an expanded curbside recycling program, construction of an anaerobic digestion facility designed to generate heat for the city's downtown core, a composting facility to provide landfill cover and soil remediation products, community outreach, funding for the research and implementation of emerging technologies, and new laws requiring apartment complexes to recycle. "There's a potential for 100 percent diversion by 2010," Oates says.

By 2003, Toronto's waste program will look very different than it does today, Oates continues. The city will divert an additional 5 percent of its refuse from the waste stream by the end of that year, bringing the total diversion rate to 30 percent or more, he says. Additionally, Keele Valley will be closed, and at least 100,000 tonnes per year of the city's waste will go to Carleton Farms landfill.

Republic's Area President Matt Neely says he expects Carleton Farms to receive much more than 100,000 tonnes.

"The projections Toronto has given us are about 500,000 tonnes of waste per year [after 2003]," Neely says.

Carleton Farms is a seven-year-old, 60-million-cubic-yard landfill, with 60 years of life remaining, Neely says. And, the landfill's host Wayne County is considering Republic's proposal to add an additional 40 million cubic yards to Carleton Farms' capacity, he notes.

Unlike Onyx's Arbor Hills landfill, Carleton Farms is not subject to a cap on foreign waste. In fact, Wayne county residents support the plan to import large quantities of Toronto's waste, according to Neely.

This is because when Republic acquired Carleton Farms from Houston-based Waste Management Inc. in February 1999, as part of a required divestiture, Waste Management diverted most of Carleton Farms' trash to a nearby Waste Management-owned landfill, Neely says. Consequently, Wayne county's Sumpter township, which had been receiving a host benefit for trash entering Carleton Farms, lost a significant amount of revenue, he explains.

"They had to lay off policemen and stop providing municipal services," he says. "So the township has been very supportive [of the Toronto deal]."

LYCOMING COUNTY RESOURCE MANAGEMENT SERVICES

LANDFILL DISPOSAL FACILITY FEE SCHEDULE

2003 FEES Effective July 1, 2003
Hours: Monday - Friday 7:00 am - 4:30 pm; Saturday 7:30 am - 12:00 noon
Location: 447 Alexander Drive, Montgomery, PA 17752
Mailing Address: P.O. Box 187, Montgomery, PA 17752-0187
PHONE: (800) 326-9571 or (570) 547-1870 **FAX:** (570) 547-6534

A MINIMUM fee of $15.00 is charged on EACH transaction*
(* Certified Waste Haulers are exempt from the minimum fee)
EACH LOAD MUST BE TARPED
NO PERSONAL CHECKS ACCEPTED

1. Municipal Solid Waste

CUSTOMER TYPE	DISPOSAL FEE	PA STATE RECYCLING FEE	HOST MUNICIPAL BENEFIT FEE	ENVIRON. STWD FUND	COUNTY ADMIN. FEE
Individual Residents[1]	$48.60/Ton	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[2]
Commercial Business Accts[1]	$36.15/Ton	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[2]
Industrial Generator Accts[1]	$36.15/Ton	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[2]
Certified Waste Haulers[1]	$33.00/Ton	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[2]

[1]Rates listed are for MSW generated in the Counties naming Lycoming County Landfill in their solid waste plans including: Columbia, Lycoming, Montour, Northumberland, Snyder and Union Counties.

[2]County Administrative Fee: Add the following fee according to the county of origin as listed below:

Columbia County	$3/Ton
Montour County	$3/Ton
Northumberland County	$3/Ton
Snyder County	$2/Ton
Union County	$2/Ton

2. MSW Miscellaneous Fees, Individual Residents:

Automobiles:	$15.00	(cars, station wagons) If Gross wt. is >4200 lbs, reweigh required.
Pickup Trucks:	$15.00	(1/2 Ton Pickups, Vans) If Gross wt. is >5500 lbs, reweigh required.
Full-Sized Pickups:	$15.00	(3/4 Ton Pickups and greater) If Gross wt. is >6600 lbs, reweigh required.
Trailer attached to any of the above:	$15.00	Price according to weight w/$15 min., each load reweighed.

3. **Miscellaneous Service Fees:** (See Definitions)

White Goods without Refrigerant:	No Charge with certification of evacuation by authorized vendor
White Goods containing Refrigerant:	$15.00 per appliance
Digout Fee:	$15.00 per vehicle
Cleanup Costs:	Equipment rental cost and operator time plus any additional fees associated with cleanup.

4. **Industrial Residuals:** (See Definitions)

Rates will be established on an individual basis. A letter of notification will be sent to individual customers.

5. **Asbestos:** (See Definitions)

	Disposal Fee	State Recycling Fee	Host Benefit Fee	Environ. Stwd Fund
Friable and Non-Friable Asbestos	$46.55/Ton	$2/Ton	$1/Ton	$4.25/Ton

6. **Tires:****

	Disposal Fee	State Recycling Fee	Host Benefit Fee	Environ. Stwd Fund
Tires (Whole Loads)	$93.75/Ton	N/A	$1/Ton	$.25/Ton
Car/Sm Truck Tires (P & LT Series)	$3.00 each	N/A	N/A	N/A
Over-the-Road Truck Tires (R Series: 17" – 22")	$5.00 each	N/A	N/A	N/A
Tractor & Heavy Equipment Tires (over 22")	$148.75/Ton	N/A	$1/Ton	$.25/Ton

**Tires must be brought to the Landfill separately from other wastes. However, if tires are found mixed in other wastes at the time of disposal, an additional fee in addition to the original charge without reduction in weight for tires, will be added according to the tire size and number of tires found. The Standard Fee listed above is for whole, pneumatic, round, clean, and dry tires, which have the integrity to roll. This includes car, truck, ATV, golf cart, racing slicks, wheelbarrow, motorcycle, bicycle and mini bike tires. Tractor and Heavy Equipment tires include tires from farming equipment, heavy equipment such as graders, backhoes, etc., and airplane tires. Tire pieces, scrap sidewalls, tubes and wheels are to be landfilled at MSW posted rates, and will not be accepted for recycling purposes.

7. Clean Wood Wastes: (See Definition)

	Disposal Fee	State Recycling Fee	Host Benefit Fee	Environ. Stwd Fund
Participating Counties Rate	$19.30/Ton	N/A	$1/Ton	$.25/Ton

Sorting Costs: If unacceptable wood or other waste products are found in loads received at the clean wood site, a $10/hour sorting cost will be charged for the sorting of those items that are not acceptable. The unacceptable items will be weighed and charged at appropriate rates to the customer.

8. Construction/Demolition Wastes: (See Definition)

CUSTOMER TYPE	DISPOSAL FEE	PA STATE RECYCLING FEE	HOST MUNICIPAL BENEFIT FEE	ENVIRON. STWD FUND	COUNTY ADMIN. FEE
Individual Residents[1]	$25.00/Ton[2]	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[3]
Commercial Business Accts[1]	$25.00/Ton[2]	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[3]
Industrial Generator Accts[1]	$25.00/Ton[2]	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[3]
Certified Waste Haulers[1]	$25.00/Ton[2]	$2/Ton	$1/Ton	$4.25/Ton	See Listing Below[3]

[1] Rates listed are for MSW generated in the Counties naming Lycoming County Landfill in their solid waste plans including: Columbia, Lycoming, Montour, Northumberland, Snyder and Union Counties.

[2] When C/D loads contain waste other than C/D, causing RMS to transfer the load from the C/D site to the MSW site, clean-up costs will be added to the transaction cost. The ticket will be corrected to reflect MSW waste at MSW posted rates, and a clean-up fee of $32/Ton will also be charged. (The total cost for such transactions is $71.95/ton for Certified Waste Hauler accounts based on current MSW posted rates, or $75.05/ton for Commercial Business Accounts based on current MSW posted rates, and $87.40/ton for Individual Accounts based on current MSW posted rates.)

[3] County Administrative Fee: Add the following fee according to the county of origin as listed below:

Columbia County	$3/Ton
Montour County	$3/Ton
Northumberland County	$3/Ton
Snyder County	$2/Ton
Union County	$2/Ton

DEFINITIONS:

Certified Waste Hauler - A business enterprise trading in the solid waste industry, utilizing commercial grade solid waste industry equipment in the performance of their service, are subject to the PaDEP's rules and regulations, and conform to PA Code, Title 25, Chapter 285 – Storage, Collection, and Transportation Regulations, for collection and transportation of solid waste. Certified Waste Haulers are also required to carry automobile liability insurance with a combined single limit of $1,000,000.

Commercial Business Accounts - Commercial enterprises, or non-profit enterprises including municipalities, schools, hospitals, and government agencies, that do not trade for profit in the solid waste industry, do not generate or dispose of industrial residual wastes, and are not subject to the rules and regulations of the PaDEP for collecting and transporting solid waste. Commercial Business Accounts are required to carry automobile liability insurance with a combined single limit of $1,000,000.

Industrial Generator Accounts – A person generating and disposing approved waste through LCRMS's Form R, Waste Acceptance Plan. Industrial Generator Accounts delivering approved waste in their own vehicles are required to carry automobile liability insurance with a combined single limit of $1,000,000.

Individual Residents - Private individuals utilizing LCRMS facilities on an occasional basis.

White Goods – Appliances and other salvageable materials including, washing machines, dryers, refrigerators, freezers, air conditioners, dehumidifiers, dishwashers, hot water heaters, stoves, sheet iron, tin, and steel auto parts.

Digout – Frozen loads in containers that are removed with LCRMS equipment and operators.

Cleanup Costs – Fees charged to customers for removal of waste dumped in improper disposal area, and for reloading and/or cleanup of wastes rejected for disposal. Fees may include personnel costs, testing fees, and any special handling fees associated with the load in question.

Asbestos – Wastes contaminated with, or containing asbestos, as defined by PaDEP.

Industrial Residual Waste – Those wastes meeting the permit conditions as approved in LCRMS's Form R application, and have been pre-approved for disposal at LCRMS. Wastes are subject to PA DEP regulations.

Clean Wood Waste – Acceptable clean wood includes, unpainted wood, (stained wood and wood with glue is acceptable), brush, limbs not exceeding 10" in diameter, pallets, skids, compressed wood fiber pallets, utility spools with hardware removed, plywood and waferboard. Clean wood may not contain non-wood items, any treated wood, plasterboard, creosote products, demolition waste, masonite, or painted wood.

Construction Demolition Waste - Solid waste resulting from the construction or demolition of buildings and other structures including, wood, plaster, roofing shingles, metals, asphalt substances, bricks, blocks, concrete, cardboard, styrofoam, insulation, plastic, empty buckets: (tar, paint, plaster), fire debris from structures only (excluding contents).

Holidays: The Lycoming County Resource Management Services facilities will be closed on the following listed Holidays:

New Year's Day, Wednesday, (January 1, 2003)
Memorial Day, Monday, (May 26, 2003)
Independence Day, Friday, (July 4, 2003)
Labor Day, Monday, (September 1, 2003)
Thanksgiving Day, Thursday, (November 27, 2003)

Christmas Day, Thursday, (December 25, 2003)

Operating Hours: Operating hours at the Landfill are: 7:00 am - 4:30 pm Monday through Friday, and 7:30 am - 12:00 noon on Saturday. Any waste delivered outside regular posted hours will be charged an additional $1/Ton for approved, pre-arranged dumping Monday through Saturday, and $2/Ton for approved, pre-arranged dumping on Sunday and listed Holidays. All out-of-hour, Sunday and Holiday deliveries must be pre-approved by Lycoming County Resource Management Services.

ALL RATES ARE SUBJECT TO CHANGE WITH 30 DAYS POSTED NOTICE OR AS REQUIRED BY LAW.

DailyAdvance.com

Rountree: Landfill to aid schools

By JULIAN EURE

Camden commissioners are pursuing a $60 million deal with Waste Industries to bring a landfill to Camden because it's the only way to avoid a massive property tax hike needed to pay for new schools, the commission's chairman said Friday.

"With all these houses coming in (to Camden), we've got to have some money to build schools with," Commissioner J.C. Rountree said. Without a landfill or some other revenue source, "we're looking to have to raise taxes by 30 cents on the hundred."

Rountree, who represents South Mills Township, says officials have tried to slow down growth by implementing zoning and other measures. The trouble is, many of the areas being considered for development were already platted for residential use when the zoning rules were written. Consequently, landowners have use rights that can't be superseded by county ordinances.

The result has been a growing conversion of farmland into residential subdivisions. Rountree, a farmer, says he's lost three farms himself over the past three years because landowners couldn't pass up the price developers were offering for their land.

While the residential boom has helped the county's tax base, it's also increased pressure on the county's three-school school district, as many of the new Camden residents are bringing with them school-age children.

"Schools are what cost us the most money," Rountree said. "We're going to have to build another school in the next three years ... to take some pressure off Grandy" Primary School. Most likely the school will be for kindergartners and first- and second-graders, Rountree said.

The Board of Commissioners raised the property tax rate several years ago by 10 cents — to 75 cents per $100 of valuation — specifically to pay for improvements at the county's three schools. To build a new school in three years, however, would force commissioners to raise the tax rate another 30 cents, Rountree says.

Knowing "the landowners couldn't stand that much of a tax increase," commissioners have been casting about for other potential revenue sources. The one they finally came up with was playing host to a privately owned landfill, Rountree said.

"That's why we're interested in this (landfill project)," he said. "It's a way to solve" our revenue problems.

Hosting a landfill would be lucrative for Camden, says Ven Poole, vice president of corporate development for Waste Industries, the Raleigh-based company that's proposing to build the 600-acre landfill in the northern part of the county.

Not only would the county be able to dump its residential and commercial garbage in the landfill for free — saving the county about a quarter of a million dollars annually — it also would be able to tax the equipment used at the landfill, bringing the county another quarter of million dollars of income a year.

The real prize, however, would be the host fees the county would receive once the daily volume of trash received at the landfill reached certain levels.

According to the franchise agreement Camden commissioners have signed with Waste Industries to build and operate the landfill, the county would earn 5 percent of each dollar Waste Industries charges once daily tonnage exceeded 500, and 7 percent of each dollar once daily tonnage exceeded 1,500.

Although it would take a new landfill some time to build up garbage volume to those levels, the deal has the potential to earn Camden between $2 million and $3 million annually, officials say. That could make the deal, which is for 30 years, worth anywhere from $60 million to $90 million.

The deal is contingent on the state of North Carolina approving the landfill. Waste Industries is just beginning the initial steps to obtain the many permits it will need before it can build and operate the landfill. If the state OKs Waste Industries' plans, a landfill in Camden is still two to three years away.

Forrest Pugh, a commissioner who represents Shiloh precinct, agrees with Rountree that the landfill would be a less painful way to raise revenue. He disagrees with Rountree, however, that a massive tax increase was imminent for school construction.

While a 30-cent tax increase "is something we talked about, it's not an absolute must," Pugh said.

Pugh, who didn't seek re-election and will be leaving the Board of Commissioners in December, believes the school district should benefit from any revenues the county receives for hosting a landfill. He also says addressing the school growth issue is "definitely a big reason" why commissioners are pursuing a landfill and the host fees it would bring.

At the same time, however, he says commissioners don't want to commit to expensive projects that will require them to spend the principal it receives in host fees. Any money spent, he said, would likely be from the interest that accrues from investment of the principal.

Besides the schools, Pugh would like to see some of the landfill money go toward improving infrastructure — roads, sewer service, utilities — in the county, particularly in northern Camden.

When the state of Virginia eventually widens U.S. Highway 17 to four lanes, officials are expecting commerce and business development in Hampton Roads to gravitate southward a lot more quickly. When it comes, Camden wants to compete for the jobs the companies will bring. But to do it, the county will first have to have the infrastructure business depends on.

The landfill money will help Camden get ready, Pugh says.

"Hopefully we'll be able to have the infrastructure in place" to meet their needs, he said.

Regardless of how the landfill money is used, commissioners pursued the landfill because they wanted to improve the lives of Camden residents, Pugh says.

"We don't have an Albemarle Hospital like Pasquotank County does," he said. "We did this because we saw it as an opportunity to help the county."

http://www.dailyadvance.com/news/newsfd/auto/feed/news/2002/11/25/1038243575.03162.1237.3787.html

Addendum to
Alternatives Analysis for Disposal of Municipal Refuse

Submitted to the Department of Environmental Services (ENV),
City and County of Honolulu

Pacific Waste
CONSULTING GROUP
September 2008

Introduction

This addendum includes additional information referenced to the appropriate sections in the *Alternatives Analysis for Disposal of Municipal Refuse,* as presented in the Waimanalo Gulch Sanitary Landfill Lateral Expansion, Draft Environmental Impact Statement (DEIS).

Section 3.4. Disposal (Addendum)

Overview of Waste Sources and Disposal
This section reviews the source and destination (recycling, composting, or disposal) for the waste material produced on Oahu. Waste is collected by the City and commercial waste haulers. The City primarily collects residential waste from households, although it does collect some waste from multi–family dwellings and commercial establishments. The majority of non-residential waste is collected by commercial haulers.

Waste is taken to the Waimanalo Gulch Sanitary Landfill, H–POWER, or the PVT Landfill. PVT only accepts construction and demolition debris waste. H–POWER accepts most of the City's residential waste and much of the commercial waste. The Waimanalo Gulch Sanitary Landfill accepts the remainder, as well as the ash and residue from H–POWER. The following tables show how much waste is delivered by each type of hauler to each facility in fiscal year 2006.
Table A shows the waste that was diverted through recycling, reuse or composting and disposed of. The total disposal for PVT and unpermitted sites is estimated because the data is not reported for those disposal locations.

Table A, Diversion and Disposal

Destination	Tons
Recycled, Reused, Composted	628,373
Waimanalo Gulch Sanitary Landfill	337,667
H-POWER	602,520
PVT Landfill (est.)	200,000
Unpermitted disposal sites (est.)	25,000
Total	1,793,560

Table B shows the types of material disposed of at the Waimanalo Gulch Sanitary Landfill. The ash and residue are from H–POWER resulting from the processing of waste at that facility. The residue is from processing the waste into a refuse derived fuel and ash as a product of combustion.

Table B, Materials Disposed at Waimanalo Gulch

Material	Tons
MSW	337,667
Ash	88,380
Residue	79,443
Total	505,490

Table C shows the total disposal at H–POWER and Waimanalo Gulch.

Table C, Total Disposal

Location	Tons	Percent
H-POWER	602,520	64%
Waimanalo Gulch	337,667	36%
Total	940,187	100%

Table D shows the source of materials disposed of at H–POWER and the Waimanalo Gulch Sanitary Landfill.

Table D, Source of Materials (Tons in FY 2006)

Sector	H–POWER	Waimanalo Gulch	Overall
Residential	371,649	40,367	412,016
Commercial	384,389	114,300	498,689
Convenience Center	283	29,199	29,482
Total	756,321	183,866	940,187

Table E uses the same sources and disposal locations as Table D, but provides the percentage of each source that went to each disposal location.

Table E, Source of Materials — Percentage

Sector	H–POWER	Waimanalo Gulch	Overall
Residential	49%	22%	44%
Commercial	51%	62%	53%
Convenience Center	0%	16%	3%

Section 3.4.2. H-POWER (Addendum)

Current Status of H-POWER Expansion
The City is in process of working with Covanta Energy to add a third unit to H–POWER. When permitted, the third unit will have a capacity of 300,000 tons per year (TPY) and will be a mass burn facility. The existing H–POWER Units #1 and #2 are refuse derived fuel units in which the waste is processed to remove metals and other difficult to combust materials before incinerating the waste. The new mass burn facility will accept waste without pre-processing and convert it to energy.

The plant is intended to reduce the amount of disposal in the Waimanalo Gulch Sanitary Landfill. It will further reduce the Island of Oahu's greenhouse gas footprint by increasing from five to eight percent the amount of electricity produced from solid waste, a renewable fuel.

The plant will have an economic life, but it can be upgraded when technical improvements are available. When constructed, it will have emission controls among the best of any energy from waste plant in the country. The plant will be the most modern in operation. As with H–POWER units #1 and #2, future upgrades are expected to keep the plant technologically current and provide needed disposal capacity for the foreseeable future.

Section 4.4. Alternative Technologies (Addendum)

Combination of Smaller Alternative Technologies
The evaluation of a combination of smaller alternative technologies was not included in this EIS because doing so did not fit within the project schedule and the impacts were expected to exceed the impacts at one location.

The situation is similar to the evaluation of multiple smaller landfill sites with less capacity. This same issue was discussed by the 2002 Mayor’s Advisory Committee on Landfill Site Selection. The Committee questioned whether the impacts of the landfill would be lessened if several smaller landfills were located around the island instead of just at Waimanalo Gulch. It was noted:

> “The Committee decided to limit its consideration to sites that had more than 10 years of capacity based on: the assumption that demand projections from the City remain unchanged; the City’s experience with the length of time needed to implement new and feasible waste reduction technologies; and the cost and time required to identify and permit a new landfill site.” (See Appendix K, Section 3.4).

The time and resources necessary to evaluate a combination of smaller scale technologies is expected to be substantial and include:

- Several potential alternative sites would need to be identified, evaluated with the public and governmental agencies concerning environmental and land use effects, selected, and purchased. The number of alternative sites and magnitude of the public and governmental agency coordination needed would be a function of the number of technologies selected. Mitigative measures to address potential environmental effects associated with each technology would need to be developed.

- Detailed evaluation of the feasibility and cost of multiple technology or technologies using a different set of qualifying criteria than currently considered by the City. This evaluation would need to include the detailed implementation plan identifying the planned construction scheduling and capital costs.

- An estimate of the time needed for environmental and land use permitting would also need to be factored into the project schedule.

In addition, for each alternative technology selected: (1) any waste by-products generated as a result of the technology process or processes used, would need to be at a scale that would not require landfilling; (2) a market would be required for the product resulting from the technology, and (3) the technology would have to be feasible, proven, and based on its use in a municipality similar in requirement to the City & County.

The City has the fiduciary and management responsibility to select only technologies that are proven to work on MSW with costs similar to the public cost of disposal and operations at WGSL. Factors that are not in favor of the evaluation of several smaller alternative technology facilities are:

- The expected lengthy period of commitment of resources needed to research and develop a coordinated program to use small alternative technology facilities. This is reasonably expected to last more than a year and could take several years. The exhaustive process to select the technology for the third boiler at H–POWER took approximately a year to complete and was for a technology already proven in the City & County. The evaluation of smaller and newer technologies could reasonably be expected to last much longer.

- The use of several smaller facilities is not efficient and cost effective. This is because the economies of scale normally present in an appropriately sized facility is not necessarily present at a smaller scale. The installation of the infrastructure at multiple sites could have a much greater environmental impact than using just one site.

Thus, the evaluation of a combination of alternatives is not considered feasible and would have significantly extended the time required beyond the November 1, 2009 LUC deadline to allow for the same or similar disposal capacity as is available at the WGSL.

Section 5. Transshipment Off-Island (Addendum)

Current Status of Transshipment

On June 16, 2008, bids were opened for the City's Request For Bids for interim shipping of MSW to the mainland United States. Three bids were received. Three procurement protests were then filed on behalf of the two higher bidders. The City is working to resolve these protests. They are being evaluated with input from various City agencies. After the City issues final rulings on the protests, the parties will have the right to an appeal. Until any such time that the appeals are resolved, the City is prohibited by State law from awarding any contract.

Appendix L

Survey of Terrestrial Invertebrate Resources
Waimānalo Gulch Sanitary Landfill Expansion, 2008

Survey of Terrestrial Invertebrate Resources in the Waimanalo Gulch, O‘ahu, Hawai‘i: Sanitary Landfill Expansion Area

Prepared by: Steven Lee Montgomery, Ph. D., Waipahu, Hawai‘i

Submitted to: AECOS Consultants

For: R. M. Towill Corporation on behalf of
City & County of Honolulu, Department of Environmental Services.

September 26, 2008

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Figures & Tables

SUMMARY

The Waimanalo Gulch Landfill expansion area sampled in this biological survey yielded native mollusks and native and adventive arthropods. No invertebrate listed under either federal or state endangered species statutes was located within the survey area.

INTRODUCTION

This report summarizes the findings of an invertebrate[1] survey conducted in support of an environmental impact statement as part of a proposal to expand the Waimanalo Gulch Landfill. Waste Management and the City & County of Honolulu propose to extend the landfill active area by 92.5 acres (Towill 2006). This survey was conducted by Steven Lee Montgomery, Ph. D., for AECOS Consultants as part of a team effort directed by R. M. Towill Corporation, Honolulu.

Invertebrates are often the dominant fauna in natural Hawaiian environments. The primary emphasis of this survey was on terrestrial arthropods, particularly those that are endemic, indigenous, or threatened species, especially those having legal status under either, or both federal and state endangered species statutes (DLNR 1996, USFWS 2005a, 2008).

Native Hawaiian plant, vertebrate, and invertebrate populations are often interdependent. Certain insects are obligatorily attached to specific host plants and are able to use only that plant as their food. Those insect - host relationships are ancient and intertwined. Invertebrates are the food of some birds and the pollinators of plants. Native invertebrates have proven inventive in adapting to opportunities in changed ecosystems. A surprising number of native arthropod species survive even in degraded habitats. Nevertheless, the overall health of native Hawaiian invertebrate populations depends upon habitat quality and absence or low levels of predators introduced from the continents. Sufficient food sources, host plant availability, and the absence or low levels of introduced, continental predators and parasites comprise a classic native, healthy ecosystem. Consequently, where appropriate in the survey discussion, host plants, and some introduced arthropods are also noted.

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[1] Animals without backbones: insects, spiders, snails, shrimp, etc.

GENERAL SITE DESCRIPTION

The area identified for Waimanalo Gulch Landfill expansion occupies a valley on the dry foothills of the Wai‘anae Range, ‘Ewa District, O‘ahu (Figure 1). The Landfill area is largely bounded by Makaīwa Gulch to the east / Diamond Head, and Keone’ō’io Gulch to the west / ‘ewa, and Farrington Highway to the south / makai (Figure 2). The expansion area is at the mauka end of the valley, narrow bottomed and steep sided. The majority of the land is steeply sloping valley walls cut into the old shield volcano. There are no perpetually flowing streams or standing, open water to support hygrophilous invertebrates. Short term stream flows follow only after significant rainfall. A few small ponds of water may persist for short periods in stream depressions after seasonal heavy rains. Host plant vegetation is thickest and most varied in the stream channels and on the gulch walls, especially during the winter rainy season.

Figure 1: Map showing general location of landfill site on island of O‘ahu

At this site, several known native Hawaiian plants of interest as hosts or shelter for invertebrates were limited or missing in comparison to less altered dryland, low elevation locations in the islands. A few native plants such as `ilima (*Sida fallax*) and pili grass (*Heteropogon contortus*) are surrounded by aliens species introduced since 1790. Tree Tobacco (*Nicotiana* glauca) is frequently seen on its favored habitat, disturbed ground created by the usual activity of the landfill operation.

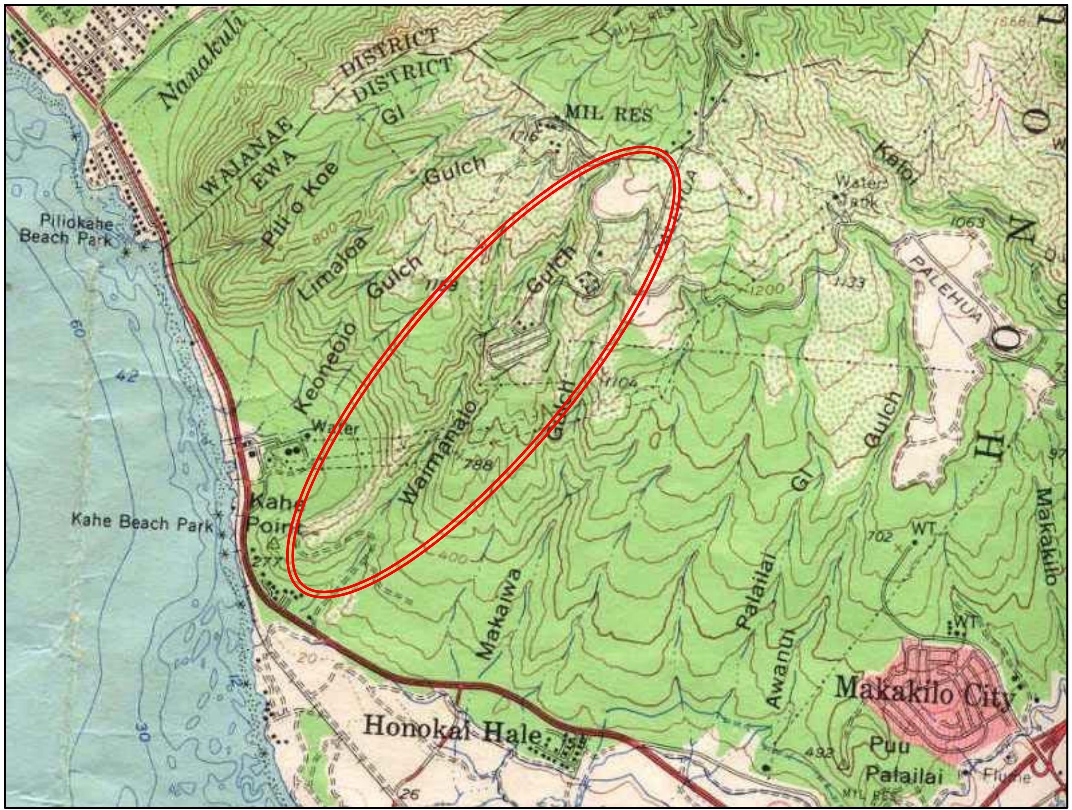

Figure 2. Waimanalo Gulch on O‘ahu’s leeward coast

INVERTEBRATE SURVEY METHODS

Previous Surveys and Literature Search

Prior to the field survey, a search was made for publications relating to invertebrates associated with the Waimanalo Gulch Landfill expansion area. This review did not find any previous invertebrate surveys of the Landfill areas. A recent survey at the adjacent proposed Makaīwa Hills housing development provided a comparison to a similar environment (Montgomery 2006). Earlier surveys of the Waimanalo Gulch Landfill expansion site for avian, botanical, and mammalian resources by Environment Impact Study Corporation (1983), Char (1999), Bruner (1999), and Guinther (2007) show no reference or evidence of surveying for invertebrates.

Searches also were made in regional and national databases which provide geographic access, such as the Pacific Basin Information Node and Hawaii Natural Heritage Program. None of the searches returned records of invertebrate surveys in Waimanalo Gulch. University of Hawaii Library holdings and Bishop Museum library and data bases also were searched.

Since 1970, I have taken part in field projects at other locations on the slopes near Waimanalo Gulch and other dryland locations on O‘ahu and throughout the island chain. Surveys of other dryland areas have created a sizeable body of information on native invertebrate and related botanical resources found in areas similar to Waimanalo Gulch Landfill expansion area (Bridwell 1920, Swezey 1935a). Those experiences and the results of those surveys provided the basis for my study design and my analysis of results.

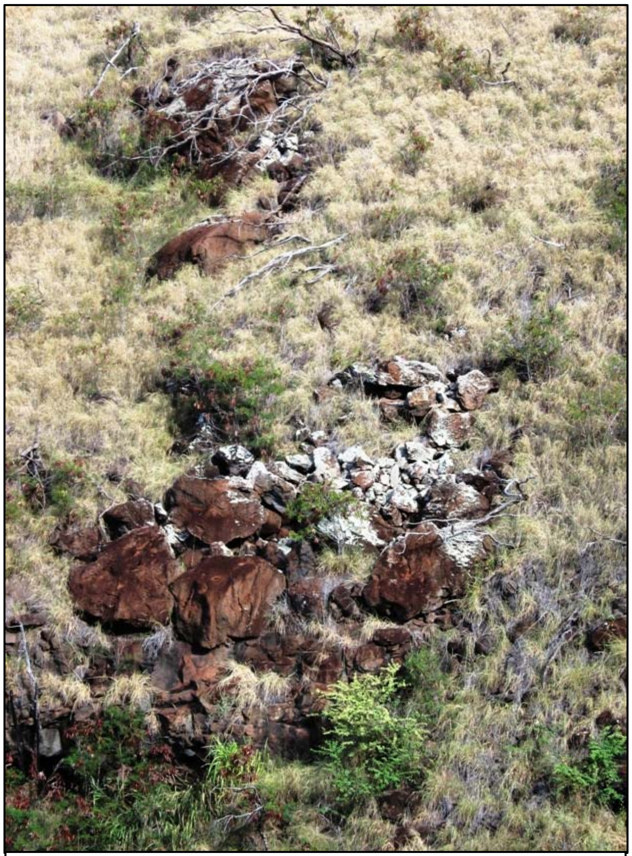

Figure 3: Typical talus slopes of lichen covered rocks.

Fieldwork

Field surveys were conducted at the Waimanalo Gulch Landfill expansion site in August 2008. I conducted a general assessment of terrain and habitats at the start of the survey. Surveying efforts were conducted at various times of day and night, a technique which is vital for a thorough survey. Native botanical resources identified by Char (1999), and Guinther (2007) were an important focus of my searches. The talus slopes of lichen covered rocks and older rock ledges (Figure 3 and 5) were of special interest as undisturbed Hawaiian ecosystem habitat. These areas support a microflora of lichens and algae, food for a higher diversity and larger number of native invertebrates than other locations within the valley.

During the day, I walked up the bulldozer road with wandering searches as practical off the sides of the road. When this road ended, I walked and climbed as far as possible into the remaining valley and up the slopes. See Figure 6 (page 10) for night collecting locations within the survey area.

Fieldwork schedule:

Aug. 26-27, 2008	Site examination and general orientation; general survey; light assisted census
Aug. 31-Sept. 1, 2008	General survey; light assisted census

Collecting Methods

The following collecting methods for terrestrial invertebrates were used as appropriate to the terrain, botanical resources, and target species.

Host plant searches: Potential host plants, both native and introduced, were sampled for arthropods that feed or rest on plants. Tree tobacco was a special focus as were all native plants.

Light sampling: A survey of insects active at night is vital to provide a complete record of the fauna. Many insects are only active at night to evade birds, avoid high temperatures and desiccation, or to use food sources such as night opening flowers. Light sampling uses a bright light source in front of a white cloth sheet. Night active insects seem to mistake the collecting light for the light of the moon, which they use to orient themselves. In attempting to navigate by the collecting light, confused insects are drawn toward the light and land on the cloth in confusion. This type of collecting is most successful during the dark phase of the moon under clouds blocking starlight. Vegetation usually blocks light from being seen over long distances, and most moths and other night fliers are not capable of very distant flight. Consequently, light sampling does not call in many insects from outside the survey area.

Light censusing was conducted for 10 hours each night on Aug. 26-27, 2008, and Aug. 31-Sept. 1, 2008. The light source was a mercury vapor (MV) bulb powered by an electric generator (left). An additional, hand held UV light source was used on the Aug. 31 - Sept. 1, 2008, trip at an additional location. Locations were chosen based on experience, native host plant proximity, and terrain. Competing artificial light sources were not a factor in response success.

© Figure 4: Typical light surveying arrangement.

Sweep nets: This collecting method targets flying and perching insects. A fine mesh net was swept across plants, leaf litter, rocks, etc. to collect any flying, perching, or crawling insects. Transfer from the net was either by aspiration, or directly into a holding container.

Visual observation: At all times, I was vigilant for any visual evidence of invertebrate presence or activity. Visual observations provide valuable evidence and are a cross check that extends the reach of sampling techniques. Visual observation also included turning over rocks, dead wood, and other debris and examination of living and dead plants and plant parts.

Survey Limitations / Conditions

My ability to form advisory opinions is limited / influenced in the following ways:

Common alien species: No attempt was made to collect or completely document common alien arthropod species present in the area.

Collecting conditions: Monitoring at a different time of the year, or for a longer period of time, might produce a longer or different arthropod list. Weather and seasonal vegetation play an especially important role in any survey of invertebrates. Many arthropods time their emergence and breeding to overlap or follow seasonal weather or to coincide with growth spurts of an important plant food. Host plant presence/absence, and seasonal changes, especially plant growth after heavy rains, affect the species collected.

Weather was favorable for collecting during each day of collecting. This survey was conducted without the benefit of winter rains, however native dryland adapted vegetation was in a better than expected condition due to several summer rains. If vegetation displayed young tender or mature new growth, a different insect list might have resulted.

The moon did not present competition to light collecting efforts and should not have affected the number of insects attracted to the light. The moon rose late on August 26 (1:58 a.m.) as a waning crescent with only 19% of the visible disk illuminated. On August 31 the moon rose at 7:07 a.m. as a waxing crescent with 1% of the disk illuminated. The moon set at 7:28 p.m. on Aug. 31, and did not rise again until 8:02 a.m. on Sept.1, presenting no disc during the period of collecting. (USNO)

Physical limitations: The steepness of slopes in some areas made access to some possible host plants difficult (Figure 3 and 5). Light censusing at night was some compensation for this hurdle.

The size of the project area and the steepness of many slopes means the survey was not comprehensive. The overall study strategy and site selections were designed to mitigate this recognized handicap. The resulting survey was representative and targeted in favor of locating and examining native host plants.

Figure 5: Steep slopes made light census efforts extremely important in obtaining meaningful results.

RESULTS:

In addition to the invertebrate results noted below, I noted a Barn Owl (*Tyto alba*) pellet containing rat bones, confirming the expectation that the Owl would be present on the property (Bruner 1999). I also saw evidence of dogs in the area. I observed no signs of feral goats or pigs, common enemies of native host plants. I saw and heard cattle in the upper shrubland above the Landfill property (see Recommendations, p. 16).

DISCUSSION

Native invertebrates found in this survey and significant non-native species are listed in Table 1. Native species of note are discussed and information is provided on several adventive species often misidentified by the public as native species. Also, information is provided on some medically important species.

Table 1: List of Invertebrates: Waimanalo Gulch, O‘ahu [2]

Species	common name	Status	Abundance	Recovered at / by
MOLLUSCA				
GASTROPODA				
PULMONATA	snails and Slugs			
Succineidae				
Succinea caduca	Hawaiian amber snail	End	O	in rocky ledges
ARTHROPODA				
ARACHNIDA				
SCHIZOMIDA				
Scorpiones	scorpions			
Isometrus maculatus (De Geer)	lesser brown scorpion	Adv	O	at light
ARTHROPODA				
INSECTA				
COLLEMBOLA	springtails			
Entomobryidae				
undetermined sp. 1		?	O	under stones
LEPIDOPTERA				
Cosmopterigidae	case bearers			
Hyposmocoma alliterata Walsingham, 1907	broad, pointed case	End	U	at light
Hyposmocoma sp. 1	straight slender case	End	C	under stones
Hyposmocoma sp. 2	curved, broad case	End	O	under stones
Hyposmocoma sp. 3	black, pointed adult	End	C	at light
Hyposmocoma sp. 4		End	R	at light
Crambidae	micro-moths			
Mestolobes miniscula (Butler 1881)		End	U	at light
Mestolobes sp.		End	U	at light
Omiodes localis (Butler, 1879)	grass leaf roller	End	R	at light
Tamsica hyacinthina (Meyrick 1899)		End	A	at light
Tamsica floricolens (Butler, 1883) ?	black saddled grass moth	End	R	at light
Noctuidae	miller moths			
Ascalapha odorata (Linnaeus, 1758)	black witch moth	Adv	O	at light
Oecophoridae				
Thyrocopa abusa Walsingham, 1907		End	R	at light
Sphingidae	hawk moths			
Agrius cingulata (Fabricius, 1775)	sweetpotato hornworm	Adv	U	at light
Hippotion rosetta (Swinhoe 1892)	Boerhavia sphinx moth	Adv	O	at light

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[2] Names authority: Hawaii Biological Survey 2002a; Nishida 2002; Zimmerman 1948-80; Zimmerman 2001

Table 1: continued

Species	common name	Status	Abundance	Recovered at / by
ARTHROPODA				
INSECTA				
HOMOPTERA	planthoppers			
Cixiidae				
Oliarus discrepans Giffard, 1925	wild cotton planthopper	End	R	at light
HYMENOPTERA	wasps, bees, ants			
Apidae	bees			
Apis mellifera Linnaeus, 1758	honey bee	Pur	R	in flight
Formicidae	ants			
Pheidole megacephala	big-headed ant	Adv	C	on soil
Solenopsis geminata (Fabricius, 1804)	fire ant	Adv	O	
Halictidae				
Dialictus sp. possibly *nevadensis* (Crawford, 1907)	mining bee	Adv	C	at *Sida* flowers
Vespidae	wasps			
Polistes exclamans Viereck, 1906	common paper wasp	Adv	C	in rocky ledges
ODONATA	dragonflies and damselflies			
Libellulidae	skimmers			
Pantala flavescens (Fabricius, 1798)	globe skimmer	Ind	C	in flight
CHILOPODA				
SCOLOPENDROMORPHA				
Scolopendridae	centipedes			
Scolopendra subspinipes Leach, 1815	large centipede	Adv	O	at light

Status:

End	endemic to Hawaiian Islands
Ind	indigenous to Hawaiian Islands
Adv	adventive
Pur	purposefully introduced
?	unknown

Abundance = occurrence ratings:

R	Rare	seen in only one or perhaps two locations
U	Uncommon	seen at most in several locations
O	Occasional	seen with some regularity
C	Common	observed numerous times during the survey
A	Abundant	found in large numbers
AA	Very abundant	abundant and dominant

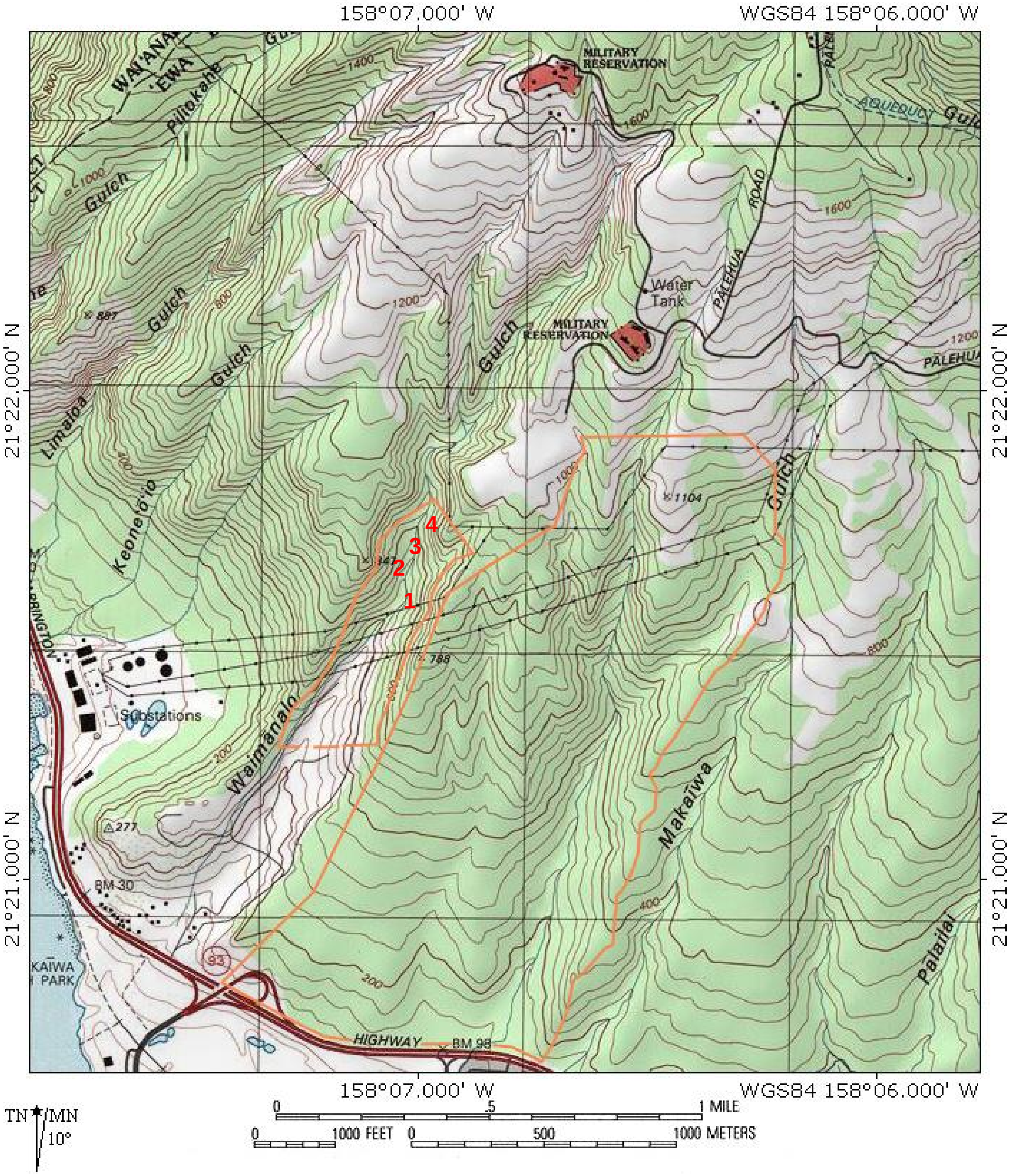

Figure 6. Waimanalo Gulch Landfillshowing light monitoring locations
[study area is smaller orange outline to left]

August 26-27, 2008	1 = light sampling
August 31- September 1, 2008	2, 3, 4= light sampling

(map courtesy R. Guinther)

INVERTEBRATE RESOURCES

MOLLUSCA: Gastropoda Pulmonata

Succineidae: *Succinea caduca* Hawaiian amber snail

Figure 7: *Succinea caduca* at Waimanalo Gulch

The only native terrestrial mollusk encountered was a succineid (Figure 7), length approximately 6-8 mm. Endemic *Succinea* snails were observed under stones and on rocky ledges. The rocks are usually encrusted with lichens in a veneer. The ledges provide food and shelter from heat and desiccation. The 1983 survey of Waimanalo Gulch botanical resources noted a fire swept through the valley in that year (Environment Impact Study Corporation), yet the snails persist. The rocky ledges and talus islands appear to offer refuge against destruction by fire and drought by offering a cool, moist habitat in the rocky crevices (Holland 2008).

This species is endemic to O’ahu, but is widely distributed. This distribution pattern is not uncommon in *Succinea*. This group of snails may be arboreal or ground dwelling, and occupies a wide range of habitats.

They often cover their shells with bits of decaying plant matter for camouflage. All *Succinea* feed on decaying plant matter. (Zimmerman 2001). They are not known to eat healthy, growing plants and pose no threat to home gardens or landscaping (R. Cowie, personal communication 2002). The group is under study by Dr. Cowie’s lab at the University of Hawai’i (Cowie 2006).

ARTHROPODS

INSECTA

LEPIDOPTERA

Cosmopterigidae: *Hyposmocoma*

Two species of *Hyposmocoma*, as caterpillars, were found on the rocky outcroppings and three species, in adult stage, came to light. Considering the population is likely at a low level due to the dry weather, the diversity is note worthy. In the wet season it could be expected that a higher number of individuals and more species would be recovered. Properly called “case bearers,” the caterpillars are sometimes misleadingly called “bagworms.” Very young caterpillars of case bearers find safety inside a leaf curl or

Figure 8: Camouflaged *Hyposmocoma* at Waimanalo Gulch, O’ahu

similar hiding place, but when growth forces them out of that protection, they intricately weave a portable shell of their own silk from a lip spinneret. For camouflage, they add bits of their surroundings to the case using their silk: snips of dry grass or leaves, flakes of bark, maybe a little dirt. The case is then easily mistaken by a predator as another part of the landscape (Figure 8). These bunkers are fitted with a hinged lid (operculum), pulled shut by mini-mandibles to defend them from enemies like beetles and micro wasps. Their relationship to the case is similar to that of a hermit crab to his shell. They aren’t physically connected to the case as a snail or turtle is fixed to their shells. They are dependent on their case, and die if removed – even if protected from predators and given food. They don’t move far, but feed while partly emerged from the case, dragging along their protective armor by their six true legs. Cases are sometimes attached to rocks a short distance above the ground. (Manning/Montgomery in Liittschwager & Middleton 2001) With over 500 kinds, *Hyposmocoma* micromoths are the greatest assemblage of Hawaiian Island moths, showing astonishing diversity. After writing 630 pages on them, Dr. Elwood Zimmerman lamented the inadequacy of his study. He noted an enormous cluster of species with explosive speciation and diverging radiation (Zimmerman 1978). Much remains to be learned about the life ways of this interesting group of insects now under study by University of Hawaii’s Dr. Daniel Rubinoff and colleagues (Rubinoff et al. 2008). The UH lab will attempt to rear out the caterpillars to identify the species. As sexually based characters can be important in identifications, and some of the species were represented by a single specimen, additional collections may be needed for identification.

Noctuidae: *Ascalapha odorata*
The black witch moth (Figure 9) found in this census has been widely distributed in the island chain since the first O’ahu sightings were noted at Manoa in 1928 (Bryan 1929). This large moth is occasionally mistaken for a bat when seen in flight in low light. It is most frequently seen a dawn or dusk. In cities it is seen resting under the eaves of roofs during the day. In rural areas it rests under foliage and against tree trunks.

©Figure 9: Black witch moth resting in day

Sphingidae: *Agrius cingulata* Sweetpotato hornworm

© Figure 10: Sweetpotato hornworm showing pink markings

The sweetpotato hornworm (Figure 10), a large and easily seen moth, is often confused by the public with the Blackburn’s sphinx moth (*Manduca blackburni*) described below. They are distinguished by their pink markings, as opposed to orange markings on Blackburn’s sphinx moth (see Figure 12). *A. cingulata* caterpillars feed on all sweet potato, morning glory, and related plants. The species is widely distributed around the Hawaiian Islands.

HOMOPTERA (PLANTHOPPERS)

Cixiidae *Oliarus discrepans* Giffard, 1925

Oliarus discrepans was previously listed by the US Fish & Wildlife Service as a “Species of Concern.” (HBS 2002a) This designation has been abandoned by the Service. Five individuals of this native, lowland planthopper, rarely seen in the last 40 years, were recovered. *O. discrepans* is considered a founding species or ancestor for a large cluster of species.

ODONATA (Dragonflies and Damselflies)

Libellulidae: *Pantala flavescens* Globe skimmer

This indigenous dragonfly was observed on the site. Among the most easily observed native insects, dragonflies are large, easily approached by people, and graceful in flight. Any small amount of fresh water will attract globe skimmers (Figure 11) and they often colonized human maintained water sources such as golf-course water hazards and ponds. It is widely distributed throughout the Hawaiian Islands, from Kure to Hawai‘i Island and has even been found flying at sea (Howarth & Mull 1992).

© Figure 11: Globe skimmers often use human created water sources

Invertebrates Not Present

Plant and invertebrate populations are interdependent, meaning host plant presence previews invertebrate diversity. The absence of wiliwili (*Erythrina sandwicensis*) and ma‘o or Hawaiian cotton (*Gossypium tomentosum*) and the low levels of ‘ilima (*Sida* sp.) (Char 1999, Guinther 2007) contribute to the paucity of Hawaiian arthropods at Waimanalo Gulch. A longer survey after the winter flush of plant growth would surely have found several more frequently seen native arthropods as noted below.

Alien predatory ants are another major cause of low native arthropods. Both the fire ant (*Solenopsis geminata*) and big-headed ant (*Pheidole megacephala*), which prey on other insects (Zimmerman 1948-80), are present on the property. Ants are well documented as a primary cause of low levels of native arthropods at elevations up to 2000 ft. (Perkins 1913). On all nights during light collecting, ants quickly appeared and began attacking the resting moths and smaller insects at my light. Ants frequently do not overlap territories, but have separate territories, effectively apportioning the hunting grounds between themselves, offering few ant-free zones to native arthropods.

MOLLUSCA: Gastropoda (Snails) Pulmonata

Achatinellidae

The Oahu Tree Snail (*Achatinella)*, listed on the federal endangered species list, was not found (DLNR 1996; Federal Register 1981). The habitat (elevation, host plants, and moisture levels) make the area inappropriate for the snail.

ARTHROPODA ARANEAE

Lycosidae: *Lycosa* sp.

Native *Lycosa* or wolf spiders (18 mm) were not seen on the property, although they are probably present based on their distribution in similar habitat island-wide. These are quick, strong predators which give maternal care to their young. They hide alone by day and hunt by night in established individual territories. (Manning/Montgomery in Liittschwager & Middleton 2001)

ARTHROPODA INSECTA

DIPTERA

Drosophilidae: *Drosophila*

No native *Drosophila* were observed on the property. The location does not provide appropriate habitat for any of the 12 native *Drosophila* species recently listed as endangered or threatened. (USFWS 2006a, b).

HETEROPTERA

Lygaeidae *Nysius* sp.

Although commonly found in dryland locations, this native seed bug which uses many host plants, alien and native, was not recorded by this survey.

HYMENOPTERA

Colletidae *Hylaeus* sp.

The yellow-faced bee was not found, but is likely present. This native, ground nesting bee is often found in dry habitats at similar elevations. *Ceratina smaragdula* (Fabricius, 1787), the small carpenter bee, was noted and is often confused with the yellow-faced bee as it is similar in size and often visits the same native plants. (Daly &Magnacca 2003)

LEPIDOPTERA

Sphingidae: *Manduca blackburni*

Blackburn's sphinx moth (*Manduca blackburni*), an endangered species (Fed Reg 1999-2000) which favors drylands, was not found in this survey. The moth's native solanaceous host plant, ʻaiea (*Nothocestrum* sp.), was not observed on the property in my own survey or prior botanical surveys. The best alien host, tree tobacco (*Nicotiana glauca*), however, is present in many locations in the expansion area. Over 50 plants were searched without finding evidence of feeding or presence of caterpillars.

© Figure 12: Blackburn's sphinx moth is distinguished from other hawk moths by orange markings.

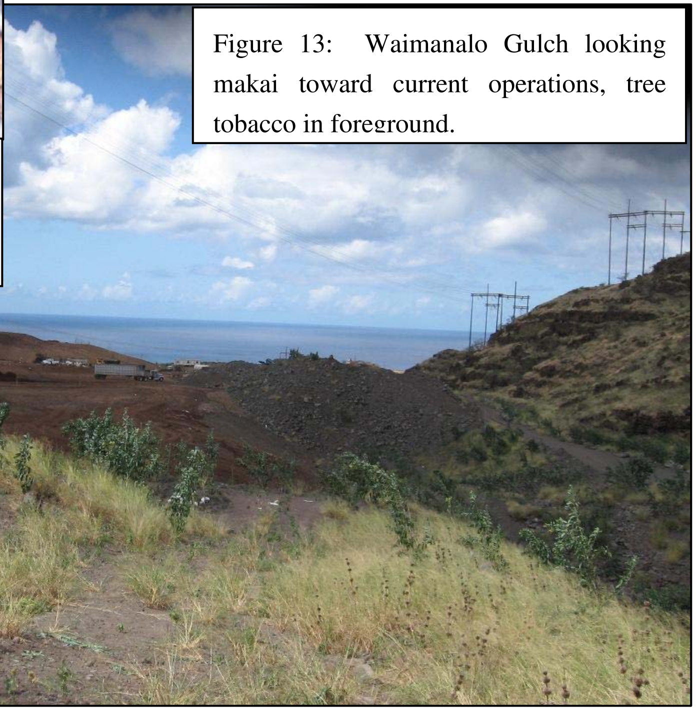

Figure 13: Waimanalo Gulch looking makai toward current operations, tree tobacco in foreground.

The moth has not been seen on O'ahu for many decades. The *Recovery Plan* (USFWS 2005b) for this large sphinx moth proposes only one Management Unit on O'ahu, at the Nature Conservancy's Honouliuli Preserve and relies on future reintroductions from other islands.

Medically important species

The Waimanalo Gulch Landfill Expansion area includes prime habitat for medically important species: centipedes, scorpions, and paper wasps. Widow spiders also may be present in the area. Paper wasps (Figure 14) were plentiful and aggressively defensive on overhanging ledges. Honey bees were in low numbers, most likely the result of the recent introduction of the Varroa mite which is killing colonies.

© Figure 14. Paper wasp building nest

Employees should be alert for these species during their work. These species may pose a serious risk to some individuals, and supervisors should be aware of any special allergy by employees. Some individuals can experience anaphylactic reactions to venom. When dislodging stones or brush, use of gloves and long sleeves will greatly reduce the risk of accidental contact and bites or stings. Please see *What Bit Me?* (Nishida and Tenorio 1993).

POTENTIAL IMPACTS

Potential Impacts on Federal or State Listed Species

No federally or state listed endangered or threatened species were noted in this survey (USFWS 2008). No anticipated actions related to the proposed project activity in the surveyed locations are expected to threaten entire species or entire populations.

RECOMMENDATIONS

Improve associated watershed

It is important to manage the ahupua’a to reduce peak flooding, which can damage stream banks, culverts, and undermine waste storage cells. The presence of cattle in the watershed above the Landfill has had and will have negative impacts. For example, at Hawai'i Kai’s Haha'ione Valley and Manoa Valley, exceptional downpours on goat and pig disturbed mauka landscapes and have exacerbated extreme water runoff. Improving the quality of watershed on the property above the Landfill would reduce the intensity of flash flooding and the potential for damage. Removal of the cattle in the catchment area above the Landfill would improve vegetation and reduce erosion. Restoration of the watershed with selective planting of fire resistant plants intended to slow runoff (a mix of plant heights with a strong ground cover) would make a substantial contribution toward soil and water retention.

ACKNOWLEDGMENTS

Thanks are extended to the personnel of the Department of Land and Natural Resources for quick turn around time on permits to conduct this work and Waste Management staff for property access assistance. Thanks are extended to Eric Guinther for access to his botanical reports and to Dr. Brenden Holland and Dr. Daniel Rubinoff of the University of Hawaii for assistance with snails and case bearer identifications. Steven Lee Montgomery conducted all collecting and is responsible for all conclusions. Anita Manning contributed to preparation of this report.

STANDARD NOMENCLATURE

Bird names follow *Hawaii's Birds* (Hawaii Audubon Society 2005).

Invertebrate names follow

Freshwater & Terrestrial Mollusk Checklist (HBS 2002b)
Common Names of Insects & Related Organisms (HES 1990)
Hawaiian Terrestrial Arthropod Checklist (HBS2002a; Nishida 2002)

Place name spelling follows *Place Names of Hawaii* (Pukui et al. 1976).

Plant names follow

Manual of the Flowering Plants of Hawai‘i (Wagner et al. 1999)
A Tropical Garden Flora (Staples and Herbst 2005)

ABBREVIATIONS

DLNR	Department of Land and Natural Resources, State of Hawai’i
DOFAW	Division of Forestry and Wildlife, State of Hawai’i
MV	Mercury Vapor
n.	new
sp.	species
spp.	more than one species
UH	University of Hawai‘i
USFWS	United States Fish and Wildlife Service
UV	Ultraviolet

GLOSSARY[3]

Adventive: organisms introduced to an area but not purposefully.

Ahupua'a: historic land division usually from uplands to seashore, recognizing the interconnectedness of uplands and seashore as a management unit

Alien: occurring in the locality it occupies ONLY with human assistance, accidental or purposeful; not native. Both Polynesian introductions (e.g., coconut) and post-1778 introductions (e.g., guava, goats, and sheep) are aliens.

Arthropod: insects and related invertebrates (e.g., spiders) having an external skeleton and jointed legs.

Endemic: naturally occurring, without human transport, ONLY in the locality occupied. Hawaii has a high percentage of endemic plants and animals, some in very small microenvironments.

Hygrophilous: literally water loving, adapted to living or breeding in wet or damp places

Indigenous: naturally occurring without human assistance in the locality it occupies; may also occur elsewhere, including outside the Hawaiian Islands. (e.g., Naupaka kahakai (*Scaevola sericea*) is the same plant in Hawaiʻi and throughout the Pacific).

Insects: arthropods with six legs, and bodies in 3 sections

Invertebrates: animals without backbones (insects, spiders, snails / slugs, shrimp)

Larva/larval: an immature stage of development in offspring of many types of animals.

Makai: down-slope, towards the ocean.

Mauka: up slope, towards the mountains.

Mollusk: invertebrates in the phylum Mollusca. Common representatives are snails, slugs, mussels, clams, oysters, squids, and octopuses.

Native: organism that originated in area where it lives without human assistance. May be indigenous or endemic.

Nocturnal: active or most apparent at night.

Purposefully introduced: an organism brought into an area for a specific purpose, for example, as a biological control agent.

Rare: threatened by extinction and low numbers.

Species: all individuals and populations of a particular type of organism, maintained by biological mechanisms that result in their breeding mostly with their kind.

Waning: describes a gradual decrease in the amount of the moonʻs disk that is visible; shrinking

Waxing : describes a gradual increase in the amount of the moonʻs disk that is visible; growing

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[3] Glossary based largely on definitions in *Biological Science: An Ecological Approach,* 7th ed., Kendall/Hunt Publishing Co., Dubuque, a high school text; on the glossary in *Manual of Flowering Plants of Hawai'i*, Vol.2, Wagner, et al., 1999, Bishop Museum Press, and other sources.

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Appendix M

Blasting Effects on Rockfalls and Vibrations
Waimānalo Gulch Sanitary Landfill Expansion, 2008

Geosyntec consultants

475 – 14th Street, Suite 400
Oakland, California 94612
Tel. (510) 836-3034 • Fax (510) 836-3036

Blasting Effects on Rockfalls and Vibrations

Waimanalo Gulch Landfill

Ewa Beach, HI

At the Waimanalo Gulch Landfill blasting may be used to excavate rock in certain areas for excavation to the subgrade levels. The explosion of blast charges results in ground and surface vibrations. The best predictor of the impact of blasting on structures and humans is peak particle velocity and the frequency of vibration transmitted into the residence.

Acceptable Ranges of Particle Velocities and Frequencies of Vibration

Based on numerous blasting studies, the Bureau of Mines concluded that, for residential-type structures, safe levels of particle velocities from blasting range from 0.5 to 2.0 in/sec.

The damage threshold values are also a function of the frequencies of vibration transmitted to the residence. Depending on the type, the structure may experience strains when frequencies vary between 4 Hz and 25 Hz. Depending on the individual's response and annoyance level from ground vibrations, particle velocities ranging between 0.5 and 0.75 in/sec have been judged "less acceptable". Higher velocities are not acceptable.

Furthermore, information quoted from Merritt [1983] states that: *"Most courts have accepted the fact that a particle velocity not exceeding 2 in/sec will not damage any part of any structure."*

Particle velocity can be estimated using the following equation:

$$v = H\,(D/\sqrt{W})^{-\beta} \qquad (1)$$

where:

D = distance from the explosive charge, feet;

W = maximum weight of explosives, lbs per delay; and

β, H are site-specific constants determined based on the blast test program

Blast Test Program

Prior to starting the full-scale blasting program for production, WM plans to conduct a Blast Test Program at the site. The program will consist of monitoring particle velocity and frequency of vibration with distance from the blast source for the known blast charge. Based on the Blast Test Program, the site-specific constants β and H can be determined. Once these site-specific constants are established, equation (1) can be used to establish the distance from the blast beyond which the impact from the blast will be safe. Similarly the frequency-distance attenuation relationship will also be established based on the test program.

The above program will help establish the charge weights per delay that will be used during production blasting operations so that blasting does not adversely impact the residential developments.

In addition to the above, as a part of the above Blast Test Program, WM will also monitor the potential for rockfalls during blasting. If a potential for rockfalls is identified, WM will use barriers (e.g., nets) to mitigate the potential rockfall issues.

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BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Petition of

DEPARTMENT OF PUBLIC WORKS,
CITY AND COUNTY OF HONOLULU

For a Special Use Permit to Establish a Sanitary Landfill on Approximately 60.5 Acres of Land Situate Within the Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Tax Map Key No.: 9-2-03: Portion of Parcel 2 and Portion of Parcel 13

DOCKET NO. SP87-362

DEPARTMENT OF PUBLIC WORKS,
CITY AND COUNTY OF HONOLULU

This is to certify that this is a true and correct copy of the Decision and Order on file in the office of the State Land Use Commission, Honolulu Hawaii.

APR 20 1987 by
Date Executive Officer

LAND USE COMMISSION
STATE OF HAWAII
APR 20 2 05 PM '87

FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECISION AND ORDER

EXHIBIT C

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Petition of DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU For a Special Use Permit to Establish a Sanitary Landfill on Approximately 60.5 Acres of Land Situate Within the Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Tax Map Key No.: 9-2-03: Portion of Parcel 2 and Portion of Parcel 13	)	DOCKET NO. SP87-362 DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU

FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECISION AND ORDER

The Department of Public Works, City and County of Honolulu (hereinafter the "Petitioner") initiated this proceeding pursuant to Section 205-6, Hawaii Revised Statutes, as amended, and Subchapter 12 of the Hawaii Land Use Commission Rules. The Land Use Commission (hereinafter the "Commission") having considered the entire record on this matter, hereby makes the following findings of fact and conclusions of law and decision and order:

FINDINGS OF FACT

Procedural Matters

1. The Petitioner filed the Special Permit application with the Department of Land Utilization on October 1, 1986. Public hearings were conducted by the Planning

Commission on January 21, 1987 and continued on February 4, 1987. No public testimony was received at either of these hearing dates.

2. On January 16, 1987, the Land Use Commission received a copy of the Planning Commission's agenda for the January 21, 1987 hearing date.

3. On February 4, 1987, the Planning Commission approved the Special Permit, with six conditions. The Special Permit was received by the Land Use Commission on February 23, 1987.

Description of Property

4. The proposed landfill site is in Waimanalo Gulch adjacent to and on the Makakilo side of the Kahe Electric Power Plant, abutting the mauka side of Farrington Highway and mauka of the proposed Ko Olina Resort (formerly known as the West Beach Resort) and approximately one mile west of the Honokai Hale residential subdivision.

5. The landfill site is approximately 60.5 acres and is identified as Oahu Tax Map Key No.: 9-2-03: portion of parcel 2 and portion of parcel 13 (hereinafter the "Property").

6. According to the Real Property Assessment of the City Department of Finance, the present owners of the Property are as follows:

TMK:	9-2-03:2	James Campbell Trust Estate
TMK:	9-2-03:13	Robert H. K. Au & Wife Audrey F. Betsy F. S. Au Lum Betty L. W. Au

7. The County is in the process of condemning portions of parcels 2 and 13 totaling approximately 200.622 acres of which 60.5 acres will be used for the proposed landfill.

8. The Property, which is currently vacant, is located adjacent to 13 single-family dwellings. Prior to 1960, the site was used for cattle grazing.

9. Soils found on the Property are classified as Lualualei extremely stony clay 3 to 5% slope (LPE) and Rock Land (rRK).

10. The Property is located in an area that receives between 20 and 30 inches of rainfall per year. Groundwater found below the Property is brackish with a salinity range of 250 to 19,000 parts per million chloride content.

11. The Property is not classified by the Agricultural Lands of Importance to the State of Hawaii (ALISH) system.

12. No endangered plants and animals were found on the Property.

13. There are no known significant archaeological sites on the Property.

<u>Summary of Proposed Use</u>

14. Petitioner is requesting the Special Permit to allow the establishment of a sanitary landfill including highway and roadway improvements, administration building, scale and scalehouse, maintenance shed, drainage system,

leachate collection system, leachate and gas monitoring wells, landscaping and irrigation, security fencing and utilities on approximately 60.5 acres of land. (The Property as described in Petitioner's Exhibit 3 reflects an area of approximately 80 plus acres although the Planning Commission's recommendation for approval was for only 60.5 acres.)

15. Petitioner proposes the new landfill to initially serve the Leeward Communities for disposing raw refuse and is projected to have an eight year life and a capacity of 6.65 million cubic yards. Petitioner anticipates that when the proposed H-POWER (Honolulu Resource Recover Project) facility becomes operational in 1988, most of the raw refuse will be diverted to this facility and the Property will be used for the disposal of ash from H-POWER and other non-combustibles.

16. Petitioner proposes to operate the proposed landfill from 7:00 a.m. to 4:30 p.m., seven days per week. In addition, contractors with the County will be allowed 24-hour access to the landfill to dispose of ash from the operation of H-POWER once every hour. The accumulated ash will be spread and compacted the next day during normal working hours.

17. Petitioner states that the current sanitary landfills at Kapaa, Kawailoa and Waianae are rapidly approaching capacity. Even with a resource recovery project, the ash waste from H-POWER will still need a site for final disposal. However, with a resource recovery facility in place, the useful life of the proposed landfill may be doubled.

18. Access to the Property is currently provided by Farrington Highway, a four lane divided highway. Petitioner proposes to improve Farrington Highway by constructing exclusive turning lanes connecting to a 2000 lineal foot access roadway on the Property.

State and County Plans and Programs

19. The subject Property is located in the State Agricultural District as designated on State Land Use District Boundary Map O-6 Ewa, Hawaii.

20. The City and County of Honolulu Ewa Development Plan designates the Property as Agriculture. Zoning for the Property is AG-2 General Agriculture. The current zoning allows the use of the Property for sanitary landfill.

21. The Property is not located within the Special Management Area.

22. The Property lies below the UIC (Underground Injection Control) line for the area.

Environmental Concerns

23. Major concerns are the possible contamination of offshore waters from leachates generated at the Property, visual, noise, dust, odor and traffic impacts on surrounding existing and proposed communities.

24. The Final Environmental Impact Statement (EIS) was submitted and was accepted by the Director of Land Utilization on October 17, 1985. The EIS included a summary of probable

impacts, probable adverse environmental effects and proposed mitigation measures, alternatives to the proposed action, irreversible and irretrievable commitments of resources, summary of unresolved issues, and other matter as required by Chapter 343, HRS.

Conformance with Special Permit Guidelines

25. The project does not appear contrary to the Land Use Law. The proposed site is located in a gulch in the Leeward District on generally sloping lands and in an area with a relatively drier climate. The project site does not fall in the prime, unique, or other important agricultural land classifications on the ALISH map. Under the Land Study Bureau Agricultural Soils Classification, the site is rated "E"; where "A" represents the highest productivity rating and "E" the lowest.

26. The desired use would not adversely affect surrounding property. The nearest dwelling is located approximately 400 feet from the weigh station and 500 feet from the disposal area. According to the Petitioner, leachate contamination of off-shore waters from the landfill is unlikely because annual rainfall in Ewa averages only 20 to 30 inches. To ensure against leachate contamination, the Petitioner has incorporated a number of state-of-the art measures in the design of the landfill. These include large silting basins, a perimeter drainage system, the landscaping of graded surfaces

and completed sections, grading and compaction of the bottom of the landfill, and the construction of a leachate collection system, monitoring well and an on-site drainage system.

27. Such use would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, and school improvements and police and fire protection. Petitioner will make the necessary highway improvements, to include a deceleration lane on the off-ramp. On- and off-site improvements for storm drainage and leachate control, water and wastewater disposal will also be provided by the Petitioner. The proposed projects' traffic impact would generate only a slight increase in overall traffic on the coast highway.

28. Unusual conditions, trends, and needs have arisen since the district boundaries and regulations were established. Petitioner has determined a need for a new Leeward area sanitary landfill and has indicated it on the Development Plan Public Facilities Map (adopted in 1982). Petitioner prepared an EIS which reviewed various alternative sites and found the project area most feasible to provide this service for a projected full-life of approximately 8 years.

29. The land upon which the proposed use is sought is unsuited for the uses permitted within the district. The topography, soil conditions, and general location of the site render the site unfeasible for agricultural applications.

Planning Commission Recommendation

30. At its meeting of February 4, 1987, the City and County of Honolulu Planning Commission voted to recommend approval of the subject permit for the establishment of the sanitary landfill facility subject to the following conditions:

"1. The earth berm shall be installed prior to commencement of waste disposal operations.

"2. A landscape plan, to include plant names, sizes, quantities and location, shall be submitted to the Department of Land Utilization for approval. The plan shall also be implemented within 90 days of completion of the berm work.

"3. The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.

"4. The applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, and Board of Water Supply for all on-site and off-site improvements involving access, storm drainage, leachate control, water and wastewater disposal.

"5. The Planning Commission or Director of Land Utilization may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

"6. The applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action or disposition of the permit."

CONCLUSIONS OF LAW

The proposed use is an "unusual and reasonable" use as defined in Chapter 205-6, Hawaii Revised Statutes and the proposed use is not contrary to the objectives to be accomplished by the State Land Use Law to preserve, protect and encourage the development of lands in the State for those uses to which they are best suited in the interest of the public health and welfare.

ORDER

IT IS HEREBY ORDERED that Special Permit Docket Number 8~~6~~7-362 to establish a sanitary landfill including highway and roadway improvements, administration building, scale and scalehouse, maintenance shed, drainage system, leachate collection system, leachate and gas monitoring wells, landscaping and irrigation, security fencing and utilities, on approximately 60.5 acres, consisting a portion of the Property, situate within the State Land Use Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Tax Map Key Number: 9-2-03: portion of parcel 13, and approximately identified on Exhibit A attached hereto and incorporated by reference herein be approved subject to the following conditions:

1. That an earth berm shall be installed prior to the commencement of any waste disposal operations.

2. The landscaping plans which would include plant names, sizes, quantities and location shall be submitted to the Department of Land Utilization for approval and shall be implemented within 90 days of completion of the berm work.

3. The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.

4. The applicant shall obtain all necessary approvals from the State Department of Health, Department of

Transportation, and Board of Water Supply for all on-site and off-site improvements involving access, storm drainage, leachate control, water and wastewater disposal.

5. The Planning Commission or Director of Land Utilization may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

6. The applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action or disposition of the permit.

7. That the project be completed and operating within 3 years of the approval of the special use permit.

8. That the City and County of Honolulu indemnify and hold harmless the State of Hawaii and all of its agencies and/or employees for any lawsuit or legal action relating to any groundwater contamination or noise, odor pollution relative to the operation of the landfill.

DOCKET NO. SP87-362 - CITY AND COUNTY OF HONOLULU, DEPARTMENT OF PUBLIC WORKS

Done at Honolulu, Hawaii, this 20th day of April 1987, per motions on March 17, 1987 and April 15, 1987.

LAND USE COMMISSION
STATE OF HAWAII

By T.P. Tacbian
TEOFILO PHIL TACBIAN
Chairman and Commissioner

By Frederick P. Whittemore
FREDERICK P. WHITTEMORE
Vice Chairman and Commissioner

By Everett Cuskaden
EVERETT L. CUSKADEN
Commissioner

By Robert S. Tamaye
ROBERT S. TAMAYE
Commissioner

By William W. L. Yuen
WILLIAM W. L. YUEN
Commissioner

By
TORU SUZUKI
Commissioner

By
RICHARD B. F. CHOY
Commissioner

By Lawrence F. Chun
LAWRENCE F. CHUN
Commissioner

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Petition of DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU For a Special Use Permit to Establish a Sanitary Landfill on Approximately 60.5 Acres of Land Situate Within the Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Tax Map Key No.: 9-2-03: Portion of Parcel 2 and Portion of Parcel 13	DOCKET NO. SP87-362 DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Findings of Fact, Conclusions of Law, and Decision and Order was served upon the following by either hand delivery or depositing the same in the U.S. Postal Service by certified mail:

DONALD A. CLEGG, Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

MICHAEL J. CHUN, PH.D, Director and
Chief Engineer
Department of Public Works
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dated: Honolulu, Hawaii, this 20th day of April 1987.

Esther Ueda

ESTHER UEDA
Executive Officer

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Petition of)
)
DEPARTMENT OF PUBLIC WORKS,)
CITY AND COUNTY OF HONOLULU)
)
For an Amendment to the Special)
Use Permit Which Establishes a)
Sanitary Landfill on Approximately)
60.5 Acres of Land Situate Within)
the Agricultural District at)
Waimanalo Gulch, Honouliuli, Ewa,)
Oahu, Tax Map Key No.: 9-2-03:)
Portion of Parcel 2 and Portion)
of Parcel 13)
)

DOCKET NO. SP87-362

DEPARTMENT OF PUBLIC
WORKS, CITY AND COUNTY
OF HONOLULU

LAND USE COMMISSION
STATE OF HAWAII
OCT 31 8 32 AM '89

FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECISION AND ORDER

EXHIBIT D

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Petition of DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU For an Amendment to the Special Use Permit Which Establishes a Sanitary Landfill on Approximately 60.5 Acres of Land Situate Within the Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Tax Map Key No.: 9-2-03: Portion of Parcel 2 and Portion of Parcel 13	DOCKET NO. SP87-362 DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU

FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECISION AND ORDER

The Department of Public Works, City and County of Honolulu (hereinafter the "Petitioner") initiated this proceeding pursuant to Section 205-6, Hawaii Revised Statutes, as amended, and Subchapter 12 of the Hawaii Land Use Commission Rules. The Land Use Commission (hereinafter the "Commission") having considered the entire record on this matter, hereby makes the following findings of fact, conclusions of law and decision and order:

FINDINGS OF FACT

Procedural Matters

1. Petitioner filed the amendment to Special Permit 87-362/Department of Public Works with the Department of Land Utilization, City and County of Honolulu on June 16, 1989.

2. On July 26, 1989, the City and County of Honolulu Planning Commission (hereinafter the "Planning Commission") conducted a public hearing on the request. Public testimony was presented by Jane Ross, Chairperson of Neighborhood Board Number 23. The Planning Commission also received a written statement from William W. Paty, Director of the State Department of Land and Natural Resources.

3. On July 26, 1989, the Planning Commission voted to recommend approval with one additional condition. The record of the proceeding on the Special Permit amendment (hereinafter "Amendment") was received by the Commission on August 9, 1989.

Background Information and Proposed Amendment

4. By Decision and Order issued on April 20, 1987, the Commission approved the original special permit for a landfill site for approximately 60.5 acres subject to eight conditions as follows:

"1. That an earth berm shall be installed prior to the commencement of any waste disposal operations.

"2. The landscaping plans which would include plant names, sizes, quantities and location shall be submitted to the Department of Land Utilization for approval and shall be implemented within 90 days of completion of the berm work.

"3. The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.

"4. The applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, and Board of Water Supply for all on-site and off-site improvements involving access, storm drainage, leachate control, water and wastewater disposal.

"5. The Planning Commission or Director of Land Utilization may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

"6. The applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action or disposition of the permit.

"7. That the project be completed and operating within 3 years of the approval of the special use permit.

"8. That the City and County of Honolulu indemnify and hold harmless the State of Hawaii and all of its agencies and/or employees for any lawsuit or legal action relating to any groundwater contamination or noise, odor pollution relative to the operation of the landfill."

5. Petitioner's Exhibit 3 of the original Special Permit docket reflected an area of approximately 80 plus acres for the landfill site. However, the Planning Commission's approval at that time was for 60.5 acres.

<u>Description of Property</u>

6. The 60.5 acre previously approved landfill site and the proposed expansion area (hereinafter collectively the

"Project Site") is in Waimanalo Gulch adjacent to and on the Makakilo side of the Kahe Electric Power Plant. The site abuts the mauka side of Farrington Highway and is mauka of the proposed Ko Olina Resort (formerly known as the West Beach Resort). The Honokai Hale residential subdivision is approximately one mile east of the Project Site.

7. The proposed 26-acre expansion area, Oahu Tax Map Key Number: 9-2-03: portion of 2, (hereinafter the "Property") is located immediately mauka and contiguous to the existing approved 60.5-acre area.

8. The Project Site is located adjacent to 13 single-family dwellings. These dwellings are located within the Agricultural District situate between the Kahe Power Plant Urban District and the Project Site, mauka of Farrington Highway.

9. The previously approved 60.5-acre area is presently being developed for landfill use.

10. The expansion area is traversed by three electrical transmission lines originating from the Kahe Power Plant.

11. Soils found on the Project Site are classified as Lualualei extremely stony clay 3 to 5% slope (LPE) and Rock Land (rRK).

12. The Project Site is located in an area that receives between 20 and 30 inches of rainfall per year.

Groundwater found below the Project Site is brackish with a salinity range of 250 to 19,000 parts per million chloride content.

13. The Project Site is not classified by the Agricultural Lands of Importance to the State of Hawaii system.

14. No endangered plants and animals were found on the Project Site.

15. The Department of Land and Natural Resources indicates that the landfill project will have no effect on significant historic sites.

16. Petitioner indicates that the Property is owned by the City and County of Honolulu.

17. Access to the Project Site is currently provided by Farrington Highway, a four lane divided highway. Petitioner proposes to improve Farrington Highway by constructing exclusive turning lanes connecting to a 2000 lineal foot access roadway on the Project Site.

Description of Proposed Amendment to Special Permit

18. The current request is to modify the existing Special Permit by including approximately 26.0 acres of land inadvertently left out of the original Special Permit for a total Special Permit area of 86.5 acres.

19. Petitioner proposes this addition in order to allow enough land area for the proposed administration building, weighing station, drainage structures and access roads.

State and County Plans and Programs

20. The Property is located in the State Agricultural District as designated on State Land Use District Boundary Map O-6 Ewa, Hawaii.

21. The City and County of Honolulu Ewa Development Plan designates the Property as Agriculture. Zoning is AG-2 General Agriculture. The current zoning allows the use of the Property for sanitary landfill.

22. The Property is not located within the Special Management Area.

Environmental Concerns

23. Environmental concerns such as the possible contamination of offshore waters from leachates generated at the Project Site; visual, noise, dust, odor and traffic impacts on surrounding existing and proposed communities were addressed in the Environmental Impact Statement accepted by the Department of Land Utilization on October 17, 1985 and submitted with the original Special Permit application.

Agency Comments

24. The State Department of Health indicates in its June 29, 1989 letter (Petitioner's Exhibit E) that the Petitioner will need to amend its original Solid Waste Management Permit to reflect the modification.

25. The Department of Land and Natural Resources had no objections to the proposed 26-acre addition.

26. The Hawaiian Electric Company, Inc. (HECO) indicates in its July 12, 1989 letter, the following:

"During construction, adequate safety precaution must be taken to prevent construction equipment from contacting our overhead facilities. In order to work under our lines, the following conditions must be agreed to:

"Hawaiian Electric reserves the right to review and approve any proposed construction work within our easement area.

"No buildings or structures are to be erected within the easement area.

"The minimum clearance from the lowest conductor to ground shall be as specified by General Order No. 6.

"No grading work will be allowed within a 20-foot radius of any poles, structures or anchors without Hawaiian Electric's approval.

"Vehicular access will be required to each easement area for maintenance and for future construction.

"In addition, the City and contractor must provide us with a Hold Harmless Agreement before any work is done under our overhead lines."

Conformance With Special Permit Tests

27. In support of the proposed amendment to the Special Permit, the Department of Land Utilization (DLU) provided, in part, the following:

"The request to modify the State Special Use Permit to increase the Waimanalo Gulch Sanitary Landfill site by 26.0±

acres meets the State Land Use Agriculture District's "Five Tests to be applied."

"The effects of the proposed modification were adequately reviewed during the original State Special Use Permit process and during the preparation of the Environmental Impact Statement. The modification will not adversely impact on the surrounding properties if conditions of approval required by the SLUC approve (Attachment C, Docket No. SP87-362) and 86/SUP-5 remain in effect and are implemented."

Planning Commission Recommendation

28. On August 3, 1989, the Planning Commission recommended that the modification of the existing State Special Use Permit for the Waimanalo Gulch Landfill be approved subject to all conditions of the original permit as well as to an additional condition requiring coordination between the Department of Public Works and the Hawaiian Electric Company during the construction and operation of the landfill.

CONCLUSIONS OF LAW

The proposed Amendment is an "unusual and reasonable" use as defined in Chapter 205-6, Hawaii Revised Statutes and the proposed expansion is not contrary to the objectives to be accomplished by the State Land Use Law to preserve, protect and encourage the development of lands in the State for those uses to which they are best suited in the interest of the public health and welfare.

ORDER

IT IS HEREBY ORDERED that an Amendment to Special Permit Docket Number 87-362 to expand the existing approved area by approximately 26 acres situate within the State Land Use Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Tax Map Key Number: 9-2-03: portion of parcel 2, and approximately identified on Exhibit A attached hereto and incorporated by reference herein be approved subject to the following eight conditions of the original Special Permit and the additional condition as recommended by the Planning Commission:

1. That an earth berm shall be installed prior to the commencement of any waste disposal operations.

2. The landscaping plans which would include plant names, sizes, quantities and location shall be submitted to the Department of Land Utilization for approval and shall be implemented within 90 days of completion of the berm work.

3. The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.

4. The applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, and Board of Water Supply for all on-site and off-site improvements involving access, storm drainage, leachate control, water and wastewater disposal.

5. The Planning Commission or Director of Land Utilization may at any time impose additional conditions when

it becomes apparent that a modification is necessary and appropriate.

6. The applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action or disposition of the permit.

7. That the project be completed and operating within 3 years of the approval of the special use permit.

8. That the City and County of Honolulu indemnify and hold harmless the State of Hawaii and all of its agencies and/or employees for any lawsuit or legal action relating to any groundwater contamination, noise, or odor pollution relative to the operation of the landfill.

9. Petitioner shall coordinate construction and operation of the landfill with the Hawaiian Electric Company.

DOCKET NO. SP87-362 - DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU

Done at Honolulu, Hawaii, this 31st day of October 1989, per motions on September 21, 1989 and October 19, 1989.

LAND USE COMMISSION
STATE OF HAWAII

By (absent)
RENTON L. K. NIP
Chairman and Commissioner

By Lawrence F. Chun
LAWRENCE F. CHUN
Vice Chairman and Commissioner

By Sharon R. Himeno
SHARON R. HIMENO
Commissioner

By Allen K. Hoe
ALLEN K. HOE
Commissioner

By
ALLEN Y. KAJIOKA
Commissioner

By Eusebio Lapenia, Jr.
EUSEBIO LAPENIA, JR.
Commissioner

By James M. Shinno
JAMES M. SHINNO
Commissioner

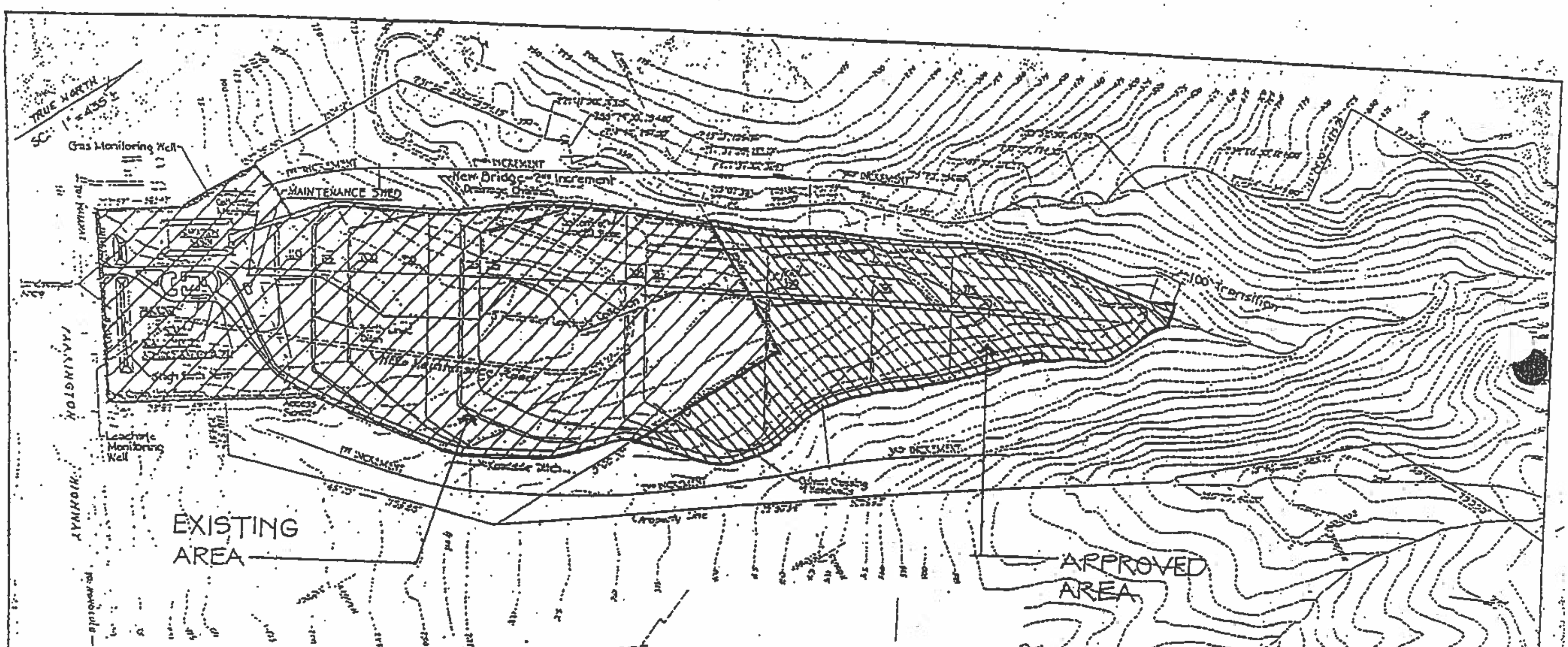
By
ELTON WADA
Commissioner

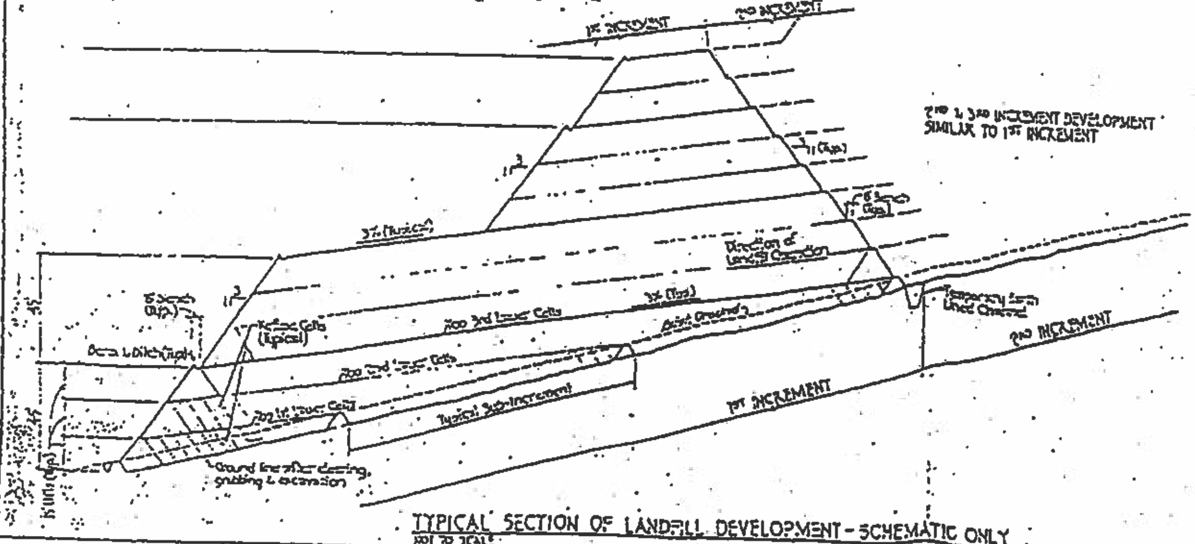
By Frederick P. Whittemore
FREDERICK P. WHITTEMORE
Commissioner

Filed and effective on
October 31, 1989

Certified by:

Executive Officer





TYPICAL SECTION OF LANDFILL DEVELOPMENT - SCHEMATIC ONLY
NOT TO SCALE

SP87-362/DEPARTMENT OF PUBLIC
WORKS, CITY & COUNTY OF HONOLULU

LOCATION MAP

TMK. NO. 9-2-03: Por. 13, Por. 12
WAIMANALO GULCH
HONOULIULI, EWA, OAHU

EXHIBIT A

PLANNING COMMISSION OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION)
)
OF)
)
DEPARTMENT OF)
ENVIRONMENTAL SERVICES) 2002/SUP-6
)
FOR AN AMENDMENT TO A)
STATE SPECIAL USE PERMIT)

FINDINGS OF FACT, CONCLUSIONS, AND DECISION

I. PROPOSAL

The Planning Commission, at its public hearing held on March 5, 2003, pursuant to Section 205-6, Hawaii Revised Statutes and Subchapter 4, Rules of the Planning Commission, City and County of Honolulu, considered the application of Department of Environmental Services to amend Special Use Permit (SUP) File No. 86/SUP-5. The applicant proposes a 21-acre, 5-year capacity expansion to the existing 86.5-acre landfill to allow continued disposal of municipal solid waste (MSW). The proposed expansion includes 4 cells (E1 through E4) for disposing MSW, berms, detention and stilling basins, drainage channels, and access routes located within the State Land Use Agricultural District in Waimanalo Gulch, Honouliuli, Ewa, Oahu. The project area is identified by Tax Map Key 9-2-3: portion of 72 and portion of 73.

EXHIBIT E

II. FINDINGS OF FACT

On the basis of the evidence presented, the Commission hereby finds that:

1. The subject expansion area is identified by Tax Map Key 9-2-3: portion of Parcel 72 and portion of Parcel 73 and is owned by the City & County of Honolulu.
2. The site is located in Waimanalo Gulch, Honouliuli, Ewa, Oahu.
3. The site is within the State Land Use Agricultural District, is partially within the Urban Growth Boundary of the Ewa Development Plan, and is zoned AG-2 General Agricultural District.
4. The landfill is not classified by the State Agricultural Lands of Importance to the State of Hawaii classification system. The University of Hawaii Land Study Bureau overall master productivity rating for the property is "E" which indicates very poor crop productivity potential.
5. The site is adjacent to Hawaiian Electric Company's Kahe Power Plant and Kahe Point Homes on its northwestern boundary; to the proposed Makaiwa Hills residential and commercial community on its southeastern boundary; and to Farrington Highway on its southwestern boundary. Across Farrington Highway from the site is the Ko Olina Resort, which contains resort and residential units, a golf course and marina. Honokai Hale and Nanakai Gardens residential subdivisions are located about 4,000 feet to the southeast of the site.
6. The Waianae Coast Neighborhood Board No. 24 recommended that Cell E1 be relocated to minimize litter, odor, and visual impacts; that the 5-year deadline to terminate landfill

operations be clarified, and that community members be on the landfill siting team. The Honokai Hale/Makakilo/Kapolei Neighborhood Board No. 34 opposed the placement of refuse towards the front of the landfill.

7. The Department of Planning and Permitting (DPP) accepted the Final Supplemental Environmental Impact Statement (FSEIS) on January 10, 2003. Notice of the DPP's acceptance of the FSEIS was published in the January 23, 2003 issue of the Environmental Notice, in accordance with the Environmental Impact Law, Chapter 343, Hawaii Revised Statutes.

8. The Planning Commission received a Report and Recommendation dated February 28, 2003 from the Director of Planning and Permitting providing an analysis of the Special Use Permit amendment request and its recommendation for approval with 2 additional conditions.

9. At the public hearing of March 5, 2003, 3 persons testified and one written testimony was received. Councilmember Mike Gabbard, representing Council District 1, supported the request with conditions relating to closure of the landfill and to inclusion of community members on a proposed alternative site selection committee. Councilmember Nestor Garcia, representing Council District 9, supported the expansion with conditions relating to closure, alternative site selection, inclusion of community members in the site selection committee, and encouragement of use of alternative technologies and waste recovery programs. State Senator Brian Kanno opposed the expansion request. A member of the Waianae community indicated that there are concerns on impacts to the neighborhood and the environment and opposed the expansion request.

10. The Planning Commission considered the public testimony and recommended that:

a: The applicant submit to the City Council, an alternative landfill site(s) by December 31, 2003, and

b: Community members be included on the alternate site selection committee.

Items 10a and 10b are recommendations to the applicant and are not included as conditions of approval of the SUP amendment.

III. CONCLUSIONS OF LAW

The Planning Commission hereby concludes that:

1. The proposed use would not be contrary to the objectives of the State Land Use Law. The landfill and proposed expansion are located on soils that have very poor potential for crop production.
2. The proposed expansion would not adversely affect surrounding property if operated in accordance with relevant governmental approvals and requirements, including conditions of the Special Use Permit. Concerns relating to impacts on the surrounding community and the environment have been adequately disclosed in the FSEIS. Mitigation measures should be implemented in accordance with the applicant's representations as documented in the FSEIS.
2. The proposal will not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, school improvements, and police and fire protection. Government agencies did not object to the proposed SUP amendment.
3. Unusual conditions, trends and needs have arisen since the Agricultural District boundaries and regulations were established. The landfill is quickly approaching its

maximum capacity, and there is no feasible alternative that can be implemented in time to dispose MSW after the approved landfill capacity is exhausted. At the time the original SUP was granted, the Planning Commission and the Land Use Commission found that the proposal met all 5 guidelines for issuing an SUP. Also at that time, plans for the development of Kapolei as the Second City and development of support housing, Ko Olina Resort, industrial, and support infrastructure in proximity to the landfill were being implemented.

4. The site's soil quality is not conducive crop production and the steep terrain does not lend itself to pasture use. Prior SUP approvals have allowed the removal of the property from agricultural use. Circumstances relating to use of the property for agriculture have not changed since the original SUP was granted. The State Department of Agriculture has not objections to the proposal.

IV. DECISION AND ORDER

Pursuant to the foregoing Findings of Fact, Conclusions and attachment, it was the decision of the Planning Commission, at its meeting of March 5, 2003, to approve Special Use Permit No. 2002/SUP-6, subject to the following additional conditions:

10. Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

11. Prior to commencing land filling in the 21-acre expansion area, the applicant shall submit to the Director of Planning and Permitting for review and approval, a metes and bounds

description and map of the approved landfill area as permitted by this Special Use Permit and amendments thereto. Any minor modifications to allow reasonable adjustments of the approved area due to engineering and/or health and safety requirements may be approved by the Director of Planning and Permitting, providing there is no net increase to the approved area of 107.5 acre.

Dated at Honolulu, Hawaii this 13th day of March, 2003.

PLANNING COMMISSION
CITY AND COUNTY OF HONOLULU

By Brian Yahata for
CHARLIE RODGERS, Chair

Doc 207619

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI'I

In The Matter Of The Application Of The)
)
DEPARTMENT OF ENVIRONMENTAL)
SERVICES, CITY AND COUNTY OF)
HONOLULU (FKA DEPARTMENT OF)
PUBLIC WORKS, CITY AND COUNTY OF)
HONOLULU)
)
For An Amendment To The Special Use)
Permit Which Established A Sanitary Landfill)
On Approximately 86.5 Acres Of Land Within)
The State Land Use Agricultural District At)
Waimanalo Gulch, Honouliuli, 'Ewa, O'ahu,)
Hawai'i, TMK No: 9-2-03: Portion 72 and)
Portion 73 (fka TMK No: 9-2-03: Portion 2 and)
Portion 13))

DOCKET NO. SP87-362

DECISION AND ORDER
APPROVING AMENDMENT
TO SPECIAL USE PERMIT

This is to certify that this is a true and correct
copy of the document on file in the office of the
State Land Use Commission, Honolulu, Hawaii.
6/9/03 by
Date Executive Officer

DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

EXHIBIT F

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (FKA DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 86.5 Acres Of Land Within The State Land Use Agricultural District At Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, TMK No: 9-2-03: Portion 72 and Portion 73 (fka TMK No: 9-2-03: Portion 2 and Portion 13)	DOCKET NO. SP87-362 DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

DECISION AND ORDER APPROVING AMENDMENT TO SPECIAL USE PERMIT

On January 17, 2003, the Department of Environmental Services, City and County of Honolulu ("Applicant"), formerly known as the Department of Public Works, City and County of Honolulu, filed an application to amend an existing special use permit ("Amendment") with the Department of Planning and Permitting, City and County of Honolulu ("DPP"), pursuant to section 205-6, Hawai`i Revised Statutes ("HRS"), and sections 15-15-95 and 15-15-96, Hawai`i Administrative Rules ("HAR"). The Applicant proposes to expand the existing Waimanalo Gulch Sanitary Landfill on approximately 21 acres of land within the State Land Use Agricultural District at

Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, identified as TMK No: 9-2-03: portion 72 and portion 73 ("Property").[1] The Property is owned by the City and County of Honolulu and is under the jurisdiction of the Applicant.

On January 22, 2003, the DPP accepted the Amendment.

On March 5, 2003, the Planning Commission, City and County of Honolulu ("Planning Commission"), conducted a hearing on the Amendment, pursuant to a public notice published on January 31, 2003. After due deliberation, the Planning Commission recommended approval of the Amendment to the Land Use Commission ("LUC"), subject to the existing nine conditions and two additional conditions.

On March 13, 2003, the LUC received a copy of the decision and record of the Planning Commission's proceedings on the Amendment.

The LUC has jurisdiction over the Amendment. Section 205-6, HRS, and sections 15-15-95 and 15-15-96, HAR, authorize the LUC to approve special use permits and amendments thereto for areas greater than 15 acres where application for LUC approval is made within 60 days after the decision is rendered on the request to the Planning Commission.

On March 27, 2003, the LUC met in Waipahu, O`ahu, to consider the Amendment.[2] Frank Doyle and Maile R. Chun, Esq., appeared on behalf of the

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[1] The actual landfill expansion is planned on approximately 14.9 acres. Accessory structures and uses, including, but not limited to berms and detention basins, are planned on the remaining acreage.

Applicant. David K. Tanoue, Esq.; Eric G. Crispin; Barbara Kim-Stanton; and Raymond Young appeared on behalf of the DPP. Russell Y. Tsuji, Esq., and Abe Mitsuda were also present on behalf of the Office of Planning. At the meeting, the Applicant presented a chart entitled "Mayor's Blue Ribbon Landfill Site Selection Committee, New Landfill Timeline, March 27, 2003," which the LUC accepted as Exhibit Number 33 to the record in this proceeding. The Applicant represented, among other things, that it would continue to seek alternate disposal sites and other technologies and waste recovery programs to reduce the amount of waste that is disposed of in landfills.

Conformance With Special Use Permit Criteria

Following discussion by the Commissioners, a motion was made and seconded to grant the Amendment, subject to the conditions as reflected in the minutes of the meeting, including, among other requirements, that if a new landfill site is not selected by December 31, 2003, the special use permit would immediately expire. An amendment clarifying this motion was then made and seconded to amend the date to December 1, 2003, by which the Blue Ribbon Landfill Site Selection Committee is to recommend a new landfill site and to further specify that if the City Council fails to select the new site by June 1, 2004, the special use permit would immediately expire. The LUC found that i) By Order dated April 20, 1987, the LUC approved a special use

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[2] Pursuant to section 92-3, HRS, Ernest Adaniya, Greg Perry, Darrell Bussell, Paul B. Kekina, Lieutenant Commander Chuck Lewis, Richard Payne, Gail Butchart, Todd Apo, Cynthia K.L. Rezentes, and Kevin Mizuno presented oral testimony, and State Senator Brian Kanno and Councilmember Nestor Garcia submitted written testimony.

permit to establish the Waimanalo Gulch Sanitary Landfill on approximately 60.5 acres. By Order dated October 31, 1989, the LUC approved an amendment to the special use permit to expand the landfill by approximately 26 acres; ii) The current expansion is consistent with the solid waste handling and disposal policies of the `Ewa Development Plan and will serve all of O`ahu's residents and visitors; iii) The Property is currently in open space and is located adjacent to the existing landfill; iv) No agricultural production occurs on the Property; v) There are no historic sites on the Property and there are no traditional cultural practices that have been identified that are specific to the Property; vi) There are no threatened or endangered species of flora and fauna nor are there any species of concern on the Property; vii) The expansion of the landfill will not adversely affect surrounding properties provided mitigation measures and all applicable government rules and requirements are followed; viii) The Applicant will comply with Federal and State regulations governing siting, design standards, operating requirements, groundwater monitoring and corrective action, closure, post-closure care, and financial assistance; ix) The Property will be restricted from handling or treating toxic hazardous waste material; x) Permanent and temporary fencing will be utilized to control litter in the expansion cells; xi) Vacuum equipment will be employed to clean the litter from the fences, and cleanup crews will be deployed when notice is received that litter has drifted offsite; xii) The Applicant will implement odor and gas emission control measures including a gas recovery and monitoring system, regular use of odor misters, regular use of cover material, early onsite queuing of waste haulers, and diversion of sewage sludge offsite for drying and processing at the Sand Island Wastewater Treatment Plant; xiii) The expansion is not expected to result in noise levels greater than produced from current activities; xiv) Most of the short-term noise generated will be during operation and mobilization of heavy construction equipment; xv) The Applicant will comply with State noise regulations to mitigate short-term impacts; xvi) Longer term measures to ensure noise abatement include properly muffling equipment with noise attenuation devices, scheduling rock crushing during normal landfill operation hours, and landscaping with vegetation; xvii) Upon closure of the landfill, the Applicant and Waste Management of Hawaii, Inc., the operator of the landfill, will be responsible for capping the entire landfill, monitoring groundwater, methane gas, and leachates for 30 years; xviii) Exposed areas will be seeded or hydromulched, as appropriate, using plants similar to those found around the landfill; xix) Fabric to mimic rock outcrops will also be strategically placed to break up the homogenous appearance of the filled areas relative to the surrounding hillside; xx) The impact of the landfill on `Ewa and Nanakuli residential values was studied; xxi) Proximity to the landfill is not a consistent contributor to property values and does not adversely affect property values; xxii) The existing landfill has been in operation since 1989 and the relevant support infrastructure and services for the proposed expansion are adequate; xxiii) The approved capacity of the landfill is rapidly approaching its maximum; xxiv) The landfill receives on a daily basis 600 tons of ash residue from the Honolulu Program on Waste Energy Recovery and 800 tons of municipal solid waste for a total of 1,400 tons per day; xxv) The Applicant evaluated alternative sites and technologies for the disposal of municipal solid waste; xxvi) The expansion of the landfill is the only feasible alternative that can be implemented in time to dispose of municipal solid waste after the approved landfill capacity is exhausted; and xxvii) The Property has extremely rocky soils and is not conducive to crop production, and the steep terrain is not appropriate for pasture use.

Following discussion by the Commissioners, a vote was taken on the amendment to the motion. There being a vote tally of 7 ayes, 1 nay, and 1 absent, the amendment carried. A vote was then taken on the main motion, as amended. There being a vote tally of 7 ayes, 1 nay, and 1 absent, the motion carried.

ORDER

Having duly considered the complete record of the Amendment and the oral arguments presented by the parties in the proceeding, and a motion and amendment thereto having been made at a meeting conducted on March 27, 2003, in Waipahu, O`ahu, and the motion and amendment having received the affirmative votes required by section 15-15-13, HAR, and there being good cause for the motion and amendment, the Commission hereby APPROVES the Amendment granted by the Planning Commission to expand the existing Waimanalo Gulch Sanitary Landfill on approximately 21 acres of land within the State Land Use Agricultural District at Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, identified as TMK No: 9-2-03: portion 72 and portion 73, and approximately identified on Exhibit "A," attached hereto and incorporated by reference herein, subject to the following conditions:

1. The Blue Ribbon Site Selection Committee shall make its recommendation for a new landfill site to the City Council by December 1, 2003. The City Council shall select a new site by June 1, 2004. If a new site is not selected by June 1, 2004, this Special Use Permit shall immediately expire.

2. In the event that Condition No. 1 is satisfied, Condition No. 14 shall become effective.

3. That an earth berm shall be installed prior to the commencement of any waste disposal operations.

4. The landscaping plans which would include plant names, sizes, quantities and location shall be submitted to the Department of Planning and Permitting for approval and shall be implemented within 90 days of completion of the berm work.

5. The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.

6. The Applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, Commission on Water Resource Management, and Board of Water Supply for all on-site and off-site improvements

involving access, storm drainage, leachate control, water, well construction, and wastewater disposal.

7. The Planning Commission or Director of the Department of Planning and Permitting may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

8. The Applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action or disposition of the permit.

9. In accordance with Chapter 11-60, "Air Pollution Control," Hawai`i Administrative Rules, the Applicant shall be responsible for ensuring that effective dust control measures during all phases of development, construction, and operation of the landfill expansion are provided to minimize or prevent any visible dust emission from impacting surrounding areas. The Applicant shall develop a dust control management plan that identifies and addresses all activities that have a potential to generate fugitive dust.

10. That the City and County of Honolulu shall indemnify and hold harmless the State of Hawai`i and all of its agencies and/or employees for any lawsuit or legal action relating to any groundwater contamination and noise and odor pollution relative to the operation of the landfill.

11. The Applicant shall coordinate construction and operation of the landfill with the Hawaiian Electric Company.

12. Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

13. Prior to commencing land filling in the 21-acre expansion area, the Applicant shall submit to the Director of the Department of Planning and Permitting for review and approval, a metes and bounds description and map of the approved landfill area as permitted by this Special Use Permit and amendments thereto. Any minor modifications to allow reasonable adjustments of the approved area due to engineering and/or health and safety requirements may be approved by the Director of the Department of Planning and Permitting; provided that there is no net increase to the approved area of 107.5 acres. A copy of the metes and bounds description and map shall be provided to the Land Use Commission.

14. The Applicant shall promptly provide, without any prior notice, annual reports to the Department of Planning and Permitting and the Land Use Commission in connection with the status of the landfill expansion and the Applicant's progress in complying with the conditions imposed herein. The annual report shall be submitted in a form prescribed by the Executive Officer of the Commission.

15. The City and County of Honolulu shall select a new landfill site. The recommendation for a new site shall be forwarded to the Planning Commission and City Council no later than December 1, 2003.

16. The City and County of Honolulu shall ensure that funding for design and planning is included in the FY05 budget to demonstrate the City's commitment to the new site and to ensure that no further extensions are necessary.

17. The City and County of Honolulu shall initiate the public comment and environmental review process for the new site no later than December 31, 2004.

18. The City and County of Honolulu shall, to the extent feasible, use alternative technologies to provide a comprehensive waste stream management program that includes H-Power, plasma arc, plasma gasification, and recycling technologies.

19. The City and County of Honolulu shall appropriately implement by executive order or ordinance the seven bullet points identified in the Applicant's Exhibit 3, Appendix H, page 1-3, regarding the third boiler at H-Power, wood recovery, metal recovery, gypsum recovery, enhanced enforcement of landfill bans, implementation of the bottle bill, and establishment of user fees.

ADOPTION OF ORDER

The undersigned Commissioners, being familiar with the record and the proceedings, hereby adopt and approve the foregoing ORDER this 5th day of June, 2003 The ORDER and its ADOPTION shall take effect upon the date this ORDER is certified and filed by this Commission.

LAND USE COMMISSION
STATE OF HAWAI'I

By ____________________
LAWRENCE N. C. ING
Chairperson and Commissioner

By ____________________
P. ROY CATALANI
Vice Chairperson and Commissioner

By ____________________
STANLEY ROEHRIG
Vice Chairperson and Commissioner

By ____________________
BRUCE A. COPPA
Commissioner

By ____________________
PRAVIN DESAI
Commissioner

By Isaac Fiesta Jr.
ISAAC FIESTA, JR.
Commissioner

By Steven Montgomery
STEVEN MONTGOMERY
Commissioner

By
RANDALL SAKUMOTO
Commissioner

By OPPOSED
PETER YUKIMURA
Commissioner

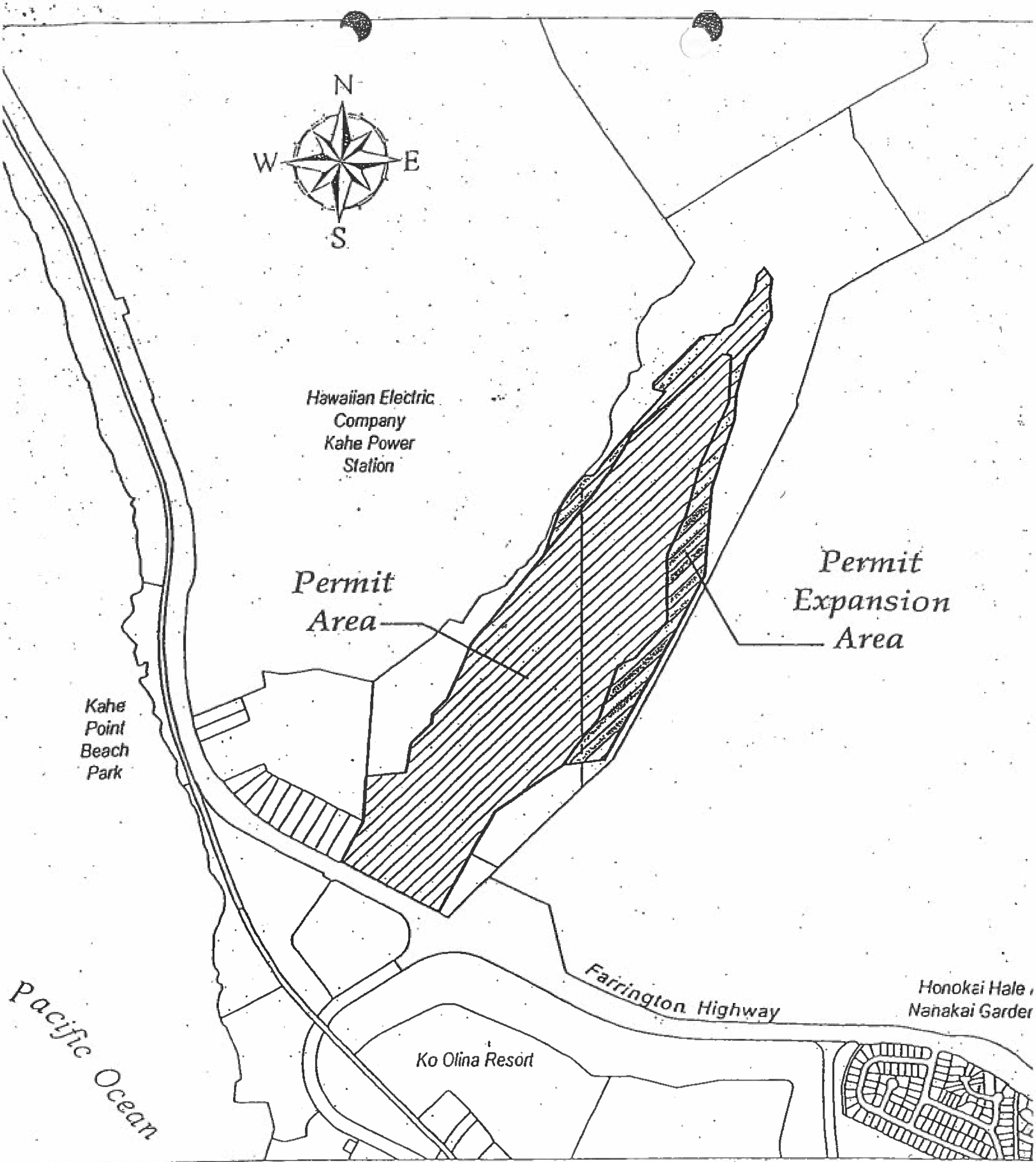
APPROVED AS TO FORM:

Diane Erickson
Deputy Attorney General

Filed and effective on
June 9, 2003

Certified by:

Anthony J H Ching
Executive Officer

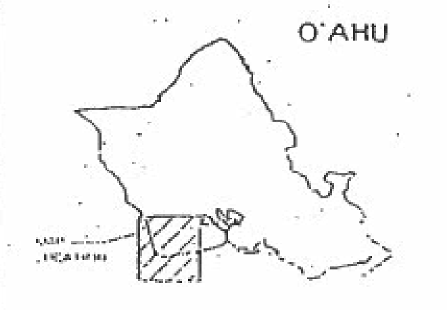


SP87-362 DEPARTMENT OF ENVIRONMENTAL SERVICES,
CITY AND COUNTY OF HONOLULU
(fka Department of Public Works, City and County of Honolulu)

LOCATION MAP

TMK No.: 9-2-3: portion 72 and portion 73
Waimanalo Gulch, Honouliuli, 'Ewa, O'ahu, Hawai'i
Scale 1: 1,000 ft

EXHIBIT "A"



BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (FKA DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 86.5 Acres Of Land Within The State Land Use Agricultural District At Waimanalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, TMK No: 9-2-03: Portion 72 and Portion 73 (fka TMK No: 9-2-03: Portion 2 and Portion 13)	DOCKET NO. SP87-362 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Decision and Order Approving Amendment to Special Use Permit was served upon the following by either hand delivery or depositing the same in the U.S. Postal Service by regular or certified mail as noted:

DEL.

MARY LOU KOBAYASHI
Office of Planning
P.O. Box 2359
Honolulu, Hawaii 96804

CERT.

JOHN CHANG, ESQ.
Deputy Attorney General
Hale Auhau
425 Queen Street
Honolulu, Hawaii 96813

CERT.

ERIC G. CRISPIN, DIRECTOR
Department of Planning and Permitting
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

CERT.

FRANK DOYLE, DIRECTOR
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

CERT.

DAVID ARAKAWA, ESQ.
Corporation Counsel
City & County of Honolulu
530 South King Street
Honolulu, Hawaii 96813

DATED: Honolulu, Hawaii, this 9th day of June, 2003.

Anthony J Ching

ANTHONY J. H. CHING
Executive Officer

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

No. 04-348, CD1, FD1
(Waimanalo Gulch)

RESOLUTION

SELECTING A SITE FOR A NEW CITY LANDFILL.

WHEREAS, by order of the state land use commission, the city council was required to select a site for a new city landfill no later than June 1, 2004; and

WHEREAS, on April 1, 2004, the city council petitioned and received from the state land use commission an extension of the deadline to select a site for a new city landfill by December 1, 2004; and

WHEREAS, the mayor appointed a blue ribbon advisory committee ("blue ribbon committee") on landfill site selection, which was directed to recommend a new landfill site to the council by December 1, 2003; and

WHEREAS, the blue ribbon committee sent its report on landfill site selection to the council on December 1, 2003; and

WHEREAS, the final report recommended four possible sites for a new landfill, Maili, Makaiwa, Nanakuli B and Ameron Quarry; and

WHEREAS, the state office of information practices ("OIP") concluded, in an opinion dated January 13, 2004, that the blue ribbon committee's final report was void, due to violations of the state's sunshine law; and

WHEREAS, since the blue ribbon committee's report is merely advisory, and because OIP found the committee's report to be void, the council believes it is not restricted to selecting a new landfill site from the blue ribbon committee's list of recommended sites; and

WHEREAS, the council's public works and economic development committee was assigned the responsibility of reviewing potential landfill sites and recommending a site to the full council for approval; and

WHEREAS, while the council must select a landfill site, it recognizes that there are promising new waste disposal methods and processes for its municipal solid waste, such as plasma arc, plasma torch, and plasma gasification and vitrification technologies, off-island shipping, grinding to reduce volume, binding with concrete to produce building materials and many others, that have shown the ability to reduce or eliminate the amount of solid waste going into landfills; and

WHEREAS, the city's proposed island-wide recycling program, together with the use of emerging new waste disposal technologies, have the potential of greatly reducing the amount of waste going into our landfill; now, therefore,

BE IT RESOLVED by the council of the City and County of Honolulu that the city must employ sustainability concepts in the handling of its municipal solid waste so that the maximum recyclable materials, energy and alternative products are extracted before any waste is placed in our landfills; and

BE IT FURTHER RESOLVED that the council will work with the incoming mayor and his administration to devote all available resources to ensuring the maximum use of recycling and the development of alternative technologies for disposal of municipal solid waste with the intention to effectively eliminate, to the extent possible, the need for a landfill by 2008; and

BE IT FURTHER RESOLVED by the council, and in accordance with the conditions set forth by the state land use commission, that the Waimanalo Gulch site is selected as the site for the city's landfill because:

(1) The site currently has over 15 years capacity left with further expansion, and this capacity can be further extended should the city be successful in reducing the amount of waste currently entering the landfill through recycling and the use of new technologies;

(2) The city already owns the property and the infrastructure is already in place, making the site the most economical and least expensive to develop and maintain as a landfill;

(3) Other sites will require a large capital outlay by the city to acquire the land through condemnation and to develop and construct the site and required supporting infrastructure;

(4) A landfill management contract is already in place for 15 years;

(5) This is the only site where the costs and revenues for a landfill are known factors; and

(6) The current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impact, odors, airborne waste, litter and dust control;

and

BE IT FURTHER RESOLVED that the city administration is requested to immediately contact the planning commission, the state department of health and state land use commission to satisfy any necessary requirements for the use of the selected landfill site; and

BE IT FINALLY RESOLVED that the clerk transmit copies of this resolution to the state land use commission, the state department of health, the mayor, the managing director, the director of the department of environmental services, and the city planning commission.

INTRODUCED BY:

Rod Tam

Councilmembers

DATE OF INTRODUCTION:

November 12, 2004

Honolulu, Hawaii

(OCS/112404/mg)

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

CERTIFICATE

RESOLUTION 04-348, CD1, FD1

Introduced: 11/12/04 By: Rod Tam

Committee: PWED

Title: RESOLUTION SELECTING A SITE FOR A NEW CITY LANDFILL.

Links: 04-348
04-348, CD1
04-348, CD1, FD1
Related Communications

PWED	11/19/04	CR-514 – Resolution reported out of committee for adoption as amended in CD1 form.
Council	12/1/04	CR-514 & Resolution (CD1, FD1) adopted.

Cachola	Y	Dela Cruz	Y	Djou........	N	Gabbard.....	N	Garcia....	N
Kobayashi....	Y	Marshall........	Y	Okino.....	Y	Tam............	Y		

I hereby certify that the above is a true record of action by the Council of the City and County of Honolulu on this RESOLUTION.

Denise C. DeCosta
DENISE C. DE COSTA, CITY CLERK

DONOVAN M. DELA CRUZ, CHAIR AND PRESIDING OFFICER

City and County of Honolulu
DEPARTMENT OF PLANNING AND PERMITTING
650 South King Street
Honolulu, Hawaii 96813

RECEIVED
07 JUL -6 P4:34
DEPT OF PLANNING AND PERMITTING
CITY & COUNTY OF HONOLULU

PLANNING DIVISION MASTER APPLICATION FORM

Additional data, drawings/plans, and fee requirements are listed on a separate sheet title "Instructions for Filing". *PLEASE ASK FOR THESE INSTRUCTIONS.*

All specified materials described in the "Instructions for Filing" and required fees must accompany this form; incomplete applications will delay processing. You are encouraged to consult with Planning Division staff in completing the application. Please call appropriate phone number given in the "Instructions for Filing".

Please print legibly or type the required information.

SUBMITTED FEE: $ N/A

PERMIT/APPROVAL REQUESTED (Check one or more as appropriate):

☐ GENERAL PLAN AMENDMENT	☑ SPECIAL USE PERMIT
☐ STATE LAND USE BOUNDARY AMENDMENT (<15 acres) From ______ (District) to ______ (District)	☐ ZONING DISTRICT BOUNDARY ADJUSTMENT, ADMINISTRATIVE
☐ DEVELOPMENT PLAN (DP)/SUSTAINABLE COMMUNITIES PLAN (SCP) AMENDMENT Indicate DP/SCP area ______	☐ ZONE CHANGE From ______ (District) to ______ (District) ☐ AMEND UNILATERAL AGREEMENT TO ORDINANCE NO. ______

☐ PUBLIC INFRASTRUCTURE MAP REVISION (Indicate Map Symbol Request): ☐CY (Corporation Yard) ☐DSP (Desalination Plant) ☐D (Drainage Way (Open Channel) ☐EG (Energy Generation) ☐ET (Electrical Transmission) ☐FS (Fire Station) ☐GB (Government Building) ☐GC (Golf Course) ☐P (Parks) ☐PS (Police Station) ☐PKG (Parking Facility/Transit Center) ☐RES (Water Reservoir) ☐SPS (Sewage Pump Station) ☐STP (Sewage Treatment Plant) ☐SW (Solid Waste Facility) ☐TC (Transit Corridor) ☐R (Arterial & Collector Roadway) ☐W (Potable Well)

(Project/Parcel specific information should be provided for General Plan and Development Plan amendments only if appropriate.)

TAX MAP KEY(S): 9-2-3: 072 and 073
STREET ADDRESS/LOCATION OF PROPERTY: 92-460 Farrington Highway, Kapolei, HI 96707
APPLICATION/SUBJECT AREA *(Acres/sq.ft.)*: N/A

THE PROPOSED PROJECT IS LOCATED ☑ INSIDE ☑ OUTSIDE THE:

- ☑ Urban Growth Boundary
- ☐ Urban Community Boundary
- ☐ Rural Community Boundary

OF THE Ewa DEVELOPMENT PLAN/SUSTAINABLE COMMUNITY PLAN
ZONING DISTRICT(S): AG-2, General Agricultural STATE LAND USE DISTRICT: Agricultural

RECORDED FEE OWNER:
Name (& title, if any) City and County of Honolulu
Organization c/o Department of Environmental Services
Mailing Address 1000 Uluohia Street, Suite 308
Kapolei, HI 96707
Phone Number 692-5159
Signature Eric S. Takamura
Eric S. Takamura, Director of Environmental Services

APPLICANT:
Name City and County of Honolulu
Organization Department of Environmental Services
Mailing Address 1000 Uluohia Street, Suite 308
Kapolei, HI 96707
Phone Number 692-5159
Signature Eric S. Takamura
Eric S. Takamura, Director of Environmental Services

PRESENT USE(S) OF PROPERTY/BUILDING:
Municipal Sanitary Landfill

AUTHORIZED AGENT/CONTACT PERSON:
Name Wilma Namumnart
Mailing Address 1000 Uluohia Street, Suite 212
Kapolei, HI 96707
Phone Number 692-5352
Signature Eric S. Takamura for
Wilma Namumnart, Refuse Division, Department of Environmental Services

PROJECT NAME (If any): Waimanalo Gulch Sanitary Landfill

REQUEST/PROPOSAL (Briefly describe the nature of the request, proposed activity or project):

Request for modification of condition 10 of SUP file No. 86/SUP-5. See attached documents.

DPP/ELOG NO.______ DPP/POSSE NO.______

EXHIBIT H

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 692-5159 ● FAX: (808) 692-5113 ● WEBSITE: http://www.co.honolulu.gov

MUFI HANNEMANN
MAYOR

ERIC S. TAKAMURA, Ph.D., P.E.
DIRECTOR

KENNETH A. SHIMIZU
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
SECOND DEPUTY DIRECTOR

July 6, 2007

IN REPLY REFER TO:
RA 07-044

Mr. Henry Eng
Director
Department of Planning and Permitting
City and County of Honolulu
640 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Eng:

Re: State Special Use Permit (SUP) No. 86/SUP-5;
In re Department of Environmental Services, City and County of Honolulu (FKA Department of Public Works, City and County of Honolulu);
Application to Modify (1) the Findings of Fact, Conclusions and Decision dated March 13, 2003, and (2) the Decision and Order Approving Amendment to Special Use Permit Issued June 9, 2003

The Department of Environmental Services, City and County of Honolulu (the "Applicant" or the "Department of Environmental Services"), respectfully applies to the Planning Commission, City and County of Honolulu (the "Planning Commission"), for an Order modifying its Findings of Fact, Conclusions, and Decision, dated March 13, 2003 (the "2003 Planning Commission Decision"), which approved an amendment to the State Special Use Permit ("SUP") File No. 86/SUP-5 to allow a 21-acre expansion to the Landfill.[1] Applicant seeks to modify the 2003 Planning Commission Decision by extending the five-year deadline prohibiting further acceptance of waste material at the Waimanalo Gulch Sanitary Landfill (the "Landfill") by an additional two years or until the Landfill reaches its permitted capacity, whichever occurs first.

Should this request be approved by the Planning Commission, the entire record of this request is to be transmitted to the Land Use Commission, State of Hawaii (the "LUC"), for final action.[2]

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[1] This Application is made in accordance with Section 2-49 of the Rules of the Planning Commission

[2] The LUC Decision and Order Approving Amendment to Special Use Permit No. 87-362 was issued on June 9, 2003 (the "2003 LUC Decision"). The LUC adopted the May 1, 2008, closure deadline as Condition No. 12 in the 2003 LUC Decision.

The basis for this Application is that the current permitted area of the Landfill has a useful life of approximately two years beyond the May 1, 2008, deadline. The application which gave rise to the aforementioned decisions sought only to expand the Landfill by 21 acres, which was, at that time, projected to extend the useful life of the Landfill by five years. Since the decisions to permit the expansion, however, certain circumstances have increased the useful life of the Landfill by approximately two additional years. It is in the public interest to use this additional space, which is within the current footprint of the Landfill approved by the Planning Commission and the LUC.

Additionally, the Landfill is currently the only landfill permitted to receive municipal solid waste ("MSW") on Oahu. If the Landfill is forced to close on May 1, 2008, in accordance with Condition No. 10 of the 2003 Planning Commission Decision and Condition No. 12 of the 2003 LUC Decision, there will be no permitted landfill to serve Oahu's solid waste management needs. As a landfill is necessary for proper solid waste management, the lack of a permitted landfill would potentially create serious health and safety issues.

In order to alleviate this potential health and safety risk, it is respectfully requested that Condition No. 10 of the 2003 Planning Commission Decision be modified to extend the waste acceptance deadline of the Landfill by two years or until the Landfill reaches its permitted capacity, whichever occurs first. There is enough capacity remaining in the already-permitted footprint of the Landfill for an additional two years of use beyond the May 1, 2008 closure deadline. See Declaration of Frank J. Doyle, attached, at ¶¶ 8-9.

Moreover, the Final Supplemental Environmental Impact Statement (the "FSEIS"), dated December 2002, and accepted by the Department of Planning and Permitting on January 10, 2003, covers the already-permitted footprint, the current operations and impacts associated with continued use of the Landfill beyond the current end date for acceptance of waste. Furthermore, neither the permitted area nor the methods of operation will change with this extension. This alternative, therefore, appears to be the most feasible and appropriate to avoid the serious health and safety risks associated with halting acceptance of solid waste at the sole MSW landfill on Oahu.

It is thus respectfully requested that the Planning Commission modify Condition No. 10 of the 2003 Planning Commission Decision to read as follows:

> The 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan [~~.~~] by May 1, 2010 or until the approved area reaches its permitted capacity, whichever occurs first.

Applicant is not seeking any other modifications to the 2003 Planning Commission Decision at this time. As discussed hereinafter, an application to amend the SUP to expand the Landfill by another approximately 92.5 acres is being prepared, and upon acceptance of the Final Environmental Impact Statement ("FEIS") for this further expansion, other modifications of the SUP will be sought.

I. BACKGROUND

A. Establishment of the Landfill

On October 17, 1985, the Director of Land Utilization, City and County of Honolulu (*nka* the "Department of Planning and Permitting"), accepted the Environmental Impact Statement for the establishment of a landfill at Waimanalo Gulch, Honouliuli, 'Ewa, O'ahu, Hawai'i.

On February 4, 1987, the Planning Commission approved SUP application No. 86/SUP-5 to establish the Landfill on approximately 60.5 acres of land within the Agricultural District, subject to six conditions. The application was submitted by the Department of Public Works, City and County of Honolulu (*nka* the "Department of Environmental Services").

Because the SUP was for land greater than fifteen acres, on April 20, 1987, the LUC also approved the issuance of the SUP in LUC Docket Number 87-362 to establish the Landfill, subject to eight conditions.[3] The LUC's Findings of Fact, Conclusions of Law and Decision and Order dated April 20, 1987, is attached hereto as Exhibit "A."

B. Expansion of the Landfill by 26 acres

On July 26, 1989, the Planning Commission approved an amendment to the SUP to expand the Landfill by 26 acres, with one additional condition. The amendment had been requested because 26 acres had been inadvertently left out of the original SUP. The additional 26 acres was necessary to allow enough land area for the proposed administration building, weighing station, drainage structures and access roads.

On October 31, 1989, the LUC also approved the SUP amendment to expand the existing permitted area by 26 acres, with the additional condition as recommended by the Planning Commission. The LUC's Findings of Fact, Conclusions of Law and Decision and Order dated October 31, 1989, is attached hereto as Exhibit "B."

C. Further Expansion of the Landfill by 21 acres

On January 10, 2003, the Department of Planning and Permitting accepted the FSEIS, which addressed a proposed 21-acre expansion of the landfill.

On March 13, 2003, the Planning Commission granted the application of the Department of Environmental Services to expand the landfill by 21 acres, which, at that time, was projected

---

[3] "Special permits for areas greater than fifteen (15) acres require approval of both the planning commission and the land use commission." Rules of Planning Commission § 2-38. See also Hawaii Revised Statutes § 205-6(d).

to extend the life of the landfill by five years. The proposed expansion included four cells (E1 through E4) for disposing MSW, berms, detention and stilling basins, drainage channels and access routes. In the 2003 Planning Commission Decision, attached hereto as Exhibit "C," the Planning Commission recommended that the Department of Environmental Services submit an alternative landfill site, or sites, to the City Council by December 31, 2003. The Planning Commission did not, however, condition its approval on this recommendation.

With its approval of the 21-acre expansion, the Planning Commission imposed two additional conditions. One of those conditions, Condition No. 10, required the following:

> Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

On June 9, 2003, the LUC issued the 2003 LUC Decision, attached hereto as Exhibit "D." The LUC adopted Condition No. 10 of the 2003 Planning Commission Decision as Condition No. 12 in the 2003 LUC Decision.

D. Resolution Adopted by City Council Selecting the Landfill as Oahu's future landfill site.

On December 1, 2004, the City Council selected the Landfill as Oahu's future landfill site. The City Council's resolution is attached hereto as Exhibit "E." In selecting the Landfill as its future site, the City Council noted, in pertinent part, the following:

(1) The site currently has over 15 years capacity left with further expansion, and this capacity can be further extended should the city be successful in reducing the amount of waste currently entering the landfill through recycling and the use of new technologies;

(2) The city already owns the property and the infrastructure is already in place, making the site the most economical and least expensive to develop and maintain as a landfill;

(3) Other sites will require a large capital outlay by the city to acquire the land through condemnation and to develop and construct the site and required supporting infrastructure;

(4) A landfill management contract is already in place for 15 years;

Therefore, the City Council has decided that the Landfill will fulfill Oahu's solid waste management landfill needs for the foreseeable future.

II. REQUEST FOR MODIFICATION OF CONDITION NO. 10 OF THE 2003 PLANNING COMMISSION DECISION

Section 2-49 of the Rules of the Planning Commission provides, in relevant part:

> (a) A petitioner who desires a modification or deletion of a condition imposed by the [planning] commission shall make such a request to the [planning] commission in writing. This request shall be processed in the same manner as the original petition for a SUP. A public hearing on the request shall be held prior to any commission action.
>
> . . .
>
> (c) ... Modification of conditions for areas greater than fifteen (15) acres will require the concurrence of the land use commission.

As discussed above, both the Planning Commission and the LUC imposed the May 1, 2008, deadline (Condition No. 10 and Condition No. 12, respectively). That condition reads as follows:

> Within 5 years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.

The Solid Waste Management Permit approval for the expansion was issued on May 15, 2003. The SUP Amendment approval was issued on June 9, 2003. Therefore, the SUP now in effect requires that the Landfill stop accepting refuse on May 1, 2008. For the reasons that follow below, it is not only practical to extend the Landfill's solid waste acceptance deadline, but also necessary and critical.

A. The currently permitted Landfill has a useful life that will extend beyond the May 1, 2008, deadline.

The Landfill is currently permitted on approximately 107.5 acres of land. When the Department of Environmental Services requested the most recent expansion to the Landfill of 21 acres in 2003, it was projected that the additional 21 acres would extend the life of the Landfill by an additional five years. Due to several factors, however, the currently permitted Landfill area has a useful life of approximately two years beyond the May 1, 2008, deadline.

In a ban that took effect on January 13, 2003, the green waste from Oahu was diverted from the Landfill to processing/recycling facilities. This ban also diverted Construction and Demolition Debris ("C&D") from the Landfill to a nearby C&D facility. Improved compaction and landfill operating methods have also contributed to the optimization of capacity at the Landfill. The additional available capacity at the Landfill is explained in the 2007 Airspace Report and tables showing site life projections at the Landfill for both MSW and ash, attached hereto as Exhibit "F".

B. Condition 10, if allowed to stand, presents a major health and safety issue.

The Landfill is a strategic component of the City's solid waste management system and the final destination for certain solid wastes including MSW, recycling residue, and H-POWER generated ash, residue and unacceptable waste that cannot further be combusted, recycled or reused. If Condition No. 10 of the 2003 Planning Commission and Condition No. 12 of the 2003 LUC decision are allowed to stand, the Landfill will be forced to stop accepting solid waste as of May 1, 2008, resulting in an adverse, island-wide impact to all the communities of Oahu due to loss of a landfill for the sanitary disposal of municipal refuse. Ceasing the acceptance of solid waste at the Landfill on May 1, 2008, would result in major public health and safety problems for the City, its residents and visitors, and the State of Hawaii, as there would be no sanitary and secure means of landfilling municipal refuse.

Although several alternatives to the Landfill have been proposed, none of those alternatives can eliminate the need for a landfill on Oahu.

1. H-POWER is not a viable alternative.

Although most municipal waste is currently directed to the H-POWER facility, H-POWER does not have the capacity, or ability, to accept all of Oahu's refuse. The H-POWER facility can only accept certain kinds of waste (i.e., combustible refuse), and the Landfill currently accepts H-POWER byproducts including ash, reside and unacceptable waste that cannot be further processed. H-POWER cannot replace the immediate need for the Landfill, which is currently set to cease accepting solid waste on May 1, 2008. Many types of waste, such as bulky waste, food waste and contaminated soils cannot be managed through H-POWER.

2. Other alternative technologies are not a viable alternative.

Although the Department of Environmental Services has issued a Request for Proposals for alternative technology waste-to-energy proposals, initial responses to which are due on July 30, 2007, such alternative technology facilities will not be in place by May 1, 2008, and in any event will not eliminate the continuing need for a landfill.

3. Transshipment of solid waste off-island is not a viable alternative.

Although there may possibly be a role for limited off-island shipment of Oahu's solid waste to another state or another island, such efforts would not eliminate the need for a landfill. There will always be a need for a landfill in order to manage ash, residue and unacceptable waste that cannot be combusted at H-POWER or processed by alternative technologies, to manage solid waste during natural disasters, and to provide for other contingencies.

Accordingly, because the Landfill is the only currently permitted landfill available to serve Oahu's municipal solid waste needs, it is also the City's best and only viable solution. Requiring the Landfill to stop accepting solid waste on May 1, 2008, will have immediate and dire consequences for all of Oahu. The May 1, 2008, deadline imposed as Condition No. 10 of the 2003 Planning Commission Decision, and Condition No. 12 of the 2003 LUC Decision, respectively, must be extended to May 1, 2010, or until the Landfill reaches its permitted capacity, whichever occurs first.

C. Additional time is needed for completion of an application for further expansion of the Landfill.

On December 4, 2004, after the 2003 Planning Commission Decision and the 2003 LUC decision, the Honolulu City Council selected the Landfill as the landfill that will serve the island of Oahu for the foreseeable future. In order to accommodate and implement the City Council's selection, the Department of Environmental Services is now preparing an application to amend the SUP to expand the Landfill by another approximately 92.5 acres. The Final Environmental Impact Statement (the "FEIS") for this further expansion, however, is not expected to be completed until December 2007, and the administrative proceedings necessary to further expand the Landfill may not conclude until after the May 1, 2008 deadline, which was set forth in Condition No. 10 of the 2003 Planning Commission Decision and Condition 12 of the 2003 LUC Decision, respectively. See Declaration of Frank J. Doyle, attached, at ¶¶ 10-11.

Accordingly, the Applicant requests that the Planning Commission modify Condition No. 10 of the 2003 Planning Commission Decision to extend the solid waste acceptance deadline of the Landfill to May 1, 2010, or until the Landfill reaches its permitted capacity, whichever occurs first.

For all the foregoing reasons, the Department of Environmental Services respectfully requests that the Planning Commission grant this application.

Sincerely,

Eric S. Takamura

Dr. Eric S. Takamura, P.E.
Director

Attachments

VERIFICATION

DR. ERIC S. TAKAMURA, P.E., being duly sworn, on oath, deposes and says that he the Director of the Department of Environmental Services, City and County of Honolulu, and as such is authorized to make this verification on behalf of the Department of Environmental Services; that he has read the foregoing Application and knows the contents thereof; and that the same are true to the best of his knowledge, information and belief.

DATED: Honolulu, Hawaii, July 6, 2007.

Eric S. Takamura

Dr. Eric S. Takamura, P.E., Director
Department of Environmental Services

Subscribed and sworn to me
this 6 day of July, 2007.

Name: Joy L Wilson
Notary Public, State of Hawaii
My commission expires: 1/2/2008

DECLARATION OF FRANK J. DOYLE

I, FRANK J. DOYLE, hereby declare as follows:

1. I am the Chief of the Refuse Division for the Department of Environmental Services.

2. I make this declaration based upon personal knowledge in support of the Application to Modify (1) the Findings of Fact, Conclusions, and Decision dated March 13, 2003; and (2) the Decision and Order Approving Amendment to Special Use Permit Issued June 9, 2003.

3. Attached hereto as Exhibit "A" is a true and correct copy of the LUC's Findings of Fact, Conclusions of Law and Decision and Order issued April 20, 1987.

4. Attached hereto as Exhibit "B" is a true and correct copy of the LUC's Findings of Fact, Conclusions of Law and Decision and Order issued on October 31, 1989.

5. Attached hereto as Exhibit "C" is a true and correct copy of the Planning Commission's Findings of Fact, Conclusions and Decision dated March 13, 2003 (the "2003 Planning Commission Decision").

6. Attached hereto as Exhibit "D" is a true and correct copy of the LUC's Decision and Order Approving Amendment to Special Use Permit issued June 9, 2003 (the "2003 LUC Decision").

7. Attached hereto as Exhibit "E" is a true and correct copy of Resolution No. 04-348, CD 1, FD 1, adopted by the Honolulu City Council on December 1, 2004.

8. The current permitted area of the Landfill has the capacity to continue to accept waste beyond the May 1, 2008 deadline imposed by the 2003 Planning Commission Decision and the 2003 LUC decision.

9. The current permitted capacity is projected to allow the Landfill to continue accepting waste up to May 1, 2010.

10. The Department of Environmental Services is in the process of preparing an application for an amendment to the SUP to expand the Landfill by 92.5 acres of land.

11. The Final Environmental Impact Statement for the proposed expansion is currently projected to be completed in December 2007.

12. The Department of Environmental Services has issued a Request for Proposals for alternative technology waste-to-energy proposals, and initial responses to this Request for Proposals are due July 30, 2007.

I DECLARE UNDER PENALTY OF LAW THAT THE FOREGOING IS TRUE AND CORRECT.

DATED: Honolulu, Hawaii, June 5, 2007.

Frank J Doyle

Frank J. Doyle, P.E., Chief
Refuse Division

BEFORE THE PLANNING COMMISSION

OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

RECEIVED
CORPORATION COUNSEL
C AND C OF HONOLULU

'08 JAN 22 A9:34

REFERRED TO

In the Matter of the Application of

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU

For Amendment to State Special Use Permit and Extension of Deadline to Cease Acceptance of Additional Waste Material.

EWA—STATE SPECIAL USE PERMIT NO. 86/SUP-5 (RY)

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION ~~AND ORDER~~

I certify that this is a full, true and correct copy of the original document on file with the Planning Commission, City and County of Honolulu.

Patricia J. Kalapa

1-18-2008
DATE

FINDINGS OF FACT,
CONCLUSIONS OF LAW, AND DECISION AND ORDER

This matter came on for a contested case hearing before the Planning Commission of the City and County of Honolulu ("Planning Commission") on December 7, 2007, at 9:00 a.m. at Kapolei Hale. Based on the record in this matter, including the evidence adduced at the contested case hearing, the credibility of the witnesses testifying at the hearing, the proposed findings of fact and conclusions of law submitted by the parties and their respective responses thereto, and the written arguments of the parties, the Planning Commission hereby finds as follows:

FINDINGS OF FACT

1. The Waimanalo Gulch Sanitary Landfill ("WGSL") is located at 92-460 Farrington Highway, Honouliuli, Ewa, Oahu. It is within the State Land Use Agricultural District.

2. On March 13, 2003, the Planning Commission issued its Findings of Fact, Conclusions of Law, and Decision and Order ("2003 Planning Commission Decision") containing Condition No. 10, which required in part that WGSL be restricted from

EXHIBIT I

accepting any additional waste material by May 1, 2008, and be closed in accordance with an approved closure plan.

3. On July 6, 2007, Department of Environmental Services, City and County of Honolulu ("ENV") filed with the Department of Planning and Permitting ("DPP") a request to amend Condition No. 10 by extending the deadline to accept solid waste at WGSL from May 1, 2008, to May 1, 2010, or until WGSL reaches permitted capacity, whichever occurs first (the "Application").

4. On October 12, 2007, notice of the Planning Commission's public hearing to consider ENV's Application was published in the Honolulu Star-Bulletin.

5. By letter dated October 24, 2007, Petitioner Colleen Hanabusa ("Hanabusa"), filed with DPP her Petition to Intervene and Request for Contested Case. On October 26, 2007, Ko Olina Community Association, Inc. ("KOCA"), filed with DPP its petition to intervene in ENV's time extension request.

6. On November 2, 2007, ENV filed with DPP its memoranda in opposition to the petitions to intervene filed by Hanabusa and KOCA.

7. On November 5, 2007, DPP filed its Director's report with the Planning Commission, which recommended approval of the time extension requested by ENV.

8. On November 7, 2007, ENV submitted two letters to DPP in response to DPP's staff requests, providing additional information relating to ENV's time extension request.

9. On November 14, 2007, the public hearing was held on ENV's time extension request at Mission Memorial Auditorium, City Hall Annex, where public testimony was received.

10. On November 14, 2007, during the public hearing, the Planning Commission granted intervener status to petitioners Hanabusa and KOCA.

11. On November 14, 2007, during the public hearing, the Planning Commission approved the consolidation of the two intervention petitions into one contested case proceeding.

12. On November 14, 2007, the Planning Commission closed the public hearing shortly after the Commission granted the petitioners intervener status.

13. On November 21, 2007, the Planning Commission issued notice of the contested case hearing to the parties.

14. On November 30, 2007, the Planning Commission Chair held a prehearing conference with the parties.

15. On December 7, 2007, the contested case hearing was held at Kapolei Hale.

16. The current permitted area of the WGSL has a useful life of approximately two years beyond the May 1, 2008, deadline if the State Department of Health ("DOH") approves ENV's request to modify the grade as discussed in paragraph 24 below.

17. The additional useful life is the result of ENV's efforts in diverting solid waste from WGSL and improved landfill operating methods to optimize the landfill's capacity.

18. ENV has diverted solid waste from WGSL through the H-Power waste-to-energy facility and through its reuse and recycling programs for municipal solid waste ("MSW"). ENV expects additional diversion to occur through its efforts to expand its waste-to-energy program, biosolids reuse, and possibly off-island shipping of some solid waste.

19. Despite ENV's efforts to divert solid waste from WGSL, a landfill is currently necessary for proper solid waste management, the lack of which would potentially create serious health and safety issues for residents on Oahu. There will always be material that cannot be combusted, recycled, reused or shipped, and a landfill is also needed to manage solid waste during natural disasters and other contingencies. Currently, technology has not advanced far enough to eliminate the need for a landfill on Oahu.

20. The H-Power facility requires periodic equipment shutdown for maintenance. During these periods, H-Power does not accept or burn solid waste and the waste is diverted to WGSL. Further, if WGSL were unable to accept H-Power ash and residue, with no approved landfill for that material, H-Power might have to close in a matter of days.

21. On January 31, 2006, the DOH issued a Notice of Violation ("NOV") to ENV and Waste Management of Hawaii, Inc. ("WMH"), containing 18 alleged violations at WGSL.

22. When DOH issued the NOV, 16 of the 18 alleged violations had already been brought into compliance by WMH.

23. The two matters in the DOH NOV for which WGSL was not in compliance when the NOV was issued were the 4-B sump for leachate control and the grade exceedances. On September 26, 2007, DOH approved the replacement of the 4-B sump.

24. The remaining unresolved compliance issue in the NOV is the grade exceedances. There is presently a lack of permitted capacity in the ash monofill portion of the landfill, and certain small parts of the MSW portion are over currently permitted grades. ENV has submitted a grade modification request to DOH to correct these exceedances and allow for additional capacity in the ash monofill portion.

25. DOH has completed its technical review of the grade modification request, issued a draft permit, and was expected to hold a public hearing on Tuesday, December 11, 2007, on the request.

26. If DOH approves the grade modification request, the modified grades would be below the original grades approved by DOH in 1989.

27. In 2001, during design for the 14.9-acre expansion, WMH, the operator of WGSL, conducted a stability analysis for the entire landfill. Although the landfill site was stable, differences in the coarseness of the landfill liner used caused the factor of safety in

some places of the landfill to be lower than the standard 1.5 factor of safety required by DOH.

28. WMH then worked with DOH to lower the permitted landfill height to increase the factor of safety, which resulted in some areas of the MSW portion and one area of the ash monofill portion becoming out of compliance due to overfill.

29. DOH was notified of the overfill in those areas, and to address the issue, a toe berm was constructed at the front of the landfill.

30. If DOH approves the grade modification request, there would be approximately 4.7 years, as of March 2, 2007, of additional capacity in the ash monofill portion of the landfill. The grade modification request does not change the MSW peak elevation of 510 feet.

31. The time extension sought by ENV would not affect the footprint, the permitted landfill elevations, the daily tonnages of solid waste received at WGSL, or any of the landfill operations.

32. In the Solid Waste Management Permit, the MSW portion of WGSL has a specified elevation of 510 feet. The permit, however, does not have a specific elevation for the ash monofill portion, but references the grading plan submitted to DOH along with the permit application.

33. The May 1, 2008, deadline for accepting solid waste at WGSL was based on a 5-year expectancy for a 21-acre expansion proposed by ENV and approved by the Planning Commission and the LUC in 2003. At that time, it was not known that improved landfill operations and recycling efforts would contribute to an increase in the life expectancy of WGSL.

34. WGSL has been in operation since 1989, and is currently the only landfill permitted to receive MSW on the island of Oahu.

35. If WGSL closes by May 1, 2008, in accordance with Condition No. 10 of the 2003 Planning Commission Decision and Condition No. 12 of the Decision and Order Approving Amendment to Special Use Permit, issued on June 9, 2003, by the Land Use Commission, State of Hawaii ("2003 LUC Decision'), there will be no permitted landfill to serve the MSW needs on Oahu.

36. The Final Supplemental Environmental Impact Statement ("FSEIS") dated December 2002 and accepted by DPP on January 10, 2003, covers the currently-permitted footprint of WGSL.

37. The FSEIS also covers the current operations and impacts associated with continued use of WGSL beyond the May 1, 2008, deadline for accepting waste.

38. ENV does not seek any other modification at this time other than extending the deadline of accepting solid waste at WGSL from May 1, 2008, to May 1, 2010, or until WGSL reaches permitted capacity, whichever occurs first.

39. Any proposed findings of fact or conditions submitted by ENV, Hanabusa, or KOCA that are not expressly ruled upon by the Planning Commission, or rejected by clearly contrary findings of fact, are deemed to be denied.

40. To the extent that any of the foregoing Findings of Fact are more properly deemed to be Conclusions of Law, they are incorporated herein as Conclusions of Law. Should any of the following Conclusions of Law be more properly deemed to be Findings of Fact, they are incorporated herein as Findings of Fact.

CONCLUSIONS OF LAW

The Planning Commission hereby concludes as follows:

1. Hawaii Revised Statutes § 91-10(5) provides that:

> [T]he party initiating the proceeding shall have the burden of proof, including the burden of producing evidence as well as the burden of persuasion. The degree or quantum of proof shall be a preponderance of the evidence.

As the applicant, ENV has the burden of proof.

2. WGSL operates under a State Special Use Permit. Chapter 2, Subchapter 4, of the Rules of the Planning Commission sets forth the rules applicable to State Special Use Permits. Section 2-45 provides as follows:

> Test to be applied. Certain "unusual and reasonable" uses within agricultural districts other than those for which the district is classified may be permitted. The following guidelines are established in determining an "unusual and reasonable use":
> (a) Such use shall not be contrary to the objectives sought to be accomplished by the state land use law and regulations.
> (b) That the desired use would not adversely affect surrounding property.
> (c) Such use would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage and school improvements, and police and fire protection.
> (d) Unusual conditions, trends, and needs have arisen since the district boundaries and regulations were established.
> (e) That the land upon which the proposed use is sought is unsuited for the uses permitted within the district.

3. Based on the findings set forth above, the Planning Commission concludes that the requested time extension (a) is not contrary to the objectives sought to be accomplished by the state land use law and regulations; (b) would not adversely affect surrounding property; and (c) would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage and school improvements, and police and fire protection. The Planning Commission further concludes that the same unusual conditions, trends, and needs that existed at the time the original Special Use Permit was granted continue to exist and that the land upon which the WGSL is located continues to be unsuited for agricultural purposes.

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Conclusions of Law, it is the decision and order of the Planning Commission to APPROVE the ENV's request to modify Condition 10 of the 2003 Planning Commission Decision dated March 13, 2003, Special Use Permit File No. 86/SUP-5, as follows:

> The 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure

plan by May 1, 2010 or until the approved area reaches its permitted capacity, whichever occurs first.

Consistent with the foregoing, it is the further decision and order of the Planning Commission to recommend to the Land Use Commission that Condition No. 12 of the 2003 LUC Decision, Docket No. SP87-362, issued on June 9, 2003, be amended to read as follows:

> The 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan by May 1, 2010 or until the approved area reaches its permitted capacity, whichever occurs first.

The foregoing APPROVAL by the Planning Commission is subject to the following condition:

1. The ENV must obtain approval of its pending grade modification request for WGSL from the State Department of Health.

Dated at Honolulu, Hawaii, this 16th day of January, 2008.

PLANNING COMMISSION
CITY AND COUNTY OF HONOLULU

KARIN L. HOLMA, Chair

JAMES PACOPAC, Vice Chair

BEADIE DAWSON

VGaynor
VICKI GAYNOR

Andrew M. Jamila, Jr.
ANDREW M. JAMILA, JR.

RODNEY KIM

KERRY M. KOMATSUBARA

BEFORE THE PLANNING COMMISSION

OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

In the Matter of the Application of DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU For Amendment to State Special Use Permit and Extension of Deadline to Cease Acceptance of Additional Waste Material.	)	EWA—STATE SPECIAL USE PERMIT NO. 86/SUP-5 (RY) CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the Findings of Fact, Conclusions of Law, and Decision and Order was served upon the following by certified mail, return receipt requested, postage prepaid, on January 18, 2008:

GARY Y. TAKEUCHI, ESQ.
PAUL HERRAN, ESQ.
Deputies Corporation Counsel
Department of the Corporation Counsel
530 South King Street
Honolulu, Hawaii 96813

Attorneys for Applicant
Department of Environmental Services

COLLEEN HANABUSA
1100 Alakea Street, Suite 1200
Honolulu, Hawaii 96813

Attorney for Intervenors
Senator Colleen Hanabusa and
Ko Olina Community Association, Inc.

DATED: Honolulu, Hawaii, January 18, 2008.

Patricia J. Kalapa
PATRICIA J. KALAPA
Secretary-Reporter
Planning Commission

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The	)	DOCKET NO. SP87-362
	)	
DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (fka DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU)	)	FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER ADOPTING WITH MODIFICATIONS, THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S RECOMMENDATION TO APPROVE AMENDMENT TO SPECIAL USE PERMIT
For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 107.5 Acres Of Land Within The State Land Use Agricultural District At Waimānalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, Tax Map Key: 9-2-03: Portion 72 And Portion 73 (fka Tax Map Key: 9-2-03: Portion 2 And Portion 13)	)	

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER ADOPTING WITH MODIFICATIONS, THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S RECOMMENDATION TO APPROVE AMENDMENT TO SPECIAL USE PERMIT

This is to certify that this is a true and correct copy of the document on file in the office of the State Land Use Commission, Honolulu, Hawaii.

MAR 14 2008 by Rodney h. Maile

Date Interim Executive Officer

EXHIBIT J

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The	)	DOCKET NO. SP87-362
	)	
DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (fka DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU)	)	FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER ADOPTING WITH MODIFICATIONS, THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S RECOMMENDATION TO APPROVE AMENDMENT TO SPECIAL USE PERMIT
For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 107.5 Acres Of Land Within The State Land Use Agricultural District At Waimānalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, Tax Map Key: 9-2-03: Portion 72 And Portion 73 (fka Tax Map Key: 9-2-03: Portion 2 And Portion 13)	)	

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER ADOPTING WITH MODIFICATIONS, THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S RECOMMENDATION TO APPROVE AMENDMENT TO SPECIAL USE PERMIT

The Land Use Commission ("LUC"), having examined the complete record of the City and County of Honolulu Planning Commission's ("Planning Commission") proceedings on the City and County of Honolulu Department of Environmental Services' ("Applicant") application to amend Condition Number 10 of the Planning Commission's Findings of Fact, Conclusions, and Decision dated March 13, 2003, by extending the deadline to accept solid waste at the Waimānalo Gulch

Sanitary Landfill ("WGSL") from May 1, 2008, to May 1, 2010, or until the WGSL reaches its permitted capacity, whichever occurs first ("Application")[1], and upon consideration of the matters discussed therein, at its meetings on February 21, 2008, March 6, 2008, and March 7, 2008, in Honolulu, Hawai`i, hereby makes the following findings of fact, conclusions of law, and decision and order:

FINDINGS OF FACT

PROCEDURAL MATTERS

1. On July 6, 2007, the Applicant filed the Application with the City and County of Honolulu Department of Planning and Permitting ("DPP"), DPP Docket `Ewa – State Special Use Permit No. 86/SUP-5, pursuant to section 205-6, Hawai`i Revised Statutes ("HRS"), and sections 15-15-95 and 15-15-96, Hawai`i Administrative Rules ("HAR").

2. The Applicant sought to amend Condition Number 10 of the Planning Commission's Findings of Fact, Conclusions, and Decision dated March 13, 2003, by extending the deadline to accept solid waste at the WGSL from May 1, 2008, to May 1, 2010, or until the WGSL reached its permitted capacity, whichever occurred first. No other amendments were requested at that time.

3. On August 30, 2007, the DPP accepted the Application for processing as of August 30, 2007.

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[1] The LUC adopted Condition Number 10 in its entirety as Condition Number 12 in its Decision and Order Approving Amendment ("D&O Approving Amendment") filed June 9, 2003.

4. On October 12, 2007, the Notice of the Planning Commission public hearing on the Application was published in the *Honolulu Star-Bulletin*.

5. On October 25, 2007, Colleen Hanabusa, Esq., filed a Petition to Intervene and Request for Contested Case.

6. On October 26, 2007, Ken Williams, General Manager and Vice President, filed a Petition to Intervene on behalf of the Ko Olina Community Association ("KOCA").[2]

7. On November 2, 2007, the Applicant filed its Memoranda in Opposition to Ms. Hanabusa's and KOCA's Petitions to Intervene.

8. On November 14, 2007, the Planning Commission considered the Application and the Petitions to Intervene at the Mission Memorial Auditorium, City Hall Annex, in Honolulu, Hawai`i. At the hearing, the Planning Commission heard public testimony from eight individuals primarily in opposition to the Application. The Planning Commission also received written testimony from numerous individuals in support and in opposition to the Application.. After due deliberation, the Planning Commission granted the requests to intervene and consolidated said requests into one contested case proceeding. The Planning Commission subsequently closed the public hearing and scheduled the matter for a contested case hearing.

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[2] KOCA is a community association which represents various resort and residential owners throughout the Ko Olina Resort. The resort is located makai of Farrington Highway and is situated across from the WGSL.

9. On November 30, 2007, the Planning Commission Chair held a prehearing conference with the parties in the contested case hearing.

10. On December 7, 2007, the Planning Commission conducted the contested case hearing on the Application at Kapolei Hale, Conference Rooms A and B, in Kapolei, Hawai`i. Following the presentation of the parties' respective cases-in chief, the Planning Commission closed the hearing.

11. ,On December 21, 2007, KOCA and Ms. Hanabusa filed a Proposed Findings of Fact and Conclusions of Law.

12. On December 21, 2007, KOCA and Ms. Hanabusa filed a Closing Argument.

13. On December 21, 2007, the Applicant filed a Closing Argument.

14. On December 21, 2007, the Applicant filed a Proposed Findings of Fact, Conclusions of Law, and Decision and Order.

15. On January 8, 2008, KOCA and Ms. Hanabusa filed a Response to the Applicant's Proposed Findings of Fact, Conclusions of Law, and Decision and Order.

16. On January 8, 2008, the Applicant filed a Rebuttal to Intervenors' Proposed Findings of Fact and Conclusions of Law and Intervenors' Closing Argument.

17. On January 16, 2008, the Planning Commission acted on the Application at the Mission Memorial Auditorium, City Hall Annex, in Honolulu,

Hawai`i. After due deliberation and consideration of the record in this matter, the Planning Commission recommended approval of the Application to the LUC and issued its Findings of Fact, Conclusions of Law, and Decision and Order.

18. On January 31, 2008, the LUC received the decision and the complete record of the Planning Commission's proceedings on the Application.

19. On February 15, 2008, Ms. Hanabusa filed the following pleadings: Petition for Declaratory Orders and Request for Hearing; Petition for Intervention; and Motion to Dismiss, on behalf of herself and KOCA.

20. On February 21, 2008, the Applicant filed its Memorandum in Opposition to Petition for Declaratory Orders and Request for Hearing; Memorandum in Opposition to Motion to Dismiss; and Request for Official Notice.[3]

21. On February 21, 2008, the LUC met in Conference Room 204, Leiopapa A Kamehameha Building, in Honolulu, Hawai`i, to consider the Application. Gary Y. Takeuchi, Esq., and Eric S. Takamura appeared on behalf of the Applicant. Colleen Hanabusa, Esq., and Ken Williams were also present at the meeting. At the meeting, Commissioner Contrades disclosed that his daughter is employed by the Corporation Counsel, City and County of Honolulu, but that he did not discuss the

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[3] The Request for Official Notice requested the LUC to take official notice of true and correct copies of (i) *Honolulu Advertiser* and *Honolulu Star-Bulletin* articles dated December 12, 2007, regarding the settlement of the State Department of Health's ("DOH") Notice of Violation; (ii) the settlement agreement dated December 7, 2007, between the DOH, the City and County of Honolulu, and Waste Management Hawaii, Inc. ("WMH"); and (iii) Modification of Solid Waste Permit No. LF-0054-02 for the WGSL dated February 20, 2008.

Application with her. The Applicant, Ms. Hanabusa, and KOCA had no objections to the participation of Commissioner Contrades in the proceeding. Following the receipt of public testimony[4], the LUC deferred the matter to its March 6, 2008, meeting in Honolulu, Hawai`i.

22. On February 26, 2008, Ms. Hanabusa filed: a Supplemental Petition for Declaratory Orders and Request for Hearing; a Second Supplemental Petition for Declaratory Orders; and a Motion to Strike Request for Official Notice on behalf of herself and KOCA.

23. On March 4, 2008, the Applicant filed its Memorandum in Opposition to Supplemental Petition for Declaratory Orders and Request for Hearing; a Memorandum in Opposition to Second Supplemental Petition for Declaratory Orders; and a Memorandum in Opposition to Motion to Strike Request for Official Notice.

24. On March 6, 2008, the LUC resumed its meeting on the Application and the pleadings filed by the Applicant and Ms. Hanabusa and KOCA in Conference Room 405, Leiopapa A Kamehameha Building, in Honolulu, Hawai`i. Gary Y. Takeuchi, Esq., and Eric S. Takamura appeared on behalf of the Applicant. Colleen Hanabusa, Esq., and Ken Williams were also present at the continued meeting. At the

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[4] Pursuant to section 92-3, HRS, T. George Paris, Ralph F. Harris, Ashley Fraser, Greg Nichols, Kimberly Carhart, Robert Weiss, Cynthia K.L. Rezentes, Edgar Gum and Mark Donnelly, Ken Williams, and Mary Lou Kobayashi provided written testimony on the Application. The LUC also heard testimony from Lincoln Naiwi.; Beverly Munson; Lee Munson; Mel Kahele; Ron Amemiya; James K. Manaku, Sr.; Cynthia K.L. Rezentes; Duke Hospodar; Kimo Keli`i; Patty Teruya; Mary Lou Kobayashi; and Councilmember Todd Apo.

meeting, the LUC recognized Ms. Hanabusa and KOCA as intervenors in the LUC's proceeding based on their intervenor status before the Planning Commission, and therefore by a vote tally of 8 ayes, 0 nays, and 1 absent, denied their Petition for Intervention on the grounds that it is rendered moot. Thereafter, a motion was made and seconded to take Ms. Hanabusa's Petition for Declaratory Orders and Request for Hearing and Supplemental Petitions filed thereafter under advisement. There being a vote tally of 8 ayes, 0 nays, and 1 absent, the motion carried. Following the receipt of public testimony[5], and upon further discussion, a motion was made and seconded to deny the Applicant's Request for Official Notice on the grounds that the documents for which official notice was requested: (i) are not part of the Planning Commission record that is to be considered by the LUC pursuant to section 205-6, HRS, and (ii) did not meet the criteria cited in section 15-15-63(k), HAR. By a vote tally of 8 ayes, 0 nays, and 1 absent, the motion carried. Having denied the Applicant's Request for Official Notice, the Motion to Strike Request for Official Notice filed by Ms. Hanabusa was deemed moot. Thereafter, a motion to deny Ms. Hanabusa's Motion to Dismiss was made and seconded on the grounds that: (i) the Planning Commission's recommendation to approve the Application subject to the Applicant obtaining DOH approval of its grade modification request, was not a precondition based on the clear language of the

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[5] Pursuant to section 92-3, HRS, Ralph F. Harris, Edgar Gum and Mark Donnelly, Josiah Ho`ohuli, Nina Fisher, Cynthia K.L. Rezentes, Isireli Qalo, and Pele Toomata provided written testimony on the Application. The LUC also heard testimony from Ralph F. Harris, Mike Nelson, Isireli Qalo, Greg Nichols, Pele Toomata, and Russell Duong.

condition; and (ii) the LUC has the authority to modify its conditions based on past practice and its interpretation of section 15-15-95(e), HAR. By a vote tally of 8 ayes, 0 nays, and 1 absent, the motion carried. Following deliberation by the LUC, a motion was made and seconded to grant the Application. Upon discussion, the motion was amended and seconded to include the following two additional conditions: (i) the LUC will not accept any further amendments to this special use permit and will not grant any further time extensions; and (ii) within one year, the Applicant will submit to the LUC an approved closure plan for the WGSL. By a vote tally of 4 ayes, 4 nays, and 1 absent, the motion failed. Thereafter, a motion was made to grant the Application but to limit the time extension to one year. The motion was not seconded and therefore failed. Following further deliberation, a motion was made and seconded to deny the Application. By a vote tally of 3 ayes, 5 nays, and 1 absent, the motion failed. Following discussion, the LUC continued the meeting to March 7, 2008.

25. On March 7, 2008, the LUC resumed its meeting on the Application in Conference Room 405, Leiopapa A Kamehameha Building, in Honolulu, Hawai`i. Gary Y. Takeuchi, Esq., and Eric S. Takamura appeared on behalf of the Applicant. Colleen Hanabusa, Esq., and Ken Williams were also present at the continued meeting. At the meeting, a motion was made and seconded to adopt the recommendation of the Planning Commission with an amendment to the closure date of the WGSL from May 1, 2010, to November 1, 2009, and with the additional condition requiring the Applicant to

report to the LUC every six months on the actions taken to alleviate the further use of the WGSL. Following deliberation by the LUC, a vote was taken on the motion. There being a vote tally of 6 ayes, 2 nays, and 1 absent, the motion carried.

DESCRIPTION OF PROPERTY

26. The WGSL is located at 92-460 Farrington Highway, Honouliuli, `Ewa, O`ahu, and is situated on TMK: 9-2-03: por. 72 and por. 73 ("Property").

27. The Property is located within the State Land Use Agricultural District. The Property is owned by the City and County of Honolulu.

28. The WGSL currently consists of approximately 107.5 acres and is under the jurisdiction of the Applicant and operated under contract to WMH. It has been in operation since 1989 and is currently the only landfill permitted to receive municipal solid waste ("MSW") on O`ahu.

BACKGROUND OF THE WGSL

29. The WGSL was established pursuant to LUC Docket No. SP87-362. As approved, the WGSL consisted of approximately 60.5 acres of land and included highway and roadway improvements, an administrative building, a scale and scalehouse, a maintenance shed, a drainage system, a leachate collection system, leachate and gas monitoring wells, landscaping and irrigation, security fencing, and utilities.

30. By Findings of Fact, Conclusions of Law and Decision and Order filed October 31, 1989, the LUC approved the request of the Applicant's predecessor, the Department of Public Works, City and County of Honolulu, to expand the WGSL by 26 acres for a total land area of approximately 86.5 acres.

31. By D&O Approving Amendment filed June 9, 2003, the LUC approved the expansion of the WGSL by an additional 21 acres for a total land area of approximately 107.5 acres. A Final Supplemental Environmental Impact Statement ("FSEIS") dated December 2002 and accepted by the DPP on January 10, 2003, covers the currently permitted footprint of the WGSL. The FSEIS also addresses the current operations and impacts associated with the continued use of the WGSL beyond the May 1, 2008, deadline for accepting waste.

NEED FOR REQUEST

32. By Resolution No. 04-348, CD1, FD1, the City Council selected the WGSL as the municipal landfill to serve the needs of O`ahu for the foreseeable future. As a result of this selection, the Applicant has been preparing an application to amend the existing special use permit to expand the WGSL by an additional 92.5 acres of land. An Environmental Impact Statement ("EIS") is also being prepared for this expansion.

33. Due to the discovery of stone uprights in the proposed expansion area, the completion of the EIS has been delayed pending resolution of the matter with

the State Historic Preservation Division. Concerns that the expansion could not be completed by May 1, 2008, prompted the Applicant to file the Application.

34. The current permitted area of the landfill has a useful life of approximately two years beyond the May 1, 2008, deadline if the DOH approves the Applicant's request to modify Solid Waste Management Permit No. LF-0054-02 ("Permit"), which was renewed on May 15, 2003, and expires on April 30, 2008. The modification to the Permit would increase the heights of the cells within the ash monofill and MSW portions of the WGSL.

35. The additional useful life of the WGSL is the result of the Applicant's efforts to divert solid waste and improved landfill operating methods to optimize the WGSL's capacity. The Applicant has diverted solid waste from the WGSL through the H-POWER waste-to-energy facility and through its reuse and recycling programs for MSW. In 2003, the Planning Commission and the LUC approved the May 1, 2008, deadline to close the WGSL based on a 5-year expectancy of the then proposed 21-acre expansion of the WGSL. It was not known at that time that the above measures would contribute to an increase in the life expectancy of the WGSL.

36. The Applicant expects additional diversion to occur through its efforts to expand its waste-to-energy program, biosolids reuse, and possibly off-island shipping of some MSW.

37. Despite the Applicant's efforts to divert solid waste from the WGSL, a landfill is currently necessary for proper solid waste management to avoid the potential health and safety issues for O`ahu's residents. There will always be material that cannot be combusted, recycled, reused, or shipped. A landfill is also needed to manage solid waste during natural disasters and other contingencies. Currently, technology has not advanced far enough to eliminate the need for a landfill on O`ahu.

38. The H-POWER facility requires periodic equipment shutdown for maintenance. During these periods, H-POWER does not accept or burn solid waste and the waste is diverted to the WGSL. In addition, if the WGSL were unable to accept H-POWER ash and residue, H-POWER might have to close in a matter of days inasmuch as there is no approved landfill for that material.

<u>NOTICE OF VIOLATION</u>

39. On January 31, 2006, the DOH issued a Notice of Violation ("NOV") to the Applicant and WMH which contained 18 violations associated with the management and operation of the WGSL.

40. WMH had already brought into compliance 16 of the 18 violations at the time the DOH issued the NOV.

41. The two areas in the DOH NOV for which the WGSL was not in compliance when the NOV was issued were the 4-B sump for leachate control and the

grade exceedences. On September 26, 2007, the DOH approved the replacement of the 4-B sump.

42. The remaining unresolved compliance issue in the NOV is the grade exceedences. There is presently a lack of permitted capacity in the ash monofill portion of the WGSL, and certain portions of the MSW section are over currently permitted grades. The Applicant has submitted a grade modification request to the DOH to correct these exceedences and allow for additional capacity in the ash monofill portion of the WGSL.

43. The DOH has completed its technical review of the grade modification request and issued a draft permit.

44. During design for the 14.9-acre expansion of the WGSL in 2001, WMH conducted a stability analysis for the entire landfill. Although the Property was stable, differences in the coarseness of the landfill liner used caused the factor of safety in some places of the WGSL to be lower than the standard 1.5 factor of safety required by the DOH.

45. WMH worked with the DOH to lower the permitted landfill height to increase the factor of safety, which resulted in some areas of the MSW portion and one area of the ash monofill portion of the WGSL to become out of compliance due to overfill.

46. The DOH was notified of the overfill in those areas. To address the issue, a toe berm was constructed at the front of the WGSL.

47. If the DOH approves the grade modification request, there would be approximately 4.7 years, as of March 2, 2007, of additional capacity in the ash monofill portion of the WGSL. The grade modification request does not change the MSW peak elevation of 510 feet as specified by the Permit. The Permit does not have a specific elevation for the ash monofill portion of the WGSL but references the grading plan submitted by the DOH together with the Permit application.

48. The Application does not affect the WGSL's footprint, its permitted landfill elevations, its daily tonnages of solid waste, or any of its operations.

49. If the WGSL closes by May 1, 2008, there will be no permitted landfill to serve the MSW needs on O`ahu.

CONCLUSIONS OF LAW

1. The LUC has jurisdiction over the Application pursuant to section 205-6, HRS, and sections 15-15-95 and 15-15-96, HAR.

2. Based upon the record of the proceedings before the Planning Commission, and pursuant to section 205-6, HRS, and sections 15-15-95 and 15-15-96, HAR, the LUC finds that an extension to the deadline to accept solid waste at the WGSL from May 1, 2008, to November 1, 2009, or until the WGSL reaches its permitted

capacity, whichever occurs first, meets the guidelines for determining an "unusual and reasonable" use within the State Land Use Agricultural District.

3. The use shall not be contrary to the objectives sought to be accomplished by chapters 205 and 205A, HRS, and the rules of the LUC. Due to improved landfill operations and ongoing recycling efforts, the projected capacity of the WGSL has increased beyond its previous five-year life expectancy. Although alternative methods to address the municipal solid waste stream are currently implemented, a landfill is still necessary to accommodate the ash, residue, and waste that cannot be processed by H-POWER or alternative technologies. Closure of the WGSL by May 1, 2008, would be adverse to the public's health and safety.

4. Based upon the record of the proceedings before the Planning Commission, the desired use would not adversely affect surrounding property. The WGSL is already an established use at the Property and has been conditioned to avoid generating impacts upon the surrounding environment. Odor impacts from the WGSL are due to the disposal of sewage sludge and related wastewater residue. The immediate coverage of soil and the use of odor misters have been employed to mitigate these impacts. A portion of the sewage sludge is being processed into soil amendment instead of being disposed of at the WGSL. At the time landfill capacity is reached, the Applicant and the operator will be responsible for capping the entire facility and monitoring groundwater, methane gas, and leachates for 30 years. Additional measures

to reduce the impact of the WGSL after its closure include hydro-mulching and seeding exposed areas with vegetation similar to that which currently exists around the WGSL grounds. Faux rock outcrops will also be added to improve the visual appearance of the site.

5. Based upon the record of the proceedings before the Planning Commission, the use would not unreasonably burden public agencies to provide roads and streets, sewers, water drainage and school improvements, and police and fire protection. Since the WGSL began operations in 1989, facilities and services continue to be adequate without requiring public agencies to provide additional infrastructure to support its operation.

6. Based upon the record of the proceedings before the Planning Commission, the preponderance of the evidence established that unusual conditions, trends, and needs had arisen since the district boundaries and rules were established. Pursuant to Resolution No. 04-348, CD1, FD1, the WGSL was chosen as the site for the City and County's landfill despite its omission from the Blue Ribbon Advisory Committee's list of recommended sites for a new landfill. Due to the advisory nature of the committee's final report and the violations of the State's sunshine law that voided the report, the City Council believed that it was not bound by the recommendations of the report. After reviewing potential landfill sites, the City Council determined that the current site of the WGSL was the best site given the amount of capacity projected,

economic considerations, an existing management contract, and the availability of cost and revenue data. The resolution also supports the Application for a time extension to the existing WGSL. If the WGSL were to close on May 1, 2008, existing alternative avenues and planned programs to address the MSW stream would not be sufficient nor would they be implemented in time to alleviate the need for the WGSL.

7. Based upon the record of the proceedings before the Planning Commission, the land upon which the proposed use is sought is unsuited for the uses permitted within the district. The Property contains extremely rocky soils and is not conducive to crop production. The steep terrain also limits use of the Property for pasture purposes. Due to the presence of the WGSL, agricultural uses at the Property are not feasible. However, upon the closure of the WGSL, there is the possibility that agricultural uses could occur, subject to the requirements of the DOH and other governmental agencies.

8. Any of the proposed findings of fact or conclusions of law submitted by any of the parties not already ruled on by the LUC by adoption or rejected by clearly contrary findings of fact or conclusions of law are hereby denied and rejected. Any conclusion of law that is or should be a finding of fact is to be taken as such notwithstanding its denomination as a conclusion of law; any finding of fact that is or should be a conclusion of law is to be taken as such notwithstanding its denomination as a finding of fact.

DECISION AND ORDER

Having duly considered the complete record in this matter, the oral arguments presented by the parties in this proceeding, the LUC, through a motion having been duly made at a meeting conducted on March 7, 2008, in Honolulu, Hawai`i, and the motion having received the affirmative votes required by section 15-15-13, HAR, and there being good cause for the motion, hereby ORDERS as follows:

1. The recommendation of the Planning Commission is ADOPTED WITH MODIFICATIONS, with Condition Number 12 of the LUC's D&O Approving Amendment filed June 9, 2003, amended to read as follows:

   12. The 200-acre Property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan by November 1, 2009, or until the approved area reaches its permitted capacity, whichever occurs first.

2. The amendment to Condition Number 12 is subject to the following condition:

> The Applicant must obtain approval of its pending grade modification request for the WGSL from the DOH.

IT IS FURTHER ORDERED that the following additional condition to the D&O Approving Amendment filed June 9, 2003, is imposed:

> The Applicant shall report to the LUC every six months on the actions taken to alleviate the further use of the WGSL.

IT IS ALSO ORDERED that all other conditions to the LUC's D&O Approving Amendment filed June 9, 2003, shall remain in full force and effect.[6]

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[6] Condition Number 1 was amended pursuant to the LUC's Order Granting in Part and Denying in Part Motion to Amend and/or Stay the Decision and Order Approving Amendment to Special Use Permit dated June 3, 2003 filed May 10, 2004.

ADOPTION OF ORDER

The undersigned Commissioners, being familiar with the record and proceedings, hereby adopt and approve the foregoing ORDER this 14th day of March, 2008. This ORDER and its ADOPTION shall take effect upon the date this ORDER is certified and filed by this Commission.

Done at Honolulu, Hawai`i, this 14th day of March, 2008, per motion on March 7, 2008.

APPROVED AS TO FORM

Diane Erickson
Deputy Attorney General

LAND USE COMMISSION
STATE OF HAWAI`I

By Lisa M. Judge
LISA M. JUDGE
Chairperson and Commissioner

By____________________
DUANE KANUHA
Vice-Chairperson and Commissioner

By (voted "NAY")
KYLE CHOCK
Commissioner

ADOPTION OF ORDER

The undersigned Commissioners, being familiar with the record and proceedings, hereby adopt and approve the foregoing ORDER this ________ day of __________________, 2008. This ORDER and its ADOPTION shall take effect upon the date this ORDER is certified and filed by this Commission.

Done at _______________, Hawai`i, this ______ day of _______________, 2008, per motion on March 7, 2008.

LAND USE COMMISSION
STATE OF HAWAI`I

APPROVED AS TO FORM

____
Deputy Attorney General

By______________________________
LISA M. JUDGE
Chairperson and Commissioner

By______________________________
DUANE KANUHA
Vice-Chairpersonand Commissioner

By _____(voted "NAY")_____________
KYLE CHOCK
Commissioner

By Thomas Contrades

THOMAS CONTRADES
Commissioner

By (absent)

VLADIMIR PAUL DEVENS
Commissioner

By (voted "NAY")

NORMAND LEZY
Commissioner

By________________________________

RANSOM PILTZ
Commissioner

By________________________________

NICHOLAS W. TEVES, JR.
Commissioner

Filed and effective on:
MAR 14 2008

By________________________________

REUBEN S.F. WONG
Commissioner

Certified by:

Rodney A. Maile

RODNEY A. MAILE
Interim Executive Officer

By______________________________
THOMAS CONTRADES
Commissioner

By________(absent)____________________
VLADIMIR PAUL DEVENS
Commissioner

By _____(voted "NAY")________________
NORMAND LEZY
Commissioner

By______________________________
RANSOM PILTZ
Commissioner

By______________________________
NICHOLAS W. TEVES, JR.
Commissioner

Filed and effective on:

____

By______________________________
REUBEN S.F. WONG
Commissioner

Certified by:

____
RODNEY A. MAILE
Interim Executive Officer

By______________________________
THOMAS CONTRADES
Commissioner

By_______(absent)_______________
VLADIMIR PAUL DEVENS
Commissioner

By _____(voted "NAY")____________
NORMAND LEZY
Commissioner

By______________________________
RANSOM PILTZ
Commissioner

By______________________________
NICHOLAS W. TEVES, JR.
Commissioner

Filed and effective on:

____

By______________________________
REUBEN S.F. WONG
Commissioner

Certified by:

____
RODNEY A. MAILE
Interim Executive Officer

By____________________________
THOMAS CONTRADES
Commissioner

By________(absent)_________________________
VLADIMIR PAUL DEVENS
Commissioner

By ______(voted "NAY")___________________
NORMAND LEZY
Commissioner

By____________________________
RANSOM PILTZ
Commissioner

By____________________________
NICHOLAS W. TEVES, JR.
Commissioner

Filed and effective on:

____

By Reuben Wong
REUBEN S.F. WONG
Commissioner

Certified by:

____
RODNEY A. MAILE
Interim Executive Officer

BEFORE THE LAND USE COMMISSION
OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The	)	DOCKET NO. SP87-362
	)	
DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU (fka DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU)	)	CERTIFICATE OF SERVICE
	)	
For An Amendment To The Special Use Permit Which Established A Sanitary Landfill On Approximately 107.5 Acres Of Land Within The State Land Use Agricultural District At Waimānalo Gulch, Honouliuli, `Ewa, O`ahu, Hawai`i, Tax Map Key: 9-2-03: Portion 72 And Portion 73 (fka Tax Map Key: 9-2-03: Portion 2 And Portion 13)	)	

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Findings of Fact, Conclusions of Law, and Decision and Order Adopting with Modifications, the City and County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit was served upon the following by either hand delivery or depositing the same in the U. S. Postal Service by regular or certified mail as noted:

CERT: CARRIE OKINAGA, Esq.
Corporation Counsel
City and County of Honolulu
530 South King Street
Honolulu, HI 96813

CERT. COLLEEN HANABUSA, Esq.
1100 Alakea Street, 12th Floor
Honolulu, Hawaii 96813

Dated: Honolulu, Hawai`i, MAR 14 2008.

Rodney A. Maile

RODNEY A. MAILE
Interim Executive Officer

BEFORE THE PLANNING COMMISSION
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

In the Matter of the Application of

DEPARTMENT OF ENVIRONMENTAL
SERVICES, CITY AND COUNTY OF
HONOLULU

For a New Special Use Permit to supersede
Existing Special Use Permit to allow a 92.5-
acre Expansion and Time Extension
For Waimanalo Gulch Sanitary Landfill,
Waimanalo Gulch, Oahu, Hawaii,
Tax Map Key Nos. (1) 9-2-003:072 and 073.

FILE NOS. 2008/SUP-2 (RY) AND 86/SUP-5

FINDINGS OF FACT, CONCLUSIONS OF
LAW, AND DECISION AND ORDER

I certify that this is a full, true and
correct copy of the original document
on file with the Planning Commission,
City and County of Honolulu.

Patricia J. Kalapa
August 4, 2009
DATE

FINDINGS OF FACT,
CONCLUSIONS OF LAW, AND DECISION AND ORDER

This matter came on for a contested case hearing before the Planning Commission, City and County of Honolulu (the "Planning Commission"), on June 22, 2009, June 24, 2009, July 1, 2009, July 2, 2009 and July 8, 2009. Based on the record in this matter, including the evidence presented at the contested case hearing, the credibility of the witnesses testifying at the hearing, and the proposed findings of fact, conclusions of law, and decisions and orders submitted by the parties and their respective responses thereto, and the written arguments of the parties, the Planning Commission hereby makes the following findings of fact, conclusions of law, and decision and order:

FINDINGS OF FACT

PROCEDURAL MATTERS

1. The Waimanalo Gulch Sanitary Landfill ("WGSL" or the "landfill") is located at 92-460 Farrington Highway, Honouliuli, Ewa, Oahu. See Planning Division Master Application Form included within the Special Use Permit Application filed on December 3, 2008.

EXHIBIT K

2. On November 23, 2006, the Office of Environmental Quality Control, State of Hawaii ("OEQC"), published notice in *The Environmental Notice* that the Environmental Impact Statement ("EIS") Preparation Notice for the expansion of WGSL was available for public review and comment. See Letter from David Tanoue, Director of the Department of Planning and Permitting, to Karin Holma, Chair of the Planning Commission, dated May 1, 2009 ("DPP Recommendation") at 6.

3. On October 13, 2008, the *Final Environmental Impact Statement, Waimanalo Gulch Sanitary Landfill Lateral Expansion, Waimanalo Gulch, Oahu, Hawaii, TMKs: (1) 9-2-003: 072 and 073*, dated October 2008 ("2008 FEIS"), for the expansion of WGSL, was accepted on behalf of the Mayor by the Department of Planning and Permitting ("DPP"). Id.; Exhibit "7" to the Department of Environmental Services, City and County of Honolulu's July 6, 2009 Memorandum in Opposition to Intervenor's Motion to Dismiss the Application.

4. On October 23, 2008, OEQC published notice of the 2008 FEIS Acceptance in *The Environmental Notice*, in accordance with the Hawaii Environmental Policy Act ("HEPA"), Hawaii Revised Statutes ("HRS") Chapter 343. See DPP Recommendation at 6.

5. On December 3, 2008, the Department of Environmental Services, City and County of Honolulu ("Applicant" or "ENV"), filed a State Special Use Permit Application ("Application"), with DPP pursuant to HRS Section 205-6, and Rules of the Planning Commission, City and County of Honolulu ("RPC"), Subchapter 4, Rules Applicable to State Special Use Permits. See Application. The Application, designated as Special Use Permit Application File No. 2008/SUP-2, is for a new Special Use Permit ("SUP") for the use of the approximately 200.622-acre property (the "Property"), identified by Tax Map Key ("TMK")

Nos. (1) 9-2-003: 072 and 073, in Waimanalo Gulch, Oahu, Hawaii. See Application at Figure 1-1 and Planning Division Master Application Form. The Application seeks to expand the current operating portion of the Property, approximately 107.5 acres, by approximately 92.5 acres (the "Project"). See Application at Planning Division Master Application Form and p. 1-2.

6. The Applicant concurrently seeks to withdraw its existing SUP permit for approximately 107.5 acres, Special Use Permit File No. 86/SUP-5, and the conditions imposed therein, if the Application for the new SUP permit is granted. See April 2, 2009 memorandum from Applicant to DPP; Transcript ("Tr.") 7/2/09, 20:4-10; DPP Recommendation at 3, 24.

7. The Applicant has also filed a petition with the Land Use Commission, State of Hawaii, for a district boundary amendment to reclassify the Property from the State Agricultural District to the Urban District, which may be withdrawn if the Application is granted. See Application at p. 2-2, fn.1.

8. The Planning Commission's public hearing to consider ENV's application was scheduled for May 6, 2009. On April 3, 2009, a notice of the hearing of the matter was published in the *Honolulu Star-Bulletin*.

9. On April 16, 2009, Ko Olina Community Association ("KOCA"), Colleen Hanabusa, and Maile Shimabukuro (collectively, "Intervenors") filed a Petition to Intervene in this matter. On April 24, 2009, Applicant filed a Memorandum in Opposition to Intervenors' Petition to Intervene.

10. On May 1, 2009, DPP transmitted its report and recommendation for approval of the Application to the Planning Commission. See DPP Recommendation.

11. On May 1, 2009, the Planning Commission conducted a site visit to the Property and to the H-POWER facility.

12. At the public hearing on May 6, 2009, at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii, the Planning Commission heard public testimony. The Planning Commission was also scheduled to hear argument regarding Intervenors' Petition to Intervene. At Intervenors' request, however, the Planning Commission continued the public hearing and consideration of Intervenors' Petition to Intervene to May 20, 2009.

13. On May 7, 2009, Todd K. Apo ("Apo") filed a Petition to Intervene in this matter. On May 18, 2009, Applicant filed a Memorandum in Opposition to Apo's Petition to Intervene.

14. On May 19, 2009, Intervenors' filed a Motion to Recuse Commissioner John Kaopua.

15. On May 20, 2009, the public hearing was continued at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii. At the continued public hearing, the Planning Commission heard and granted Intervenors' Petition to Intervene. Pursuant to RPC Subchapter 5, the matter was noted as a contested case. The Planning Commission also began hearing argument regarding Apo's Petition to Intervene and continued that matter to June 10, 2009.

16. On June 5, 2009, Applicant filed a Memorandum in Opposition to Intervenors' Motion to Recuse Commissioner John Kaopua.

17. On June 10, 2009, the hearing was continued at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii. The Planning Commission heard and granted Intervenors' Motion to Recuse Commissioner John Kaopua. The Planning Commission denied Apo's Petition to Intervene on the grounds that it was untimely filed, that Apo's position regarding that Application was substantially the same as the position of

the Intervenors, and that the proceeding will be inefficient and unmanageable if Apo was allowed to intervene. See Findings of Fact, Conclusions of Law, and Order issued on July 27, 2009. Thereafter, the Planning Commission closed the public hearing on the Application.

18. On June 15, 2009, Intervenors filed their List of Witnesses, listing 42 potential witnesses including Apo. Applicant also filed its List of Witnesses, listing six potential witnesses.

19. On June 22, 2009, the contested case hearing began on the Application at Kapolei Hale, 1000 Uluohia Street, Kapolei, Hawaii. The Applicant submitted Exhibits "A1" through "A31," which were accepted into the record by the Planning Commission. See Tr. 6/22/09, 29:2-13. The Applicant presented its first two witnesses: Brian Takeda, who was qualified as an expert in the field of urban and regional planning, and Hari Sharma ("Sharma"), who was qualified as an expert in the field of geotechnical and geo-environmental engineering. Id. at 33:5-8; 234:7-12. Intervenors offered, and the Planning Commission received into the record, Exhibits "B1" and "B4." Id. at 81:6-11; 226:14-15.

20. On June 24, 2009, the Planning Commission resumed the contested case hearing on the Application at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii. The examination of Sharma was completed. The Applicant presented its third witness Joseph R. Whelan ("Whelan").

21. On June 29, 2009, Intervenors filed a Motion to Dismiss the Application, contending that the 2008 FEIS did not cover the entire 200.622-acre site and therefore, ENV's Application had to be dismissed.

22. On July 1, 2009, the Planning Commission resumed the contested case hearing on the Application at Kapolei Hale, 1000 Uluohia Street, Kapolei, Hawaii. The examination of

Whelan was completed. The Applicant presented its fourth and fifth witnesses: Richard Von Pein, who was qualified as an expert in the field of landfill design and geotechnical engineering, and Frank Doyle, Chief of the Division of Refuse, City and County of Honolulu. See Tr. 7/1/09, 93:2-8; 176:4-9. Applicant offered, and the Planning Commission accepted for the record, Exhibit "A32." Id. at 168:16-17.

23. On July 2, 2009, the Planning Commission resumed the contested case hearing on the Application at the City Council Chambers, Third Floor, 530 South King Street, Honolulu, Hawaii. The Applicant offered no further witnesses and concluded its case-in-chief. See Tr. 7/2/09, 4:15-17. Intervenors began their case-in-chief and presented the following seven witnesses: Abbey Mayer; Josiah Hoohuli; William J. Aila, Jr.; Daniel Banchiu; Cynthia Rezentes; Maeda Timson; and Apo. The Applicant offered, and the Planning Commission received into the record, Exhibits "A33" and "A34." Id. at 32:20-25; 240:7-13. Intervenor offered, and the Planning Commission received into the record, Exhibit "B5." Id. at 185:21-23. Other documents were referenced by the Planning Commission and the parties as Exhibits "B2" through "B3." Intervenors rested their case. Id. at 279:15.

24. On July 6, 2009, Applicants filed a Memorandum in Opposition to Intervenors' Motion to Dismiss the Application.

25. On July 8, 2009, the Planning Commission resumed the contested case hearing on the Application at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii. Applicant presented David M. Shideler as a rebuttal witness, who was qualified as an expert in archaeology and historical cultural resources. See Tr. 7/8/09, 11:15-21. Applicant offered, and the Planning Commission received into the record, Exhibits "A35," "A36," and "A37." Id. at 8:25-9:5, 65:14-22, 68:6-13. Intervenors made their witness, Apo,

available for additional questions by Commissioner Beadie Dawson. The examination of Apo was completed.

26. On July 8, 2009, the Planning Commission also heard and denied Intervenors' Motion to Dismiss the Application on the grounds that the Planning Commission does not have jurisdiction to consider the sufficiency of the 2008 FEIS and that Intervenor Hanabusa had previously filed the appropriate matter contesting the sufficiency in State circuit court. The Planning Commission scheduled decision-making for the Application on July 31, 2009, at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii. Id. at 110:15-25; 111:1-5, 20-21.

EXHIBITS AND WITNESSES

27. The Applicant offered, and the Planning Commission received into the record, Exhibits "A1" to "A37," without objection.

28. Intervenors offered, and the Planning Commission received into the record, Exhibits "B1," "B4," and "B5," without objection.

29. The Applicant called the following witnesses: Brian Takeda, who was qualified as an expert in the field of urban and regional planning; Hari Sharma, who was qualified as an expert in the field of geotechnical and geo-environmental engineering; Joseph R. Whelan; Richard Von Pein, who was qualified as an expert in the field of landfill design and geotechnical engineering; Frank Doyle; and David M. Shideler, who was qualified as an expert in the field of archaeology and historical cultural resources.

30. Dr. Sharma prepared a report entitled "Engineering Report for Landfill Expansion; Waimanalo Gulch Sanitary Landfill," dated March 12, 2008, which is Exhibit "A29." See Tr. 6/22/09, 235:4-25.

31. Intervenors called the following witnesses: Abbey Mayer; Josiah Hoohuli; William Aila, Jr.; Daniel Banchiu; Cynthia Rezentes; Maeda Timson; and Todd Apo. Intervenors did not move to qualify any of these persons as expert witnesses.

32. Intervenors Ko Olina Community Association, Colleen Hanabusa, and Maile Shimabukuro did not testify and did not submit any written testimony during the contested case hearing.

33. Mr. Doyle testified that the Applicant will begin in 2010 efforts to identify and develop a new landfill site to supplement WGSL. See Tr. 7/1/09, 251:18-24.

34. Mr. Doyle also testified that it would take more than seven years to identify and develop a new landfill site. Id. at 260:16-22; 261:3-22.

POST-HEARING SUBMISSIONS BY THE PARTIES

35. On July 17, 2009, Applicant filed the Department of Environmental Services, City and County of Honolulu's Post-Hearing Brief and the Department of Environmental Services, City and County of Honolulu's Proposed Findings of Fact, Conclusions of Law, and Decision and Order; and Certificate of Service.

36. On July 17, 2009, Intervenors filed the Post Hearing Brief of Intervenors, Certificate of Service and Intervenors' Ko Olina Community Association, Colleen Hanabusa and Maile Shimabukuro Proposed Findings of Fact and Conclusions of law and Decision and Order, and Certificate of Service.

37. On July 29, 2009, Applicant filed that certain Department of Environmental Services, City and County of Honolulu's (1) Response to Post-Hearing Brief of Intervenors and (2) Exceptions to Intervenors' Proposed Findings of Fact, Conclusions of Law, and Decision and Order; Declaration of Gary Y. Takeuchi; Exhibits "1" – "3"; and Certificate of Service.

38. On July 29, 2009, Intervenors filed that certain Reply Brief of Intervenors, Certificate of Service.

PROPOSAL FOR SPECIAL USE PERMIT

39. A special use permit is being sought for the continued use of the Property as a landfill. See Application at 1-1. The 107.5-acre portion of the Property currently used as a landfill is proposed to be expanded by the remaining approximately 92.5 acres. Id. Of the approximately 92.5 acres in the expansion area, approximately 37 acres will be utilized for landfill cells. See Exhibit "A1" at 3-1, 4-4, 11-1. In addition, the expansion area will include the development of landfill-associated support infrastructure, including drainage, access roadways, a landfill gas collection and monitoring system, leachate collection and monitoring systems, stockpile sites, a public drop-off center, and a landfill gas-to-energy system and other related features. Id.; see also Application at Part I.

40. The SUP will cover the entire Property. See Application at Part I.

DESCRIPTION OF THE PROPERTY

41. The Property is owned by the City and County of Honolulu ("City") and operated by Waste Management of Hawaii, Inc ("Waste Management"). See Tr. 7/1/09, 179:4-8.

42. The state land use district designation for the Property is Agricultural District. See DPP Recommendation at 1; Application at Planning Division Master Application Form.

43. The existing City zoning district for the Property is AG-2, General Agricultural District. See Application at Planning Division Master Application Form; DPP Recommendation at 1.

44. The Ewa Development Plan recognizes the existing landfill. See Exhibit "A5"; DPP Recommendation at 1.

45. Existing uses of the property are landfill and open space. See DPP Recommendation at 2.

46. Elevations at the Property range from a low of 70 feet above mean sea level (msl) to 940 feet (msl) in the northern portion. Except for areas of fill, the steep-sloped valley contains dryland grasses and an abundance of rock outcrops. See DPP Recommendation at 8.

47. The area is fairly dry. According to an on-site rain gauge, located at the weather station, the average rainfall at WGSL is approximately 15 inches per year. See Application at 2-27; DPP Recommendation at 9.

48. The soil found at the Property consists primarily of Rock Land (rRK) with small amounts of Stony Steep Land (rSY). See Application at 2-30.

49. According to the Agricultural Lands of Importance ("ALISH") to the State of Hawaii system, the Property is not classified as Prime Agricultural Land, Unique Agricultural Land or Important Agricultural Lands. See Figure 8-2 of Exhibit "A1."

50. The University of Hawaii Land Study Bureau overall master productivity rating for the Property is "E," which indicates very poor crop productivity potential. See Application at 2-31.

51. The Federal Emergency Management Agency, Flood Insurance Rate Map, identifies the landfill property as within "Zone D," an area in which flood hazards are undetermined, but possible. See Figure 5-9 of Exhibit "A1."

52. The Property is not located within the Special Management Area. See Figure 8-3 of Exhibit "A1."

SURROUNDING USES

53. Surrounding uses to the Property include the Hawaiian Electric Company Kahe Power Plant to the west, single-family dwellings and the Ko Olina Resort to the south, and vacant lands to the north and east. See Figure 7-3 of Exhibit "A1."

54. Farrington Highway is located south of the Property. Id.

55. The region east of Property comprises the Makaiwa Hills development, which is scheduled for development. See Tr. 6/22/09, 64:6-8; Figure 7-3 of Exhibit "A1." WGSL has been in operation since 1989. See Tr. 7/1/09, 179:9-10. In 2008, the Makaiwa Hills parcel was rezoned for single family, mixed and apartment use by Ordinance 8-26, Bill 47 (2008). See Exhibit "A36."

56. The Makaiwa Hills developer's intention, according to its Final EIS dated October 2007 (the "Makaiwa Hills EIS"), is to proceed with development from makai (south) proceeding in a mauka (north) direction, as well as proceeding from east to west. See Tr. 6/22/09, 167:6-25. The Makaiwa Hills EIS indicates that construction of the western portion of its development closest to WGSL will not proceed until 2015. Id. at 167:25-168; Exhibit "A37" at p. 4-60.

57. WGSL plans to initiate closure of the existing landfill cells in the area nearest Makaiwa Hills' proposed residences prior to 2015. See Tr. 6/22/09, 168:1-8; 188:17-25, 189:1-14. In particular, cell E2 and portions of cells E1, E3, and several other MSW cells (labeled Closure Sequence "A" in Exhibit "A12") are anticipated to be covered, capped, and closed by 2012. See Exhibit "A12"; Tr. 6/24/09, 91:7-92:1.

58. There is a ridgeline between Makaiwa Hills and WGSL. See Tr. 6/22/09, 191:12-18. The area of Makaiwa Hills nearest to WGSL's landfill cells in the proposed

expansion area is identified as open space on the Makaiwa Hills property and will not be developed. Id. at 191:4-8; Exhibit "A11."

59. The current landfill access road proceeds up to the scalehouse, past the ash cells, veers due west to the west side of the Property, and travels up the western side of the Property and into the proposed expansion area. See Tr. 6/24/09, 89:5-16. This course takes the road away from the eastern boundary of the Property and away from Makaiwa Hills. Id.

60. Waste Management documents and responds to complaints received about the operations of WGSL. Id. at 100:9-101:3. Waste Management received and investigated six complaints in 2007, three complaints in 2008, and three complaints to date in 2009. Id. at 101:4-7.

61. Daniel Banchiu, general manager of JW Marriott, Ihilani ("Marriott"), testified for Intervenors at the July 2, 2009 hearing on the Application. See Tr. 7/2/09, 99:1-13. The Marriott operates a hotel at the Ko Olina resort. Id. at 99:21-24. He testified that he is aware of view and odor complaints from his guests but that the Marriott has not notified Waste Management about any complaints. Id. at 100:14-101:12; 110:1-10. He also testified that guests complained of views of a smokestack in the distance. On cross-examination, however, he admitted that he has never been to the landfill and that the smokestack could be located at some other facility--perhaps a facility with a smokestack. Id. at 106:1-25; 107:1-12. WGSL does not have a smokestack, but the Kahe Power Plant, which is adjacent to the Property, does. See Exhibit "A1" at p. 5-93.

STABILITY, CONTROLLED BLASTING AND BERMS

62. Pursuant to federal and state regulations governing landfills, a seismic hazard evaluation was performed to determine seismic slope stability of the landfill. See Tr. 6/22/09 at

238:21-239:5. Consistent with accepted industry practice, the Project was analyzed for a design earthquake of magnitude 7.0, with an acceleration of 0.25 G. Id. at 240:1-9.

63. Under the Resource Conservation and Recovery Act ("RCRA"), Subtitle D, Seismic Design Guidance document, the acceptable displacement of landfills due to a seismic event is 12 inches. Id. at 248:25-249:13. The seismic deformation analysis of the design for the expanded landfill showed that seismic deformations were six inches or less, meeting the seismic stability criteria. Id. at 249:14-23.

64. The use of controlled blasting at the Property, which is very common in many landfill excavations, will not affect the stability of WGSL because the imparted energy of controlled blasting is so small and significantly less than 0.1 G. Id. at 240:12-23; 250:3-16; 253:3-7. Monitoring probes installed by the Hawaiian Electric Company near the western Property boundary to measure vibrations from controlled blasting efforts at the currently permitted landfill did not detect any measurable readings. See Tr. 6/22/09, 252:1–15.

65. In order to alleviate community concerns about controlled blasting, a blast test program will be implemented at the Property, wherein distance, velocity, and frequencies transmitted by controlled blasting will be monitored. Id. at 251:7-16; 252:16-253:2. According to Dr. Hari Sharma, if the controlled blasting affects the landfill or any of the structures nearby, adjustments will be made. Id. at 251:7-16. There are no concerns regarding stability during the blast test program itself. Id. at 251:17-19.

66. A slope stability study was also prepared for the proposed Project. Id. at 244:2-4; 250:15-17. The proposed design meets the required factors of safety of 1.3 and 1.5 for short-term and long-term conditions, respectively. Id. at 245:18-246:11.

67. The impact of accumulated leachate on stability was also studied. According to Dr. Sharma and Richard Von Pein, even under extreme circumstances of leachate accumulation, using worst case scenarios that have never been experienced, the landfill would remain stable. See Tr. 6/24/09, 61:2-24; Tr. 7/1/09, 170:16-25, 171:1-15.

68. Whenever new cells are designed, a seismic deformation analysis and slope stability analysis must be performed to determine how the design impacts the existing cells. See Tr. 6/24/09, 9:19-23.

69. Berms are included in the design for several reasons, including for diversion of the surface water to make sure leachate is contained within the landfill and to create airspace while ensuring stability. See Tr. 6/22/09, 236:18-237:2; Tr. 6/24/09, 24:13-20; Tr. 7/1/09, 100:12-15.

70. A small Ash Toe Berm was a part of the original design for WGSL. See Tr. 7/1/09, 142:12-15; 142:21-143:3. The Ash Toe Berm was expanded in 2005 to address a small area where the factor of safety was less than 1.5. Id. at 142:17-20.

71. The E1 and West Berms were a part of the 2002 design for the 14.9-acre landfill expansion. Id. at 168:19-170:1; Exhibit "A32."

72. The West Berm will be extended further into the canyon under the proposed design for the expansion. See Tr. 6/22/09, 237:3-23; Tr. 6/24/09, 36:25-38:11.

STORM WATER AND LEACHATE

73. Leachate is rain water that falls on open landfill cells. See Tr. 7/1/09, 14:11. The bottom of the individual landfill cell is contoured to direct leachate to a low point ("sump") and has a multi-layered composite liner system. Id. at 15:4-13; 101:2-25; 102:1-4; Exhibit "A1" at Figure 4-3. Within the sump is a permanent riser that contains a pump, which pumps the

leachate in a hard pipe up to the surface, where it is then pumped into a tank for disposal at a wastewater treatment facility. Id. at 15:4-13, 17:12-15. The wastewater treatment facility accepts the leachate for treatment after determining it meets the requirements of the wastewater treatment facility's own permits and would not violate the Clean Water Act. Id. at 18:6-15; Tr. 6/22/09, 144:7-19, 147:2-5. Each of the leachate sumps is equipped with an automated pump that activates at a preset level below the compliance level. Id. at 105: 9-12. There is an alarm that lets Waste Management know if the pump is no longer functioning. Id. at 105:13-16. In addition, Waste Management physically monitors the sumps. Id. at 105:13-16; 16:23-17:2.

74. Drainage for the Property is intended to capture storm water and divert it around the landfill if it originates off site (surface run-on) or into the existing sedimentation basin if it originates onsite (surface run-off). Id. at 13:16-25; Tr. 6/22/09, 119:17-25. The sedimentation basin is designed to allow storm water to settle so that dissolved solids that come off the landfill can settle out in that basin. See Tr. 7/1/09, 77:21-24. The water is eventually discharged to the ocean subject to State of Hawaii Department of Health ("DOH") permitting requirements under the national pollution discharge elimination system ("NPDES"). Id. at 77:19-78:6. A third-party company takes samples to ensure compliance with certain discharge limits. Id. at 78:7-79:5. In addition, DOH inspects Waste Management's ditches and slopes. Id. at 78:7-15.

75. Leachate does not come into contact with storm water. Id. at 76:21-23. The storm water or surface water system is separate from the leachate collection system. Id. at 76:25-77: 8; 97:15-98:8.

76. Groundwater in the area of the Property is monitored for leachate contamination. Id. at 98:12-17.

GAS COLLECTION AND CONTROL SYSTEM AND EPA NOTICE OF VIOLATION

77. On April 4, 2006, the Environmental Protection Agency ("EPA") issued a Notice of Violation to WSGL, which included the late installation of a landfill gas collection and control system (the "GCCS") and alleged violations of reporting requirements. Id. at 19:3-8; Appendix B, Volume II of III, of Exhibit "A1." Both issues were resolved by August 2005. Tr. 7/1/09, 19:3-8. There are currently 40 gas wells at the Property. Id. at 22:18-25.

78. The GCCS collects landfill gases that are formed from the decomposition of the waste material. The gas is burned off at the onsite flare pursuant to a DOH-issued air quality permit. Id. at 23:6-11.

79. In installing the GCCS, elevated temperatures above the EPA's standard operating temperature of 131° Fahrenheit were discovered at WGSL. See Tr. 7/1/09, 112:7-10; 113:25-114:2. Waste Management has submitted a demonstration to the EPA establishing that WGSL can be safely operated at higher than the standard operating temperatures. Id. at 112:11-15.

80. The EPA Notice of Violation is pending resolution of two outstanding issues that evolved from the Notice of Violation: the temperature issue and a monetary settlement. Id. at 106:2-13.

81. The EPA has not issued any notice of violation for the elevated temperatures at WGSL. See Tr. 6/24/09, 21:18-22:1. There is no evidence that there has ever been, or that there is currently, a landfill fire at WGSL. See Tr. 7/1/09, 108:8-14. If there was combustion at WGSL, Waste Management would implement its contingency plan, including turning off the gas wells in the area of the fire, thereby depriving the combustion area of needed oxygen, which is standard procedure for handling landfill oxidation events. Id. at 107:8-25; 108:1-7.

TRAFFIC

82. A traffic impact report ("TIR") was prepared for the Project. See Tr. 6/22/09, 51:6-17; Appendix I of Exhibit "A1." The TIR analyzes the amount of existing traffic transiting Farrington Highway on both the eastbound and westbound approaches, as well as the volume of traffic entering and coming out of the Property. Id.

83. The TIR concluded that even with the expansion of the landfill, the volume of traffic would not be expected to increase dramatically. Traffic going in and out of the landfill is less than approximately one percent of the total volume of traffic in the region. See Tr. 6/22/09, 51:18-24.

ARCHAEOLOGICAL AND CULTURAL RESOURCES

84. An *Archaeological Inventory Survey, Waimānalo Gulch Landfill Expansion*, 2008 ("AIS") and a *Cultural Impact Assessment (Draft), Waimānalo Gulch Landfill Expansion*, 2008 ("CIA") were prepared for the Property. See Appendices G and H of Exhibit "A1," respectively.

85. One historic property, State Inventory of Historic Properties ("SIHP") # 50-80-12-6903, was identified by the study. See AIS (Appendix G of Exhibit "A1") at 45. SIHP# 50-80-12-6903 consists of three large upright boulders potentially utilized as trail or boundary markers. Id.

86. Applicant proposes to address SIHP# 50-80-12-6903 within a mitigation/preservation plan to be reviewed and accepted by the State Historic Preservation Division, Department of Land and Natural Resources, State of Hawaii ("SHPD"). See Tr. 6/22/09, 49:21-50:5; Exhibit "A3." Specifically, Applicant has proposed to temporarily relocate the upright stones to Battery Arizona, and return the upright stones as close as possible to their current locations after the landfill has been closed. See Tr. 6/22/09 at 49:5-20; Exhibit "A3."

87. SHPD has reviewed Applicant's proposed mitigation and determined that there is no effect to historic properties, as stated in a letter from Nancy McMahon, Deputy State Historic Preservation Officer of SHPD, to David Tanoue, Director of DPP, dated April 2, 2009. See Tr. 6/22/09, 49-20-51:1; Exhibit "A4."

88. No native Hawaiian customary and traditional rights or practices at the Property were identified. See CIA (Appendix "H" of Exhibit "A1") at 79.

PURPOSE AND NEED

89. According to Joseph Whelan, as of March 16, 2009, there was approximately 12 month of landfill airspace capacity remaining in the municipal solid waste ("MSW") portion of the current SUP area, and approximately 24 months of landfill airspace capacity remaining in the ash portion of the current SUP area. See Tr. 6/24/09, 81:22-82:6; 83:1-14.

90. On December 1, 2004, the City Council adopted Resolution No. 04-349, CD1, FD1, which selected the Property as the site for the City's landfill. See Exhibit "A20."

91. The proposed expansion of the landfill within the Property is needed because WGSL is a critical part of the City's overall integrated solid waste management efforts. See Tr. 7/1/09, 181:4-8.

92. Continued availability of WGSL is required as a permit condition to operate H-POWER and to engage in interim shipping of waste, for cleanup in the event of a natural disaster, and because there is material that cannot be combusted, recycled, reused, or shipped. Id. at 181:9-18; 182:2-4, 10-17; 197:2-22.

93. Therefore, a landfill is currently necessary for proper solid waste management, the lack of which would potentially create serious health and safety issues for the residents of Oahu. See Application at 2-6.

94. WGSL is the only permitted public MSW facility on the island of Oahu and the only permitted repository for the ash produced by H-POWER. Id. at 181:20-183:4.

95. WGSL is a critical portion of the City's overall Integrated Solid Waste Management Plan ("ISWMP"), which looks at all of the factors that make up solid waste management, including reuse and recycling, the H-POWER facility, and landfilling for material that cannot be recycled or burned for energy. Id. at 178:10-18; 181: 7-18. The ISWMP is required by State law and approved by DOH after public comments. Id. at 182:18-183: 25. One theme of the ISWMP is to minimize landfill disposal. Id. at 184:1-3.

96. Currently, approximately 1.8 million tons of waste is produced on Oahu per year. This does not include material deposited at the PVT Landfill. Id. at 179:11-23. Approximately, 340,000 tons of MSW in 2006, and approximately 280,000 tons of MSW in 2008, were landfilled at WGSL. Id. at 179:16-17. These amounts fluctuate based on such things as recycling and the economy. Id. at 179:18-19. Approximately 170,000 to 180,000 tons of ash from the H-POWER facility is deposited at WGSL each year. Id. at 179:24-25; 180:1-4.

97. Other items that cannot be recycled or burned at H-POWER are deposited at WGSL, such as screenings and sludge from sewage treatment plants, animal carcasses, tank bottom sludge, contaminated food waste that cannot be recycled, and contaminated soil that is below certain toxicity levels. Id. at 180:10-21.

98. The WGSL Oversight Advisory Committee consists of citizens primarily from the leeward communities, who meet periodically to discuss concerns with Waste Management and the Applicant regarding WGSL operations. Id. at 184:9-18.

99. The Community Benefits Advisory Committee advises the City on the spending of money for grants and improvements throughout the Waianae Coast. In fiscal year 2008, there

was approximately $2 million appropriated in the City budget, and for fiscal year 2009, approximately $2.5 million, for this program. Id. at 184:19-25, 185:1-7.

100. The City is actively reducing waste volume that is directed to the landfill. The H-POWER plant is expanding and its capacity is expected to increase by an additional 300,000 tons of MSW per year by late 2011 or early 2012. Id. at 185:8-25. The expanded H-POWER facility will be able to burn items that the current facility cannot and which are therefore currently being sent to the landfill. Id. at 186: 17-25, 187: 1-12. The City is in the process of completing the full implementation of its island-wide, curbside recycling program by May 2010. Id. at 186:7-13. The City has a program of community recycling bins to encourage schools to recycle cardboard, as well as plastic bottles and cans. Id. at 187:13-18. The City is currently in the process of procuring a new green waste recycling facility that will accept food waste and sewage sludge. Id. at 188:22-25. The City has a facility at the Sand Island Wastewater Treatment Plant that turns bio-solids into fertilizer pellets, with the goal of reusing 100 percent of the material for such uses as golf course fertilizer. Id. at 189:5-18. The City is also requesting technology demonstration proposals to explore alternate technologies. Id. at 194:11-25. ENV has looked at these technologies, like plasma arc and gasification, and to date they are not ready in the size the City needs, and are only demonstration technologies. Id. at 192:8-25; 193:1-25; 194:1-10.

101. By 2012, when H-POWER's third boiler is expected to be operational, the City, through its various solid waste management programs, expects to divert eighty (80) percent of the waste stream, with the remaining twenty (20) percent being landfilled at WGSL. Id. at 201:9-16. Id. at 195: 4-8.

102. In order to ensure there will be no cessation of waste disposal at the Property, construction of a new cell in the expansion area to be used when the capacity of the currently permitted cells is exhausted would need to begin on or around November 1, 2009, due to the amount of time that it takes for cell construction, liner placement, forming, etc. See Tr. 6/24/09, 84:8-20. Before construction can begin, an operating permit is required from DOH. Because the DOH operating permit can only be processed after a SUP or boundary amendment is granted, and given the time it takes to process the operating permit, the SUP or boundary amendment must be granted in August or September of 2009 so that construction can be timely started. See Tr. 6/24/09, 99:11-23.

STATE AND COUNTY LAND USE LAW AND REGULATIONS

103. The Project complies with the guidelines as established by the Planning Commission. See Tr. 6/22/09, 68:3-13; Application at 2-1 through 2-28.

104. The Project is consistent with various provisions of the Hawaii State Plan. See Tr. 6/22/09, 69:4-6; Application at 2-2 through 2-8.

105. The Project is consistent with the energy functional plan. GSL is a generator of naturally occurring methane and other landfill gases, and these gases are planned to be recovered by the City for use in the generation of electricity through a landfill gas-to-energy system. See Exhibit "A1" at p. 8-9; Tr. 6/22/09, 70:1-12.

106. The Project is consistent with the recreational functional plan. The Property will be reclaimed for other purposes that include outdoor recreation; for example, Kakaako Waterfront Park once served as a landfill in Honolulu. See Exhibit "A1" at p. 8-10; Tr. 6/22/09, 70:13-71:2.

107. The Project is consistent with the City's general plan. WGSL is an important public facility that will provide a necessary facility to meet future population needs and accommodate growth in the region; WGSL's eventual closure will allow the Property to be reclaimed for other public uses; and WGSL is needed in the event of a natural disaster. See Tr. 6/22/09, 71:8-25; 72:1-25; Exhibit "A1" at pp. 8-25 through 8-28.

108. The Project is consistent with the Ewa Development Plan because the facilities map contained therein designates the landfill with the appropriate symbol. See Tr. 6/22/09, 73:9-74:11; Exhibit "A1" at pp. 8-28 through 8-29.

109. The Project is consistent with City zoning because a landfill is considered a "public use" under the Land Use Ordinance, and "public uses and structures" are deemed permitted uses in every City zoning district, without the need for a permit. See Application at 2-28 through 2-29; Tr. 6/22/09, 75:5-22.

110. The parties stipulated that Commissioner Rodney Kim can participate via telephone in decision making for this contested case.

PROPOSED FINDINGS OF FACT OR CONDITIONS

Any proposed findings of fact or conditions submitted by the Applicant or Intervenors that are not expressly ruled upon by the Planning Commission by adoption herein, or rejected by clearly contrary findings of fact, are hereby denied and rejected.

LABELING OF FINDINGS OF FACT AND CONCLUSIONS OF LAW

To the extent that any of the foregoing Findings of Fact are more properly deemed to be Conclusions of Law, they are incorporated herein as Conclusions of Law. Should any of the following Conclusions of Law be more properly deemed Findings of Fact, they are incorporated herein as Findings of Fact.

CONCLUSIONS OF LAW

The Planning Commission hereby concludes as follows:

1. The Planning Commission has jurisdiction to hold public hearings and make recommendations on all proposals to adopt or amend the general plan, development plans and zoning ordinances, and to approve special use permits for unusual and reasonable uses within agricultural and rural districts other than those for which the district is classified in accordance with the RPC. Section 6-1506(b), Revised Charter of the City and County of Honolulu 1973 (2000 Edition); Hawaii Revised Statutes Section 205-6(a).

2. Hawaii Revised Statutes Section 91-10(5) provides that:

> [T]he party initiating the proceeding shall have the burden of proof, including the burden of producing evidence as well as the burden of persuasion. The degree or quantum of proof shall be a preponderance of the evidence.

The Applicant has the burden of proof to show by a preponderance of the evidence that the Application meets the provisions of Section 2-45 of the RPC.

3. The Applicant seeks a new State Special Use Permit. Chapter 2, Subchapter 4 of the RPC sets forth the rules applicable to State Special Use Permits. Section 2-45 of the RPC provides as follows:

> Test to be applied. Certain "unusual and reasonable" uses within agricultural districts other than those for which the district is classified may be permitted. The following guidelines are established as guidelines in determining an "unusual and reasonable" use:
>
> (a) Such use shall not be contrary to the objectives sought to be accomplished by the state land use law and regulations.
>
> (b) That the desired use would not adversely affect the surrounding property.
>
> (c) Such use would not unreasonably burden public agencies to provide public roads and streets, sewer, water, drainage and school improvements, and police and fire protection.
>
> (d) Unusual conditions, trends, and needs have arisen since the district boundaries and regulations were established.

(e) That the land upon which the proposed use is sought is unsuited for uses permitted in the district.

4. Based on the findings set forth above, the Planning Commission concludes that the Applicant's request for a new State Special Use Permit (a) is not contrary to the objectives sought to be accomplished by the state land use law and regulations; (b) would not adversely affect surrounding property as long as operated in accordance with governmental approvals and requirements, and mitigation measures are implemented in accordance with the Applicant's representations as documented in the 2008 FEIS; and (c) would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage and school improvements, or police and fire protection. The Planning Commission further concludes that the same unusual conditions, trends, and needs that existed at the time the original Special Use Permit was granted continue to exist and that the land on which WGSL is located continues to be unsuited for agricultural purposes.

5. The Planning Commission concludes that the Applicant has met its burden of proof with respect to the provisions set forth in Section 2-45 of the RPC.

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Conclusions of Law, it is the Decision and Order of the Planning Commission to DENY Intervenors' Motion to Dismiss Application. It is the further Decision and Order of the Planning Commission to APPROVE Applicant's Special Use Permit Application File No. 2008/SUP-2 ("2008/SUP-2"), for a new SUP for the existing and proposed expansion of WGSL, located at Tax Map Key Nos. 9-2-3: Parcels 72 and 73, totaling approximately 200.622 acres, until capacity as allowed by the State Department of Health is reached, subject to the following conditions:

1. On or before November 1, 2010, the Applicant shall begin to identify and develop one or more new landfill sites that shall either replace or supplement the WGSL. The Applicant's effort to identify and develop such sites shall be performed with reasonable diligence, and the Honolulu City Council is encouraged to work cooperatively with the Applicant's effort to select a new landfill site on Oahu. Upon the selection of a new landfill site or sites on Oahu, the Applicant shall provide written notice to the Planning Commission. After receipt of such written notice, the Planning Commission shall hold a public hearing to reevaluate 2008/SUP-2 and shall determine whether modification or revocation of 2008/SUP-2 is appropriate at that time.
2. The Applicant shall continue its efforts to use alternative technologies to provide a comprehensive waste stream management program that includes H-POWER, plasma arc, plasma gasification and recycling technologies, as appropriate. The Applicant shall also continue its efforts to seek beneficial reuse of stabilized, dewatered sewage sludge.
3. The Applicant shall provide, without any prior notice, annual reports to the Planning Commission regarding the status of identifying and developing new landfill sites on Oahu, the WGSL's operations, and Applicant's compliance with the conditions imposed herein. The annual reports also shall address the Applicant's efforts to use alternative technologies, as appropriate, and to seek beneficial re-use of stabilized, dewatered sewage sludge. The annual reports shall be submitted to the Planning Commission on June 1 of each year subsequent to the date of this Decision and Order.

4. Closure Sequence "A" for the existing landfill cells at WGSL as shown on Exhibit "A12" must be completed, and final cover applied, by December 31, 2012.

5. WGSL shall be operational only between the hours of 7:00 a.m. and 4:30 p.m. daily, except that ash and residue may be accepted at the Property 24-hours a day.

6. The Applicant shall coordinate construction of the landfill cells in the expansion area and operation of WGSL with Hawaiian Electric Company, with respect to required separation of landfill grade at all times and any accessory uses from overhead electrical power lines.

7. The operations of the WGSL under 2008/SUP-2 shall be in compliance with the requirements of Section 21-5.680 of the Revised Ordinances of the City and County of Honolulu 1990, to the extent applicable, and any and all applicable rules and regulations of the State Department of Health.

8. The Planning Commission may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

9. Enforcement of the conditions to the Planning Commission's approval of 2008/SUP-2 shall be pursuant to the Rules of the Planning Commission, including the issuance of an order to show cause why 2008/SUP-2 should not be revoked if this Commission has reason to believe that there has been a failure to perform the conditions imposed herein by this Decision and Order.

10. The Applicant shall notify the Planning Commission of termination of the use of the Property as a landfill for appropriate action or disposition of 2008/SUP-2.

IT IS ALSO the Decision and Order of the Planning Commission to APPROVE the withdrawal of Special Use Permit File No. 86/SUP-5 upon 2008/SUP-2 taking effect and that all conditions previously placed on the Property under Special Use Permit File No. 86/SUP-5 shall be null and void.

Dated at Honolulu, Hawaii, this 4th day of August, 2009.

PLANNING COMMISSION
CITY AND COUNTY OF HONOLULU

By ____________________
KARIN HOLMA, Chair

By ____________________
RODNEY KIM, Vice Chair

By ____________________
BEADIE K. DAWSON, Member

By ____________________
HAROLD J. DIAS, JR., Member

By ____________________
VICKI GAYNOR, Member

By ____________________
ANDREW M. JAMILA, JR., Member

By (RECUSED)
JOHN S. KAOPUA, III, Member

By
KERRY M. KOMATSUBARA, Member

By
JAMES C. PACOPAC, Member

FILE NOS. 2008/SUP-2 (RY) AND 86/SUP-5, IN THE MATTER OF THE APPLICATION OF DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU - FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

BEFORE THE PLANNING COMMISSION
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

In the Matter of the Application of DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU For a New Special Use Permit to supersede Existing Special Use Permit to allow a 92.5-acre Expansion and Time Extension For Waimanalo Gulch Sanitary Landfill, Waimanalo Gulch, Oahu, Hawaii, Tax Map Key Nos. (1) 9-2-003:072 and 073	FILE NO. 2008/SUP-2 (RY) AND 86/SUP-5 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the **FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER** was served upon the following by certified mail, return receipt requested, postage prepaid, on August 4, 2009:

COLLEEN HANABUSA
220 South King Street, Suite 1230
Honolulu, Hawaii 96813

Attorney for Intervenors
KO OLINA COMMUNITY ASSOCIATION,
COLLEEN HANABUSA, AND MAILE SHIMABUKURO

GARY Y. TAKEUCHI, ESQ.
JESSE K. SOUKI, ESQ.
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Department of the Corporation Counsel
530 South King Street
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Attorneys for Applicant
DEPARTMENT OF ENVIRONMENTAL SERVICES,
CITY AND COUNTY OF HONOLULU

DATED: Honolulu, Hawaiʻi, August 4, 2009.

Patricia J. Kalapa
PATRICIA J. KALAPA
Secretary-Reporter
Planning Commission

Meeting of the Planning Commission
Transcripts
July 31, 2009

The Planning Commission held a meeting on Friday, July 31, 2009, at 3:05 p.m. at the City Council Committee Meeting Room, Second Floor, 530 South King Street, Honolulu, Hawaii. Chair Karin Holma presided.

PRESENT:	Karin Holma, Chair Rodney Kim, Vice Chair (by telephone conference call) Beadie K. Dawson Harold J. Dias, Jr. Vicki Gaynor Andrew M. Jamila, Jr. Kerry Komatsubara James Pacopac
RECUSED:	John S. Kaopua III
COMMISSION STAFF:	Patty Kalapa, Secretary-Reporter
CORPORATION COUNSEL:	Winston Wong

ORIGINAL

LAND USE COMMISSION
STATE OF HAWAII
2009 AUG 11 P 1:55

CONTESTED CASE HEARING
EWA—STATE SPECIAL USE PERMIT APPLICATION—2008/SUP-2(RY)
AND WITHDRAWAL OF STATE SPECIAL USE PERMIT NO. 86/SUP-5(RY)
WAIMANALO GULCH SANITARY LANDFILL

HOLMA: I'd like to call the meeting to order. We have State Special Use Permit Application 2008/SUP-2 and withdrawal of the State Special Use Permit number 86/SUP-5, Waimanalo Gulch Sanitary Landfill. First, I want to confirm for the record that the evidentiary portion of the contested case was closed on July 8, 2009. We are here for decision making today. I want to thank all of the commissioners for all of their hard work and attending. We thank the parties for their submittals which we've all read.

What we have passed out at this point is a draft Findings of Fact or a discussion draft Findings of Fact, Conclusions of Law and Decision and Order. We are currently waiting for Commissioner Kim who is on the mainland. It's being faxed to him at this point. We're waiting for him to receive that. I ask the Commissioners to take a look at this draft.

HOLMA: It got there. We should wait ten more minutes, five more minutes? He hung up on me. He was going to pick it up. Hi Rodney, can you hear us?

KIM: Hello.

GAYNOR: Rodney.

KIM: I'm here.

GAYNOR: Can you hear us?

EXHIBIT L

KIM: I can hear you.

HOLMA: Rodney, can you talk again?

GAYNOR: Can you hear us now Rodney?

KIM: Okay. Loud and clear.

HOLMA: Did you receive the fax? Rodney, did you get the fax?

KIM: I've got the fax in front of me.

HOLMA: In order to start discussion on this, we need to have a motion, so I'm going to ask for a motion to approve the applicant's Special Use Permit application file SUP 2008-2 for the new SUP permit with conditions and based on the Findings of Fact and Conclusions of Law that are stated in this draft Decision and Order.

KOMATSUBARA: I'd like to make a motion to approve the circulated draft of the Findings of Fact, Conclusions of Law and Decision and Order. I suggest that maybe the efficient way of doing this is I'll make the motion, if someone can second the motion, and then if we can enter into a discussion, then I'll explain the general terms and how it was put together in the analysis and speak in favor of the motion.

DIAS: Second.

HOLMA: Okay. Discussion.

KOMATSUBARA: This was done at 5:30 this morning. What I basically did after going through all of these days of hearings, it was my feeling that we should approve the application for a new Special Use Permit. So what I did is I followed, in essence, the draft submitted by the applicant, the Department of Environmental Services. However, I've made certain changes. I'd like to describe the proposal that is contained herein. It's really, in essence, similar to the draft put together by ENV, but not identical to the draft put together by ENV.

The best way is, perhaps, if we can go to page 24. This is the meat and the guts of the proposed Findings of Fact, Conclusions of Law and Decision and Order. The first thing that this thing does is it denies intervenors' motion to dismiss the application for the new SUP. It approves the applicant's Special Use Permit application file number 2008/SUP-2 with certain changes and conditions. The first thing that should be noted is that the new SUP covers the entire 200.622 acres which is sought by the applicant. That really is the existing 107.5 and the approximately 92.5 expansion. The term or the length of the new SUP shall be until the Waimanalo Gulch landfill reaches its capacity as compared to a definite time period of "X" number of years.

DAWSON: It's an open date, Kerry?

KOMATSUBARA: That's correct...until it reaches its capacity. I'll explain why. This is, in essence, what is being asked for by the applicant. However, the draft that I put together is different. It has different conditions, different terms that they have to comply with in order to maintain this SUP. The most important one, I think, is that the applicant must, on or before November 1, 2009...I'm sorry on or before 2010 begin to identify and develop one or more new landfill sites that shall either replace or supplement the Waimanalo Gulch Sanitary Landfill. In addition to that, the applicant's effort to identify such sites shall be performed with reasonable diligence. But it must start to commence the process on or before November 1, 2010.

The Honolulu City Council is encouraged to work cooperatively with the applicant's effort. Upon the selection of a new site or sites, the applicant shall notify this Commission of its new selection. This Commission is obligated, at that point in time, to hold a public hearing to re-evaluate the SUP that would be granted hereunder and to determine whether a modification or a revocation of the SUP granted hereunder is appropriate at that time.

The applicant shall continue with its efforts to use alternate technologies to manage and reduce Honolulu's landfill waste. An annual report shall be provided to this Commission regarding the applicant's efforts to diligently move forward to find a new site, and also regarding the applicant's effort to find alternative technologies. That is a major change from what is included in ENV's proposal. ENV's proposal does not have this condition, nor is there any obligation for them to give us annual reports regarding the status of their effort to find a new site.

I also added in here that the operation of the landfill shall be in compliance with Section 21-5.680 of the Revised Ordinance of Honolulu to the extent that it's applicable and to all applicable rules and regulations of the Department of Health. I also added in here into this proposed draft that the enforcement of these conditions shall be pursuant to the powers granted to this Commission under its rules, including the issuance of an order to show cause why the new SUP granted hereunder should not be revoked if this Commission has reason to believe that there has been a failure to perform the conditions imposed herein this Decision and Order.

In addition, this new SUP, upon its taking effect, the existing SUP shall be withdrawn. In essence, that's the description of what this proposal is. It's similar to what ENV has proposed, but it's not identical. Now I'd like to explain how I came up with this draft and what the thought process behind it is.

First of all, for me, I believe that the applicant has met its burden of proof to show by preponderance of the evidence that the application for a new SUP meets the requirements of Section 2-45 of our Rules. Section 2-45 allows unusual and reasonable uses within the agricultural district, and they list five guidelines to make this determination. I believe the applicant has met these guidelines, and the granting of a Special Use Permit is appropriate and in compliance with the law.

I think perhaps a very common sense approach to this whole thing...I found and I believe that they've demonstrated that we need a landfill. I think it's pretty obvious; we need a landfill on this island for us to move forward. This community...it would not be in the community's best interest if we were to close this landfill before we find another landfill. The existing SUP which terminates on November 1 of this year, in my opinion, the answer is not to terminate that or to allow that existing SUP to lapse until we have a new SUP in place. Although there's been discussion regarding new technologies, shipping, etc., I think it's pretty clear that these solutions will not be on board by November 1 of this year. It seemed to be that it's not only reasonable, but it's necessary for us to continue with the operations of the Waimanalo Gulch Sanitary Landfill.

The intervenors have complained about the fairness of having Oahu's only landfill being located in their back yards since the mid 1980s. They alleged that they have been misled many times that the gulch would be closed, and they point to the numerous times when the expiration dates of the previous SUPs were extended. To me, clearly simply having a specified end date certain on the previous SUPs has not resulted in the closure of the Waimanalo Gulch. We have been down this road many times. I think it's been extended three or four times. In my opinion, simply putting on a new closure date to this new SUP will not lead to the closure of the Waimanalo Gulch Sanitary Landfill. I believe that the focus should not be on picking a date. The focus should be on how do we get the City to select a new site because you're not going to close this landfill until you find another site. I don't think it's in the interest of our community not to have a landfill. That is the problem. I don't know if there is going to be a totally workable solution, but how do you get the City to select a new site? That's the...before they used to say $64,000 and I guess that's not worth much now, but that's the big question here.

I went through the rules of our Commission and our responsibilities. First of all, I think it's very clear that it's not our Commission's responsibility to select a new site for the landfill. Really what we're doing in this process is merely to, in essence, do a land use process evaluation of a permit. Now, surely we can through the granting or denial of a permit add conditions so on and so forth, but we do not have the power to, for example, impose a fine or levy sanctions if the conditions are not met. The only power we really have is the power to revoke under our rules. But then we come back to the same question. If our only power is to revoke, how meaningful is it when everyone knows that we still need this landfill because, you know, we're not going to throw the baby out with the bath water. That's the biggest problem.

What I've tried to do in drafting this proposal is to try to change the focus, so rather than picking a date certain like it was done before, you know, you can pick a date fifteen years out and in the fourteenth year people start reporting and focusing upon whether you're going to close this landfill. If you don't have a new landfill site ready, then you just extend it another five years. That's what happened in the past.

So what this proposal does is, it says look, you can keep it open until your full, until you've reached the capacity, but you have an obligation starting from next year to start looking for a new site. Now whether you take it seriously or not, that's up to you because we have the power to call you in, and you have the obligation now to report every year on what you're doing to find a new landfill site whether it be a replacement site or supplemental site or both. We have the right to hold a hearing at any time we feel that you are not...the applicant is not in good faith moving forward with reasonable diligence to find a new site.

This, in essence, is our attempt to keep the applicant true to its representation in the hearing that it will begin in 2010 its effort to identify and develop a supplemental landfill site on Oahu. The problem still remains how to enforce this condition, how to enforce this promise. This is my good faith effort as to how to answer the question. I don't know if there's ever going to be a simple answer, but I think going down the old path of just putting a date in there has not worked. We put it down three or four times before and every time we came to that date, it was extended further and further. I can understand why people feel that they have been deceived because this keeps on being extended. I personally don't want to go down that road. I'd rather not say it's a certain date only to know that when we reach that date we're going to extend it further until we find the new site. I'd rather focus on an effort to find a new site and have the applicant come in every year and explain to us where you are in your effort to find a new site. That's what this proposal does.

DAWSON: I want to thank Kerry for the work that he has put into this proposal on his own without any encouragement from anywhere else. This is a difficult decision and I'm very, very grateful to you. I think that what you have proposed could be a great solution, the beginning of a solution, but I think that there are some refinements that need to be put in there. First of all...and this is addressed to our Commission. We have

ADJOURNMENT

The meeting adjourned at 4:25 p.m.

I certify that the foregoing is a true and correct transcription of the proceedings, prepared to the best of my ability, of the hearing held on July 31, 2009.

Patricia J. Kalapa
PATRICIA J. KALAPA, Secretary-Reporter

August 5, 2009
Date

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU

For A New Special Use Permit To Supersede Existing Special Use Permit To Allow A 92.5-Acre Expansion And Time Extension For Waimānalo Gulch Sanitary Landfill, Waimānalo Gulch, O`ahu, Hawai`i, Tax Map Key: 9-2-03: 72 And 73

DOCKET NO. SP09-403

ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER WITH MODIFICATIONS

ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER WITH MODIFICATIONS

On July 31, 2009, the City and County of Honolulu Planning Commission ("Planning Commission") met at the City Council Committee Meeting Room, Second Floor, in Honolulu, Hawai`i, to consider a new special use permit application ("Application") filed by the Department of Environmental Services, City and County of Honolulu ("Applicant"), to supersede the existing special use permit to allow a 92.5-acre expansion and time extension for the

EXHIBIT M

existing Waimānalo Gulch Sanitary Landfill ("WGSL") located at Waimānalo Gulch, O`ahu, Hawai`i, Tax Map Key: 9-2-03: 72 and 73 ("Property").

After due deliberation and consideration of the record in this matter, the Planning Commission recommended approval of the Application (County Special Use Permit File No. 2008/SUP-2), subject to ten conditions, and further recommended approval of the withdrawal of County Special Use Permit File No. 86/SUP-5 upon 2008/SUP-2 taking effect, and that all conditions previously placed on the Property under County Special Use Permit File No. 86/SUP-5 shall be null and void.

On August 11, 2009, the Land Use Commission ("LUC") received the decision and a portion of the record of the Planning Commission's proceedings on the Application.

On August 20, 2009, the LUC received the remaining portion of the record.

On September 10, 2009, the Ko Olina Community Association, Colleen Hanabusa, and Maile Shimabukuro ("Intervenors") filed a Motion To Intervene.[1]

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[1] At the September 24, 2009 meeting the LUC recognized Ms. Hanabusa, Ms. Shimabukuro and the Ko Olina Community Association as intervenors in the LUC's proceeding based upon their intervenor status before the Planning Commission and therefore denied the Motion to Intervene as moot.

On September 17, 2009, the Applicant filed a Memorandum In Opposition To Intervenors Ko Olina Community Association, Colleen Hanabusa, And Maile Shimabukuro's Motion To Intervene.

On September 21, 2009, Intervenors filed a Motion To Deny Petition.

On September 23, 2009, the Applicant filed a Memorandum In Opposition To Intervenors Ko Olina Community Association, Colleen Hanabusa And Maile Shimabukuro's Motion To Deny Petition.

On September 24, 2009, the LUC conducted a meeting on the Application in the Kaua`i Meeting Room, Sheraton Waikiki Hotel, in Honolulu, Hawai`i. Gary Y. Takeuchi, Esq., and Jesse K. Souki, Esq., appeared on behalf of the Applicant. Colleen Hanabusa, Esq.; Ken Williams; and Maile Shimabukuro were present on behalf of the Intervenors. Bryan C. Yee, Esq., and Abbey Mayer were also present on behalf of the State Office of Planning, and Don Kitaoka, Esq., and Robert Bannister were present on behalf of the Department of Planning and Permitting.[2] At the meeting, both the Applicant and Intervenors provided

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[2] Pursuant to section 92-3, HRS, the LUC heard public testimony from Fred Dodge; William Aila, Jr.; City Council Chair Todd Apo; Mel Kahele; Abbey Mayer; and Robert Bannister. The LUC also received written testimony from Ka`eo Gouveia; Nobuko Maria Mori; Ali Mahmoodi; Laura Kay Rand; Mario Beekes; Lorita Nordlum; Paulette Dibibar; Clara Batongbacal; Elizabeth Dunne; Kalena Hew Len; Kamaki Kanahele; Ralph F. Harris; James C. Banigan III; Greg Nichols; Howard Perry, Jr.; and Michael Nelson. At the meeting, the LUC denied Intervenors' Motion To Deny Petition.

oral argument in support of their respective positions on the Application. Following discussion, a motion was made and seconded to grant the Application subject to (1) the withdrawal of County Special Use Permit File No. 86/SUP-5 and LUC Docket No. SP87-362, provided that the existing conditions therein shall be incorporated to the extent they are consistent with and applicable to this decision and are not duplicative of any additional conditions imposed hereafter; (2) the conditions as recommended by the Planning Commission in County Special Use Permit File No. 2008/SUP-2 (LUC Docket No. SP09-403) and modified as appropriate; and (3) the following additional conditions: municipal solid waste shall be allowed at the WGSL up to July 31, 2012, provided that only ash and residue from H-POWER shall be allowed at the WGSL after July 31, 2012; the Honolulu City Council through the City Administration shall report to the public every three months on their efforts regarding the continued use of the WGSL, including any funding arrangements that are being considered by the City Council and the City Administration; and the City Council and the City Administration shall have a public hearing every three months to report on the status of their efforts to either reduce or continue the use of the WGSL. By a vote of 5 ayes, 3 nays, and 1 absent, the motion carried.

The LUC, upon consideration of the Planning Commission's Findings Of Fact, Conclusions Of Law, And Decision And Order, the oral arguments of the parties and the record and files herein, and good cause existing and upon motion duly passed by the LUC,

HEREBY ORDERS that the LUC shall adopt the Planning Commission's Findings Of Fact, Conclusions Of Law, And Decision And Order as its own Findings Of Fact, Conclusions Of Law, And Decision And Order, subject to the following conditions:

1. The Applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, Commission on Water Resource Management, and Board of Water Supply for all onsite and offsite improvements involving access, storm drainage, leachate control, water, well construction, and wastewater disposal.

2. In accordance with Chapter 11-60.1 "Air Pollution Control," Hawai`i Administrative Rules, the Applicant shall be responsible for ensuring that effective dust control measures during all phases of development, construction, and operation of the landfill expansion are provided to minimize or prevent any visible dust emission from impacting surrounding areas. The Applicant shall develop a dust control management plan that identifies and addresses all activities that have a potential to generate fugitive dust.

3. That the City and County of Honolulu shall indemnify and hold harmless the State of Hawai`i and all of its agencies and/or employees for

any lawsuit or legal action relating to any groundwater contamination and noise and odor pollution relative to the operation of the landfill.

4. On or before November 1, 2010, the Applicant shall begin to identify and develop one or more new landfill sites that shall either replace or supplement the WGSL. The Applicant's effort to identify and develop such sites shall be performed with reasonable diligence, and the Honolulu City Council is encouraged to work cooperatively with the Applicant's effort to select a new landfill site on Oahu. Upon the selection of a new landfill site or sites on Oahu, the Applicant shall provide written notice to the Planning Commission. After receipt of such written notice, the Planning Commission shall hold a public hearing to reevaluate 2008/SUP-2 (SP09-403) and shall determine whether modification or revocation of 2008/SUP-2 (SP09-403) is appropriate at that time. The Planning Commission shall make a recommendation to the Land Use Commission.

5. The Applicant shall continue its efforts to use alternative technologies to provide a comprehensive waste stream management program that includes H-POWER, plasma arc, plasma gasification and recycling technologies, as appropriate. The Applicant shall also continue its efforts to seek beneficial reuse of stabilized, dewatered sewage sludge.

6. The Applicant shall provide, without any prior notice, annual reports to the Planning Commission and the Land Use Commission regarding the status of identifying and developing new landfill sites on Oahu, the WGSL's operations, and Applicant's compliance with the conditions imposed herein. The annual reports also shall address the Applicant's efforts to use alternative technologies, as appropriate, and to seek beneficial re-use of stabilized, dewatered sewage sludge. The annual reports shall be submitted to the Planning Commission and Land Use Commission on June 1 of each year subsequent to the date of this Decision and Order.

7. Closure Sequence "A" for the existing landfill cells at WGSL as shown on Exhibit "A12" must be completed, and final cover applied, by December 31, 2012.

8. WGSL shall be operational only between the hours of 7:00 a.m. and 4:30 p.m. daily, except that ash and residue may be accepted at the Property 24 hours a day.

9. The Applicant shall coordinate construction of the landfill cells in the expansion area and operation of WGSL with Hawaiian Electric Company, with respect to required separation of landfill grade at all times and any accessory uses from overhead electrical power lines.

10. The operations of the WGSL under 2008/SUP-2 (SP09-403) shall be in compliance with the requirements of Section 21-5.680 of the Revised Ordinances of the City and County of Honolulu 1990, to the extent applicable, and any and all applicable rules and regulations of the State Department of Health.

11. The Planning Commission may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.

12. Enforcement of the conditions to the Planning Commission's approval of 2008/SUP-2 (SP09-403) shall be pursuant to the Rules of the Planning Commission, including the issuance of an order to show cause why 2008/SUP-2 (SP09-403) should not be revoked if the Planning Commission has reason to believe that there has been a failure to perform the conditions imposed herein by this Decision and Order.

13. The Applicant shall notify the Planning Commission and Land Use Commission of termination of the use of the Property as a landfill for appropriate action or disposition of 2008/SUP-2 (SP09-403).

14. Municipal solid waste shall be allowed at the WGSL up to July 31, 2012, provided that only ash and residue from H-POWER shall be allowed at the WGSL after July 31, 2012.

15. The Honolulu City Council through the City Administration shall report to the public every three months on the efforts of the City Council and the City Administration in regard to the continued use of the WGSL, including any funding arrangements that are being considered by the City Council and the City Administration.

16. The City Council and the City Administration shall have a public hearing every three months to report on the status of their efforts to either reduce or continue the use of the WGSL.

APPROVED AS TO FORM

Diane Erickson
Deputy Attorney General

LAND USE COMMISSION
STATE OF HAWAI`I

By
RANSOM PILTZ
Chairperson and Commissioner

By (Excused)
VLADIMIR PAUL DEVENS
Vice-Chairperson and Commissioner

By Reuben SF Wong
REUBEN S. F. WONG
Vice-Chairperson and Commissioner

By (Nay)
KYLE CHOCK
Commissioner

By

THOMAS CONTRADES
Commissioner

By (Nay)

LISA M. JUDGE
Commissioner

By

DUANE KANUHA
Commissioner

By (Nay)

NORMAND LEZY
Commissioner

By

NICHOLAS W. TEVES, JR.
Commissioner

Filed and effective on:

October 22, 2009

Certified by:

ORLANDO DAVIDSION
Executive Officer

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The

DEPARTMENT OF ENVIRONMENTAL
SERVICES, CITY AND COUNTY OF
HONOLULU

For A New Special Use Permit To
Supersede Existing Special Use Permit To
Allow A 92.5-Acre Expansion And Time
Extension For Waimānalo Gulch Sanitary
Landfill, Waimānalo Gulch, O`ahu,
Hawai`i, Tax Map Key: 9-2-03: 72 And 73

DOCKET NO. SP09-403

ORDER ADOPTING THE CITY
AND COUNTY OF HONOLULU
PLANNING COMMISSION'S
FINDINGS OF FACT,
CONCLUSIONS OF LAW, AND
DECISION AND ORDER WITH
MODIFICATIONS

ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER WITH MODIFICATIONS

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Order Adopting the City and County of Honolulu Planning Commission's Finding of Fact, Conclusions of Law and Decision and Order was served upon the following by either hand delivery or depositing the same in the U. S. Postal Service by regular or certified mail as noted:

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CERT.
COLLEEN HANABUSA, Esq.
220 So. King St. , Suite 1230
Honolulu, Hawaii 96813

Dated: October22, 2009 , Honolulu , Hawaii.

Orlando Davidson, Executive Officer

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI`I

In The Matter Of The Application Of The	)	DOCKET NO. SP09-403
	)	
DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU	)	ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER WITH MODIFICATIONS
For A New Special Use Permit To Supersede Existing Special Use Permit To Allow A 92.5-Acre Expansion And Time Extension For Waimānalo Gulch Sanitary Landfill, Waimānalo Gulch, O`ahu, Hawai`i, Tax Map Key: 9-2-03: 72 And 73	)	

ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER WITH MODIFICATIONS

This is to certify that this is a true and correct copy of the document on file in the office of the State Land Use Commission, Honolulu, Hawaii.

October 22 2009 by

Executive Officer

Orlando Davidson, Executive Officer

MARK J. BENNETT 2672
Attorney General of Hawai'i

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Attorneys for Appellee State of Hawai'i
Land Use Commission

1ST CIRCUIT COURT
STATE OF HAWAII
FILED
2010 SEP 21 AM 8:38
N. ANAYA
CLERK

IN THE CIRCUIT COURT OF THE FIRST CIRCUIT

STATE OF HAWAI'I

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU, Appellant, vs. LAND USE COMMISSION, STATE OF HAWAI'I; COLLEEN HANABUSA, MAILE SHIMABUKURO, AND KO OLINA COMMUNITY ASSOCIATION, Appellees.	CIVIL NO. 09-1-2719-11 (Agency Appeal) ORDER AFFIRMING LAND USE COMMISSION'S ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER DATED OCTOBER 22, 2009 WITH MODIFICATIONS Date: July 14, 2010 Judge: Hon. Rhonda A. Nishimura

ORDER AFFIRMING LAND USE COMMISSION'S ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER DATED OCTOBER 22, 2009 WITH MODIFICATIONS

On July 14, 2010, the appeal of DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU, from the above-referenced Order of Appellee, State of

EXHIBIT N

Hawai'i, Land Use Commission, came on for hearing before the Honorable Rhonda A. Nishimura. Gary Y. Takeuchi and Jesse Souki, Deputy Corporation Counsel, appeared on behalf of DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU, Colleen Hanabusa, Esq. appeared on behalf of KO OLINA COMMUNITY ASSOCIATION, COLLEEN HANABUSA and MAILE SHIMABUKURO, and Deputy Attorney General Russell A. Suzuki appeared on behalf of the State of Hawai'i, Land Use Commission. The Court having reviewed and considered the briefs, oral arguments and the files herein, being fully advised in the premises, and good cause appearing therefor,

HEREBY ORDERS, ADJUDGES AND DECREES that:

1. The Department of Environmental Services, City and County of Honolulu, is an "aggrieved person" within the meaning of Hawai'i Revised Statutes section 91-14(a), and the Court will apply the standards set forth in Hawai'i Revised Statutes section 91-14.

2. Condition No. 14 of the Land Use Commission's Order Adopting The City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order Dated October 22, 2009 is AFFIRMED.

3. Condition No. 15 and Condition No. 16 of the Land Use Commission's Order Adopting The City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order Dated October 22, 2009 are modified to delete references to the Honolulu City Council and the city administration and substitute the same with the Department of Environmental Services, City and County of Honolulu.

4. In all other respects the Land Use Commission's Order Adopting The City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order Dated October 22, 2009 is AFFIRMED.

DATED: Honolulu, Hawai'i, SEP 2 0 2010.

RHONDA A. NISHIMURA

FIRST CIRCUIT COURT SEAL STATE OF HAWAII

JUDGE OF THE ABOVE-ENTITLED COURT

APPROVED AS TO FORM:

COLLEEN HANABUSA, ESQ.
Attorney for KO OLINA COMMUNITY ASSOCIATION,
COLLEEN HANABUSA, and MAILE SHIMABUKURO

APPROVED AS TO FORM:

GARY Y. TAKEUCHI, ESQ.
JESSE SOUKI, ESQ.
Deputy Corporation Counsel
Attorneys for DEPARTMENT OF ENVIRONMENTAL
SERVICES, CITY AND COUNTY OF HONOLULU

<u>DEPARTMENT OF ENVIRONMENTAL SERVICES vs. LAND USE COMMISSION, STATE OF HAWAI'I; COLLEEN HANABUSA, MAILE SHIMABUKURO, AND KO OLINA COMMUNITY ASSOCIATION</u>, CIVIL NO. 09-1-2719-11, ORDER AFFIRMING LAND USE COMMISSION'S ORDER ADOPTING THE CITY AND COUNTY OF HONOLULU PLANNING COMMISSION'S FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER DATED OCTOBER 22, 2009 WITH MODIFICATIONS

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD/SHWB

June 4, 2010

S0604JKF

CERTIFIED MAIL NO. 7009 2250 0004 4923 0522
RETURN RECEIPT REQUESTED

Mr. Timothy Steinberger, Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street
Kapolei, Hawaii 96707

CERTIFIED MAIL NO. 7009 2250 0004 4923 0515
RETURN RECEIPT REQUESTED

Mr. Joseph Whelan
Operations Manager
Waste Management of Hawaii, Inc.
92-460 Farrington Highway
Kapolei, Hawaii 96707

DEPARTMENT OF
ENVIRONMENTAL SVCS
'10 JUN -7 P2:15

Dear Messrs. Steinberger and Whelan:

SUBJECT: Solid Waste Management Permit No. LF-0182-09
Waimanalo Gulch Sanitary Landfill, Kapolei, Oahu, Hawaii

The Department of Health (DOH), Solid and Hazardous Waste Branch (SHWB) received your modification/renewal application for the subject facility on December 14, 2009, additional submittals received November 3 and November 25, 2009, and other approved documents.

The application has been reviewed and approved. The enclosed permit is issued under the provisions of Hawaii Revised Statutes, Chapter 342H, and the Hawaii Administrative Rules, Title 11, Chapter 58.1, "Solid Waste Management Control."

Please note that your permit contains the following sections:

- Part I – Standard Conditions
- Part II – Special Conditions I
  - Section A. General Facility Conditions
  - Section B. Construction and Maintenance of the MSW Landfill Cells and Ash Monofill Cells
  - Section C. Acceptance Criteria

EXHIBIT O

Section D.	Provisions Related to the Operation of the MSW Landfill and Ash Monofill
Section E.	Provisions Related to the Operation of the MSW Landfill
Section F.	Provisions Related to the Operation of the Ash Monofill
Section G.	Surface Water Management
Section H.	Perimeter Gas Management
Section I.	Leachate Management/Groundwater and Leachate Monitoring
Section J.	Closure and Post-Closure Requirements
Section K.	Recordkeeping and Reporting Requirements

Part II, Special Conditions II, Materials Drop-Off Facility

The permittee(s) may appeal to the Director of Health any of the conditions to the subject permit. The appeal must be in writing and submitted to the Director of Health within twenty (20) days after the receipt of this notice.

HRS 342H-14 states that unless the submitted documents and other information secured by the DOH from the permittee(s) contain confidential information, such as secret processes or methods of manufacture, they shall be made available for inspection by the public. Please notify the SHWB within twenty (20) days of the receipt of this letter if you would like to make a claim of confidentiality. Otherwise, your entire application will be available for public inspection.

If you have any questions regarding this letter, please contact Mr. Steven Chang of the Solid and Hazardous Waste Branch at (808) 586-4226.

Sincerely,

FOR Chiyome Leinaala Fukino, M.D.
Director of Health

Enclosure: Permit No. LF-0182-09

c: Department of Health, Clean Water Branch (w/o enclosure)

PERMITTEES:
OWNER:
City and County of Honolulu
OPERATOR:
Waste Management of Hawaii
92-460 Farrington Highway
Kapolei, Hawaii 96707

PERMIT NUMBER: LF-0182-09
DATE OF MODIFICATION: June 4, 2010
EXPIRATION DATE: June 3, 2015
COUNTY: Honolulu
LATITUDE/LONGITUDE: 21°4"N/158°7'35"W
PROJECT: Waimanalo Gulch Sanitary Landfill
Page: 1 of 61

SOLID WASTE MANAGEMENT PERMIT

This solid waste management permit modification and renewal is issued under the provisions of Chapters 342H, "Solid Waste Pollution" Hawaii Revised Statutes (HRS), and Title 11, Chapter 58.1, "Solid Waste Management Control" Hawaii Administrative Rules (HAR). The above-named permittee(s) is hereby authorized to construct and to operate the facility shown on the application received December 14, 2009, additional submittals received November 3 and November 25, 2009, and other documents on file with the Department of Health (DOH) as follows:

TO CONSTRUCT AND OPERATE: The Waimanalo Gulch Sanitary Landfill facility. The facility is comprised of a 58.9-acre landfill for municipal solid waste (MSW) and a 20-acre ash monofill. The facility may be expanded to include a residential convenience center with recycling drop-off boxes, and additional 36.9 acres for waste (MSW and ash) disposal.

The facility may accept MSW and ash for disposal until the date specified in the associated Special Use Permit or until the landfill/monofill reaches its permitted capacity, whichever comes first. The peak daily disposal rate for MSW shall not exceed 3,500 tons per day. The daily disposal rate for ash shall not exceed 400 tons per day. In the event that an additional boiler (3rd boiler) is constructed and operational at H-Power, the ash monofill disposal rate shall not exceed 600 tons per day.

The MSW landfill is comprised of existing cells 1, 2, 3, and 4a and new cells 4b, 4c, 5 through 11, and E1 to E4. The proposed expansion includes additional MSW disposal cells E5, E6, and E7. The ash monofill is comprised of existing cells 1 through 4 and new cells 5 through 8. The proposed expansion includes an additional ash monofill in cell E8. Conceptually designed E9 may be used as either a MSW cell or an ash cell. Existing cells are those that received waste prior to October 9, 1993.

The facility will also include a residential materials drop-off facility (MDOF). The MDOF, to be located near the scalehouse, provides a location for residential generators to drop-off recyclables and mixed waste, away from the active landfill workface. Recyclables includes paper products, plastics, glass, scrap metal, and white good units. No processing shall be performed at the MDOF.

The facility also includes associated components associated with the operation and monitoring of the facility. Components include, but are not limited to, the leachate management system, stormwater management system, perimeter gas monitoring program, groundwater monitoring program, offices, equipment storage and repair areas, and parking. The total acreage of this facility is 200 acres including appurtenant operational uses.

PERMITTEES:
OWNER:
City and County of Honolulu
OPERATOR:
Waste Management of Hawaii
92-460 Farrington Highway
Kapolei, Hawaii 96707

PERMIT NUMBER: LF-0182-09
DATE OF MODIFICATION: June 4, 2010
EXPIRATION DATE: June 3, 2015
COUNTY: Honolulu
LATITUDE/LONGITUDE: 21°4"N/158°7'35"W
PROJECT: Waimanalo Gulch Sanitary Landfill
Page: 2 of 61

IN ACCORDANCE WITH: The permit modification/renewal application and supporting submissions received November 3, 2009, November 25, 2009, and December 14, 2009. Should there be any discrepancies in the aforementioned documents, HAR 11-58.1 and the conditions of this permit shall take precedence.

LOCATED AT: 92-460 Farrington Highway, Kapolei, Oahu, Hawaii.
TMK Nos. 9-2-03:072 and 073

SUBJECT TO: HRS 342H; HAR 11-58.1; and Part I - Standard Conditions, Part II - Special Conditions, Sections A through K, and Special Conditions II, Materials Drop-Off Facility of this permit.

Acceptance of this permit constitutes an acknowledgement and agreement that the holder will comply with all rules, regulations, and orders of the DOH and the conditions precedent to the granting of this permit.

This permit supercedes the Solid Waste Management Permit Number LF-0054-02 issued February 20, 2008, in its entirety.

For DIRECTOR OF HEALTH
State of Hawaii

The solid waste management facility is subject to HRS Chapter 342H, *Solid Waste Pollution,* HRS Chapter 342I, *Special Wastes Recycling,* and HAR Chapter 11-58.1, *Solid Waste Management Control*, HAR Chapter 11-104.1, *Management and Disposal of Infectious Wastes*, and the following conditions:

PART I - STANDARD CONDITIONS

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee(s) and enforceable, pursuant to the authority of HRS §342H. The DOH will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee(s), its agents, employees, servants, representatives, contractors, or subcontractors. If any term or condition of this permit becomes invalid as a result of a challenge to a portion of this permit, the other terms and conditions of this permit shall not be affected and shall remain valid.

2. This permit:

   a. shall not in any manner affect the title of the premises upon which the facility is or will be located;
   b. does not release the permittee(s) from any liability for any loss due to personal injury or property damage caused by, resulting from, or arising out of the design, installation, construction, operation, maintenance, closure, or post-closure of the facility;
   c. does not release the permittee(s) from compliance with other applicable statutes and regulations of the State of Hawaii or with applicable federal or local laws, regulations, or ordinances;
   d. in no way implies or suggests that the State of Hawaii, or its officers, agents, or employees assumes any liability, directly or indirectly, for any losses due to personal injury or property damage caused by, resulting from, or arising out of the design, construction, operation or maintenance of the facility; and
   e. shall not constitute nor be construed to be an approval of the design, construction, operation, maintenance, closure and post-closure of the facility beyond the regulatory requirements mandated by HRS §342H and HAR §11-58.1.

3. Issuance of this permit does not preclude the responsibility of the permittee(s) to obtain any and all necessary approvals and permits from the appropriate federal, state, and local agencies, including zoning clearances, prior to the start of operations. If there are any discrepancies between these permit conditions and other

federal, state, or local laws, regulations, ordinances, or requirements, the permittee(s) shall notify the DOH in writing.

4. Unless the submitted documents and other information secured by the DOH from the permittee(s) contain confidential information, such as secret processes or methods of manufacture, they shall be made available for inspection by the public (HRS §342H-14). The permittee(s) shall be responsible for identifying, in writing, the specific information asserted to be confidential. The DOH shall review the assertion made by the permittee(s) and determine if confidentiality is indeed warranted.

5. This permit is valid only for the specific processes and operations applied for and indicated in the submitted application and additional submissions approved by the DOH. Any unauthorized deviation that affects the facility's design, operations or procedures, or which could threaten human health and the environment, from the submitted application, approved drawings, operations manual, and additional submissions or conditions of this permit may constitute grounds for modification, suspension, or revocation of this permit, and/or enforcement action by the DOH. Should there be any discrepancies between the submitted documents and the permit conditions, the permit conditions shall take precedence. A copy of the submitted application and additional submissions shall be maintained at the facility.

6. This permit is non-transferable whether by operation of law or otherwise, either from one location to another, from one solid waste disposal operation to another, or from one person to another without the written approval of the director [HAR §11-58.1-04(e)(2)].

7. This permit shall be kept at or near the construction and operation site for which the permit is issued and shall be available upon request [HAR §11-58.1-04(f)]. A request for a duplicate permit shall be made in writing to the director within ten (10) days after the destruction, loss, or defacement of this permit. A fee of $50 shall be charged and submitted with the request [HAR §11-58.1-04(h)(3)].

8. The permittee(s) shall at all times properly operate and maintain the facility and systems of treatment, process, and control (and related appurtenances), as applicable to the facility, that are installed or used by the permittee(s) to achieve compliance with the conditions of this permit, as required by DOH rules. The facility shall be designed, constructed, and equipped in accordance with best practicable technology so as to operate without causing a violation of applicable rules and regulations.

9. Incident Notification Requirements. The permittee(s) shall notify the DOH, in writing or facsimile, whenever there are incidents such as fire, explosion, or release of regulated material/waste, which could threaten human health or the environment (i.e., air, soil, or surface and subsurface waters). Initial notification may be by phone (586-4226 during regular business hours) or fax (586-7509) and reported within eight (8) hours, whenever possible, and no more than twenty-four (24) hours. The notification report shall be completed and submitted by an Environmental Compliance Officer or other responsible official within seven (7) calendar days (three (3) calendar days for waste disposal facilities, such as landfills and incinerators) and shall include:

    a. name, address, and telephone number of the owner and operator;
    b. name, address, and telephone number of the facility at which the incident occurred;
    c. date, time, and type of incident (i.e., fire, explosion, release, etc.);
    d. name and quantity of material(s) involved;
    e. the extent of injuries, if any;
    f. an assessment of actual or potential hazards to human health or the environment, where this is applicable;
    g. estimated quantity and disposition of recovered and unrecovered material that resulted from the incident;
    h. evaluation of the circumstances that led to the incident;
    i. steps being taken to reduce, eliminate, and prevent recurrence, including an implementation schedule; and
    j. other information or monitoring as required by the DOH

    Notification requirements for releases only apply to releases of a quantity equal or exceeding the reportable quantity (RQ) listed in HAR §11-451.

10. Noncompliance Notification Requirements. If, for any reason, the permittee(s) does not comply with, or will be unable to comply with, any condition or limitation specified in the permit, the permittee(s) shall notify the DOH orally within twenty-four (24) hours followed by a written report within seven (7) calendar days (three (3) calendar days for waste disposal facilities, such as landfills and incinerators) of the verbal notification. The written report shall be completed and submitted by an Environmental Compliance Officer or other responsible official and contain the following information:

    a. description and cause of noncompliance;

b. period of noncompliance, including exact dates and times; and, if not corrected, the anticipated duration that the noncompliance is expected to continue;
c. steps that will be taken to correct the area of noncompliance;
d. steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance, including an implementation schedule; and
e. other information or monitoring as required by the DOH.

The permittee(s) may be subject to enforcement action by the DOH, penalties, or revocation of this permit.

The use of an electronic facsimile device (FAX) for notifications is acceptable. Any data transmission or detailed explanations transmitted shall be accompanied by regular mail submittals. Failure to notify in accordance with this requirement may initiate enforcement action.

11. Monitoring and Recordkeeping Requirements. The permittee(s) shall comply with the following monitoring and recordkeeping requirements:

a. Upon request, the permittee(s) shall furnish all records (e.g., transaction reports, disposal receipts, sampling, and testing results) and plans required by the DOH. The retention period for all records shall be a minimum of five (5) years unless otherwise specified in Standard Conditions, Item 11.b; however, there shall be an indefinite retention period for all records associated with any unresolved enforcement action as determined by the DOH.
b. The permittee(s) shall retain at the facility or other location designated by this permit, records of all monitoring information (including all calibration and maintenance records and all original recordings of monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The retention period shall be a minimum of five (5) years, or longer, as may be specified in the Special Conditions, from the date of the sample, measurement, report, or application unless otherwise specified by DOH rule. The retention period shall be for the life of the facility, through closure and post-closure periods, for waste disposal facilities (such as landfills and incinerators).
c. Records of monitoring information, if applicable, shall include:
   - the date, exact location, and time of sampling or measurements;
   - the person responsible for performing the sampling or measurements;
   - the date(s) analyses were performed;
   - the person responsible for performing the analyses;

- analytical techniques or methods used; and
- results of such analyses.

12. The permittee(s) shall submit complete and detailed plans and reports on existing solid waste management systems and of any proposed addition to, modification of, or alteration of any such systems that affect the facility's operations or procedures, or which could threaten human health and the environment and contain the information requested by the DOH in the form prescribed by the DOH. Any submission for permit modification shall be submitted in accordance with Standard Conditions, Item 13. The plans and reports shall be prepared by a competent person acceptable to the DOH, and at the expense of the permittee(s).

13. Should the permittee(s) decide to modify the permit or continue operation of the solid waste facility beyond the expiration date of the permit, the permittee(s) shall submit a complete permit modification or renewal application at least one hundred eighty (180) days (one year for municipal solid waste landfills) prior to the modification or the date of permit expiration. Any submission for permit modification does not affect these permit conditions until such modification becomes final in accordance with HAR §11-58.1-04, or as approved by the DOH.

14. The director may, in accordance with HRS §342H-6, enter and inspect the facility for the purpose of:

    a. investigating an actual or suspected source of solid waste or other pollution;
    b. ascertaining compliance or noncompliance with any rule, regulation, permit condition, or standard promulgated by the DOH; and
    c. conducting tests in connection therewith (including collecting soil, water, air, ash, and any other material or samples).

    The permittee(s), by accepting this permit, specifically agrees to allow authorized DOH personnel, upon presentation of credentials or other documents as may be required by law, access to the premises. The permittee(s) may conduct testing (including collecting soil, water, air, ash, and any other material or samples) simultaneously.

15. The DOH may require the permittee(s) to conduct sampling and testing to determine the degree of pollution, if any, from the solid waste facility (including soil, water, air, ash, and any other materials or samples).

16. When requested by the DOH, the permittee(s) shall within a reasonable time, as specified by the DOH, furnish any information required by law, which is needed to

determine compliance with the permit. If the permittee(s) becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the DOH, such facts or information shall be submitted or corrected promptly. Upon the written request of the permittee(s), the deadline for submission of information may be extended, if the DOH determines that reasonable justification exists for the extension.

17. If the DOH determines that the permittee(s) has violated or is violating any provision of HRS §342H, HAR §11-58.1, or these permit conditions, the DOH may pursue enforcement action in accordance with HRS §342H-7, *Enforcement*; §342H-9, *Penalties*; §342H-10, *Administrative Penalties*; §342H-11, *Injunctive and other relief*; or any other pertinent rules.

18. The DOH may, on its own motion, modify, suspend, or revoke a permit if, after affording the applicant a hearing in accordance with HRS 91, the DOH determines that any permit condition, rule, or provision of HRS §342H has been violated or that such is in the public interest [HAR §11-58.1-04(d)].

19. If the governor or the director determines that an imminent peril to the public health and safety is, or will be, caused by the disposal of solid waste or any combination of discharges of other waste that requires immediate action, the governor or the director, without a public hearing, may order the permittee(s) to immediately reduce or stop the disposal, discharge, or process, and may take any and all other actions as may be necessary (HRS §342H-8).

20. This permit requires the use of Best Practicable Technology (BPT) for the construction and operation of the facility by the use of design components, monitoring and operational systems in accordance with HAR 11-58.1.

PART II - SPECIAL CONDITIONS

Section A. General Facility Conditions

1. This facility may accept municipal solid waste (MSW) and ash for disposal at the MSW landfill and ash monofill until the date specified in the associated Special Use Permit (SUP) or until the landfill/monofill reaches its permitted capacity, whichever comes first. The permittee(s) shall construct and operate the facility in accordance with HRS 342H; HAR §11-58.1-1; the application received December 14, 2009, additional submissions received November 3 and 25, 2009, and approved subsequent submissions; and the conditions of this permit. Should there be any discrepancies among the aforementioned documents, HRS, HAR and permit conditions shall take precedence.

2. The maximum height of the landfill and its final grading plan shall not be higher than static and seismic stability of the landfill will allow given a static factor of safety of 1.5, no more than 6-inches of deformation, and in conformance with HAR 11-58.1-13(e). The final grades shall be in accordance with Figure 5 of the *Revised Engineering Report for Landfill Expansion*, dated November 24, 2009 prepared by Geosyntec, or approved subsequent submissions. Should there be discrepancies between the approved final grading plan and the aforementioned design standards and regulations, then the design standards and regulations shall take precedence. The permittee(s) shall notify the DOH of any discrepancies.

3. Prior to the placement of waste in the proposed expansion area of cells E5 and E6, the South Extension to the West Berm (West Berm Buttress) shall be fully constructed in accordance with Sheet 25 of the Construction Drawings Cells E5 through E8, Revision 3, dated March 16, 2010, prepared by Geosyntec. Of the proposed expansion area, the permittee(s) may only construct cells E5, E6, E7 and E8, and may only partially fill MSW cells E5 and E6 to elevation 510 feet, msl. The construction of the West Berm extension and filling of MSW cells shall be in accordance with Construction Drawings Cells E5 through E8, Revision 3 dated March 16, 2010, prepared by Geosyntec Consultants, Inc. Further construction of the West Berm or E9 and/or filling of cells E5, E6, E7, E8, E9, and other MSW cells shall not be performed until construction/fill sequencing plans are submitted and DOH approved. These construction/fill sequencing plans shall be submitted at least 60 days prior to scheduled start of construction/filling beyond what was presented in the March 16, 2010 construction drawings.

4. No construction of additional disposal cells or modification of the lateral or vertical extent of disposal cells, shall occur without written approval by the DOH. Any

modification requests shall be submitted in accordance with Standard Conditions, Item 13, at least one (1) year prior to commencement of the proposed construction or modification. The construction and design plans shall be prepared and certified by a professional engineer, with at least five (5) years experience in designing landfills, and registered in the State of Hawaii.

5. A permanent sign shall be posted at the facility entrance identifying the facility, the hours and days of operation, and the name and address of the operator, a telephone number, and other pertinent information.

6. The permittee(s) shall operate the facility during the normal operating hours of 7:00a.m. to 4:30p.m., daily, for acceptance and disposal of MSW in the MSW landfill and 24 hours per day for the acceptance and disposal of ash in the ash monofill. In the event that the facility proposes any waste acceptance and disposal outside normal operating hours, the permittee(s) shall notify the DOH, in writing, of this event. The notification shall be provided at least twenty-four (24) hours in advance of the event. If the event is unanticipated, the permittee(s) shall provide verbal notice of the event within four (4) hours and written notification within eight (8) hours of commencement of the event. A facsimile submission of the notification is acceptable. The written notification shall specify the dates and times affected, the nature and reason for the extended operations, identification of any considerations associated with the extended operations, and controls/procedures that will be implemented to mitigate any adverse impacts of the extended operations.

7. An all-weather access road shall be maintained into and out of the facility site, through the entrance facility and to and from the working area of the landfill.

8. The permittee(s) is responsible for providing measures to control public access in accordance with HAR 11-58.1-15(f). The permittee(s) shall provide and maintain controlled access to the facility in the form of fences and gates along the site perimeter where natural barriers do not provide a means of controlling access. When natural barriers no longer control access effectively, fences and gates shall be provided to meet the requirements of controlled access. All gates shall be kept locked when an attendant is not on duty.

9. Scavenging at the facility by the general public is prohibited.

10. The facility shall have a Site Manager and Environmental Compliance Officer, who shall be knowledgeable of state solid waste laws, regulations, these permit conditions, and the permit application components, including the Site Operations Manual. The permittee(s) shall submit written updates in the event that there are

any changes in the responsibilities or identification of the facility Site Manager or Environmental Compliance Officer.

11. Landfill operations shall be supervised at all times by an onsite individual, who has successfully completed a Manager of Landfill Operations (MOLO) training course conducted by the Solid Waste Association of North America. MOLO training certifications shall be current. Records of such training shall be placed in the operating record.

12. The permittee(s) shall comply with the financial assurance requirements in HAR 11-58.1-18 for closure of the MSW landfill, closure of the ash monofill, post-closure care, and corrective action, if required.

    a. The permittee(s) shall include a copy of the detailed written estimates in the Annual Operating Report, required in Special Conditions, Section K of this permit.
    b. The permittee(s) shall include documentation of financial assurance in the Annual Operating Report, required by Special Conditions, Section K of this permit.

13. Emergency Action Plan. The permittee(s) shall implement the Emergency Action Plan, as provided in the Site Operations Manual.

    a. The permittee(s) shall provide verbal and written notification of incidents to the DOH, in accordance with Standard Conditions, Item 9 of this permit. Incidents shall also include suspected subsurface fires, and be reported based on any of the notification criteria listed in the Emergency Action Plan.

    b. The permittee(s) shall implement Emergency Action Plans for at least the following situations:
        i. Fires (including surface, nearby, incoming waste loads, vehicle/equipment, subsurface, etc.),
        ii. Severe storm (2-year, 24-hour storm or greater, or continued significant rainy conditions over duration of 14 days),
        iii. Earthquake having a magnitude 5.0 or greater that originates from a source within a 100-kilometer (60-mile) radius from the site, or an earthquake having a magnitude 7.0 or greater originating anywhere within the major Hawaiian Islands;
        iv. Hazardous material spills at or above the Reportable Quantity,
        v. Other emergency procedures, and trigger levels, as provided in the Emergency Action Plan.

c. The permittee(s) shall assess, monitor, and maintain the landfill after emergencies that may affect the integrity of the landfill, including, but not limited to, the liner system, leachate collection and control system, surface water management system, and any other affected portions of the landfill. If the acceptance and disposal of waste ceases, the permittee(s) shall submit a written evaluation of whether waste acceptance can resume. The evaluation shall be prepared by a professional engineer registered in the State of Hawaii and the Site Manager, certifying that the landfill and its associated environmental controls are functional, equivalent, or better than required, and that operation of the landfill will not cause a violation of environmental regulations. The evaluation shall also include a description of any findings and corrective actions. The facility may resume acceptance and disposal of waste upon submission of this evaluation to the DOH. The DOH may require additional assessment, monitoring, and corrective actions, as necessary to address the event.

d. In the event of an earthquake having a magnitude 5.0 or greater that originates from a source within a 100-kilometer (60-mile) radius from the site, or an earthquake having a magnitude 7.0 or greater originating anywhere within the major Hawaiian Islands (the triggering event), the facility shall not accept and dispose of waste until a professional engineer registered in the state of Hawaii certifies the integrity and functionality of the landfill and its associated environmental controls, including, but not limited to, the liner system, leachate collection and control system, and surface water management system. In the event of an earthquake having a magnitude between 5.0 and 7.0 (a magnitude less than the triggering event) outside the 100-kilometer (60-mile) radius, the operator or site engineer shall make an immediate assessment to determine if the site should be temporarily shut down.

   i. The permittee(s) shall submit a written evaluation of whether waste acceptance and disposal can continue after a seismic activity as described above. The written evaluation shall include conclusions ascertained from the monitoring system program, required by Special Conditions, Section A, Item 13.d.ii. The evaluation shall be prepared by a professional engineer registered in the state of Hawaii and the Site Manager, certifying that the landfill, or portions of the landfill, and its associated environmental controls:

      (1) Have not been adversely affected by the earthquake and that continued operation of the landfill will not cause a violation of environmental regulations; or

    (2) May have been adversely affected by the earthquake and that waste acceptance should temporarily cease, pending further evaluation and/or correction action.

ii. The permittee(s) shall maintain and monitor the inclinometer system to assess the integrity and functionality of the landfill and its environmental controls, in the event of an earthquake.

    (1) Inclinometers were installed for seismic monitoring in the Ash Toe and E-1 berms to detect and measure the displacement at the landfill base liner in accordance with a *Workplan for Containment System Monitoring Program*, prepared by Geosyntec, and dated July 2, 2008, and approved subsequent submissions.
    (2) For this expansion and the construction of the Western Surface Water Drain System, permittee(s) shall determine and submit construction drawings and procedures for a suitable seismic monitoring system. Construction drawings and procedures shall be provided to the DOH within ninety (90) days of permit issuance.
    (3) The permittee(s) shall comply with the seismic monitoring and reporting requirements in the Workplan for Containment System Monitoring Program.
    (4) The monitoring system program shall be considered part of the Site Operations Manual and implemented as part of this permit. If the evaluation in Special Conditions, Section A, Item 13.d.i indicates that the landfill, or its associated environmental controls, may have been adversely affected by the earthquake, the permittee(s) shall propose and implement additional evaluation methods and corrective actions. The proposal shall also include an implementation and reporting schedule. The permittee(s) may resume waste acceptance and disposal in accordance with Special Conditions, Section A, Item 13.c.

14. Alternate Waste Disposal Option. The permittee(s) shall provide a viable alternate waste disposal option in the event of an emergency, earthquake, or any other event that may preclude the acceptance and disposal of waste at the landfill. The alternate waste disposal option shall meet all applicable federal, state, and local laws and regulations. The option shall be available until assessment of the landfill integrity and environmental controls, such as the liner system, and any associated corrective actions are successfully completed, as required by Special Conditions, Section A, Item 13. The permittee(s) shall submit written updates to the Alternate Waste

Disposal Option, dated March 20, 2008, on an annual basis. The updates shall be included in the Annual Operating Report.

Section B. Construction and Maintenance of MSW Landfill Cells and Ash Monofill Cells

1. The permittee(s) shall maintain the integrity of the liner system and leachate collection and control system as designed and constructed, or implement equivalent or better alternative environmental controls, as approved by the DOH.

    a. Existing MSW landfill cells 1, 2, 3, and 4a (partial) (installed prior to 1991)
        i. The bottom liner and side slope liners consist of a liner system comprised of thirty-six inches of clay soil.
        ii. The drainage layer consists of 12 inches of drain rock.

    b. New MSW landfill cell 4b, in accordance with Site Redevelopment Plans, prepared by SEC, Donahue, dated June 4, 1992.
        i. The bottom liner consists of a 60-mil HDPE liner on top of 24 inches of compacted clay. On top of the 60-mil HDPE liner is a 16-ounce per square foot geotextile.
        ii. The drainage layer consists of 12 inches of drainage gravel, on which a 10-ounce per square yard geotextile is placed.

    c. New MSW landfill cells 4a (partial) and 4c (partial), in accordance with Final Construction Quality Assurance Report, prepared by RUST Environment & Infrastructure, Inc., dated August 12, 1996.
        i. The bottom liner consists of a 60-mil HDPE geomembrane on top of a clay liner of $5x10^{-9}$ cm/sec maximum permeability. A 16-ounce per square yard nonwoven geotextile placed over the geomembrane.
        ii. The drainage layer consists of 12 inches minimum drainage rock, on which a 16-ounce per square yard nonwoven geotextile is placed.

    d. New MSW landfill cell 4c (partial), in accordance with Final Construction Quality Assurance Reports, prepared by RUST Environment & Infrastructure, Inc., dated December 1997.
        i. The bottom liner consists of a 60-mil HDPE geomembrane over a clay liner of $5x10^{-9}$ cm/sec maximum permeability.
        ii. A 16-ounce per square yard nonwoven geotextile over the geomembrane.
        iii. The drainage layer consists of 12 inches of drainage rock, on which a 16-ounce per square yard nonwoven geotextile is placed.

e. New MSW landfill cells 5 through 7, in accordance with Quality Assurance Report – Cell 5 (upper) and Cells 6 and 7 (partial), prepared by Harding Lawson Associates, dated July 8, 1994.
New MSW landfill cells 8 and 9, in accordance with Construction Quality Assurance Remainder of MSW Cells 8 and 4c, and MSW cell 9, prepared by RUST Environment & Infrastructure, Inc., dated December 1997; and Construction Quality Assurance Report for Subcell E-2D, MSW Cells 8 and 9 Remainder, prepared by Earth Tech, Inc., dated February 2006.
New MSW landfill cell 10, in accordance with Construction Quality Assurance Report for Cell 10, prepared by A-Mehr, Inc., dated January 20, 2000.
   i. The bottom liner consists of a 60-mil HDPE geomembrane on top of a clay liner of $5x10^{-9}$ cm/sec maximum permeability.
   ii. A layer of cushioning 16-ounce per square yard geotextile over the geomembrane.
   iii. The drainage layer consists of a minimum of 12 inches of drainage rock, on which another 16-ounces per square yard geotextile is placed.

f. New MSW Cell 11, in accordance with Figure 20, Engineering Report for Grading Plan Modification December 2005, Revision 3, prepared by GeoSyntec Consultants, Inc., dated February 8, 2007.
   i. The bottom liner consists of a 60-mil HDPE geomembrane on top of a clay liner of $5x10^{-9}$ cm/sec maximum permeability.
   ii. A layer of cushioning 16-ounce per square yard geotextile over the geomembrane.
   iii. The drainage layer consists of a minimum of 12 inches of drainage rock, on which another 16-ounces per square yard geotextile is placed.

g. Existing MSW ash monofill cells 1 through 4, in accordance with Construction Quality Assurance Reported for Ash Monofill Base Liner Installation, Phase I, dated March 15, 1990.
   i. The bottom liner and side slope liner consist of a composite liner system comprised of a 60-mil HDPE layer on top of thirty-six inches of clay soil with maximum permeability of $1x10^{-7}$ cm/sec.
   ii. The drainage layer consists of a minimum of 0.2-inch geonet with a 16-ounce geotextile protective layer.

h. New ash monofill cells 5 through 8, in accordance with Final Construction Quality Assurance Reports, prepared by RUST, dated August 14, 1995 and

October 1998. Final Construction Quality Assurance Report Remainder of Ash Cell 7 and Ash Cell 8, prepared by A-Mehr, Inc., dated October 8, 1998.

  i. The alternate bottom liner consists of a 60-mil HDPE layer on top of a minimum one pound per square foot geosynthetic clay liner of maximum permeability of 5x10^{-9} cm/sec.
  ii. The drainage layer consists of a minimum of 0.2-inch geonet with a 16-ounce geotextile protective layer.

i. Lateral expansion cells E-1 and E-2, in accordance with Construction Quality Assurance Reports prepared by A-Mehr, Inc., dated August 2003 and August 2004. Lateral expansion cell E-3 in accordance with the Construction Quality Assurance Report prepared by Earth Tech, Inc., dated May 2007. Details of this system are shown in construction record drawings included in Construction Quality Assurance Reports for Cells E-1 (August 2003, prepared by A-Mehr, Inc.), Cell E-2A (August 2004, prepared by A-Mehr, Inc.), Cell E-2B (November 2004, prepared by Earth Tech, Inc.), Cell E-2C (September 2005, prepared by Earth Tech, Inc.), Cell E-2D (February 2006, prepared by Earth Tech, Inc.), and Cell E-3 (May 2007, prepared by Earth Tech, Inc.).

  i. The base liner consists of 60-mil single-sided textured HDPE geomembrane on top of an internally reinforced geosynthetic clay liner having a maximum permeability of 5x10^{-9} cm/sec.
  ii. The drainage layer consists of 12 inches of drain rock on top of a 16-ounce per square yard cushion geotextile. On top of the drain rock is a 16-ounce per square yard cushion geotextile.

j. The lateral expansion cell E-4 shall be maintained in accordance with the *Project Manual Cell E4 and West Berm (Remainder) Construction*, prepared by GeoSyntec Consultants, Inc., dated December 2006, and specified constructed components identified in the *Construction Quality Assurance Report for Cell E4*, dated January 2008.

  i. Due to the possible presence of groundwater seeps, the permittee(s) shall maintain the underdrain system consisting of gravel-filled trenches excavated into the subgrade. The subdrains shall be maintained in accordance with a letter report by A-Mehr, Inc., Geologic Investigation and Subdrain Design, dated June 3, 2003.
  ii. The base liner consists of 60-mil single-sided textured HDPE geomembrane on top of an internally reinforced geosynthetic clay liner having a maximum permeability of 5x 10^{-9} cm/sec.
  iii. The drainage layer consists of 12 inches of 2-inch minus drain rock on top of a 16 oz/yd^2 cushion geotextile. On top of the drain rock is a

layer of 16 oz/yd^2 cushion geotextile. The operations layer of 24 inches of 2-inch minus crushed rock was placed above the 16 oz/yd^2 geotextile.

iv. The side slopes are lined and do not exceed a slope of two to one (horizontal: vertical). The liner consists of 60-mil single-sided textured HDPE geomembrane on top of a layer of internally reinforced geosynthetic clay liner. The side slopes are not required to have the gravel drainage layer beyond 10 feet from the bottom of the cell. The operations layer on side slopes consists of a minimum of 24 inches of soil material.

2. Lateral expansion cells E5 through E8 shall be constructed in accordance with Geosyntec Consultants, Inc., *Construction Drawings, Cells E5 through E8, Revision 3,* dated March 16, 2010.

   a. Subdrain shall be installed in Cell E5 as a continuation of the subdrain installed in preceding cells E1 through E4, in accordance with Note 9 on Sheet 3 of the construction drawings.
   b. Soil cushion under base HDPE geomembrane shall be 12-inches minimum thickness of on-site soil having a maximum particle diameter of ¼-inch, or as approved by the design engineer.
   c. The base liner shall consist of a primary 60-mil double-sided textured HDPE geomembrane on top of an internally reinforced geosynthetic clay liner (GCL), which overlies a 40-mil double-sided textured HDPE geomembrane backing.
   d. The drainage layer shall consist of minimum 12 inches of gravel (maximum size 1 inch) overlying a 16 oz/yd^2 (minimum) non-woven geotextile cushion. On top of the drainage layer shall be a 10 oz/yd^2 (minimum) non-woven geotextile filter. Over the geotextile filter shall be minimum 24 inches of operations layer, consisting of 2-inch minus soil.
   e. The 12-inch gravel layer is required to extend 10 feet vertically up the side slopes. Beyond this elevation on side slopes the filter geotextile need not be included, and the operations layer can be in contact with the cushion geotextile.
   f. This base liner design shall be used in both the MSW and ash monofill cells.
   g. The operations layer shall be 24-inches of 2-inch minus drain rock having a hydraulic conductivity of at least 1x 10^{-2} cm/sec.
   h. The first layer of solid waste on the bottom and side slopes shall consist of a minimum thickness of 5 to 10 feet of select waste that is screened for the removal of objects having a dimension greater than 24 inches to prevent puncture or displacement damage. As an example, residential waste may be directly placed and spread on the operations layer, visually inspected, and

objects greater than 24 inches shall be removed. The thickness of the select waste layer shall be based on the size/weight of the compactor and as defined in the Site Operations Manual.

  - i. Only tracked, low ground pressure bulldozers or landfill equipment with rubber wheels shall be used on the operations layer. The select waste layer shall not be compacted and a point load compactor shall not be operated on the select waste layer.
  - ii. The permittee(s) shall also comply with the select waste placement procedures provided in the Site Operations Manual.
  - iii. The permittee(s) shall document select waste screening and placement. At a minimum, documentation shall include verification by the Site Manager or Environmental Compliance Officer and photo documentation. The permittee(s) shall maintain a copy of select waste documentation at the facility and submit a copy of the documentation to the DOH upon completion of the select waste layer.

- i. For the ash monofill Cell E8, the permittee(s) shall conduct an evaluation and potentially add additional separation distance between the ash and base liner by increasing the thickness of the operations layer to ensure liner protection from potential elevated ash temperatures. Hydraulic separation shall be provided between the MSW and ash monofill cells. The modified design shall be provided within 60 days after permit issuance.

3. CONSTRUCTION OF WESTERN SURFACE WATER DRAINAGE SYSTEMS.

   - a. The construction of the western bypass channel and temporary drainage system shall be in accordance with the construction drawings, titled *Western Surface Water Drainage Project*, prepared by GEI Consultants, Inc., and dated January 2010. These drawings also contain the construction requirements for the temporary storm water drain system, which will include installing a 36-inch HDPE pipe along the bottom of Cell E6 under the base liner and construction of a temporary diversion berm in Cell E7.
   - b. During construction and prior to disabling of existing storm water drain conveyances, permittee(s) shall pre-stage 6-mil or thicker geomembrane sheet, pumps, and any other material and equipment in quantities and sizes needed to control and direct storm water that flows into Cell E6, E4 and 11.
   - c. The installation of the temporary storm drain piping shall be completed and tested prior to start of cell liner construction.
   - d. Work shall be sequenced to maintain storm drain capability to handle 24-hour, 25-year storm flows at any given time.

4. CONSTRUCTION OF THE LANDFILL SURFACE WATER DRAINAGE SYSTEM.

   a. The landfill surface water drainage system consists of the Eastern Surface Water Drainage System, which covers the surface water drainage on the eastern side of the landfill, and the surface water management plan, which is an annual report of the surface drainage configurations in place at that time. For the western side of the landfill, the surface drainage configuration will need to be changed as the configuration of the west berm and MSW fill levels change. Surface drainage configuration shall be reported annually in the Surface Water Management Plan.

   b. The Eastern Surface Water Drainage System shall be constructed in accordance with drawings titled *Eastern Surface Water Drainage Project, 2011 Partial Final Closure*, dated October 2009 and prepared by GEI Consultants, Inc. These drawings cover construction of Phase I of the Eastern Surface Drainage System, which includes conveyance piping from the outlet at the sedimentation basin to a temporary inlet structure located on the eastern edge of the landfill near the junction of cells E2 and E3.

   c. The permittee(s) shall submit updated Eastern Drainage System design drawings to accommodate stormwater runoff associated with new cells as they are being constructed. The updated drawings shall be submitted at least sixty (60) days prior to construction. Eastern drainage systems are to be constructed while maintaining storm drain capability to handle 24-hour, 25-year storm flows.

5. EXTENSION OF MSW 4B SUMP LEACHATE DISCHARGE RISER.

   a. The permittee(s) shall maintain the MSW leachate collection sump (4B-cell sump) leachate discharge riser and associated pumps and instrumentation. The sump leachate discharge riser was constructed in accordance with design drawing titled, Sump 4B Riser Replacement, by Sanborn, Head and Associates, Inc., dated July 26, 2007, and approved subsequent submissions. The installation was documented in report prepared by Sanborn, Head & Associates, Inc., titled *Cell 4B Leachate Sump Riser and Pump System Installation Report* dated January 2008.

   b. Subsequent extension of the riser as MSW lifts are added shall be accomplished in accordance with the *WORK PLAN: CELL 4B LEACHATE SUMP RISER EXTENSION* included as Attachment 9 of WMH's response letter dated November 2, 2009, which stated that this work plan would be added to the Engineering Report. Operator shall ensure that as lifts are placed, at least ten (10) feet of clearance around the riser is maintained to preclude lateral forces or damage occurring due to operation of heavy equipment. Gravel shall be placed in the space between the riser and the surrounding MSW lifts and compacted in a manner that will not increase any potential damaging forces on the riser pipe. Immediately following the installation of a riser extension, the permittee(s) shall reestablish an elevation control point as required by Special Conditions, Section I, Item 4. Compliance with this requirement shall be included in the documentation of riser extension work. The Solid Waste Section shall be notified at least one week prior to scheduled commencement of work to add extensions to the riser.

6. The permittee(s) shall submit any significant proposed changes affecting the design or structural integrity of the installed liner system or leachate collection system, in writing, at least one hundred eighty (180) days prior to commencement of the proposed change. Regular maintenance procedures, such as replacing broken valves with a similar valve, do not require DOH approval. Any proposed changes shall be comparable or improved in its capability to protect human health and the environment. At a minimum, the written proposal shall include:

   a. Identification of affected cells;
   b. Reason for the proposed change;
   c. Engineering design;
   d. Point of Compliance Evaluation;
   e. Implementation schedule; and
   f. Other pertinent information.

   The DOH may also require additional information to evaluate the request. If the proposed changes require a modification to this permit, a modification application shall be submitted in accordance with Standard Conditions, Item 13.

7. In accordance with a Geosyntec design memorandum dated February 18, 2010, regarding the buttress installation for the West Berm, interface friction testing shall be performed for the base and cover liners delineated in a new Section 02800 of the Technical Specifications for Cells E5 through E8. As such, the liner interface strengths for the new MSW and Ash cells shall be verified prior to all base liner and closure cover construction, with direct shear tests conducted under peer-reviewed methods and under the general guidance of ASTM D5321 and D6243. Shear strengths shall meet or exceed the strength parameters used in the stability analyses and shall be approved by a licensed engineer prior to start of construction. These

test results shall be documented in the construction quality assurance (CQA) reports for cell construction.

8. Installation of any geosynthetic liner shall be performed by an experienced installer who has installed a minimum of 500,000 square feet of similar type liners or shall be performed under the supervision of the manufacturer. An experienced QA/QC landfill inspector with at least five (5) years of experience in landfill CQA responsible to a professional engineer shall observe liner installation and grade elevations. The permittee(s) shall notify the DOH, in writing, five (5) days prior to any liner installation work.

9. The permittee(s) is responsible for obtaining the services of a registered land surveyor who shall provide a minimum second order of accuracy on: triangulation, traverse, leveling and baseline measurements of the base grade as shown on the approved drawings, leachate lines, liner elevations, and other features used to determine compliance with the approved drawings. Prior to liner placement, the liner contractor and installer shall certify the base grade in writing. This written certification shall be included in the CQA report described in Special Conditions, Section B, Item 12.

10. The permittee(s) shall retain a professional engineer registered in the state of Hawaii for the supervision of the CQA requirements of this project, and upon the completion of all construction elements (west berm buttress, west berm extension, and liner/leachate systems), the engineer shall submit a CQA report to the DOH as to the complete conformity of construction to the plans and specifications as approved. The CQA report is described in Special Conditions, Section B, Item 12.

11. The permittee(s) shall submit a CQA report after completion of the West Berm extension, as presented in *Construction Drawings, Cells E5 through E8*, Revision 3, dated March 16, 2010.

12. The permittee(s) shall prepare and submit a CQA report to the DOH.

    a. The CQA report shall be submitted to the DOH at least thirty (30) days prior to proposed placement of the waste in the cell.
    b. A professional engineer, with at least five (5) years experience in designing landfills, and registered in the State of Hawaii shall review the inspections and test records for each sector as certified by the liner manufacturer or manufacturer's representative and the QA/QC engineer. The professional engineer shall also verify that the buttress, berm, bottom liner, and leachate

collection system have been installed in accordance with the plans as approved by the DOH.

c. The CQA report shall also include the following, as applicable:
   i. A map of each sector showing panel layouts as installed;
   ii. A letter of certification signed by the QA/QC engineer stating that all weld test results and vacuum or pressure testing of all welded seams were visually observed;
   iii. Liner inspection reports;
   iv. QA/QC testing procedures;
   v. Laboratory's analyses;
   vi. As-built and survey drawings documenting the buttress, berm, and cell construction, including the bottom and top of sump elevations, location and elevation of base grades, liner system, and leachate collection system;
   vii. Provide documentation to show that panels were properly joined within the cell, as well as with liner systems in adjacent cells;
   viii. Provide documentation and as-built drawings to show supporting berms constructed beneath areas where new liner systems are connected with previously installed liner systems;
   ix. Provide documentation and as-built drawings of anchor trenches and berms (temporary and permanent) located around each cell;
   x. Provide documentation and description of any temporary stormwater control measures implemented;
   xi. Identify any deviations from the construction plan, reason for the deviation, and affects on the stability and integrity of the design. Any deviations shall be comparable or improved in its capability to protect human health and the environment; and
   xii. Written certification by a professional engineer that the buttress, berm, liner system, leachate collection system, and any other associated items were installed in accordance with the approved documents.

13. No solid waste shall be disposed of into any new cell or sector until an experienced professional engineer certifies completion of construction in accordance with approved drawings and the DOH approves the CQA report submitted in accordance with Special Conditions, Section B, Item 12. The permittee(s) shall coordinate the inspection of each new cell or sector by the DOH, with the presence of the CQA engineer and on-site facility operator.

14. The permittee(s) shall maintain the main stability berm at the toe of the landfill in accordance with the construction drawings and sequencing plan titled Ash Area Toe Berm by GeoSyntec Consultants, Inc., Revision 3 dated 13 June 2005, contained in

the Engineering Report for Grading Plan Modification December 2005, Revision 3, dated February 8, 2007; as modified by the Construction Quality Assurance Report for Ash Toe Berm and E-1 Berm Construction prepared by Earth Tech, Inc., dated September 2007.

15. The permittee(s) shall maintain the E-1 Berm in accordance with the construction drawings E-1 Area Toe Berm prepared by GeoSyntec dated March 2005, contained in Project Manual, Ash Toe and E-Cell Berms, dated March 2005; as amended by Construction Quality Assurance Report for Ash Toe Berm and E-1 Berm Construction prepared by Earth Tech, Inc., dated September 2007, or approved subsequent submissions.

16. The initial phased construction of the West Berm shall be maintained in accordance with CQA Report for the West Berm Construction (Interim) dated February 2010 and prepared by AECOM Technical Services, Inc.

    a. The construction of the west berm buttress and the extension of the West Berm shall be done in accordance with *Construction Drawings Cells E5 through E*8 by Geosyntec Consultants, Inc., Revision 3, dated March 16, 2010. Construction of the buttress shall be accomplished prior to any further extension of the West Berm and addition of MSW into the expansion cells E5 and E6.
    b. Extension of the West Berm shall be sequenced with filling of Cells E5 and E6 up to elevation 510 feet, msl in accordance with the Construction Drawings Cells E5-through E8. No additional waste shall be placed until construction drawings for further extension of the West Berm and filling of the expansion cells is reviewed and approved by the DOH. Submission of the sequencing plans shall be provided to the DOH at least 60 days prior to scheduled start of work.

17. The permittee(s) shall submit construction drawings and procedures to install and implement a seismic monitoring system for the expansion cells E5 through E8 and the Western Surface Water Drainage System. Documents shall be submitted to the DOH within 90 days of permit issue.

18. The permittee(s) shall install and maintain grade survey control markers to delineate the boundaries and elevations of the MSW landfill areas and ash monofill, in sufficient number to demonstrate compliance with permitted grades.

Section C. Acceptance Criteria

1. The permittee(s) is authorized to accept for disposal, solid wastes, as defined in HAR 11-58.1-03.

2. The permittee(s) shall implement the Waste Acceptance & Hazardous Waste Exclusion Program, as provided in the Site Operations Manual and the following conditions.

    a. The permittee(s) shall screen waste, prevent unacceptable waste from entering the facility, and remove unacceptable waste if it enters the facility.
    b. The permittee(s) shall post a sign on the property that lists unacceptable wastes.
    c. The permittee(s) shall conduct random visual surveillance of mixed commercial loads (not inclusive of loads known to only contain single source-separated materials, such as sludge, ash, fish waste, and auto shredder residue), at least twice per day, to spot check for unacceptable wastes. In the event that H-Power is diverting waste to the facility, or the facility is receiving more than 2,500 tons per day, random visual surveillance shall be conducted on commercial loads at least four times per day. The permittee(s) shall document findings on the Load Check Data Sheet.
    d. The permittee(s) shall maintain and utilize video surveillance equipment in the scalehouse to visually screen the contents of each load.
    e. The bulldozer/compactor operators at the active workface shall visually screen the contents of each load and remove unacceptable waste.
    f. If unacceptable waste is observed, the permittee(s) shall reject the load. If the waste has been unloaded, the permittee(s) shall separate the unacceptable waste, move it away from the active workface, and manage it in accordance with Special Conditions, Section C, Item 3.
    g. Operators shall receive training on visual surveillance and unacceptable waste handling procedures set forth in the Site Operations Manual. Training shall be attended at least once per year, or more frequently as needed to ensure compliance with the facility procedures.
    h. The permittee(s) shall maintain records of random inspections on the Load Check Data Sheets and personnel training.
    i. Unacceptable waste is defined as:
        i. Regulated hazardous waste, as defined in HAR 11-261 through 268;
        ii. Radioactive waste, which shall be managed in accordance with HAR 11-58.1-64;
        iii. Polychlorinated biphenyl (PCB) waste, as defined in 40 CFR Part 761;

iv. Untreated infectious waste, excluding infectious waste generated within the household, in accordance with HAR 11-58.1-53;
v. Bulk or noncontainerized liquid waste, except as provided in HAR 11-58.1-15(i);
vi. Containers holding liquid waste, except as provided in HAR 11-58.1-15(i)(2);
vii. Commercial loads containing >25% greenwaste and household loads containing > 50% greenwaste, in accordance with HAR 11-58.1-65(b);
viii. Scrap automobiles, white goods, and whole motor vehicle tires, in accordance with HAR 11-58.1-65(c);
ix. Lead acid batteries, in accordance with HRS 342I;
x. Compressed gas tanks; and
xi. Other unacceptable wastes listed in the Site Operations Manual.

3. Should unacceptable waste be identified at the facility, the permittee(s) shall separate the waste, manage, transport, and recycle/dispose of it in accordance with the Site Operations Manual and applicable laws and rules. Unacceptable waste identified at the facility shall not be disposed of at the facility.

    a. Unacceptable waste shall also be transported from the facility prior to posing a nuisance, health, or safety concern.
    b. Unacceptable waste shall be transported to a permitted solid waste management facility allowed to accept the waste, or out-of-state recycling/ disposal facility.
    c. The permittee(s) shall maintain a daily log of unacceptable waste turned away from the facility or separated from disposal, including date, hauler, waste type, estimated quantity, and destination.
    d. The permittee(s) shall notify the DOH, in writing, within 24 hours or the next working day of the identification of hazardous or PCB waste. The notification shall include the date and time of incident, origin of the waste, hauler/generator, description and quantity of waste, actions that will be taken to manage the waste at the site, and actions that will be taken to remove the waste from the premises. The permittee(s) shall also provide written notification, including a copy of the associated manifests, within seven (7) days of removal of the waste from the facility.

4. The permittee(s) shall implement the Radioactive Waste Exclusion Plan, as provided in the Site Operations Manual. All incoming loads shall be screened to prevent the acceptance of radioactive wastes, excluding known loads of radioactive waste from H-Power. Radioactive wastes shall be managed in accordance with HAR 11-58.1-64. In the event that a radioactive load is identified, the facility shall

follow the procedures in the Radioactive Waste Exclusion Plan. The permittee(s) shall complete and submit a Radiation Monitoring Report, documenting the date, time, actions taken, and resolution of the event. Loads of radioactive waste from H-Power shall be inaccessible to the public and managed in accordance with the Radioactive Waste Exclusion Plan.

5. The permittee(s) shall implement the Special Waste Acceptance Program, as provided in the Site Operations Manual.

    a. The permittee(s) shall pre-approve special wastes, prior to acceptance at the facility.
    b. The permittee(s) shall maintain written documentation and implement special handling procedures associated with each type of special waste. The procedures shall be based on the physical, chemical or pertinent characteristics of the special waste.
    c. Special waste means any solid waste, which because of its source or physical, chemical, or biological characteristic, require special consideration for its proper processing or disposal, or both. Special waste includes, but is not limited to:
        i. Asbestos;
        ii. Semi-solid wastes including:
            (1) water separation, car and equipment wash wastes;
            (2) sewage sludge;
            (3) underground storage tank and other sludge;
        iii. Off-specification and outdated products;
        iv. Bag house dusts;
        v. Inorganic filter cakes;
        vi. Treated infectious waste;
        vii. Dead animals and offal;
        viii. Contaminated Materials including:
            (1) Contaminated soils and debris, including: resins and chemical debris; petroleum and other contaminated soils; and petroleum fuels (i.e., used oil, diesel, jet fuel, gasoline) and debris
            (2) Sandblast grits;
            (3) Wastes that are toxic in nature, such as insecticides, poisons, or radioactive materials (provided that they are not regulated under another authority such as RCRA Subtitle C, TSCA that requires disposal other than at a permitted MSW landfill); and
            (4) Other solid waste, which may be accepted for disposal such as contaminated industrial/commercial waste and non-TSCA

regulated PCB waste, provided such materials are not regulated hazardous waste; and

ix. Other special waste listed in the Site Operations Manual.

d. The permittee(s) shall approve Contaminated Materials (as defined in Special Conditions, Section C, Item 5.c.viii), on a case-by-case basis, prior to acceptance at the facility.

  i. The permittee(s) shall implement the Procedures for the Acceptance of Contaminated Material. These procedures shall be implemented for all contaminated materials defined in Special Conditions, Section C, Item 5.c.viii.

  ii. A notice of Contaminated Material Approval shall be submitted to the DOH prior to acceptance at the facility. The notice shall include approval from both the owner and operator of the facility. The use of facsimile submissions is acceptable. The notice shall include: acceptance date(s), quantity and description of waste, origin of waste, waste profile sheet/approval manifest; proposed management of contaminated material (use as daily cover or disposal as void space fill) and any special management and handling procedures.

e. All documentation shall be maintained at the facility.

Section D. Provisions Related to the Operation of the MSW Landfill and Ash Monofill

1. The permittee(s) shall implement the Site Operations Manual received December 2009, and approved subsequent revisions. The DOH may periodically require revisions to the Site Operations Manual. The contents of the Site Operations Manual shall address permit requirements and be implemented to ensure compliance. Any significant changes to the Site Operations Manual require approval from the DOH. Depending on the scope of the change, a permit modification may also be required. If there are discrepancies between the Site Operations Manual and these permit conditions, the permit conditions take precedence.

2. **User Population.** The permittee(s) shall maintain a list of the types of users for operator reference and regulatory review. In the event that the user population, or screening and review process to identify legitimate user changes, the permittee(s) shall submit a written update of such change. The written update shall propose adjustments to the screening and review process, as appropriate, to respond to the changes in the user population.

3. **Air Criteria.** The permittee(s) is responsible for obtaining permits and maintaining compliance with any state or federal Clean Air regulations. Open burning of solid waste, except for debris from emergency cleanup operations, is prohibited. Open

burning of debris from emergency cleanup operations shall not commence without prior approval from the DOH.

4. **Climatic Information.** Climate information shall be collected on a daily basis and shall include information on daily rainfall, solar radiation, evaporation, wind speed and direction, humidity, temperature, and other applicable meteorological data, as applicable, for use in modeling evapotranspiration and leachate generation with the HELP Model at the landfill and evaluating litter/odor control. The permittee(s) shall also monitor and record daily windspeed and direction at the active workface of the MSW landfill. The permittee(s) shall minimize any weather equipment downtimes. In the event that the equipment is not operational, the permittee(s) shall maintain a record of the affected date(s), reason, and actions taken. Data shall be provided to the DOH upon request.

5. **Program for Regular Training.** The permittee(s) shall provide training to landfill operators annually, or more frequently, as needed, to ensure that the operators are familiar with the Site Operations Manual and these permit conditions. Training presentations shall be presented by a Site Manager or Environmental Compliance Officer. Records of training shall be maintained.

6. **Queuing.** The permittee(s) shall provide adequate on-site queuing for a minimum of 15 waste delivery vehicles at the scalehouse area. The permittee(s) shall also make reasonable best efforts to prevent waste vehicles from idling on the highway.

7. **Mud and Dust Prevention Program.** The permittee(s) shall provide measures for minimizing the tracking of mud onto public roads, and the generation of dust on site.

   a. The mud prevention measures shall include the installation and maintenance of wet weather pads and access routes constructed of material (such as cold plane material or asphalt/concrete rubble) that will minimize the exposure of excessive muddy conditions. A wet weather deck shall be present to allow for safe disposal of MSW during wet weather or muddy conditions. The permittee(s) shall maintain a steel rumble strip on the main access road during wet weather and muddy conditions. If mud is tracked offsite, the permittee(s) shall clean up the tracked mud off the property and implement additional mud prevention measures. Possible measures that may be implemented include a drive-through tire wash, and/or wash pad.
   b. Recycled aggregate, asphalt and/or concrete used outside the limits of the waste footprint or used to control or direct stormwater shall be uncontaminated and meet the definition of inert fill in HRS 342H-1. No wet

weather area for disposal, temporary or otherwise, shall occur outside the waste footprint.

c. The dust prevention measures shall include, but are not limited to, applying water spray to roads and active workface throughout the day, as needed to control dust. The permittee(s) shall also prevent dust from inactive areas by applying water, and planting and maintaining vegetation on intermediate cover on completed fill slopes.

d. If measures do not adequately minimize the tracking of mud on to public roads or generation of dust, the permittee(s) shall implement additional mud prevention and dust control measures.

8. **Disease Vector Control.** The permittee(s) shall prevent or control on-site populations of disease vectors.

   a. The permittee(s) shall implement the Vector Control Plan, as provided in the Site Operations manual, and these permit conditions.
   b. If vectors, or signs or indicators of vector attractants are identified, the permittee(s) shall prepare and implement a vector-specific control/prevention plan to eradicate the vectors and prevent future recurrences.
      i. The plan shall include a more frequent inspection schedule, to ensure the plan was successful in eradicating vectors and preventing future recurrences. The increased schedule shall be implemented for at least three (3) months, or other approved time period, after the vector issue has been resolved.
      ii. The permittee(s) shall submit a copy of the plan to the DOH, as an update to the Site Operations Manual, within thirty (30) days of identifying vectors or vector attractants.
      iii. The permittee(s) shall submit a report, documenting the actions taken at the site and results of such actions. The report shall be submitted within thirty (30) days of completion of the plan.
   c. If vector control measures are not adequate, the permittee(s) shall implement additional vector control measures.

9. **Litter Control.** The permittee(s) shall confine litter to the working face area and prevent litter from leaving the facility. The permittee(s) shall implement the Litter Control Plan, as provided in the Site Operations Manual and these conditions. During the course of the working day of operation, all windblown material shall be collected and be properly disposed. At a minimum, the collection measures shall include:

a. The use of litter screens/fences within 100 yards downwind of the active workface (primary fencing).
b. The use of additional litter screens/fences in secondary control positions.
c. The presence of a truck clean-out area near the active workface, with litter screens/fences and disposal receptacles for truck clean-out. If the truck clean-out area is within 100 feet of a downwind primary fencing area, additional screens/fences shall only be required if the primary and secondary fencing areas are inadequate.
d. Cleaning of litter screens/fences (primary, secondary, and truck clean-out area screens/fences) throughout the day. At the end of the operating day, all litter shall be removed from all litter screen/fences.
e. Additional litter cleanup of all impacted areas in the event of a major windstorm or other incident in which litter escapes the normal litter containment systems.
f. Documentation of the number of personnel picking up litter, number of bags collected, and maximum wind speed for each day.
g. If litter control measures are not adequate, the permittee(s) shall implement additional litter control measures.

10. **Temporary Storage.** Stockpiled materials within the landfill waste boundary shall be limited to cover material on the ash monofill and cover material, gravel for roads/wet weather, liner, pipe, and equipment parking on the MSW landfill, except as provided in Special Conditions, Section D, Item 11.

a. The volume of material storage stockpiles shall not exceed a limit of 30 days capacity. If temporary storage exceeds or is anticipated to exceed 30 days, the permittee(s) shall construct temporary berms or implement other measures to prevent erosion of the stored material and allow for proper surface water flow.
b. Cover material stored on the ash monofill shall be placed atop at least 24 inches of intermediate cover material and shall not impede surface water flow. Temporary berms, containment measures, and access to stockpiles at the ash monofill shall also be placed atop at least 24 inches of intermediate cover material.
c. Cover material, gravel for roads/wet weather, liner, pipe, and equipment parking on the MSW landfill shall be placed atop at least 12 inches of intermediate cover material and shall not impede surface water flow. Temporary berms, containment measures, and access to stockpiles at the MSW landfill shall also be placed atop at least 12 inches of intermediate cover material.

d. The permittee(s) shall collect pot hole samples to verify the depth of intermediate cover prior to placement of the material storage stockpiles, temporary berms, or other containment measures. Documentation of depth, as well as periodic inspections, shall be provided to the DOH upon request. Periodic inspections shall be performed on a monthly basis during material storage and weekly when significant activity is ongoing.

e. Material storage stockpiles shall not exceed permit grades if storage is for greater than 30 days, unless a professional engineer certifies that the proposal will not affect the integrity of the landfill. The certification shall include calculations used in the determination. The permittee shall also demonstrate that the maximum storage height has adequate vertical clearance from overhead power lines, as specified by the power line owner.

11. The permittee(s) may submit written requests for the temporary storage of other materials or other activities on the MSW landfill and ash monofill. The requests shall be limited to materials intended for use within the waste disposal area of the MSW landfill or ash monofill and activities associated with landfill operations.

a. The written request shall be submitted at least fourteen (14) days prior to the proposed activity. At a minimum, the request shall include provisions to meet or exceed the following requirements:

i. The volume of material shall not exceed a limit of 30 days capacity and the duration of activities shall not exceed 30 days. If storage/activities exceeds or is anticipated to exceed 30 days, the permittee(s) shall construct temporary berms or implement other measures to prevent erosion of the stored material and allow for proper stormwater flow.

ii. Stockpiles/activities shall be placed/conducted atop at least 24 inches of intermediate cover material and shall not impede stormwater flow, unless otherwise approved by the DOH. Temporary berms, containment measures, activity areas, and access to stockpiles/activity areas shall also be placed atop at least 24 inches of intermediate cover material, unless otherwise approved by the DOH.

iii. The permittee(s) shall collect pot hole samples to verify the depth of intermediate cover prior to placement of the material storage stockpiles, temporary berms, or other containment measures and prior to commencement of other activities. Documentation of depth, as well as periodic inspections, shall be provided to the DOH upon request. Periodic inspections shall be performed on a monthly basis during material storage and weekly when significant activity is ongoing.

iv. Material storage stockpiles shall not exceed permit grades if storage is for greater than 30 days, unless a professional engineer certifies that the proposal will not affect the integrity of the landfill. The certification shall include calculations used in the determination.

b. The DOH shall consider the type of material, reason, and duration of the storage activity. The DOH may require additional requirements and controls. Storage of materials or other activities shall not commence without prior written approval from the DOH.

Section E. Provisions Related to the Operation of the MSW Landfill

1. The nominal operating rate of the landfill is 1,400 tons per day. The peak daily disposal rate shall not exceed 3,500 tons per day.

2. The permittee(s) shall provide adequate equipment and personnel to operate the MSW landfill facility, including provisions for back-up personnel and equipment. The following equipment and personnel requirements shall be available at the active workface, unless otherwise approved by the DOH.

   a. At an average operating rate of less than 1,400 tons per day of MSW, the site shall have operationally available (in working condition and with operator) a minimum of one bulldozer, one compactor, one water truck and one traffic controller. The traffic controller and bulldozer operator may be the same person if operating below 1,000 tons per day.
   b. At an average operating rate between 1,400 and 2,500 tons per day of MSW, the site shall have operationally available a minimum of 2 bulldozers, 2 compactors, one water truck and 2 traffic controllers.
   c. At rates of over 2,500 tons per day, the site shall have operationally available a minimum of 3 bulldozers, 2 compactors, one water truck, and 2 traffic controllers.

3. Operators shall routinely clean the tracks/wheels at the working face using shovel/dry methodology. However, if water is needed, cleaning shall be at the workface and the amount of water used shall be limited to an amount that would otherwise be used for dust control and not cause infiltration into the waste layer.

4. The permittee(s) shall inform drivers/operators of non-household vehicles that their loads should be covered prior to entering the facility.

5. The permittee(s) shall implement the Asbestos Management and Disposal Plan, as provided in the Site Operations Manual. Compliance with the plan does not preclude

compliance with other applicable statutes, regulations, and rules. The permittee(s) shall document the quantity, type, and location of asbestos disposed of in the MSW landfill. Disposal locations shall be recorded with GPS coordinates. The permittee(s) shall maintain records on the amount and location of asbestos disposal.

6. Loads of treated medical waste shall be placed in a trench/pit excavated within waste that was placed on the same day. Loads of treated medical waste shall be immediately covered with a minimum of two (2) feet of MSW and compacted.

7. The permittee(s) shall implement a Dead Animal and Offal Management Plan, and these permit conditions:

    a. Loads of dead animals and offal shall only be received between the hours of 8:30 a.m. and 2:30 p.m., unless otherwise approved or restricted by the DOH.
    b. Loads of dead animals and offal shall be placed in trench/pit areas, excavated within waste that was placed on the same day.
    c. Loads of dead animals and offal shall be immediately covered with a minimum of two (2) feet of MSW or soil and compacted. The thickness of MSW shall be increased or additional soil shall be used, as needed to minimize odors.
    d. Odor neutralizers and soil cover shall be used, as needed, to minimize odors.

8. The permittee(s) shall implement the Odor Control Program, as provided in the Site Operations Manual, and these permit conditions. The odor neutralization system shall be used as needed to manage odors from the site.

    a. The acceptance of odorous loads shall be scheduled to prevent trucks containing odorous loads from waiting outside the facility, minimize the time the trucks containing odorous loads are waiting in the queue, ensure that a sufficient amount of MSW has been placed to allow creation of a trench/pit area for odorous load disposal, and ensure that sufficient loads of MSW will be placed over the odorous load prior to placement of daily cover.
    b. Odorous loads shall only be received between 8:30 a.m. and 2:30 pm, unless otherwise approved or restricted by the DOH.
    c. Odorous loads shall be placed in trench/pit areas, excavated within waste that was placed on the same day.
    d. The odorous load shall be immediately covered with a minimum of two (2) feet of MSW or soil and compacted. The thickness of MSW shall be increased or additional soil shall be used, as needed to minimize the odor.
    e. Odor neutralizers and soil cover shall be used, as needed to minimize odors.

f. In the event that the facility receives an odorous load outside of common odorous wastes (such as treated sewage sludge, bulk shipments of off-specification foods, food wastes, dead animals, and offal), the permittee(s) shall notify the DOH prior to acceptance of the load. If an odorous load outside of common odorous waste arrives at the scalehouse without prior notification to the permittee(s), the permittee(s) shall notify the DOH within four (4) hours of its arrival. The notification shall also include any special management and handling procedures that will be implemented.

g. If odor control measures are not adequate, the permittee(s) shall implement additional odor control measures and the DOH may require that additional measures be implemented.

9. The following controls shall apply to the operations with contaminated materials (as defined in Special Conditions, Section C, Item 5.c.viii):

   a. The permittee(s) shall ensure that contaminated materials are removed from the truck during disposal and excess amounts of contaminated materials are not transported from the site.
   b. The permittee(s) shall only allow the disposal of contaminated materials when the wind speed is below 30 mph at the active workface.
   c. The permittee(s) shall implement dust control measures, such as water sprays and barriers, to adequately control dust during placement of contaminated material. The DOH may require or the permittee(s) may choose to use additional dust control measures, such as containerization of contaminated soil or dust monitoring during placement. Additional control measures and procedures for dust monitoring, if applicable, shall be specified in the Contaminated Materials Notification.
   d. The permittee(s) shall document the special disposal procedures implemented for the contaminated material. Special disposal procedures may include isolation of the material by the use of synthetic or soil barriers or containers.

10. Scrap metal may be removed from the disposal waste stream and recycled.

   a. Scrap metal removal operations shall be performed in accordance with the operations manual and Special Conditions, Section D, Item 11.
   b. Scrap metal removal operations shall be in a designated area, located away from the active workface and shall not be accessible by household users.
   c. The permittee(s) may use screens and magnets to remove scrap metal from the waste stream. The permittee(s) may shear scrap metal for size reduction.

d. Scrap metal shall be stored in containers with a capacity of no more than 40-cubic yards. A maximum of two (2) 40-cubic yard containers may be stored at the site for scrap metal storage.

11. Contaminated soil with contaminant concentrations below current DOH Environmental Action Levels (EALs) for direct exposure, commercial/industrial land use may be used as:

    a. void space fill within MSW landfill working face; and
    b. daily cover, provided that the daily cover shall not be exposed for more than 24 hours.

12. Contaminated soil with contaminant concentrations greater than current DOH EALs for unrestricted land use shall not be used as intermediate or final cover.

13. The permittee(s) shall place daily cover on the active MSW workface at the end of each workday, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging.

14. The daily cover material shall be comprised of a minimum of six inches of earthen material or an alternative daily cover, and shall leave no exposed waste. Of primary preference, earthen material shall be soil. If soil is not available, the earthen material may consist of aggregate and shall have an aggregate size less than 2.5 inches and well graded, provided that the aggregate meets the requirements of Special Conditions, Section E, Item 13. The permittee(s) shall maintain a daily log, including the date, volume, and type of material used as daily cover.

15. The permittee(s) may submit a written proposal to request the use of an alternative daily cover (ADC), comprised of alternative materials of an alternative thickness (other than at least six inches of earthen material).

    a. The request shall include ADC specifications, associated operational procedures, an assessment of whether the alternative material and thickness can control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment, and any other pertinent information.
    b. The use of ADC is limited to daily cover use.
    c. The permittee(s) shall obtain DOH approval, in writing, prior to the commencement of the demonstration project.
    d. The use of ADC shall be evaluated in demonstration projects. The demonstration project shall be performed in 6-month increments to determine

whether the ADC and its thickness can control disease vectors, fires, odors, nuisance, litter and scavenging without presenting a threat to human health and the environment.

e. The demonstration period shall include oversight by the DOH. The permittee(s) shall report the performance of the ADC at the end of the demonstration period, including an evaluation of whether the ADC is appropriate for use at the facility, and successful operational procedures.

f. The permittee(s) shall obtain DOH approval, in writing, prior to commencement of continued use of ADC beyond the demonstration period. The DOH may impose conditions on the use of ADC. Those conditions shall become part of this permit.

g. The demonstration period or the approved use of an ADC may be rescinded or cancelled by either the DOH or operator at anytime without cause.

16. The permittee(s) shall implement a Daily Cover Monitoring Verification Program as follows:

    a. The permittee(s) shall take digital photos of the active workface at the middle and end of each weekday (Monday through Friday), from the same perspective, to document the placement and thickness of daily cover. Digital photo records shall be maintained at the facility and submitted to the DOH via email by 12:00 noon on the next business day, with cell location information. The permittee(s) and the DOH will work cooperatively to determine the best perspective for the photos.

    b. The permittee(s) shall record the following quantitative items on a daily basis:
        i. volume of waste disposed;
        ii. cell geometry, and
        iii. volume and type of daily cover used.

17. The permittee(s) shall cover all inactive MSW areas with intermediate cover. Inactive waste areas are areas that do not receive waste (MSW) within a 30-day period.

18. The permittee(s) shall cover any area receiving vehicular traffic with intermediate cover, regardless of the time period since last receiving waste.

19. Intermediate cover shall be a minimum of 12 inches of earthen material (may include six inches of soil daily cover). Particle size shall be adequate to minimize infiltration and direct stormwater to collection systems.

20. Intermediate cover shall be inspected on a regular basis, at least once per month, and shall be addressed as issues are identified, such as repairs for erosion and cracking. The permittee(s) shall maintain a log of inspections, findings, and corrective actions, if needed. The DOH may require that intermediate slopes be vegetated or measures be taken to control dust.

21. In the event of sustained winds (over a two minute period), at or exceeding 40 mph at the active workface, the permittee(s) shall stop disposal operations and proceed with placement of daily cover. The permittee(s) shall also cease acceptance and disposal of waste in other high wind conditions, as determined by the foreman and Site Manager or Environmental Compliance Officer. The permittee(s) shall maintain a log of such events, including the date, time of shutdown, and associated wind speed.

Section F. Provisions Related to the Operation of the Ash Monofill

1. Only MSW, industrial, or commercial ash may be disposed of in the ash monofill.
   a. Acceptance of industrial/commercial ash shall be in accordance with Special Conditions, Section C, Item 5.
   b. The permittee(s) shall provide written notification at least twenty-four (24) hours prior to acceptance of industrial/commercial ash. The notification shall include the source of the ash, quantity of ash, physical and chemical characteristics of the ash, proposed dates of receipt, and any special handling/disposal procedures associated with the ash. If the ash is considered a Contaminated Material, the approval and acceptance shall also be in accordance with Special Conditions, Section C, Item 5.d.

2. The ash shall be the result of complete incineration.

3. The ash shall meet the liquid restriction requirements in HAR 11-58.1-15(i).

4. Any ash that is considered a hazardous waste as defined in state hazardous waste laws and regulations shall not be disposed of in the ash monofill.

5. The daily disposal rate for ash shall not exceed 400 tons per day. In the event that an additional boiler is constructed and operational at H-Power, the ash monofill disposal rate shall not exceed 600 tons per day.

6. The permittee(s) shall provide adequate equipment and personnel to operate the ash monofill, including provisions for back-up personnel and equipment. The following equipment and personnel requirements shall be met unless otherwise

approved by the DOH. The site shall have operationally available a minimum of one bulldozer, one loader/compactor, and one water truck.

7. The active workface for ash placement shall not exceed 75 feet by 75 feet, or other dimensions approved by the DOH.

8. The permittee(s) shall spread and compact ash within 24 hours of receipt at the facility.

9. The permittee(s) shall cover disposed ash at the end of each operating day, or at more frequent intervals if necessary, to control dust. The daily cover material shall be comprised of a minimum of six inches of earthen material, or an alternative daily cover.

   a. The earthen material shall have an aggregate size that is sufficient to prevent the migration of ash.
   b. Fresh MSW ash material is acceptable as alternative daily cover provided that such usage shall be limited to the active workface where MSW ash is being placed on a daily basis, which will be covered the next day.
   c. If alternative cover comprising of fresh ash is not covered within 24 hours, soil daily cover shall be applied.

10. The permittee(s) shall apply at least six (6) inches of soil cover over exposed ash every seven (7) days, or more frequently as required by the DOH.

11. The permittee(s) shall implement a Weekly Cover Monitoring Verification Program as follows:

   a. The permittee(s) shall take digital photos of the active ash workface on a weekly basis, prior to the placement of the weekly soil cover and after the weekly cover has been placed. Digital photo records shall be maintained at the facility and submitted to the DOH via email by 12:00 noon on the next business day following the day on which weekly cover was placed, with cell location information. The permittee(s) and the DOH will work cooperatively to determine the best perspective for the photos.
   b. The permittee(s) shall record the following quantitative items on a weekly basis:
      i. volume of waste disposed;
      ii. cell geometry; and
      iii. volume of soil cover used.

12. The permittee(s) shall cover all inactive ash areas with intermediate cover. Inactive areas are areas that do not receive waste (ash) within a 30-day period.

13. The permittee(s) shall cover any area receiving vehicular traffic with intermediate cover, regardless of the time period since last receiving waste.

14. Intermediate cover shall be a minimum of 12 inches of earthen material (may include six (6) inches of soil weekly/daily cover). Contaminated soil with contaminant concentrations greater than current DOH EALs for unrestricted use shall not be used as intermediate or final cover. Particle size shall be adequate to minimize infiltration and direct stormwater to collection systems.

15. Intermediate cover shall be inspected on a regular basis, at least once per month, and shall be addressed as issues are identified, such as repairs for erosion and cracking. The permittee(s) shall maintain a log of inspections, findings, and corrective actions, if needed. The DOH may require that intermediate slopes be vegetated or measures be taken to control dust.

16. Any ash placed in the ash monofill shall not be subsequently excavated or removed from the monofill without prior notification to and approval by the DOH.

17. In the event of sustained winds (over a two minute period), at or exceeding 40 mph at the active workface, the permittee(s) shall implement additional measures to adequately control dust from exposed ash. Dust control measures may include, but are not limited to, applying water sprays and soil cover. The permittee(s) shall maintain a log of such events, including the date, dust control measures implemented, and associated wind speed.

Section G. Surface Water Management

1. The permittee(s) shall design, construct, and maintain a surface water run-on and run-off control system in accordance with HAR 11-58.1-15(g), throughout the life of the landfill and through post-closure. At a minimum, the permittee(s) shall construct and maintain the following:

   a. A western bypass channel or offsite surface water conveyance for the upper canyon and western area flows, in accordance with construction drawings titled *Western Surface Water Drainage Project*, dated January 2010 and prepared by GEI Consultants, Inc. This conveyance shall be designed to handle 24-hour, 25-year storm flows, and will bypass the landfill and terminate in a stilling basin to be constructed below the existing sedimentation pond. See Special Conditions, Part II, Section B.3.

b. An on-site surface water management system as follows:
   i. A surface water drainage system of pipe and swale conveyances running along the eastern side of the landfill designed to handle storm flows from a 24-hour, 25-year storm, in accordance with drawings, titled *Eastern Surface Water Drainage Project, 2011 Partial Final Closure*, dated October 2009 and prepared by GEI Consultants, Inc. See Special Conditions, Part II, Section B.4 for description of work.
   ii. For the western side of the landfill, as dictated by the on-going construction of the Western Berm extension and west berm buttress, surface water drainage shall be controlled via the installation of temporary berms, swales and pipes as necessary to prevent ponding and minimize infiltration of storm water into the landfill.
   iii. During the construction of the Western Drain and temporary stormwater drain systems, there may be periods when there will either be no means to convey stormwater around the landfill or a storm of sufficient magnitude occurs that causes stormwater to overflow the temporary diversion berm for the temporary stormwater drain into cell E6. Prior to such a rain or storm event, permittee(s) shall take action by covering pocket areas with geomembrane sheet, and setting up pumps or other methods as necessary to control and direct surface water runoff in order to prevent or minimize infiltration of surface water into the landfill cells and erosion of landfill cover.
   iv. Prior to start of construction of Cell E6, in preparation for the need to implement storm water containment actions as discussed in paragraph iii above, the permittee(s) shall determine the quantity of geomembrane sheet needed, size and quantity of pumps, and other materials and equipment that are deemed necessary, and to stage these materials and equipment for immediate use when needed.
   v. These precautionary actions are specified in Waste Management of Hawaii, Inc., letter dated December 14, 2009. The permittee(s) shall notify the DOH verbally and by email within 24 hours of any stormwater containment action as discussed in paragraph iii above.
   vi. The permittee(s) shall submit construction drawings for the Phase II of the Eastern Surface Water drainage system to the DOH at least 60 days prior to scheduled start of construction.
   vii. Both of these drainage systems will flow into the existing sedimentation pond.

   c. During construction of surface water systems, the permittee(s) shall ensure that existing storm water collection and conveyance are sufficient to manage 24-hour, 25-year storm events.

2. Stormwater that comes in contact with solid waste shall be managed and disposed of as leachate.

3. The conditions of this permit do not preclude compliance with any other applicable federal, state, or local requirements including water quality and surface water discharge regulations.

4. The landfill Surface Water Management Plan shall be updated annually and filed with the DOH by September 1 of each year. It shall contain the following information:

   a. Report of an annual inspection of surface water management features and facilities, together with a description of required maintenance and changes, which shall be completed by September 1 of each year;
   b. Updated drawings showing current topography of the landfill, surface water drainage paths and conveyances, and drainage system modifications planned for the next year in response to waste filling;
   c. All areas with intermediate cover shall be graded to direct stormwater away from the workface and towards the stormwater collection system;
   d. Engineering calculations documenting the capability of the surface water management system to comply with the run-on and run-off requirements listed under Special Conditions, Section G, Item 1. Top deck areas shall have minimum slopes of 2% to 5% to promote drainage. Side-slopes shall not exceed 3 horizontal to 1 vertical to limit erosion. Siltation control fences or equivalent shall be used to maintain silt on-site;
   e. Any updates to the September 2006 Storm Water Pollution Control Plan or October 2007 Spill Prevention, Control, and Countermeasures (SPCC) Plan prepared pursuant to federal requirements under the Clean Water Act.

Section H. Perimeter Gas Management

1. The permittee(s) shall implement the Perimeter Gas Monitoring Plan dated November 2009, and approved subsequent submissions. The program shall also be conducted in accordance with HAR 11-58.1-15(d) and these permit conditions:

   a. The well shall not be vented prior to measuring the gas concentration.

   b. The permittee(s) shall install additional permanent gas monitoring probes within six (6) months of MSW placement in cell(s) adjacent to planned probe locations and provide documentation of installation within sixty (60) days of completion. Documentation shall include, but is not limited to, geologic logs of each probe location, surveyed locations and elevations of probes, and as-built drawings of each monitoring probe.

2. The permittee(s) shall monitor the concentration of gases, including oxygen, methane, carbon dioxide, and hydrogen. The permittee(s) shall monitor the concentration of gases in facility structures, including temporary structures, and at the property boundary on a quarterly basis, or other frequency as approved by the DOH. If an exceedence is identified, the permittee(s) may conduct a verification monitoring event, provided that the verification monitoring is conducted within one (1) hour of the initially detected exceedence. If exceedences or other anomalous condition is identified, the DOH may increase the frequency of monitoring events.

   a. The concentration of methane gas shall not exceed 25% of the lower explosive limit (LEL) for methane in facility structures.
   b. The concentration of methane gas shall not exceed the LEL for methane at the facility property boundary.
   c. The concentration of hydrogen gas shall not exceed 25% of the LEL for hydrogen in facility structures.
   d. The concentration of hydrogen gas shall not exceed the LEL for hydrogen at the facility property boundary.

3. The permittee(s) shall inspect and maintain the gas monitoring probes. In the event that a probe is unusable, the permittee(s) shall repair the probe or install a new probe prior to the next monitoring event.

   a. If the probe is repaired, submit documentation to the DOH indicating the reason for repair, type of repairs completed, and evaluations performed to ensure the probe is acceptable for use.
   b. If the probe is replaced:
      i. The permittee(s) shall update the Perimeter Gas Monitoring Plan to show the new probe location and identification number within thirty (30) days. The update shall also document the reason for replacing the probe.
      ii. The permittee(s) shall submit an installation report for the new probe within thirty (30) days of completion. The installation report shall include the information specified in Special Conditions, Section H, Item 2.

iii. The permittee(s) shall abandon the unusable probe, and submit associated documentation.

4. The permittee(s) shall ensure that the field meters are factory calibrated in accordance with manufacturer's specifications. The permittee(s) shall also field calibrate the meters prior to each monitoring event. The permittee(s) shall conduct monitoring events only with equipment that has been properly calibrated and maintained.

5. The permittee(s) shall submit a report with results within 45 days of each monitoring event. The results shall include the date and time, gas concentrations by volume, barometric pressure, site conditions, name of personnel conducting the monitoring, description of equipment and calibration results, description of monitoring procedure, and identification of any procedures or observations outside of normal conditions.

6. If verification monitoring performed within one (1) hour of the initial exceedence shows concentrations below the limits in Special Conditions, Section H, Item 2, the permittee(s) shall place results in the operating record and send written notification of the exceedence and verification monitoring results to the DOH within seven (7) days.

7. If combustible gas concentrations exceed the limits in Special Conditions, Section H, Item 2, and verification monitoring is not performed within one (1) hour of the initial exceedence or verification monitoring confirms the initial exceedence, the permittee(s) shall perform the following.

   a. Immediately take all necessary steps to ensure protection of human health,
   b. Immediately notify the DOH of the exceedence,
   c. Within three (3) days of detection, place in the operating record and submit to the DOH, the type of gas, gas levels detected and a description of the steps taken to protect human health,
   d. Within sixty (60) days of detection, prepare and implement a remediation plan for the combustible gas releases, place a copy of the plan in the operating record, provide a copy of the plan to the DOH, and notify the DOH that the plan has been implemented.
   e. Within thirty (30) days after the remediation plan has been completed, submit a report to the DOH documenting the actions taken, additional monitoring results, and plans to prevent future recurrences.
   f. The DOH may modify the reporting and implementation schedule, as necessary to protect human health and the environment.

Section I. Leachate Management/Groundwater and Leachate Monitoring

Leachate Management

1. The permittee(s) shall implement the Leachate Management Plan as provided in the Site Operations Manual dated December 2009 and approved subsequent submissions. The permittee(s) shall provide an updated Leachate Management Plan within sixty (60) days of completed construction of additional sumps. The updated plan shall specify compliance levels associated with each new sump and reference as-built drawings and surveyed elevations.

2. The permittee(s) shall manage any storm water that comes in contact with solid waste as leachate.

3. The permittee(s) shall manage leachate to prevent any entry into the stormwater collection system and any contact with the public.

4. The permittee(s) shall maintain an elevation control point at the top of casing or other monument in the immediate vicinity of the sump, for the measurement of leachate in each sump. The elevation control point shall be surveyed on an annual basis and clearly marked. The permittee(s) shall also maintain a monument, showing benchmark elevation, located in a position off the landfill.

5. The permittee(s) shall remove leachate from the landfill via each of the leachate sumps, in a manner that maintains a maximum depth of 30 centimeters (12 inches) of leachate above any part of the liner in the cell, outside the sump area. The leachate sump compliance depths are as follows:

    a. Ash Sump: 88.1 feet above msl, per Leachate Management Plan, dated December 2009.
    b. E1 Sump: 227.1 feet above msl (sump base at 223.1 ft above msl and sump depth is 3 feet), per Leachate Management Plan, dated December 2009.
    c. 4B Sump: 124.9 feet above msl (sump base at 120.9 feet msl and sump depth estimated at 3 feet), per Topographic Survey Map, Ash Cell 4 and MSW 4B, prepared by Park Engineering, dated May 19, 2006, which is referenced on Sump 4B Riser Replacement drawing by Sanborn, Head & Associates revision dated July 26, 2007.
    d. E6 Sump: 388 feet above msl, with sump depth of approximately 3 feet, per Sheet 8 of the *Construction Drawings Cells E5 through E8*

dated February 10, 2010 and prepared by Geosyntec Consultants, Inc. The compliance elevation may be modified based on as-built drawings of the sump, and as accepted by the DOH.

e. E8 Sump: 427 feet above msl, with sump depth of approximately 3 feet, per Sheet 22 of the *Construction Drawings Cells E5 through E8* dated February 10, 2010 and prepared by Geosyntec Consultants, Inc. The compliance elevation may be modified based on as-built drawings of the sump and as accepted by the DOH.

6. The permittee(s) shall maintain usable access to all groundwater monitoring wells and leachate manholes/sumps shown in the Groundwater and Leachate Monitoring Plan dated November 2009, and approved subsequent submissions.

7. The permittee(s) shall maintain the integrity of the monitoring wells and sumps, and protect them from damage, destruction, or vandalism. If repairs or replacement is necessary to ensure proper management and monitoring, then the permittee(s) shall design and construct the necessary repairs and/or replacements.

   a. Should any of these wells/manholes become damaged, destroyed, or vandalized, the permittee(s) shall notify the DOH immediately. The notification shall include pertinent information as to the cause of the destruction, description of measures to replace and/or repairs of the monitoring station/manhole, and actions taken to prevent the recurrence of such problems in the future.
   b. If a new well/manhole will be constructed or repaired, submit a construction plan to the DOH prior to commencement of construction. At a minimum, the plan shall include the proposed well location, rationale for the location, well design, and installation procedures. The permittee(s) shall implement the repair/construction upon DOH approval.
   c. A Well/Sump Completion Report shall be sent to the DOH within thirty (30) days of any new groundwater well/leachate sump construction. At a minimum, the report shall include geologic logs, surveyed location and elevation of the well, and as-built drawings.

8. Leachate Storage, Transport, and Removal

   a. The permittee(s) shall use an automated pumping system to pump leachate to on-site storage tank(s) to comply with the leachate sump compliance depths in Special Conditions, Section I, Item 5. The automated systems shall include an alarm system to alert the permittee(s) to anomalous conditions in the pump or piping system.

b. The permittee(s) shall transport leachate from the storage tank(s) to an authorized wastewater treatment and disposal facility, or as approved by the DOH, as frequently as needed to comply with leachate sump compliance depth requirements in Special Conditions, Section I, Item 5.

c. The storage tanks and connector piping shall be situated within the limits of the landfill in areas with a Subtitle D liner system constructed in accordance with HAR 11-58.1, or within secondary containment.

d. The permittee(s) shall maintain the storage tanks and connector piping between the sumps and storage tanks at all times.

e. If the pump system or any portion of the leachate collection and removal system is inoperable, the permittee(s) shall take immediate steps to rectify the problem and implement contingency measures to comply with remaining conditions of this permit.

f. The permittee(s) shall inspect the condition and integrity of the tanks and connector piping at least once every six (6) months. The permittee(s) shall document the results of the inspections and implement corrective actions to address any findings, including but not limited to rusting, that may compromise the integrity of the system and result in a release.

g. The permittee(s) shall contract with one or more qualified and properly licensed third-party contractors to remove and transport leachate from the temporary storage tanks, to supplement any leachate transport capability of the permittee(s). The permittee(s) shall maintain a current copy of all leachate pumping agreements with third-party contractors, and shall maintain the contracts in full force at all times. The permittee(s) shall provide this information to the DOH upon request.

h. The permittee(s) shall empty the E-1 berm drain and ash berm drain at a frequency such that there is no significant accumulation of liquid/leachate in each line. The permittee(s) shall empty the drains on a monthly basis and more frequently during rainfall events, or as otherwise approved by the DOH.

9. Leachate Monitoring and Recordkeeping

a. The permittee(s) shall use automated monitoring and recordkeeping systems to monitor leachate levels in all sumps and storage tanks. The automated systems shall include an alarm system to alert the permittee(s) to anomalous conditions in the sumps or storage tanks.

b. The permittee(s) shall maintain a log of the status of the leachate collection systems, at least three times per week. The log shall include the date, level of leachate in each sump, volume of leachate in each tank, and associated pump rates.

c. The permittee(s) shall take manual measurements of leachate levels in the ash sump and 4B sump at least once per month. The permittee(s) shall take manual measurements of leachate levels in the E1 sump on an annual basis. The permittee(s) shall take manual measurements of leachate levels in the E6 and E8 sumps on a monthly basis, for the first six months of operation. After the first six (6), the permittee(s) shall take manual measurements of leachate levels in the E6 and E8 sumps on an annual basis. If manual measurements are inconsistent with automated readings or other problems are identified with the system, the DOH may increase the frequency of manual measurements.

d. In the event that any portion of the automated monitoring or recordkeeping systems is under repair, maintenance, or inoperable, the permittee(s) shall take manual measurements at least every other day, or daily if needed, to monitor the leachate levels in the associated sumps. Within seven (7) days of triggering the requirement for manual measurements, the permittee(s) shall submit written notification to the DOH describing the situation, corrective actions, and schedule. The DOH may increase the frequency of manual measurements. After the repair/maintenance is completed, the permittee(s) shall continue daily measurements for a minimum of three (3) days, and weekly for three (3) weeks to verify that all automated readings are consistent with manual measurements. The permittee(s) shall submit written notification, including documentation, of the three (3)-week verification test, prior to reducing the frequency of manual measurements.

e. The permittee(s) shall maintain the following documentation for management of leachate from the E-1 berm drain line and ash berm drain line:
   i. date of leachate removal;
   ii. quantity of leachate removed; and
   iv. disposal method.

Groundwater and Leachate Monitoring

10. Groundwater and leachate monitoring shall be conducted in accordance with HAR 11-58.1-16, the State of Hawaii Landfill Groundwater Monitoring Guidance Document Version 1.8 dated September 2002, and the conditions of this permit.

11. The permittee(s) shall implement the Groundwater and Leachate Monitoring Plan dated October 2009, approved subsequent submissions, and applicable conditions of this permit. The permittee(s) shall submit a revised Groundwater and Leachate

Monitoring Plan to address the two (2) new sumps in Cells E6 and E8 of the expansion area.

a. The revised Plan shall be submitted within sixty (60) days of permit issuance.

b. New groundwater monitoring wells shall be installed within one hundred eighty (180) days of plan approval.

12. All sample collection, handling, management, and analysis shall be conducted in accordance with EPA SW-846, *Test Methods for Evaluating Solid Waste*.

13. Each sample shall be properly collected, identified, contained, and preserved. The name and signature of the person who collected the sample shall be included in the records. A chain of custody shall be maintained from the time of sample collection through the final analysis and disposition.

14. Sample analysis shall be conducted by an independent third party with appropriate credentials and performed at the expense of the permittee(s).

15. Groundwater samples shall be collected and analyzed on a quarterly basis, or as required or otherwise approved by the DOH.

    a. Groundwater samples shall be analyzed for constituents listed in 40 CFR 258, Appendix I, major cations and anions (Mg, Na, Ca, K, Cl, CO_3, SO_4, HCO_3), major leachate indicators (TDS, TOC, total alkalinity, nitrogen-ammonia, Cl, and Fe), COD, nitrate-N, bromide, and field measurements (electrical conductance, pH, temperature, turbidity, and groundwater surface elevation), or as required or otherwise approved by the DOH.

    b. Groundwater samples from newly installed wells shall also be analyzed for the following constituents in its first quarterly monitoring event: constituents listed in 40 CFR 258, Appendix II, major cations and anions (Mg, Na, Ca, K, Cl, CO_3, SO_4, HCO_3), major leachate indicators (TDS, TOC, total alkalinity, nitrogen-ammonia, Cl, Fe), COD, nitrate-N, bromide, and field measurements (electrical conductance, pH, temperature, turbidity, and groundwater surface elevation), or as required or otherwise approved by the DOH.

16. Leachate samples shall be collected and analyzed on a quarterly basis, or as required by the DOH. Leachate samples shall be analyzed for constituents listed in 40 CFR 258, Appendix II, major cations and anions (Mg, Na, Ca, K, Cl, CO_3, SO_4, HCO_3), major leachate indicators (TDS, TOC, total alkalinity, nitrogen-ammonia, Cl, Fe), COD, nitrate-N, bromide, and field measurements (electrical conductance, pH, temperature, and turbidity), or as required or otherwise approved by the DOH.

17. Reduction in Testing

    a. Following a minimum of two (2) years of consecutive quarterly intrawell groundwater monitoring, the permittee(s) may petition the DOH for a reduction in testing to semiannual monitoring.
    b. Following a minimum of one (1) year of consecutive quarterly leachate monitoring, the permittee(s) may petition the DOH for a reduction in testing to annual monitoring.
    c. The permittee(s) shall submit the request in writing. The permittee(s) must receive written approval from the DOH prior to implementation of any change in sampling frequency. If other information indicates that more frequent monitoring is justified, the DOH may reinstate the original testing and frequency requirements.

18. The permittee(s) shall prepare and submit a Groundwater/Leachate Monitoring Report within ninety (90) days of sampling, or other applicable reporting period. At a minimum, the monitoring reports shall include:

    a. Identification of wells/manholes sampled during the event;
    b. Sample collection dates and methodology;
    c. Identification of third party entity that performed the sample analysis;
    d. Field measurements and analytical data, including copies of laboratory reports;
    e. Statistical evaluation of all analytical data (except field measurements);
    f. Identification of any deviations from the plan, reason for the deviation, and affect on the sampling results; and
    g. Statement of whether any detections of VOCs or statistically significant increases were identified.

19. In the event of a detection of VOCs above the practical quantitation limit or a statistically significant exceedence, the permittee(s) shall comply with the requirements of HAR 11-58.1-16 and the Landfill Groundwater Monitoring Guidance document.

Section J. Closure and Post-Closure Requirements

1. The permittee shall submit an updated Closure Plan within ninety (90) days of receipt of this permit. The updated Closure/Post-Closure Plan shall reflect the

permitted landfill expansion, including MSW Cells E5-E7, ash cell E8, additional cell E9, and associated leachate collection sumps. The Plan shall also:

a. Identify landfill units slated for closure as referenced in Special Conditions, Section J, Items 3, cells that have already reached final grades, and cells where waste will no longer be disposed of;
b. Include sequencing of landfill closure.
c. Provide a schedule for submission of construction plans and specifications, as required by Special Conditions, Section J, Item 4.

2. The permittee(s) shall perform closure and post-closure activities in accordance with the Closure and Postclosure Care Plan, prepared by GeoSyntec Consultants, Inc., as revised February 2009, approved subsequent documents, HAR 11-58.1-17, and these permit conditions. Should there be discrepancies between these documents, the HAR and these permit conditions take precedence.

3. The permittee(s) shall begin closure activities of the ash monofill cells 1 through 8 within thirty (30) days after the date on which the ash monofill received the known final receipt of waste (reaches permitted grades), or December 31, 2012, whichever comes first. The DOH may consider an extension provided adequate demonstration is provided to show that the unit has additional permitted capacity and that the permittee(s) has taken and will continue to take all steps necessary to prevent threats to prevent human health and the environment from the unclosed ash monofill cells 1 through 8.

4. The permittee(s) shall submit closure construction plans and specifications at least six months prior to scheduled construction, including a proposed construction schedule. The construction plans and specifications shall be prepared and certified by a professional engineer, with at least five (5) years experience in designing landfills, and registered in the State of Hawaii.

5. The permittee(s) shall provide written notice of intent to close each landfill unit at least ninety (90) days prior to initiating closure activities. The notice of intent shall include a schedule and shall also be placed in the operating record.

6. The permittee(s) shall begin closure activities of each MSW landfill unit or ash monofill unit after receiving DOH approval on the closure construction plans and specifications and:

a. within thirty days after the date on which the unit receives the known final receipt of wastes; or

b. within one year after the most recent receipt of wastes, if remaining capacity exists, and there is reasonable likelihood that the landfill unit or ash monofill unit will receive additional wastes; except, as provided in Special Conditions, Section J, Item 3.

7. Soil with contaminant concentrations above DOH EALs for unrestricted use shall not be used in the final cover system.

8. The permittee(s) shall complete closure activities of each unit within one hundred eighty (180) days following the beginning of closure in Special Conditions, Section J, Item 5 or 6. The permittee(s) shall retain a professional engineer registered in the state of Hawaii for the supervision of the closure construction quality assurance requirements, and upon the completion, the engineer shall submit a summary report to the DOH as to the complete conformity to the plans and specifications as approved. The summary report shall be submitted within sixty (60) days after closure activities are completed. The summary report shall include a certification that the permeability of the final cover system shall be less than or equal to the permeability of each type of bottom liner system present at the facility. The summary report shall also include a description of closure activities, as-built drawings, surveys of the final cover system, a documented control program of the final cover system construction, quality assurance/quality control testing procedures, laboratory analyses, and engineer's certification of construction.

9. At a minimum, the Closure and Post-Closure Plan and the Financial Assurance report shall be revised every five (5) years, or whenever facility plans are updated or changed. This is not withstanding the requirement to make adjustments for inflation on an annual basis.

10. Within ninety (90) days of completion of closure construction, the permittee(s) shall submit a copy of the notation on the deed to the landfill property in accordance with HAR 11-58.1-17.

11. The permittee(s) shall inspect and maintain the final cover system, including portions of the final cover system in the case of a phased closure, and other environmental controls associated with the facility on a quarterly basis, or more frequently if required by the DOH. If post closure plans are inadequate to maintain the integrity of the final cover system and associated environmental controls, additional measures may be required. The DOH may periodically require revisions to the plan.

    a. The inspections of the final cover system shall include, but are not limited to: an assessment of security control; erosion and erosion damage; cap deformation resulting from settlement, subsidence, or deformation; and runoff control structures.

b. The inspections of other environmental controls shall include, but are not limited to, an assessment of the surface water management system, perimeter gas monitoring system, leachate collection and control system, and presence of odors, vectors, and litter.

c. The permittee(s) shall document findings and implement corrective actions or other procedures, as necessary to maintain the integrity and functionality of the final cover system and environmental controls. The permittee(s) shall submit written notification of any areas requiring attention and any associated corrective actions or procedures performed, within thirty (30) days of the quarterly inspection.

12. The permittee(s) shall operate the surface water management system, perimeter gas monitoring system, leachate collection and control system, and groundwater/leachate monitoring programs in accordance with this permit. The DOH may periodically require revisions to the plans.

13. During closure and post-closure periods, the permittee(s) shall continue to assess the landfill after emergency events such as earthquakes and fires, in accordance with Special Conditions, Section A, Item 13.

14. If portions of the landfill are closed while the remainder of the facility is still operating, the permittee(s) shall continue operating and monitoring the closed sections in accordance with this permit. If the entire facility is no longer accepting waste, the permittee(s) shall continue operating and monitoring the closed sections in accordance with this permit.

Section K. Recordkeeping and Reporting Requirements

1. The permittee(s) shall maintain records in accordance with HAR 11-58.1-15(j), Standard Conditions, Item 11, and the conditions of this permit. Records shall include the following list and any other recordkeeping requirements set forth in this permit:
   a. Financial assurance requirements (Special Conditions, Section A, Item 12)
   b. Select waste screening (Special Conditions, Section B, Item 2.h.iii)
   c. Site-specific Interface Friction Tests (Special Conditions, Section B, Item 7)
   d. Load Check Data Sheets (Special Conditions, Section C, Item 2)
   e. Training records (Special Conditions, Section A, Item 11; Section C, Item 2; and Section D, Item 5)
   f. Daily log of unacceptable waste (Special Conditions, Section C, Item 3)

- g. Special Waste Acceptance Program (Special Conditions, Section C, Item 5)
- h. User population (Special Conditions, Section D, Item 2)
- i. Climatic information (Special Conditions, Section D, Item 4)
- j. Litter control (Special Conditions, Section D, Item 9)
- k. Temporary storage/other activities (Special Conditions, Section D, Items 10 and 11)
- l. Asbestos disposal locations (Special Conditions, Section E, Item 5)
- m. Special disposal procedures for contaminated material (Special Conditions, Section E, Item 9.d)
- n. Daily cover log (Special Conditions, Section E, Item 14)
- o. Daily/weekly cover monitoring verification program (Special Conditions, Section E, Item 16 and Section F, Item 11)
- p. Monthly monitoring of intermediate cover (Special Conditions, Section E, Item 20 and Section F, Item 15)
- q. Ceasing operations due to wind (Special Conditions, Section E, Item 21)
- r. Dust control measures at ash monofill due to wind (Special Conditions, Section F, Item 17)
- s. Inspection of tanks and connector piping for leachate and leachate pumping agreements (Special Conditions, Section I, Item 8)
- t. Leachate collection system logs (automatic and manual) (Special Conditions, Section I, Item 9)
- u. Revisions to Closure and Post-Closure Plan and Financial Assurance Report (Special Conditions, Section J, Item 9)
- v. Inspections of final cover system (Special Conditions, Section J, Item 11)

2. The permittee(s) shall comply with the reporting requirements of Standard Condition No. 11, the following list, and any other reporting requirements set forth in this permit:
    - a. Operations outside normal operating hours (Special Conditions, Section A, Item 6)
    - b. Personnel updates (Special Conditions, Section A, Item 10)
    - c. Financial assurance requirements (Special Conditions, Section A, Item 12)
    - d. Incident reporting, including suspected subsurface fires (Special Conditions, Section A, Item 13)
    - e. Evaluation of landfill integrity after emergency events (Special Conditions, Section A, Items 13.c and 13.d)
    - f. Annual updates to Alternate Waste Disposal Option (Special Conditions, Section A, Item 14)
    - g. Select waste screening (Special Conditions, Section B, Item 2.h.iii)
    - h. 4B Leachate Sump Discharge Riser extension (Special Conditions, Section B, Item 5.b)

- i. Liner installation notification (Special Conditions, Section B, Item 8)
- j. Identification of hazardous or PCB waste (Special Conditions, Section C, Item 3.d)
- k. Radioactive waste detection (Special Conditions, Section C, Item 4)
- l. Contaminated materials acceptance (Special Conditions, Section C, Item 5.d)
- m. Changes to user population (Special Conditions, Section D, Item 2)
- n. Acceptance of odorous loads (Special Conditions, Section E, Item 8.f)
- o. Daily/weekly cover monitoring verification program (Special Conditions, Section E, Item 16 and Section F, Item 11)
- p. Acceptance of industrial/commercial ash at the ash monofill (Special Conditions, Section F, Item 1)
- q. Implement precautionary storm water containment actions (Special Conditions, Item 1.b.v)
- r. Gas monitoring probe repair (Special Conditions, Section H, Item 3)
- s. Explosive gas exceedences (Special Conditions, Section H, Items 6 and 7)
- t. Monitoring well/manhole repair (Special Conditions, Section I, Item 7)
- u. Manual leachate monitoring (Special Conditions, Section I, Item 9)
- v. Notification of intent to close landfill units (Special Conditions, Section J, Item 5)
- w. Final cover system areas requiring attention (Special Conditions, Section J, Item 11)

3. The permittee(s) shall submit the following documents, and any other document requirements specified in this permit, in hardcopy and electronic format:
   - a. Monitoring system program for earthquakes (Special Conditions, Section A, Item 13.d.ii)
   - b. Construction drawings to modify operations layer design for E8 (Special Conditions, Section B, Item 2.i)
   - c. Eastern Drainage System, Phase II construction drawings (Special Conditions, Section B, Item 4.c)
   - d. 4-B cell sump leachate riser installation report (Special Conditions, Section B, Item 5.b
   - e. Construction Quality Assurance report (Special Conditions, Section B, Item 10)
   - f. Western Berm Completion reports (Special Conditions, Section B, Item 15)
   - g. West Berm and filling cells E7 and E8 (Special Conditions, Section B, Item 16.c)
   - h. Seismic monitoring construction drawings for cells E5 through E9 and Western Drainage System (Special Conditions, Section B, Item 17)
   - i. Vector-specific control/prevention plan (Special Conditions, Section D, Item 8)
   - j. Surface water management plan (Special Conditions, Section G, Item 4)

k. Phase II construction drawings for Eastern Drain Water System (Special Conditions, Section G, Item 1.b.vi)
l. Gas monitoring probe installation report (Special Conditions, Section H, Item 1)
m. Gas monitoring probe construction/repair (Special Conditions, Section H, Item 3)
n. Explosive gas monitoring reports (Special Conditions, Section H, Item 5)
o. Explosive gas exceedence plans/reports (Special Conditions, Section H, Item 7)
p. Updated Leachate Management Plan (Special Conditions, Section I, Item 1)
q. Monitoring well/sump construction and repair (Special Conditions, Section I, Item 7)
r. Revised Groundwater/Leachate Monitoring Plan (Special Conditions, Section I, Item 11)
s. Groundwater/Leachate Monitoring Report (Special Conditions, Section I, Item 18)
t. Updated Closure/Post-Closure Care Plan (Special Conditions, Section J, Item 1)
u. Closure plans and specifications (Special Conditions, Section J, Item 4)
v. Summary report of closure construction (Special Conditions, Section J, Item 8)
w. Copy of notation to deed following closure (Special Conditions, Section J, Item 10)

4. The permittee(s) shall submit an Annual Operating Report (AOR), for the reporting period July 1 to June 30. The AOR shall be submitted by July 31 of each year to:

   Solid and Hazardous Waste Branch
   Environmental Management Division
   Hawaii Department of Health
   P.O. Box 3378
   Honolulu, Hawaii 96801-3378

5. The Annual Operating Report shall be submitted in hardcopy and electronic format, and shall include the following information:

   a. Types of solid waste received (MSW, ash, greenwaste, industrial/commercial, tires, wood, metals, asbestos, and other special wastes).

   b. Quantities of solid wastes received by type with totals using an appropriate unit of measure.

c. Quantities of leachate (gallons) generated and how it was handled or disposed. Water balance estimates of leachate generation by the use of the most recent EPA HELP model using climatic information collected in accordance with Special Conditions, Section D, Item 4.

d. Using site-specific data, provide results of the HELP model and demonstrate the validity of the alternative liner design with respect to point of compliance requirements. This validation shall be included in the first AOR submitted after receipt of this permit, unless meteorological conditions require further evaluation.

e. Quantities of filled airspace for the present year, past filled airspace and remaining airspace in both cubic yards and years shall be provided. The information shall be provided in both numerical and graphical presentations.

f. On or before July 31 of each year, the permittee(s) shall submit an annual topographic survey of the site as prepared by a land surveyor registered in the state of Hawaii, aerial surveys, or an approved alternate method. The survey shall compare topographic elevations to final grades as approved in this permit. The permittee(s) shall also submit annual surveys of leachate sumps, as required by Special Conditions, Section I, Item 4.

g. A Sequencing Plan, including a drawing, identifying the cell areas to be filled in the coming year including identification of the wet weather areas. The cell areas and wet weather area capacity shall be provided using an appropriate unit of measure.

h. Final fill areas, intermediate fill areas, and future unused fill areas shall be identified for the projected year.

i. Daily (MSW) and weekly (ash) cell construction plan, including cell geometry, estimated daily/weekly cover volumes, and soil:waste ratios.

j. A soil-balance report of the past year and coming projected year reported separately. The soil daily cover and intermediate cover including erosion replacement soil also shall be reported separately. The source and type of soil shall be recorded separately for daily cover and intermediate cover. The soil-balance report for the past year shall be based on records of actual use in a daily, weekly and monthly basis. Any exceedence of permit grades or incomplete/non-application of daily cover shall be identified. Current soil use records shall be maintained at the facility for review.

k. Date of final receipt of waste at each cell in the landfill. A schedule and description of anticipated closure and post-closure activities to be performed within the next five years.

l. A summary of closure and post-closure activities performed during the reporting period.

m. A copy of the detailed written estimates and documentation of financial assurance.

n. Alternate Waste Disposal Plan updates (See Special Conditions, Section A, Item 14).

Special Conditions II, Materials Drop-Off Facility

1. The Materials Drop-Off Facility (MDOF) may only accept, temporary store, and transport household waste as defined in HAR §11-58.1-03 and identified under Special Conditions II, Items 4, 5, and 10. No processing of materials shall be performed the MDOF. The operations of the facility shall be in accordance with the *Materials Drop-Off Facility Operations Plan, Waimanalo Gulch Sanitary Landfill* dated April 2009 and received May 1, 2009 and approved subsequent submissions, unless otherwise specified in these permit conditions.

2. The facility shall comply with the Waste Acceptance/Hazardous Waste Exclusion Plan, dated April 2009, approved subsequent submissions, and the following conditions.

   a. No industrial waste and commercial construction & demolition waste shall be accepted at the MDOF.
   b. No regulated hazardous waste as defined in 40 CFR Part 261 or HAR Chapter 11-261, whichever is more stringent, shall be accepted at the MDOF. No lead acid batteries shall be accepted at the MDOF.
   c. No polychlorinated biphenyls (PCB) waste as defined in 40 CFR Part 761 shall be accepted at the MDOF.
   d. No waste vehicles shall be accepted at the MDOF.

3. The permittee shall implement a screening program at the entrance to ensure that only acceptable solid wastes from household generators enter the MDOF. No commercial loads shall be accepted at the MDOF. Incoming loads shall pass through the scalehouse and the scalehouse attendant shall ensure that commercial loads are

not transported to the MDOF. If the MDOF inadvertently accepts unacceptable wastes, the permittee shall properly manage and dispose of the unacceptable wastes, in accordance with applicable federal, state, and local laws and regulations prior to causing a nuisance, health or environmental threat.

4. The permittee(s) may accept the following waste materials for recycling: green waste, fiber materials (including, but not limited to, cardboard, newspaper, and mixed paper), plastic containers (#1 and #2), glass, and scrap ferrous and non-ferrous metal (scrap metal does not include electronic waste), unless otherwise specified under Special Conditions II, Item 5. The accepted materials listed in this condition shall be free of fluids and/or contaminants that may cause harm to human health or the environment (i.e., paints, oils, solvents, propane etc.). Leaded glass such as lead crystals shall not be accepted.

5. The permittee(s) may accept the following special wastes for recycling: used oil, scrap tires, white goods, and propane tanks from residential sources.

   a. Used motor oil collection, storage, transport, and recordkeeping should be managed in accordance with HAR §11-279, *Standards For The Management Of Used Oil.*
   b. The permittee(s) shall comply with the tire disposal requirements specified under HRS 342 I for *Used Motor Vehicle Tire Recovery*. Tire storage must be free of all contaminants such as oil, grease, gasoline, diesel, etc. that could create fire hazards. Tires must be stored so that they minimize the accumulation of water and creation of a vector problem. Tires shall only be transported to a DOH-permitted recycling or tire processing facility, or out-of-state recycling facility.
   c. White goods that enter the MDOF shall be unloaded properly, stored in an upright position at the designated area and transported to a permitted facility for refrigerant removal and processing. Refrigerant containing items shall not be pushed into a scrap metal roll-off container. Measures shall be taken to prevent the release of CFC's from refrigerant containing items into the atmosphere during storage and transport. Federal regulations prohibit venting of CFCs into the atmosphere.
   d. Propane tanks that enter the MDOF shall be unloaded properly, stored in an upright position at the designated area and transported to a permitted facility for processing. Measures shall be taken to prevent the release of propane into the atmosphere during storage and transport.

6. Household waste from incoming vehicles shall be unloaded directly into the designated containers and storage areas. Roll-off containers shall be switched with

empty ones when they are filled and transported to permitted recycling or disposal facilities.

7. The permittee(s) shall store all waste accepted at the MDOF in a safe and orderly manner. Wastes shall be stored in the designated recycling drop off area indicated in the MDOF layout figure submitted May 1, 2009. The recycling drop-off area shall be located atop a concrete pad and under a roof. Recyclable wastes shall be transported to DOH-permitted recycling facilities allowed and willing to accept such wastes, prior to creating a nuisance, health, safety, or environmental hazard.

8. The permittee(s) may accept additional types of recycling materials provided that an updated site plan and operation plan addressing nuisance controls, storage method and location, site holding capacity, and removal frequency, is submitted and approved by the DOH prior to accepting recyclables. Upon approval of the updated site plan and operation plan, the updated plan shall become part of this permit.

9. The maximum storage capacity and timeframe for collected recyclables is as follows. The permittee(s) shall remove waste prior to the reaching the maximum storage capacity or within ninety (90) days, whichever comes first. Collected recyclables shall not be intermingled and shall each be stored separately.

a.	Green waste	one (1) 30-cubic yard container
b.	Tires	one (1) 15-cubic yard container
c.	White goods	24 units
d.	Used Oil	330 gallons
e.	Recyclables	30-cubic yard container (4 ports)
f.	Scrap Metals	One (1) 30-cubic yard container
g.	Propane tanks	50 units

10. Mixed waste from residential sources may also be collected at the MDOF. The maximum capacity of mixed waste at the MDOF is two (2) 30-cubic yard, or smaller, roll-off containers or bins. The containers shall be located atop a concrete pad and under a roof, in the mixed waste drop off area indicated in the MDOF layout figure submitted May 1, 2009. Mixed waste shall be transported from the MDOF when the containers are full, or at least once a day, whichever comes first. The mixed waste shall be transported to the working face of the landfill for disposal, or to another permitted solid waste management facility allowed and willing to accept mixed residential waste.

11. An all weather access road shall be maintained into and within the facility.

12. Scavenging at the facility by the general public is prohibited.

13. Adequate measures shall be prepared to prevent standing water, and to control stormwater run-on and run-off.

14. Adequate measures shall be implemented to collect generated leachate. Any collected leachate shall be properly managed and disposed of prior to creating a nuisance, health or environmental threat. Records shall be maintained as to the quantity and management of all collected leachate.

15. Suitable means shall be provided to prevent and control fires, including the implementation of *Emergency Services* procedures in your May 1, 2009 submission and the *Waimanalo Gulch Sanitary Landfill's Site Operations Manual, Section I, Part E, Emergency Action Plan* submitted December 14, 2009, and approved subsequent submissions.

16. Suitable means shall be provided to prevent solid waste from scattering; control litter, odors, insects, and vectors; and minimize nuisance conditions. If existing measures are considered inadequate, additional measures may be required.

17. All solid waste passing through this facility shall be collected, treated, recycled, or disposed of at a permitted solid waste management disposal and/or recycling facility.

18. Operational records shall be maintained and shall include a daily log of type and volume of solid waste transported from the MDOF, and the disposal/recycling destination of the solid waste.

19. The permittee shall submit an annual operation report to the DOH by July 31 of each year for the preceding fiscal year (July 1 to June 30). The annual operation report shall be submitted to:

    Department of Health
    Solid and Hazardous Waste Branch
    919 Ala Moana Blvd., Room 212
    Honolulu, Hawaii 96814

    The annual operation reports shall include the following information:

    a. Quantities of solid waste received by type including destination for disposal.
    b. Quantities (in gallons) of liquid waste (leachate) generated and method of management disposal.

c. Quantities of materials recycled from the waste stream by type and destination.

An estimate in gross values of tons, cubic yards, or quantity count, as appropriate, is sufficient.

20. The permittee(s) shall comply with the recordkeeping requirements relating to used motor vehicle tires as provided under HRS Chapter 342 I. The statute requires facilities that accept used tires to submit a summary of the following information by July 31 of each year:
   a. date of receipt of used tires;
   b. quantity of used tires received; and
   c. record of shipment indicating:
      i) ultimate destination of the used tires;
      ii) identification of the transporter;
      iii) date of shipment; and
      iv) quantity of tires shipped.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION, a federally-recognized Indian tribal government and as *parens patriae* on behalf of the Enrolled Members of the Confederated Tribes and Bands of the Yakama Nation; FRIENDS OF THE COLUMBIA GORGE, an Oregon non-profit corporation; NORTHWEST ENVIRONMENTAL DEFENSE CENTER, an Oregon non-profit corporation; COLUMBIA RIVERKEEPER, a Washington non-profit corporation; DAWN STOVER, a Washington resident; and DANIEL LICHTENWALD, a Washington resident,

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF AGRICULTURE, UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE; TOM VILSACK, Secretary of the United States Department of Agriculture; and CINDY SMITH, Administrator of the United States Department of Agriculture Animal and Plant Health Inspection Service,

Defendants.

NO. CV-10-3050-EFS

ORDER GRANTING PLAINTIFFS' MOTIONS FOR PRELIMINARY INJUNCTION HEARING and MOTION FOR EXPEDITED HEARING, DENYING MOTION TO STRIKE DECLARATION, and REQUIRING SETTING OF SCHEDULING CONFERENCE

EXHIBIT P

A telephonic hearing occurred in the above-captioned matter on August 30, 2010, on Plaintiffs Confederated Tribes and Bands of the Yakama Nation's ("Yakama Nation") Motion for Preliminary Injunction (Ct. Rec. 66) and Friends of Columbia Gorge, Northwest Environmental Defense Center, Columbia Riverkeeper, Dawn Stover, and Daniel Lichtenwald's Motion for Preliminary Injunction (Ct. Rec. 24). After obtaining a temporary restraining order (Ct. Rec. 37), Plaintiffs seek a preliminary injunction barring the United States Department of Agriculture ("USDA") from authorizing shipments of Hawaiian municipal waste (hereinafter "garbage") into the mainland. Plaintiffs were represented by Michael Chappell, Tom Buchele, Anthony Broadman, Gabriel Galanda, and Julio Carranza.

Defendants USDA, USDA Animal and Plant Health Inspection Service (APHIS), USDA Secretary Tom Vilsack, and APHIS Administrator Cindy Smith oppose the motions. They were represented by Ty Bair and Pam DeRusha.

After reviewing the submitted material and relevant authority and hearing from counsel,[1] the Court is informed. As explained below, the motions are granted and a preliminary injunction is entered.

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[1] Also before the Court were the Motion to Strike Supplemental Declaration of Rebecca Bech (Ct. Rec. 69) and Motion to Expedite Hearing thereon (Ct. Rec. 72) filed by the environmental organization and individual Plaintiffs. The Court found good cause to grant an expedited hearing. After hearing from counsel, the Court denied the motion to strike APHIS Deputy Administrator for Plant Protection and Quarantine (PPQ) Bech's untimely declaration.

A. Background

Prior to 2006, federal regulations barred the shipment of Hawaiian garbage for dumping in the continental United States (hereinafter "the mainland"). Then, in 2006, APHIS proposed amending the regulations to allow for shipment of certain garbage to the mainland, 71 Fed. Reg. 20,030 (April 19, 2006), and ultimately determined such was appropriate in accordance with 7 C.F.R. §§ 330.402-403. APHIS began assessing the environmental and pest risks associated with hauling garbage, which would be baled and then wrapped in plastic, from Hawaii to the Roosevelt Regional Landfill (hereinafter "Roosevelt Landfill") located near the Columbia River[2] and the Yakama Nation[3] reservation in Washington. In pertinent part, APHIS prepared an environmental assessment (EA), which concluded that Hawaiian Waste Systems' (HWS) proposed shipment of Hawaiian garbage to the Roosevelt Landfill would have no significant environment impacts. Thereafter, APHIS issued a Finding of No Significant Impact (FONSI). Each of the Plaintiffs submitted comments in response to the FONSI; however, it is unclear whether APHIS considered the Yakama Nation's comments.

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[2] The environmental organizations' members and individual Plaintiffs enjoy hiking and observing the wildlife on the land near the Roosevelt Landfill and fishing and swimming in the Columbia River.

[3] The Yakama Nation is a federally-recognized Indian tribe. 1855 Treaty with the Yakama, 12 Stat. 951. The Yakama Nation enjoys reserved "in common" usufructuary rights on the land in and immediately surrounding the Roosevelt Landfill.

Thereafter, APHIS and HWS entered into Compliance Agreements, allowing HWS to handle and transport up to 150,000 tons of garbage from Hawaii to the Roosevelt Landfill annually. After the garbage is unloaded at a Washington or Oregon port, it will be shipped by rail and truck along the Columbia River Gorge for burial at the Roosevelt Landfill.

On July 28, 2010, Plaintiffs filed this lawsuit, seeking a temporary restraining order and preliminary injunction preventing the shipment of Hawaiian garbage to the mainland until the Court has resolved Plaintiffs' claims that Defendants violated the National Environmental Protection Act (NEPA), 42 U.S.C. §§ 4321-4370e; Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470 *et seq.*; the Yakama Treaty of 1855; federal Indian trust common law; the American Indian Religious Freedom Act, 42 U.S.C. §§ 1996 *et seq.*; Presidential Executive Orders 13,175, 13,007, and 12,898; and the Administrative Procedures Act, 5 U.S.C. §§ 500 *et seq.* (Ct. Recs. 1 & 56.) On July 29, 2010, after hearing from counsel, the Court entered a temporary restraining order enjoining Defendants from authorizing shipments of Hawaiian garbage into the mainland and set this preliminary injunction hearing. (Ct. Rec. 37.)

On August 11, 2010, APHIS cancelled the Compliance Agreements with HWS in order to conduct additional analysis pursuant to the NHPA. (Ct. Rec. 58: Decl. Bech ¶ 5.) HWS appealed this cancellation; on August 27, 2010, APHIS Administrator Smith denied the appeal. (Ct. Rec. 67: Decl. Bech ¶ 8.) On August 27, 2010, APHIS-PPQ Deputy Administrator Bech filed a declaration stating:

> 9. APHIS had determined that it would be appropriate to conduct additional . . . NEPA . . . analysis regarding HWS' petition to move MSW from Hawaii to the mainland,

> U.S. to further assess the impacts associated with the movement under a compliance agreement. Such analysis will be made available for public review and comment prior to issuing any NEPA final decision document.
>
> 10. Unless and until APHIS is satisfied that it has completed all of its obligations under the NHPA and under NEPA as per 7 C.F.R. § 330.402(b)(2), regarding HWS' petition to move MSW from Hawaii to the mainland, U.S., no new compliance agreement will be issued by APHIS.

Id. At the hearing, defense counsel Mr. Bair clarified that the EA and FONSI will remain in effect while APHIS conducts supplemental environmental review.

B. Authority and Analysis

Defendants have not challenged the evidence submitted by Plaintiffs in support of their preliminary injunction requests; rather, Defendants contend that a preliminary injunction is inappropriate because this lawsuit is moot and no injury will be suffered given that APHIS has cancelled the Compliance Agreements, will supplement its environmental analysis, and will engage in consultation as required by the NHPA.

1. Mootness Doctrine

Defendants are correct that this Court's jurisdiction is limited to cases or controversies.[4] U.S. Const. art. III § 2. A case is moot if

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[4] The standing and mootness doctrines are both based on the Constitution's case-or-controversy requirement. *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs. (TOC), Inc.*, 528 U.S. 167, 180 (2000) (citing U.S. Const. art III § 2). Standing is determined at the time the lawsuit is filed; whereas, the question of mootness arises during the pendency of the lawsuit: "'[t]he requisite personal interest that must

the issues are no longer live and the court is unable to grant effective relief. *EEOC v. Fed. Express Corp.*, 558 F.3d 842, 846 (9th Cir. 2009); *GTE Cal., Inc. v. FCC*, 39 F.3d 940, 945 (9th Cir. 1994). Nonetheless, "completion of activity is not the hallmark of mootness." *Neighbors of Cuddy Mountain v. Alexander*, 303 F.3d 1059, 1065 (9th Cir. 2002).

There are exceptions to the mootness doctrine. *EEOC*, 558 F.3d at 847. The relevant exception is voluntary cessation, which applies "if the defendant voluntarily stops the allegedly illegal conduct to avoid a judgment against him, unless it is 'absolutely clear that the allegedly wrongful behavior could not reasonably be expected to recur.'" *Forest Guardians v. U.S. Forest Serv.*, 329 F.3d 1089, 1095 (9th Cir. 2003) (quoting *Laidlaw Envtl. Servs.*, 528 U.S. at 189). This is a "stringent" standard, and the party claiming mootness has the "'heavy burden of persuad[ing]' the court that the challenged conduct cannot reasonably be expected to start up again." *Laidlaw Envtl. Servs.*, 528 U.S. at 189 (quoting *United States v. Concentrated Phosphate Export Ass'n*, 393 U.S. 199, 203 (1968)). The timing of the voluntary cessation is a factor in considering the defendant's motivation for voluntarily ceasing the challenged action. *Native Vill. of Noatak v. Blatchford*, 38 F.3d 1505, 1511 (9th Cir. 1994).

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exist at the commencement of the litigation (standing) must continue throughout its existence (mootness).'" *Id.* at 189 (citing quotations omitted); *see also Sierra Club v. U.S. Army Corps of Eng'rs*, 446 F.3d 808, 814 (8th Cir. 2006).

Following the initiation of this lawsuit, APHIS 1) cancelled the Compliance Agreements with HWS, 2) stated that it will engage in consultation consistent as required by the NHPA, and 3) represented that it will engage in supplemental environmental analysis associated with hauling Hawaiian garbage to the Roosevelt Landfill. Yet, APHIS has neither 1) withdrawn the EA or FONSI nor 2) represented that it will consult with the Yakama Nation. The FONSI marked the consummation of APHIS's decision-making process and legal consequences flow from it—it is a final action. *See Sierra Club*, 446 F.3d at 815-16. Accordingly, simply withdrawing the Compliance Agreements, communicating with agencies in compliance with the NHPA, and conducting supplemental environmental analysis does not afford Plaintiffs the entire relief they were seeking, i.e., invalidation of the EA and FONSI. Further, if the FONSI remains, APHIS has the regulatory authority to enter into a compliance agreement allowing the shipment of Hawaiian garbage to the Roosevelt Landfill *without* seeking public comment or providing notice. 7 C.F.R. § 330.403. These circumstances are clearly different than those before the district court in *Wildwest Institute v. Seesholtz*—a case relied upon by Defendants. No. CV-07-199-S-BLW, 2008 WL 3289486 (D. Idaho Aug. 8, 2008).

Accordingly, the Court finds that Defendants have failed to establish the stringent standard necessary to prevent the application of the voluntary-cessation exception to the mootness doctrine because the challenged conduct, i.e., reliance upon the allegedly-inadequate EA and FONSI and deficient interaction with the Yakama Nation, has not been withdrawn or recognized as deficient. This Court can still give effective relief by 1) declaring that APHIS failed to comply with NEPA's procedural requirements and 2) requiring APHIS to consult with the Yakama Nation prior to taking final agency action. *See EEOC*, 558 F.3d at 847-48 (finding that voluntary cessation exception to the mootness doctrine applied because FedEx had not given any assurance that it would not challenge another administrative subpoena). *Cf. Forest Guardians*, 329 F.3d at 1095 (determining agency met heavy burden because agency admitted that its forest management plan was defective and it had not attempted to issue permits under the defective plan); *Am. Rivers v. Nat'l Marine Fisheries Serv.*, 126 F.3d 1118, 1123-24 (9th Cir. 1997) (finding case moot because biological opinion had been superseded by a newer biological opinion that would not expire for three years, thereby providing sufficient time to challenge new biological opinion); *Nome Eskimo Cmty. v. Babbit*, 67 F.3d 813, 815-16 (9th Cir. 1995) (determining challenge to agency's notice that it would accept bids for lease rights was moot because agency counsel represented that the agency would not attempt further mineral development for five years); *Aluminum Co. of Am. v. Bonneville Power Admin.*, 56 F.3d 1075, 1078 (9th Cir. 1995) (finding challenge to 1993 record of decision (ROD) moot because it had expired and agency action was being taken pursuant to a new ROD for which there was sufficient time to obtain judicial review); *N.W. Envtl. Def. Ctr. v. Allen*, No. 05-1279-AA, 2007 WL 1746333 (D. Or. June 13, 2007) (finding no agency action for the court to review because the biological opinion was withdrawn by the agency so that it could comply with a recent Ninth Circuit decision; however, the court imposed a notice requirement on the agency if it planned on issuing a new biological opinion). Finding that effective relief can be given, the Court proceeds to the merits of Plaintiffs' motions for preliminary injunction.

2. Preliminary Injunction

The Court highlights again that Defendants did not challenge the evidence submitted by Plaintiffs in support of their preliminary injunction request. Defendants submit, however, that neither Plaintiffs nor the public are likely to suffer harm if the preliminary injunction is not entered because the Compliance Agreements with HWS were cancelled and supplemental environmental analysis will occur.

A preliminary injunction may be issued to maintain the status quo if the plaintiffs establish that they are "likely to succeed on the merits, that [they are] likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in [their] favor, and that an injunction is in the public interest." *Winter v. NRDC,* 129 S. Ct. 365, 374 (2008). The Ninth Circuit uses a "sliding scale" under which a preliminary injunction may be issued if there are serious questions going to the merits and the balance of hardships tips sharply in the plaintiffs' favor, along with satisfaction of the two other *Winter* factors. *Alliance for the Wild Rockies v. Cottrell,* --- F.3d ---, 2010 WL 2926463 (9th Cir. July 28, 2010).

The Court finds this standard is met. First, regardless of 1) the cancellation of the Compliance Agreements and 2) APHIS's stated intent to comply with the NHPA and conduct supplemental environmental analysis, there are serious questions relating to whether the EA sufficiently analyzed the impacts that the shipment of Hawaiian garbage will have on the affected Northwest area, including the ports, routes of train or truck travel, and the Roosevelt Landfill. Other than a no-action alternative, there was no analysis of alternatives. For these reasons, the Court finds it likely that Plaintiffs will prevail on their NEPA claims that the EA and FONSI failed to adequately analyze the environmental impacts of shipment and receipt of Hawaiian garbage to the Roosevelt Landfill, which is located on lands ceded by the Yakama Nation, wherein tribal members enjoy "in common" usufructuary rights, and in close proximity to the Columbia River, in which the environment organization members and individual Plaintiffs enjoy fishing, boating, and swimming. *See Ctr. for Biological Diversity v. Nat' Highway Traffic Safety Admin.*, 538 F.3d 1172, 1220 (9th Cir. 2008). Further, there are serious questions about whether Defendants adequately consulted with the Yakama Nation as required by the Yakama Treaty of 1855 and federal Indian trust common law.

Second, Plaintiffs are likely to suffer irreparable harm in the absence of a preliminary injunction barring the shipment of Hawaiian garbage. The Roosevelt Landfill is located in the area in which tribal members exercise their "in common" hunting, gathering, and fishing rights protected by the Yakama Treaty of 1855. The introduction of an invasive species or contamination by the Hawaiian garbage would immeasurably harm the resources and waterways enjoyed by the Yakama Nation, the environmental organization members, and the two individual Plaintiffs, as well as the Yakama Nation's logging industry. The cancellation of the Compliance Agreements and stated intent to conduct supplemental environmental analysis does not lessen the likelihood of irreparable harm because the injury under NEPA occurred when APHIS issued its allegedly deficient EA and FONSI. *See Siera Club*, 446 F.3d at 816 ("The injury-in-fact is increased risk of environmental harm stemming from the agency's allegedly uninformed decision-making."). Further, APHIS may enter into a new compliance agreement without seeking public comment or giving public notice so long as the FONSI remains effective. 7 C.F.R. § 330.403.

Third, the balance of equities tips sharply in Plaintiffs' favor. While the USDA has an interest in encouraging economic growth and Hawaii has an interest in disposing its garbage, those interests are trumped by Plaintiffs' interests in ensuring that the environmental impacts and the related economic consequences resulting from those environmental impacts are fully considered before Hawaiian garbage is shipped to the Roosevelt Landfill. The pre-2006 regulation prohibiting the shipment of Hawaiian garbage to the mainland is evidence of the historic concerns about the environmental risks inherent in such shipments. While 7 C.F.R. § 330.402 lifted that ban, APHIS's fidelity to the NEPA reprocess is critical. And APHIS acknowledges that some level of supplemental environmental analysis is necessary under the circumstances.

Fourth, a preliminary injunction is in the public interest. Although baled garbage will remain at the Honolulu port longer than anticipated, it has already sat there for over 230 days. There is nothing before the Court indicating that the presence of the garbage in Honolulu will injure the public. In comparison, the introduction of an invasive species from Hawaii to the mainland will injure those who enjoy these lands, waters, and wildlife, and those who benefit from industries, such as the timber and soft-fruit industries, which may be affected by an invasive species.

3. Conclusion

Accordingly, the Court determines Plaintiffs have established that a preliminary injunction is necessary. Nonetheless, the Court will lessen the scope of the previously-imposed bar to that area of the mainland wherein the Plaintiffs will likely suffer injury. In addition, the parties are to meet and confer regarding scheduling and submit a joint status certificate; thereafter, a scheduling conference will be held.

For the reasons given above, **IT IS HEREBY ORDERED:**

1. Friends of Columbia Gorge, Northwest Environmental Defense Center, Columbia Riverkeeper, Dawn Stover, and Daniel Lichtenwald's Motion to Expedite Hearing **(Ct. Rec. 72)** is **GRANTED**.

2. Friends of Columbia Gorge, Northwest Environmental Defense Center, Columbia Riverkeeper, Dawn Stover, and Daniel Lichtenwald's Motion to Strike Supplemental Declaration of Rebecca Bech **(Ct. Rec. 69)** is **DENIED**.

3. The Yakama Nation's Motion for Preliminary Injunction **(Ct. Rec. 66)** is **GRANTED**.

4. Friends of Columbia Gorge, Northwest Environmental Defense Center, Columbia Riverkeeper, Dawn Stover, and Daniel Lichtenwald's Motion for Temporary Restraining Order and Preliminary Injunction **(Ct. Rec. 24)** is **GRANTED**.

5. Defendants are enjoined from:

   a. authorizing shipments, subject to USDA-APHIS permitting, of Hawaiian garbage to Washington or Oregon ports on the Columbia River and/or to the Roosevelt Landfill, including those shipments authorized under any compliance agreements between HWS and USDA-APHIS, and

b. permitting, authorizing, allowing, or otherwise granting permission to HWS or any other private trash hauling enterprise to load, ship, transport, or otherwise export Hawaiian garbage from Honolulu to Washington or Oregon ports on the Columbia River and/or to the Roosevelt Landfill.

6. The $100.00 bond (Ct. Rec. 38) posted by Plaintiffs shall remain posted.

7. No later than **September 13, 2010**, the parties shall file a joint status certificate setting forth the results of their meet and confer regarding 1) the production of the administrative record, 2) the briefing and calendering of summary judgment motions, 3) trial date and length, and 4) other helpful scheduling information for the Court.

IT IS SO ORDERED. The District Court Executive is directed to file this Order and provide copies of this Order to counsel.

DATED this 30th day of August 2010

s/Edward F. Shea
EDWARD F. SHEA
United States District Judge

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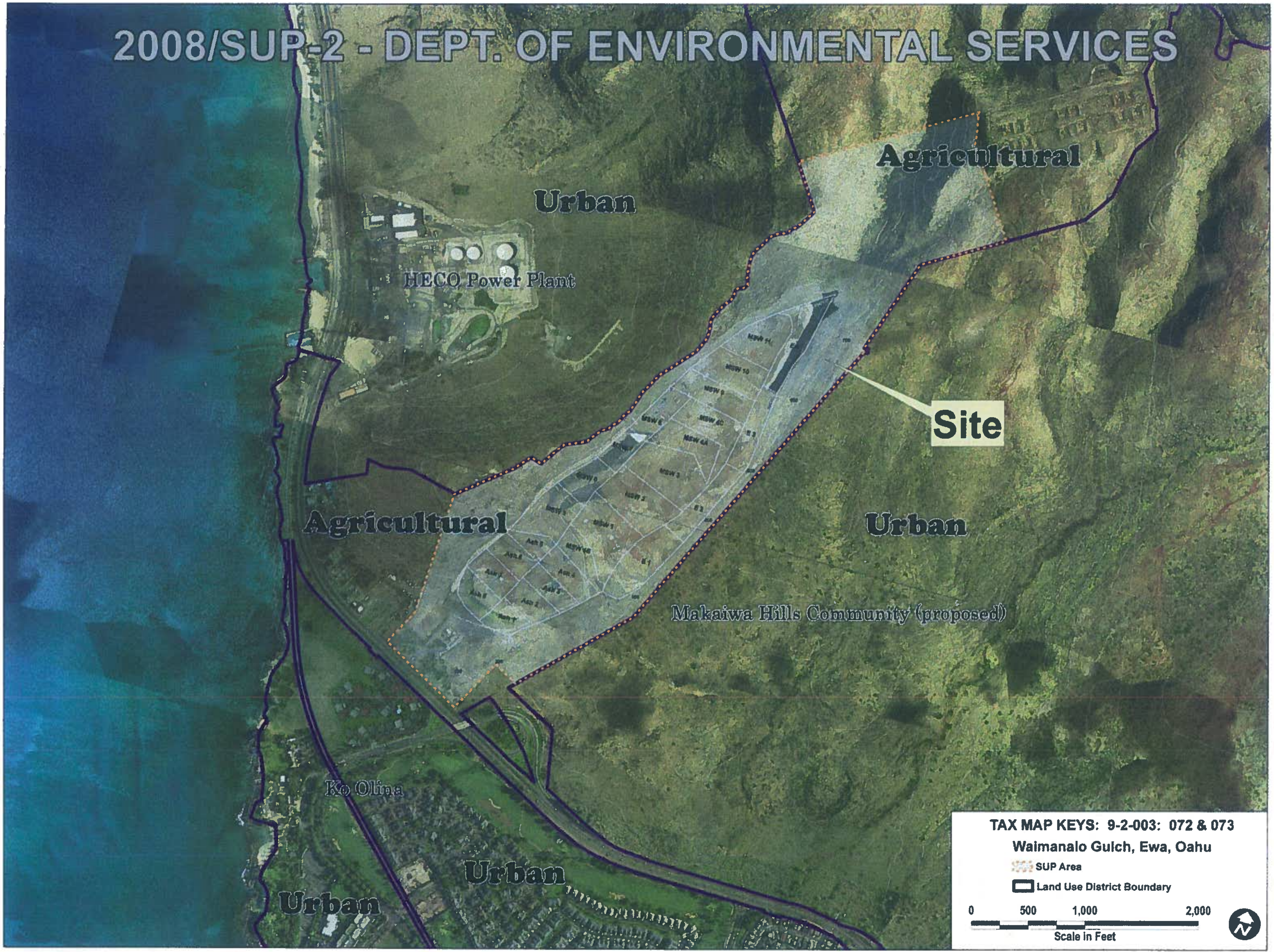

Date Prepared: Oct 3, 2011