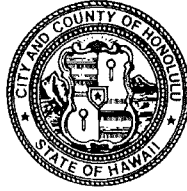


DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU

ORIGINAL

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KIRK CALDWELL
MAYOR



July 20, 2017

LORI M.K. KAHIKINA, P.E.
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IN REPLY REFER TO:
RD 17-067

Mr. Edmund Aczon, Chairperson
Land Use Commission
Department of Business, Economic Development & Tourism
State of Hawaii
235 South Beretania Street, Room 406
Honolulu, Hawaii 96813

Mr. Dean I. Hazama, Chair
Planning Commission
c/o Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Aczon and Mr. Hazama:

Subject: Docket No. SP09-403
New Special Use Permit
Waimanalo Gulch Sanitary Landfill

In accordance with the State Land Use Commission Order Adopting the City and County of Honolulu Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications, the attached Seventh Annual Report is submitted for your information. This report covers the period from June 2016 through May 2017.

The report is also being submitted to the Planning (Land Use) Commission.

Sincerely,

A handwritten signature in black ink, appearing to read "Lori M.K. Kahikina".

Lori M.K. Kahikina, P.E.
Director

Attachments

LAND USE COMMISSION
STATE OF HAWAII
2017 JUL 27 P 12:25

LAND USE COMMISSION
STATE OF HAWAII

2017 JUL 27 P 12:05

SEVENTH ANNUAL REPORT
STATUS OF ACTIONS TAKEN TO COMPLY WITH THE STATE LAND USE
COMMISSION'S ORDER DATED OCTOBER 2, 2009
AND
STATUS OF OPERATIONS
WAIMANALO GULCH SANITARY LANDFILL

Prepared For:

**Land Use Commission
State of Hawaii**

**Planning Commission
City and County of Honolulu**

Prepared By:

**Department of Environmental Services
City and County of Honolulu**

July 15, 2017

TABLE OF CONTENTS

PREFACE	1
STATUS OF IDENTIFYING AND DEVELOPING NEW LANDFILL SITES ON OAHU	2
1. General	2
2. Current Status	2
STATUS OF LANDFILL OPERATIONS	3
1. Tonnage	3
2. Current Status of WGSL	3
3. Landfill Expansion Permits	3
a. Solid Waste Permit	3
b. Special Use Permit	3
COMPLIANCE WITH CONDITIONS OF ORDER	7
ALTERNATIVE TECHNOLOGIES	11
1. H-POWER	11
a. Sludge	11
b. Medical Waste	11
c. Tires	11
d. Process Residue	12
e. Auto Shredder Residue (ASR)	12
f. Other	12
2. Sludge Re-Use	12
3. Other Request for Proposals (RFPs) for Alternative Waste Disposal Technologies	13
4. Materials Recycling	13
a. Curbside Recycling	18
b. Multi-Material Recycling Centers	18
c. Condominium Recycling	19
d. Electronic Waste (e-waste)	19
e. Business Recycling Programs	19

f.	Plastic Bag Ban	20
g.	Public Education	20
5.	Interim Off-island Shipping of Waste	21
CONCLUSION		22

PREFACE

This report was prepared in accordance with the State of Hawaii Land Use Commission's ("LUC") 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 2, 2009 ("LUC Order"). Under Condition No. 6 of the LUC Order, the Applicant (Department of Environmental Services, City and County of Honolulu, hereinafter "ENV") is required to submit annual reports to the Planning Commission of the City and County of Honolulu ("Planning Commission") and the LUC regarding the following: (1) the status of identifying and developing new landfill sites on Oahu to supplement or replace the Waimanalo Gulch Sanitary Landfill ("WGSL"); (2) the WGSL operations; and (3) ENV's compliance with the conditions imposed by the LUC Order. This report shall also address ENV's efforts to use alternative technologies as appropriate, and to seek beneficial re-use of stabilized, dewatered sewage sludge.

This is the seventh report and covers the period from June 2016 through May 2017, or as otherwise stated.

STATUS OF IDENTIFYING AND DEVELOPING NEW LANDFILL SITES ON OAHU

1. General

Condition No. 4 of the LUC Order requires that, on or before November 1, 2010, ENV shall begin to identify and develop one or more new landfill sites that shall either replace or supplement the WGSL.

2. Current Status

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, May 12, July 19, November 8, 2011 and February 1, March 16, and April 20, 2012. The Landfill Advisory Committee's final report was completed on September 25, 2012. All Committee meetings were open to the public and to public comment. Handouts provided to the Landfill Advisory Committee, the Group Memory of each meeting, and the final report are posted online at www.opala.org.

In the final report, 11 potential sites were identified and ranked based on community criteria. The City is proceeding with this process by having the consultant further review and analyze the sites based on the following technical and engineering considerations: capacity, cost, feasibility, land ownership (including cost and ability to acquire, capacity and infrastructure requirements, logistics and transportation, development costs, and capacity projections for current landfills, WGSL and PVT), and a timetable for WGSL, new landfill development and construction. Based on the remaining capacities of the existing landfills and the projected fill rates, it is prudent to analyze if any of the 11 identified sites could become more or less favorable based on this timetable.

The consultant's original contract called for an Environmental Impact Statement (EIS) to be undertaken as a part of their scope of work. Because the Landfill Advisory Committee identified 11 potential sites, it was not feasible to do an EIS at this stage. Therefore, the consultant's contract was amended to include the further analysis of the 11 sites as indicated above. The consultant is proceeding to evaluate the relevant criteria as described above. The City expects the project to be completed by June 30, 2018.

STATUS OF LANDFILL OPERATIONS

1. Tonnage

Over the period beginning June 1, 2016, through May 31, 2017, the Waimanalo Gulch Landfill received the following amounts of material:

H-POWER Ash.....	145,137 tons
H-POWER Residue.....	45,963 tons
Municipal Solid Waste (MSW).....	64,291 tons

2. Current Status of WGSL

Activities conducted during the reporting period include MSW landfilling in Cells E-4, E-5, E-6 and E-7 and ash landfilling in Cell E-9.

3. Landfill Expansion Permits

a. Solid Waste Permit

The final solid waste permit for the proposed lateral expansion was approved by the State of Hawaii, Department of Health (DOH) on June 4, 2010. A permit renewal application was submitted on a timely basis to DOH in May 2014. In accordance with Hawaii Revised Statutes § 343H-4(e) and Hawaii Administrative Rules §11-58.1-04(3), the landfill is legally continuing operations under the conditions of the previous permit and the current operations plan submitted to DOH. The permit renewal is expected to be issued later in 2017. New cell construction and drainage improvements are complete.

b. Special Use Permit (SUP)

The current SUP provided that WGSL stop accepting MSW for disposal as of July 31, 2012. Condition No. 14 of the SUP stated, "Municipal solid waste shall be allowed at the Waimanalo Gulch Sanitary Landfill up to July 31, 2012, provided that only ash and residue from H-POWER shall be allowed at the WGSL after July 31, 2012." At the time that Condition No. 14 was imposed, some types of MSW could be disposed of at H-POWER, but certain wastes such as sewage sludge, animal carcasses, and treated medical sharps could not be disposed of at H-POWER. Moreover, because H-POWER's operating permit requires a permitted landfill as a back-up disposal option, it was conceivable that H-POWER would have to shut down if WGSL is required to stop accepting MSW.

On June 28, 2011, ENV filed a SUP Amendment Application with the City Department of Planning and Permitting, to delete Condition No. 14 of the SUP, which would allow WGSL to continue accepting municipal solid waste until the landfill reaches its capacity as permitted by the DOH.

The City and County of Honolulu Planning Commission (Planning Commission) convened a public hearing on October 5, 2011, to consider ENV's application to delete Condition No. 14 of the SUP. The Planning Commission heard public testimonies and granted petitions to intervene in the SUP proceeding to Ko Olina Community Association (KOCA), Maile Shimabukuro, and Schnitzer Steel Hawaii Corp. With the granting of the petitions to intervene, the matter proceeded as a contested case. A pre-hearing conference to discuss procedural and other matters in the contested case was held on October 12, 2011. A contested case hearing began on December 7, 2011, with opening statements given by ENV and interveners. The contested case hearing continued on January 11, 25, February 8, March 7, 14, April 4, 11, 23 and May 25, 2012. On May 25, 2012, the Planning Commission stayed the matter for six (6) months in light of the Hawaii Supreme Court's (Supreme Court's) decision to strike Condition No. 14 of the SUP described below.

The City filed an appeal to the Supreme Court on February 22, 2012 to delete Condition No. 14. On May 4, 2012, the Supreme Court ruled in favor of the City and struck down Condition No. 14, which was the LUC's condition imposing the MSW deadline. The Supreme Court further ordered that the matter be remanded to the Circuit Court and the LUC for action on the SUP consistent with the Supreme Court decision. The LUC convened on July 5, 2012, to discuss procedural options only, in light of the Supreme Court remand and stayed Planning Commission proceeding.

Upon request by ENV, the LUC directed the parties to file written briefs regarding the proper procedural steps. ENV argued that the case decided by the Supreme Court remain with the LUC for decision-making. The intervenors argued to remand the Supreme Court case back to the Planning Commission with a request to consolidate the amendment application and the Supreme Court cases. The LUC decided at its meeting on September 14, 2012, to remand the Supreme Court case to the Planning Commission with a recommendation to consolidate the two cases. On December 19, 2012, the Planning Commission continued its consideration of the LUC request to consolidate the two cases to allow the incoming City administration to weigh in on the matter and the possibility of a joint recommendation from the parties. On February 20, 2013, the Planning Commission again continued its consideration of the LUC request to consolidate based upon the parties' representation that they intended to file a joint recommendation to the Planning Commission regarding both the consolidation and the subject matter of the remand. On May 16, 2014, the LUC requested a status report on the remanded matter. The City represented that the parties are continuing to negotiate a joint recommendation. The LUC directed

the City to provide an update to the LUC and the parties of these negotiations every two months, beginning in July 2014.

At a public hearing before the LUC on October 22, 2015, ENV provided a report on the status of the proceedings before the Planning Commission. ENV reported that it made progress in negotiating with KOCA and that the parties needed additional time to establish objectives for further landfill waste diversion. Accordingly, ENV and KOCA represented that they would file a stipulation with the Planning Commission to commit to an 18-month schedule to implement additional alternative uses or disposal methods to increase waste diversion. The LUC requested that the parties include Colleen Hanabusa, who was an intervenor in the matter remanded by the Hawaii Supreme Court, in the negotiations.

At a hearing before the LUC on May 18, 2016, ENV reported that it reached an agreement with all parties except Colleen Hanabusa. This agreement would have continued the proceedings before the Planning Commission to April 22, 2017. Because ENV could not obtain the concurrence of all parties to this proceeding, ENV filed a motion to stay the proceedings. The Planning Commission denied the stay, ordered the consolidation of the matter remanded by the Hawaii Supreme Court and the SUP amendment application, and continued the contested case hearing to March 1, 2017.

On March 1, 2017, the Planning Commission met to consider adoption of its Findings of Fact, Conclusions of Law, and Decision and Order. The Planning Commission approved the City's application to modify the SUP. The Planning Commission adopted the City's proposed findings of fact (except for facts that pre-date the 2011 permit modification application) and conclusions of law, and the LUC's order adopting the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order with Modifications dated October 22, 2009, by deleting Condition No. 14, and adding three conditions. In accordance with HRS Section 205-6(e), the application was transmitted to the LUC. KOCA filed a motion to deny and remand ENV's applications and an alternative motion to deny ENV's applications unless additional conditions are imposed. The City did not object to remanding the Applications but objected to KOCA's contentions regarding the Planning Commission chair and KOCA's alleged erroneous findings of fact. The City also objected to KOCA's alternative motion.

On May 24, 2017, the LUC met to consider KOCA's motions and the Planning Commission's findings of fact, conclusions of law, and decision and order relating to proceedings on remand relating to ENV's applications. The LUC granted in part and denied in part KOCA's motion to deny and remand. The record in the proceedings were remanded to the Planning Commission for further proceedings to (1) clarify whether the Planning Commission followed Section 2-75 of the Rules of the Planning Commission in issuing its Findings of Fact,

Conclusions of Law, and Decision and Order; (2) clarify the basis of the Planning Commission's proposed additional Condition No. 3, which specifies a December 31, 2022, date within which the Applicant is to identify an alternative site that will be used upon the WGS� reaching its capacity and the implications it has on the closure date of the WGS� to use and subsequent commencement of operations at the alternative landfill site; (3) clarify whether the record needs to include updated information on the operation of the WGS�, the landfill site selection process, and the waste diversion efforts of the City and County of Honolulu; (4) assuming the Planning Commission eventually recommends approval of the matter, clarify the effective date of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order; and (5) clarify whether the Planning Commission is ruling on both the 2008 Application and the 2011 Application in its Findings of Fact, Conclusions of Law, and Decision and Order.

The landfill will continue operations under the current SUP while the applications are remanded for further proceedings.

COMPLIANCE WITH CONDITIONS OF ORDER

The LUC adopted the Planning Commission's Findings of Fact, Conclusions of Law, And Decision and Order dated August 4, 2009, as its own Findings of Fact, Conclusions of Law, And Decision and Order, subject to sixteen (16) conditions. The general description and status of each condition is as follows:

Condition No.	Description
1	<p>The Applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, Commission on Water Resources Management, and Board of Water Supply for all onsite and offsite improvements involving access, storm drainage, leachate control, water, well construction, and wastewater disposal.</p> <p><u>Status:</u> All applicable permits/approvals have been obtained.</p>
2	<p>In accordance with Chapter 11-60.1 "Air Pollution Control," Hawaii 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.</p> <p><u>Status:</u> Dust control measures and management plan have been provided for as part of the Solid Waste Management Permit issued by the DOH.</p>
3	<p>The City and County of Honolulu shall 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 and noise and odor pollution relative to the operation of the landfill.</p> <p><u>Status:</u> So noted.</p>
4	<p>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 public hearing to reevaluate 2008/SUP-2 (SP09-403) and shall determine whether modification or revocation of 2008/SUP-2 (SP09-403) is</p>

Condition No.	Description
	<p>appropriate at that time. The Planning Commission shall make a recommendation to the Land Use Commission.</p> <p><u>Status:</u> See section on Status of Identifying and Developing New Landfill Sites on Oahu in this report.</p>
5	<p>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.</p> <p><u>Status:</u> See section on Alternative Technologies in this report.</p>
6	<p>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 WGSLS'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.</p> <p><u>Status:</u> Subsequent reports will be submitted in June of each year.</p>
7	<p>Closure Sequence "A" for the existing landfill cells at WGSLS as shown on Exhibit "A12" must be completed, and final cover applied, by December 31, 2012.</p> <p><u>Status:</u> Closure Sequence "A" was commenced in June 2012 and the final cover was applied and substantially completed in December 2012.</p>
8	<p>WGSLS 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.</p> <p><u>Status:</u> The Solid Waste Management Permit issued by DOH requires that landfill operations be confined to between the hours of 7:00 a.m. and 4:30 p.m. Permission to extend hours to accommodate refuse loads during H-POWER outages shall be obtained from DOH on an as-needed basis.</p>

Condition No.	Description
9	<p>The Applicant shall coordinate construction of the landfill cells in the expansion area and operation of WGSL with Hawaiian Electric Company (HECO), with respect to required separation of landfill grade at all times and any accessory uses from overhead electrical power lines.</p> <p><u>Status:</u> Coordination with HECO will be done to ensure that landfill construction and operations are adequately separated from overhead electrical power lines.</p>
10	<p>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 regulation of the State Department of Health.</p> <p><u>Status:</u> Revised Ordinances of Honolulu § 21-5.680 is inapplicable to the WGSL as that Property is a public use and said ordinance therefore does not impact operations at WGSL. The operations of the WGSL are in compliance with any and all applicable rules and regulations of the DOH.</p>
11	<p>The Planning Commission may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.</p> <p><u>Status:</u> So noted.</p>
12	<p>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.</p> <p><u>Status:</u> So noted.</p>
13	<p>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).</p> <p><u>Status:</u> Respective notifications will be made prior to termination of the use of the property as a landfill.</p>

Condition No.	Description
14	<p>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.</p> <p><u>Status:</u> The landfill will continue operations under the current SUP while the deadline for receipt of MSW is resolved by the State Land Use Commission. See section on Status of Landfill Operations, 3. Landfill Expansion Permits b. Special Use Permit.</p>
15	<p>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.</p> <p><u>Status:</u> See Condition No. 16 Status.</p>
16	<p>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.</p> <p><u>Status:</u> On August 3, 2010, the Circuit Court of the First Circuit issued its order modifying this condition by substituting ENV for the City Council and the City Administration. That portion of the order was not appealed. Public hearings are being conducted every 3 months to report on the efforts of ENV in regard to the continued use of the WGSL, including any funding arrangements being considered by the City Council and the City Administration. During the reporting period, 4 public hearings were held at Kapolei Hale on July 18, 2016, October 10, 2016, January 23, 2017 and April 17, 2017. For the 4 hearings held during the period, a grand total of 5 members of the public have attended. On average, just 1 member of the public have attended each meeting. ENV publishes public notice of the public hearings in the newspaper and posts notice on opala.org. ENV also requested that the Neighborhood Commission Office notify each Neighborhood Board of forthcoming meetings, which has been done. Reports of what occurred during the hearings are also posted online at opala.org.</p>

ALTERNATIVE TECHNOLOGIES

1. H-POWER

The H-POWER waste-to-energy facility, operated by Covanta, continues to process over 750,000 tons of municipal solid waste each year. The facility has operated reliably for over twenty six years and has disposed of over 17,000,000 tons of municipal solid waste, generating in excess of \$35,000,000 annual net revenues from the sale of electricity, recovered metals and tipping fees, and avoided the importation of 17,000,000 barrels of oil. The original refuse-derived fuel (RDF) facility was upgraded with state of the art air pollution control equipment (fabric filter bag houses) in 2009 and refurbishment of major equipment such as boiler water walls, shredders, and magnets has been ongoing since 2010.

The facility's capacity to process municipal solid waste was increased by 50% in 2012 with the addition of a third boiler, which utilizes mass-burn technology. The third boiler opened to commercial operations on April 2, 2013. It enables the facility to process and burn bulky waste that previously had to be disposed at the landfill. With the addition of the third boiler, and other efforts to divert waste from the landfill, H-POWER now plays an even larger role in reducing waste disposal at the landfill.

a. Sludge

The sludge receiving station at H-POWER commenced commercial operations in May 2015. The sludge processing system has the capacity to process 90 tons of sludge per day and is accepting dewatered sludge from Honouliuli, Waianae, and Kailua Wastewater Treatment Plants. The 20,000 tons per year of sludge currently produced by these plants is now being diverted from the landfill to H-POWER. In addition, a corresponding amount of bulky waste, which was required to bulk the sludge at the landfill, is now being disposed of at H-POWER.

b. Medical Waste

The disposal of treated medical waste at H-POWER commenced on December 30, 2015. Due to safety concerns, however, medical sharps is not accepted at H-POWER and will continue to be disposed of at the landfill.

c. Tires

H-POWER received a conditional variance from DOH to accept used auto tires collected by the City, including refuse collection, convenience centers, illegal dumping, and the City's automotive services, Department of Parks and Recreation, and Department of Facilities Maintenance. The variance allows H-POWER to process up to 400 tires per day or 65,000 tires per year. The variance is now part of H-POWER's current solid waste management permit and

is in effect until February 28, 2021, which coincides with the expiration/renewal of the facility's solid waste management permit.

d. Process Residue

The City has had discussions with Covanta on residue reduction/reprocessing options to reduce/eliminate residue disposal at the landfill. Reprocessing residue through the 3rd Boiler has been considered; however, residue content, including fine metal, glass and grit have been thought to be detrimental to boiler performance. Further evaluation and testing is required to ensure boiler safety.

In the meanwhile, emerging technologies are also being explored. A Request for Proposals (RFP) to recover/recycle ash, residue and auto shredder residue (ASR) will be put out in FY 2018.

e. Auto Shredder Residue (ASR)

Approximately 23,000 tons per year of ASR is disposed at WGSL. Although ASR was envisioned to be diverted to H-POWER, evaluation of ASR test data have concluded that the high Fluorine and Chlorine content of the material is extremely harmful to the boiler. The matter is on hold pending further evaluation and possible testing. Further, as indicated above, the City plans to issue an RFP in FY2018 to recover/recycle ASR.

f. Other

As of March 1, 2017, after resolving challenges with material handling and fees at the alternate disposal sites, bulk loads of commercially-generated spoiled food have been diverted from WGSL.

2. Sludge Re-use

Laie WWTP: Converts green waste mixed with sewage sludge into compost by using the Windrow process.

Sand Island WWTP: Process sewage sludge into fertilizer pellets using the Synagro process. In FY 2011, about 20% of the pellets were disposed at the landfill and about 80% was beneficially reused. In FY 2012, approximately 12% of the product went to the landfill and about 88% of the product was reused. In FY 2013, approximately 10% of the product went to the landfill and about 90% of the product was reused. In calendar year 2014, approximately 7% of the product went to the landfill and about 93% of the product was reused. In calendar year 2015, approximately 3% of the product went to the landfill and about 97% of the product was reused. In calendar year 2016, approximately 11% of the product

went to the landfill (due to times when the farms experienced heavy rains and were not accepting the pellets) and about 89% of the product was reused.

3. Other Request For Proposals (RFPs) for Alternative Waste Disposal Technologies

To further reduce the amount of waste disposed of at the landfill, the City issued a RFP for demonstrating waste-to-energy facilities in July 2009, and RFPs for recycling H-POWER residue, fly ash, and bottom ash in March 2010. Although the City did not receive any responses to these RFPs, ash recovery technologies have since emerged and another RFP will be put out in FY 2018. It is envisioned that H-POWER's ash, residue and even ASR may eventually be diverted to specialized material recovery facilities. The City is committed to this vision and remains optimistic that ash, residue and ASR may eventually be diverted from WGSL.

Another technology seriously being pursued by the City involves the processing and conversion of glass into a useful lightweight building material. This technology, which originated in Japan, promises to be an excellent glass recycling option and, if feasible, could eliminate the high cost of shipping glass to mainland recycling markets, while generating a marketable building material.

4. Materials Recycling

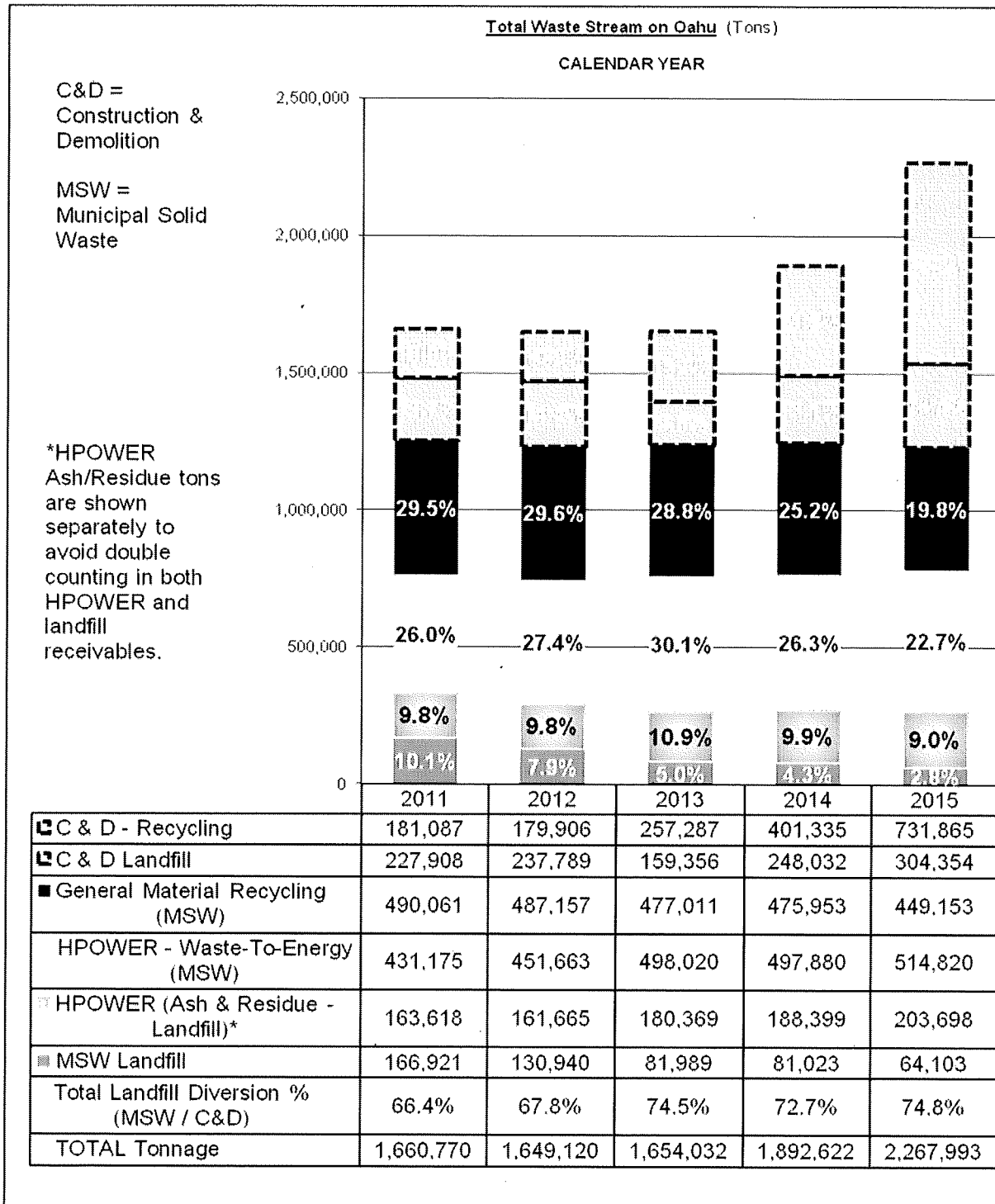
To present a complete waste flow picture for Oahu, the most current data available is for calendar year 2015. Although waste to the landfill and HPOWER is tracked every month by ENV, recycling data is provided by commercial recycling companies that are surveyed annually. Recycling data for 2015 was gathered and compiled during the first half of 2016; updated charts and analysis are posted below. Recycling data for 2016 is currently being gathered and should be posted on www.opala.org by mid-year.

The island's waste data is presented in two charts:

1. TOTAL WASTE which includes Municipal Solid Waste (MSW) and Construction and Demolition (C&D) material, processed through recycling, waste-to-energy or landfilling; and
2. MSW only, processed through recycling, waste-to-energy or landfilling.

Both charts present data for the most recent five (5) calendar years (2011-2015). Moreover, this data shows how Oahu's waste has been diverted from the landfill through recycling and waste-to-energy.

TOTAL WASTE data is presented in the chart below. For 2015, rates for C&D material recycling and disposal rose significantly for a second straight year due to ongoing major construction projects on island, while recycling and waste-to-energy combined to divert nearly 75% of waste from the landfill.

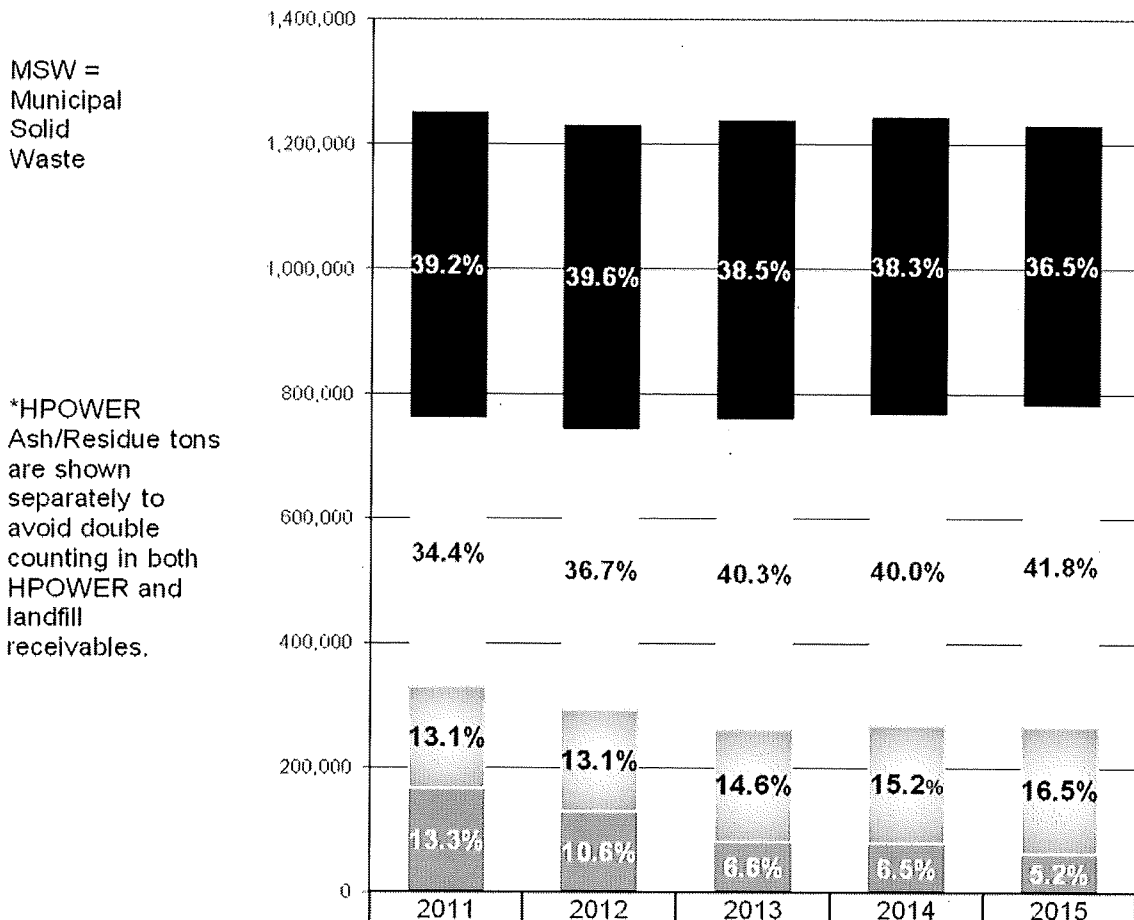


There are two landfills on Oahu: the City's Waimanalo Gulch Sanitary Landfill (WGSL), which is designated for MSW, and the privately-owned PVT Landfill, which is permitted for Construction and Demolition (C&D) waste only.

MSW ONLY data is presented in the chart below. Robust recycling and waste-to-energy rates continue to contribute to the steady decline of MSW tonnage going to the Waimanalo Gulch Sanitary Landfill. Considering MSW only and landfill diversion specific to the WGSL, the landfill diversion rate achieved through recycling and waste-to-energy is over 78%, and the general material recycling rate is almost 37%. Landfill diversion rates for the most recent five (5) years at WGSL are charted below, allowing for a better visual assessment of the data. Important to note that of the 22% of material landfilled at WGSL in 2015, less than 6% was MSW, with the rest consisting of ash and noncombustible residue from HPOWER.

Municipal Solid Waste Stream on Oahu (Tons)

CALENDAR YEAR



	2011	2012	2013	2014	2015
■ General Material Recycling (MSW)	490,061	487,157	477,011	475,953	449,153
□ HPOWER - Waste-To-Energy (MSW)	431,175	451,663	498,020	497,880	514,820
▨ HPOWER (Ash & Residue - Landfill)*	163,618	161,665	180,369	188,399	203,698
■ MSW Landfill	166,921	130,940	81,989	81,023	64,103
Total Landfill Diversion % (MSW)	73.6%	76.2%	78.8%	78.3%	78.3%
TOTAL Tonnage (MSW)	1,251,775	1,231,425	1,237,389	1,243,255	1,231,774

Recycling data: The tables below provide detail of tons recycled by material type. The City has gathered annual recycling data since 1988 (except for 1989 and 1990). Note the upward trend of general material recycling from approximately 75,000 tons in 1988 to nearly 500,000 tons today. Recycling of construction and demolition (C&D) materials, such as concrete, rock and asphalt, contributed an additional 700,000+ tons to the recycling rates, for a total of almost 1.2M tons recycled for 2015. C&D recycling rates tend to fluctuate based on the volume and type of construction projects undertaken from year to year but have risen significantly over the past two years due to several ongoing major projects across the island.

Yearly Recycling Rates (tons)

Year	General Material Recycling	C&D Recycling	Total Recycled
2015	449,153	731,865	1,181,018
2014	475,953	401,335	877,286
2013	477,011	257,287	734,298
2012	487,159	179,906	667,065
2011	490,061	181,087	671,148
2010	448,639	101,556	550,195
2009	426,947	116,670	543,617
2008	456,876	216,745	673,621
2007	453,282	148,952	602,234
2006	421,072	121,675	542,747
2005	417,669	193,829	611,498
2004	386,338	173,916	560,254
2003	366,639	106,773	473,412
2002	352,699	139,055	491,754
2001	367,300	114,070	481,370
2000	327,710	165,000	492,710
1999	314,075	225,200	539,275
1998	318,690	148,800	467,490
1997	313,394	204,400	517,794
1996	299,574	95,300	394,874
1995	294,340	44,400	338,740
1994	290,412	35,700	326,112
1993	241,600	30,000	271,600
1991	167,152	0	167,152
1988	73,992	0	73,992

Oahu Recycling 2015

Material Type	Amount in tons
PAPER	
Corrugated Cardboard	46,619
Newspaper	14,108
Office Paper	12,432
Other Paper	1,376
METALS	
Ferrous (includes autos)	128,812
Non-Ferrous (includes aluminum)	19,487
GLASS	19,087
PLASTIC	6,143
TIRES	12,395
AUTO BATTERIES	3,541
ELECTRONIC SCRAP	2,255
GREEN WASTE (yard trimmings)	108,712
WOOD WASTE/PALLETS	11,050
CONSTRUCTION & DEMOLITION (rock, concrete, asphalt)	731,865
FOOD WASTE	40,188
OTHER REUSE (Goodwill, Salvation Army)	21,306
TOTAL	1,181,017

The City's efforts to increase residential recycling rates have continued with its ongoing efforts to educate residents about the value and benefits of its three cart curbside program, and the continued promotion of its condominium recycling assistance program. Additionally, the City requires commercial sector recycling through mandatory laws established by City ordinance, and provides assistance to businesses to setup and expand their recycling programs.

a. Curbside Recycling

Curbside recycling participation remains strong and material recovery rates are increasing every year. ENV completed the final phase expansion of the fully-automated 3-cart curbside recycling program in May 2010. There are currently 160,000 homes participating in the program, capturing material at a rate of 23,000 tons of mixed recyclables and 75,000 tons of green waste per year. Increased public experience with identifying and sorting recyclables is producing higher results for the City's curbside recycling program. The program continues to be evaluated to identify strategies for improving participation and efficiencies.

b. Multi-Material Recycling Centers

Recycling through HI-5 redemption and other recycling drop-off is available to those without curbside collection service. HI-5 redemption centers now accept a wide array of recyclable materials, providing the community with a one-stop recycling center for all their materials. Currently, there are about 30 locations around Oahu that offer "HI-5 plus" recycling, accepting paper, plastic

and glass containers, and metals, along with providing HI-5 container redemption services. Among these sites are two City recycling drop-off locations in Haleiwa, one fronting its Waialua Base Yard (Emerson Rd) and the other at its Kawailoa Transfer Station. Both locations feature several 96-gallon blue carts, complete with instructional signage and stickers for the community to use. All blue cart recyclables are acceptable, including plastics (1 & 2), glass bottles and jars, metal cans, newspaper, paper bags, corrugated cardboard and white and colored office paper.

c. Condominium Recycling

The City continues to promote condominium recycling through a program that reimburses condominium properties for costs associated with the start-up of a recycling program, and additionally provides technical assistance, educational materials, wheeled carts and guidance in establishing collection services.

d. Electronic Waste (E-Waste)

A State law requiring manufacturers to provide take-back programs for electronic waste went into effect January 1, 2010, and is administered by DOH. In general, the covered electronics include computers and televisions. Collection and recycling of e-waste has increased, but the law is weak in its requirements for the manufacturers to achieve recovery goals or to provide consumer convenience in take back programs. DOH is looking for ways to strengthen the collection programs, and has proposed bills in the most recent four State legislative sessions (2012, 2013, 2014, and 2015). In 2015 the law was amended to require electronic device manufacturers to establish drop-off locations for e-waste and prohibited mail-back only recycling options for some devices. ENV will continue to work in collaboration with DOH and local e-waste recycling companies to support local programs and legislative proposals.

e. Business Recycling Programs

The City continues to provide assistance to commercial sector recycling efforts and to ensure compliance with mandatory recycling policy established in the mid 1990's, which requires office buildings to recycle office paper, bars/restaurants to recycle glass and a variety of food operations to recycle food waste. Disposal site bans/restrictions divert materials from landfill and H-POWER, including green waste, cardboard, metals, tires, auto batteries, and e-waste. The City provides technical assistance to businesses for designing and implementing recycling programs through how-to guides, workshops and on-site support, and works collaboratively with the State's Green Business Program.

f. Plastic Bag Ban

As of July 1, 2015, businesses are prohibited from providing plastic checkout bags and non-recyclable paper bags to their customers at the point of sale. Per ORD-12-8, amended by ORD 14-29, ENV is responsible for implementing and enforcing the ban. Prior to the ban's effective date, ENV mailed compliance surveys and tip sheets to approximately 10,000 potentially-affected businesses and asked them to return the compliance forms and indicate how they planned to comply with the ban. Public notices were placed in the Star Advertiser and MidWeek in May. All information pertaining to the ban is also posted online on Opala.org. On July 1, 2015, City staff began enforcing the ban. Retail industry feedback indicates that about 35% of businesses will not provide bags. 28% of businesses indicated they were exempt from the ban. Of the remaining 37% offering bags, 13% are offering paper bags, 7% are offering reusable bags, 3% are offering compostable bags, and 15% are offering some combination of the three types of allowable bags. Businesses are required to submit annual compliance information to verify their compliance with the ban.

g. Public Education

Public education regarding recycling is ongoing and includes the distribution of brochures and print materials, dissemination of information via the Opala.org website, WasteLine e-newsletter and annual events such as Tour de Trash.

Green Channel – On Oceanic 332 and streaming online at opala.org provides video shorts about the City's recycling initiatives. Dozens of episodes are archived to keep viewers entertained. These videos provide easy visuals for better understanding and teaching tools for classrooms. The partnership with Oceanic Time Warner Cable was launched in 2009. The format is interactive, supporting 24/7 viewing of all episodes on demand. As part of its agreement with the City, Oceanic runs cross-promotional ads for The Green Channel on many of its other channels.

Recycling education in the schools -- Recycling education shows presented by the Honolulu Theatre for Youth (HTY) combined with classroom activity books educate our youth to become expert recyclers and encourage them to support their family to recycle at home. Every year, the program reaches approximately 20,000 students and teachers. The seventh 2016-17 season of included a Tenney Theatre presentation of a Plantation Celebration that took place in November and December 2016. The second part of the season featured a traveling "Sort It Out" show that conducted 21 recycling performance workshops at 21 local schools and was seen by nearly 6,500 students in February 2017. Planning is underway for the 2017-18 season.

5. Interim Off-island Shipping of Waste

No waste was ever shipped to the mainland due to various problems encountered by Hawaiian Waste Systems LLC ("HWS"), the bidder awarded the contract to ship waste to the mainland. These problems culminated in the U.S. District Court, Eastern District of Washington ruling on August 30, 2010 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. Consequently, the U.S. Department of Agriculture canceled the compliance agreement permits of all Hawaii shippers that might otherwise have enabled the shipment of waste to the mainland. At the point where shipping was no longer possible, HWS had approximately 20,000 tons of baled waste stored at three locations. To dispose of this baled waste, 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. On January 6, 2011, there was a fire at the HWS facility that damaged the building in which the waste bales were disassembled and processed. The City, however, continued to work with HWS and DOH to dispose of the remaining bales of 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.

CONCLUSION

The foregoing report is submitted in accordance with reporting requirements set forth in the LUC Order dated October 2, 2009. This report focuses on the status of ENV's efforts to identify and develop one or more landfill sites that shall either replace or supplement the WGSL and the 16 Conditions contained in the LUC Order. Also discussed are the further progress of WGSL operations and the City's active efforts to reduce waste volume that is directed to the landfill, such as the expansion of the H-POWER facility and recycling.

The City intends to continue its efforts to ensure proper solid waste management for the people of Oahu, in close coordination with applicable regulatory agencies and decision-makers.

