



National Park Service
U.S. Department of the Interior

Kaloko-Honokōhau
National Historical Park

73-4786 Kanalani Street # 14
Kailua-Kona, Hawai'i 96740

808 329-6881 Phone
808 329-2597 Fax

Kaloko-Honokōhau

IN REPLY REFER TO:
L7621 (2013-15)

October 23, 2013

Mr. Daniel E. Orodener
State of Hawai'i Land Use Commission
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawai'i 96804-2359

Mr. Earl Matsukawa, AICP
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

LAND USE COMMISSION
STATE OF HAWAII
2013 OCT 25 P 1:56

Subject: National Park Service Comments on the Second Draft Environmental Impact Statement for the Kaloko Makai Project, North Kona, Island of Hawai'i

Dear Mr. Orodener and Mr. Matsukawa:

The National Park Service (NPS) is providing comments on the Second Draft Environmental Impact Statement (Second DEIS) for proposed Kaloko Makai project in North Kona, Hawaii. As stated in the NPS letter to Mr. Masukawa dated September 30, 2013, because of the shutdown of the federal government on September 30, the NPS was not able to submit comments on the Second DEIS by October 8, 2013 as agreed by the applicant (SCD-TSA Kaloko Makai, LLC). The federal government re-opened on October 17 and we are submitting comments within five business days of that re-opening.

The applicant plans to petition the Land Use Commission (LUC) for a Land Use District Boundary Amendment to reclassify land in Conservation and Agricultural Districts to Urban Districts, and proposes to develop this land into a mixed-use community. As described in the Second DEIS, the proposed development will be a 1,142-acre, master-planned, mixed-use residential community with up to 5,000 new single- and multi-family residential units, approximately 75 acres of light-industrial, an urgent care medical facility with potential for a regional hospital, two elementary schools, a middle school, an onsite wastewater treatment system, associated roadways, utilities, drainage, and water source and distribution system.

As mentioned in the NPS comment letter on the First DEIS for this project dated October 11, 2011 (October 11, 2011 Letter), the proposed project is located upslope and adjacent to the Kaloko-Honokōhau National Historical Park (National Park), the Honokōhau Settlement

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National Historic Landmark (NHL), and Ala Kahakai National Historic Trail (Historic Trail), and is situated within the state of Hawaii designated coastal zone with its makai boundary less than one mile from the ocean. As proposed and described in the Second DEIS, this project will likely have significant adverse, short and long-term direct and indirect irreversible impacts to nationally significant cultural and natural resources. In addition, this proposed project will significantly contribute to cumulative impacts in combination with the many development projects currently underway and proposed in the vicinity.

While we appreciate the applicant granting an extension to the NPS to submit its comments, the NPS had approximately 50 days (not counting the days that we were unable to work) to review and evaluate the Second DEIS. Given the magnitude, complexity, and potential impacts of the project, the comment period was inadequate to allow the NPS, as well as the general public, organizations, and other governmental agencies, to properly review the document. In addition, because the Second DEIS does not respond to or address the comments, concerns, and issues raised by the NPS in the October 11, 2011 Letter, the NPS reiterates those comments and incorporates them by reference in these comments on the Second DEIS. Moreover, because of the short review time, the NPS reserves the right to present additional information and comments on the Second DEIS and the project in general to the LUC or other agency and in any applicable forum or hearing.

In general, the Second DEIS does not meet the requirements of Hawaii Revised Statutes 343 because it fails to provide the public and decision makers with information and analysis of the nature and scope of the proposed project; fails to consider the known and potential consequences on the human and natural environment including the overall direct, indirect and cumulative impacts; and because it fails to adequately describe the measures that can avoid or mitigate those impacts or to describe the impacts that cannot be mitigated if the project goes forward as planned.

The NPS's specific comments on the Second DEIS are attached to this letter. The Second DEIS and your July 25, 2013 letter in response to the October 6, 2011 Letter do not adequately or substantively address our comments and concerns. The current environmental analysis for this proposed project in the Second DEIS contains insufficient discussion or analyses of potential primary and secondary impacts to National Park resources located immediately adjacent and downslope of the proposed project. Water quality and water quantity, marine resources, water-dependent threatened and endangered species (e.g., waterbirds and marine turtles) and candidate species (anchialine pool and coral invertebrates), visual (natural night-sky, scenic vistas and view planes, and cultural landscapes), auditory resources (soundscapes), and air quality are inadequately addressed. Secondary effects on the National Park visitors, cultural practitioners, and resources associated with local area population and growth, e.g., impacts to public services (visitor and resource protection) from increasing visitor use, traffic, noise, and airborne pollutants accompanying potentially 10,000 new cars in the area were not addressed. Potential impacts from the variety of pollutants that would be discharged from the wastewater treatment process, particularly contaminants of emerging concern, (endocrine disruptors, pharmaceuticals, personal care products, detergents) many of which are not removed by the traditional wastewater treatment process, were not addressed. Pesticides, heavy metals, and polycyclic aromatic

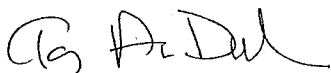
hydrocarbons and other pollutants were not addressed. The Second DEIS does not meet the requirement to fully describe the probable impact of the proposed action on the environment.

The Second DEIS repeatedly presents conclusions of "no effect" or "no impact" that are based on poorly constructed studies and unsubstantiated assumptions that are unsupported by quantitative data or the scientific literature. Appropriate evidence should be provided, or in all cases the statements should be appropriately qualified to account for the possibility of impacts. Rather than analyze and acknowledge the potential for direct, indirect and cumulative impacts on the environment, and demonstrate environmental leadership by committing to carrying out effective, enforceable measures to prevent impairment of the natural and cultural resources within the National Park and along the Kona Coast, the Second DEIS appears to be a rationalization of the proposed action in which impacts are denied throughout. While much of the concern of the NPS focuses on the potential impacts from contaminants and the proposed development of water for use at the project, the NPS also believes that the problems with the analysis in the Second DEIS extend to the discussion of traffic, noise, air quality, cultural resources, and the impacts from increased population on infrastructure, social services, and utilities.

Like the First DEIS, the information in the Second DEIS is presented at a conceptual level that lacks the detail and supporting information necessary for evaluation of irrevocable commitment of resources over a 30-year period and the potential impacts of the project on the human and natural environment. The NPS continues to recommend a phased approach to this project with an enforceable commitment to issue supplemental EIS for each future phase that includes appropriate and necessary detail and rigorous analyses supported by adequate scientific studies to enable the required public review and comment at each phase. Phasing is also the appropriate approach to protect the 269 historic properties identified for destruction. The current Second DEIS should be revised to incorporate scientific data to support conclusions and relevant, well described protective mitigation measures with effective, realistic mechanisms for enforcement.

Thank you for the opportunity to provide our brief comments on this DEIS. If you have questions regarding these comments, please contact me at 800-329-6881 x1201, Tammy_Duchesne@nps.gov, or Dr. Jeff Zimpfer of my staff, at x1500, Jeff_Zimpfer@nps.gov.

Sincerely,



Tammy Duchesne
Superintendent

cc: Hawaii Office of Environmental Quality Control

State Office of Planning
Department of Hawaiian Home Lands
Department of Land and Natural Resources
-- State Historic Preservation Division
-- Division of Aquatic Resources
-- Division of Forestry and Wildlife
Office of Hawaiian Affairs
State of Hawaii Coastal Zone Management Program

Enclosures: NPS comments on Kaloko Makai Second DEIS
NPS comment letter dated October 6, 2011

October 23, 2013 Comments by the National Park Service on the Kaloko Makai Second Draft EIS (dated August 2013)

These comments are arranged topically – Hydrology, Water Quality Impacts, Cumulative Impacts – followed by a few miscellaneous comments. The topic headings are for convenience and do not represent an additional comment on the issues presented. In addition, many of the comments are interrelated.

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HYDROLOGY

1. Pages throughout DEIS (especially Chapter 3) and Appendix C
The terms “*fresh*,” “*brackish*,” and “*saline*,” are used to describe the salinity of water throughout the Second DEIS but are not always accompanied by a salinity concentration. The salinity standards used in the Second DEIS are different than the standards defined by the State of Hawaii Department of Health (DOH) in the Hawaii Administrative Rules §11-54-1. For example, DOH defines fresh waters as having salinity less than 0.5 ppt; brackish waters as having salinity greater than 0.5 ppt but less than 32 ppt; and saline waters or saltwater as having salinity greater than 32 ppt. The DEIS, however, refers to groundwater with a salinity of 30 ppt as saline (e.g., page 3-27) when the DOH regulations defined it as brackish. The distinction has very important implications for how the proposed pumping and injection wells will be permitted by the Commission on Water Resource Management (CWRM) and DOH. The terms used to describe salinity in the Second DEIS should be clearly defined and consistent with DOH regulatory definitions to avoid confusion among the regulatory agencies and the public.

2. Page 1-20
Section 1.7.8 describes unresolved issues but does not include the source of drinking water as an unresolved issue. Page 2-51 states that “*a deep exploratory borehole at 710-foot elevation on the mauka end of the project site will be undertaken to determine if fresh groundwater can be found at that depth and to determine the feasibility of its development.*” Appendix C (page 5) states “*In general, however, there are two distinctly different possibilities, wells above Mamalahoa Highway tapping the high level groundwater directly or wells in the near vicinity of the State's deep monitor well tapping the high level groundwater at depth below saline groundwater. In either case, these wells would be incorporated into DWS' system.*” The resource near the State's deep monitor well and on the project site is uncertain and, therefore, whether new wells can be incorporated in the Hawaii County Department of Water supply (DWS) system is speculative. The issue of whether fresh groundwater can be found on the project site and whether it is feasible to develop it or to desalinate brackish groundwater remains unresolved at this time, yet has important implications for the entire project. The source of drinking water should be included as an unresolved issue until the water source for the entire project is verified and confirmed.

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3. Page 2-51

The total drinking water demands stated on page 2-51 are not consistent with the values shown on Table 3-2. Water demand should be consistent throughout the text, tables and appendices of the document.

4. Page 3-13 and Appendix C (page 7)

The Second DEIS states that the temperature of groundwater at the top of the basal aquifer is four to six degrees colder than in upgradient wells that tap high-level groundwater. While temperature data from wells that tap the basal aquifer are provided, no temperature data from the high-level wells is provided or referenced in the Second DEIS to support this comparison.

5. Page 3-15

Figure 3-6 is titled "*Location of Wells Within or Near Kaloko Makai Project Site*" but it omits eight permitted pumping wells and eight permitted monitoring wells within the Kohanaiki ahupua'a immediately down-gradient of the project site. Figure 3-6 is incomplete and misleading and should be revised to show all of the permitted pumping wells within or near the project site.

6. Page 3-19 and Appendix C (page 10)

It is noted that water levels in wells tapping the confined deep freshwater zone fluctuated in response to the ocean tide with a tidal lag of one hour. It is not clear if the high-level wells also display a lagged and dampened response to the ocean tide. A thorough discussion, along with accompanying data, of the degree to which high-level wells upgradient from the Kaloko Makai project respond to the ocean tide should be presented.

7. Page 3-19 and Appendix C (page 14)

The Second DEIS proposes a conceptual model of the Keauhou Aquifer System that differs from that used by the State of Hawaii to set the sustainable yield and permit pumping wells. Page 3-19 and Appendix C (page 14) state that "*at least some of the inland high level groundwater may discharge at depth offshore rather than flow into the basal lens at its inland margin.*" Although data are included in the Second DEIS to support a new interpretation of hydrologic data, no schematic diagram is provided that can be used to compare this new conceptualization to commonly depicted models of the aquifer system, such as those shown in the 2008 Water Resources Protection Plan. Because the Second DEIS is the only published source of information describing this new conceptual model of the aquifer system, the nature and potential extent of the geologic features that are claimed to confine fresh groundwater below the basal aquifer should be

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included to support the interpretation of the data. This information is critical to the decision-making processes of the LUC and other state and local agencies.

8. Pages 3-27 and Appendix C (page 19)

The Second DEIS states that drinking water supply alternatives 1 & 2 will only be undertaken if it can be demonstrated through well testing that pumping deep confined groundwater will have no impact on the overlying basal lens. Similar statements are made in Section 8. No parameters of this well testing are provided; nor is there any discussion of how testing will demonstrate the amount of impact.

9. Page 3-27 and Appendix C (page 19)

The Second DEIS states that the preferred drinking water supply alternative (three on-site 710-foot elevation wells) would *“result in a 1:1 reduction of fresh groundwater ultimately discharged into the marine environment offshore.”* Appendix C (page 22) states *“Based on the Keauhou Aquifer recharge calculations in Engott (2011), this total draft for the project and DWS would represent a two to three percent reduction of the total groundwater discharge into the marine environment offshore of the aquifer. Essentially all of this change would be occurring at substantial depth and distance offshore with no significant impact.”* No further information is provided regarding where the offshore discharge zone is located. No quantitative analyses have been presented to justify the assertion of no significant impact. Comparing the total draft for the project to the recharge of the Keauhou aquifer system is not convincing evidence of *“no significant impact”* because the effects of the draft will not be equally distributed throughout the entire aquifer. Groundwater discharge plays an important role in the coral reef and tidepool ecosystems within the National Park and along the coast of North Kona. No information that conclusively demonstrates the location of the offshore groundwater discharge zone or that shows that the reduction in groundwater discharge to the marine environment will be equally distributed throughout the aquifer system is presented.

10. Page 3-27 and Appendix C (page 17)

The Second DEIS states that the rate at which groundwater flows through the basal aquifer beneath the project site is estimated to be 2.0 MGD. There is inadequate discussion of how this number was calculated. Page 3-29 and Appendix C (page 20) estimate on-site rainfall recharge to be 1.0 MGD from an annual rainfall of 20 inches and an area the size of the project site. The Second DEIS assumes that no groundwater from the high-level aquifer leaks into the basal aquifer and that all groundwater recharge to the basal aquifer is due to local recharge. The source of the additional 1.0 MGD to groundwater flow beneath the project site is not explained.

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11. Page 3-28 and Appendix C (page 19)

The Second DEIS states that “*excess applied irrigation water*” will percolate to the basal lens. The text on page 3-28 states that “*approximately 15% of applied irrigation water will percolate down to the basal ground water*” while Appendix C (page 19) states that “*For the calculations herein regarding the percolation of excess applied irrigation water to the underlying basal lens, three assumptions are made. First, 12 percent of the water applied for irrigation will be in excess of crop requirements and percolate to the basal groundwater below.*” This input to the basal aquifer is an important component of the analysis of the potential impacts to groundwater in the basal aquifer. There is a discrepancy between the 12% and 15% and no basis for estimating the rate of excess applied irrigation or overwatering is provided.

12. Page 3-28 and Appendix C (page 21)

Table 3-3 and Table 4 in Appendix C quantify possible changes to the quantity and salinity of groundwater in the basal aquifer beneath the project site as a result of the proposed project. The value of 0.70 MGD for excess applied irrigation as R-1 treated wastewater on Table 3-3 is ten times higher than the value on Table 4.

13. Page 3-30 and Appendix C (page 22)

The Second DEIS states that R-1 effluent will be disposed via on-site injection wells completed at depths of 300 feet or more below sea level where the salinity of the receiving water is 30 ppt (86% seawater) or greater, at a rate of 0.8 MGD; these sections state that although the effluent is less dense and less saline than the receiving water, it will not contaminate shallower groundwater in the basal aquifer because the vertical permeability of the lava flows is too low to allow upward movement of water. Page 3-25 and Appendix C (page 5) state that if the drinking water supply for the project is alternative 3 (on-site 363-ft elevation wells with RO treatment), hypersaline concentrate (50 ppt or 143% seawater) will also be disposed of in the R-1 effluent disposal wells at a rate of 4.9 MGD; page 3-25 and Appendix C (page 22) state that the hypersaline concentrate will not rise into the overlying groundwater because it is more dense than the receiving water. No quantitative analysis has been presented to justify the assertions of no impact. Furthermore, the Second DEIS describes a saltwater circulation pattern below the basal lens. As described on page 3-19 and in Appendix C (page 22), the source of the colder temperatures in the basal lens is the upward movement of saline groundwater which originated as seawater from more than 600-foot depths offshore. The Second DEIS does not discuss how the injected effluent will be incorporated into the saltwater circulation system that is presented in the Second DEIS.

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14. Page 3-30 and Appendix C (page 22)

The Second DEIS states that if the drinking water supply is alternative 2 (on-site 710-ft elevation wells with RO treatment), the RO concentrate will be disposed via on-site injection wells completed below the midpoint of the transition zone; the salinity of the RO concentrate would range from 5.3 to 8.2 ppt (15% to 23% seawater) and the injection rate would be 1.2 MGD. By definition, the salinity of the receiving water at the midpoint of the transition zone would be 17.5 ppt (50% seawater). The salinity profile for the Kamakana Well (Figure 3-8) indicates that the midpoint of the transition zone will occur at depths of less than 100 ft below sea level. Page 3-30 states that this RO concentrate *“would flow toward the shoreline, discharge beneath the basal groundwater below the National Park’s anchialine ponds. It may emerge into the National Park’s nearshore waters where it would quickly be mixed into background levels.”* No quantitative analysis has been presented to justify this assertion of no impact. The analysis of the fate and transport of the RO concentrate under water supply alternative 2 as presented in the Second DEIS amounts to an educated guess and is unsupported by credible scientific evidence.

15. Page C-1

Last paragraph, the text describes *“two deep monitor wells (State Nos. 3858-01 and 3959-01), both of which encountered fresh groundwater...”* No data is presented to show the salinity of the water at this depth in this well.

16. Page C-1

Last paragraph, the text describes *“...fresh groundwater under artesian pressure at depth below saline groundwater and far below and hydrologically disconnected from the basal lens.”* The connection between the deep artesian groundwater and the basal lens remains uncertain and therefore the statement referring to the *“hydrologically disconnected”* system is speculative.

17. Page C-7

Paragraph 2, in reference to the statement that *“...the salinity is substantially higher than would otherwise be expected.”* No explanation of what salinity is expected, by whom, and why is provided.

18. Page C-7

Paragraph 3, the text states that *“If all the rainfall-recharge into the high level aquifer were to discharge into the downgradient basal lens, this flowrate would create a robust*

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basal groundwater body which could be developed for irrigation use and possibly even for potable supply.” This statement is speculative and no quantitative analysis is provided to support it.

19. Page C-7

Paragraph 4, the text states “*As noted above, the substantially lesser actual flowrate through the basal lens is reflected in water levels that are lower than otherwise expected...*” No explanation of what salinity is expected, by whom, and why is provided.

20. Page C-7

Paragraph 5, the text states “*Results of Well 3858-01 are described in Water Resources Associates, 2007. Since encountering fresh water at depth was unexpected at this location the exact depth that it occurred in the borehole during drilling is not known and has not been determined with video logs and other measurements.*” The quality of the water in well 3858-01 is not known with certainty, so reference to “*freshwater at depth*” is speculative and misleading.

21. Page C-14

Paragraph 3, the text states “*The confined fresh groundwater at depth, with an apparent hydraulic connection to seawater at depth offshore, suggests that at least some of the inland high level groundwater may discharge at depth offshore rather than flow into the basal lens at its inland margin.*” Although this is a possibility, the Second DEIS does not discuss other explanations for this phenomena.

22. Page C-19

Paragraph 5, the text states “*Of the three alternatives that would draw from the high level groundwater body, none would impact basal groundwater in the project's mauka-to-makai corridor or elsewhere in North Kona.*” This conclusion is not supported with evidence.

23. General for Appendices C and D. The Second DEIS should have noted that studies (Appendices C and D) used to inform the DEIS regarding groundwater and runoff were conducted during a drought in the west side of the island of Hawaii over the past couple of years (2010-present). Consequently, the results of this drought likely would affect the interpretation of effects of runoff into the marine environment and on other hydrologic components such as level of groundwater in wells (see NOAA websites; <http://www.nws.noaa.gov/data/HFO/DGTHFO>). The fact that the studies were undertaken during a drought period should be taken into consideration.

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WATER QUALITY IMPACTS

24. Pages 3-19 to 3-21; C-6 to C-7, C-14 to C-17

The statements describing the amount of nutrient removal that can be expected are at best speculative and unsubstantiated. In fact, the conclusions are based on an invalid methodology, improper assumptions, and inappropriate analysis. No explanation or theory is presented to account for removal of nitrogen or phosphorus. Moreover, the discussion is limited to these two constituents; no analysis or discussion is presented for the metals, pharmaceuticals, detergents, hydrocarbons, or other toxins, and no mention is made of contaminants of emerging concern that currently do not have any associated regulatory levels for either water quality standards or the contents of injection wells. The inappropriate and absent analysis is all the more problematic because it serves as the basis for the conclusion that no impacts to the water that flows through the National Park and the Kona coast will be generated by the proposed project.

25. Page C-20

Bullets 1, 2 and 3, the Second DEIS did not provide references for the values given.

26. Page C-20

Paragraph on "*Onsite Rainfall-Recharge*" the text states that "*...it is also assumed that nutrient levels in the post-development rainfall percolating to groundwater will be increased by 20 μ M and 2 μ M for nitrogen and phosphorus, respectively.*" No basis for the nitrogen and phosphorous concentration was given.

27. Page C-20

Paragraph under the heading OTHER CHANGES TO THE GROUNDWATER DISCHARGE INTO THE MARINE ENVIRONMENT the text states that "*Three other aspects of the project's development, although not having an impact on this basal lens, will affect the ultimate discharge of groundwater into the marine environment.*" This statement is unsupported.

28. Pages 3-32 to 3-50; Appendix D (generally)

The Second DEIS presents an oversimplification of the effects of human populations on marine resources and anchialine pools. For example, corals respond differently to an increase in nutrients and sewage depending on the species. A coral species with a more heterotrophic life history strategy may thrive in nutrient rich water while a more autotrophic species would die. There is huge variability in the response of coral species to stressors. The analysis in the Second DEIS is based on flawed assumptions, selective

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sampling, and false statements. There is no discussion or analysis of the vast peer-reviewed scientific literature documenting the harm to freshwater aquatic ecosystems and marine resources from human pollution. Moreover, there is no discussion of other types of pollution that will be associated with the proposed project, such as toxins, metals, and hydrocarbons.

29. Pages 3-45 to 3-47

In this section of the DEIS, there is much discussion of the differences between the ponds (Kaloko and Aimakapa), their marine and groundwater flux, and their physical/biological conditions. However, there is no discussion of the 100 or more anchialine pools with their connection to the basal aquifer (lens). These pools would be most impacted by nutrient loading.

30. Page D-8

Paragraph 2, the text states "*The difference in vertical stratification between the ponds reflects the different levels of input and mixing between ocean water and groundwater, which are both lower in Aimakapa relative to Kaloko.*" No basis for this statement is provided.

31. Page D-8

Paragraph 4, the text states "...*a somewhat unusual result in the 2000 data is that the lowest salinities in the ocean samples were not found nearest to the shoreline off of either fishpond. Rather, the lowest salinities were measured in surface ocean samples approximately 25-50 m offshore. Such a result suggests that the majority of groundwater flow to the ocean may be around the pond boundaries, rather than through the shoreline barriers that separate the ponds from the ocean.*" This is speculative and no other explanations are explored.

32. Page D-12

Paragraph 3, the text states "*Concentrations of NO₃⁻ in monitoring wells are generally above the conservative mixing lines, suggesting an external source of NO₃⁻ other than naturally occurring groundwater.*" No discussion of potential sources of external nitrate is provided nor is the impact of nitrate on pools discussed.

33. Page D-14

Paragraph 4, the text states "*Comparing groundwater nutrient loading to the pond with gross production/respiration within the pond indicates that only approximately 4% of the pond metabolism can be supported by "new" nutrients delivered to the pond by groundwater flux.*" No basis was provided for the 4% value.

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34. Page D-15

Paragraph 2, the text states that *“While metals were present in all of the samples, they are naturally present in volcanic soils. Further comparison of the concentrations found in the KAHO samples to reference levels in soils and water will be necessary to determine if the levels present represent significant input from other than natural sources.”* The comparison of the concentrations found in the KAHO samples to reference levels in soils and water should be made and the results presented. No analysis of the impact of metals from other than natural sources on native species occurring at the National Park or along the North Kona coast line is presented.

35. Page D-19

Paragraph 2 states *“...it is generally accepted that the two large fishponds within the Kaloko Honokōhau National Historical Park function in a similar manner to smaller anchialine ponds.”* This statement is incorrect and contradicted elsewhere in the document. *“...Kaloko Pond is not technically an anchialine pond because it contains direct connections to the ocean.”*

36. Page D-19

Paragraph 6, the text states *“Such lack of detectable inputs suggested that the pond is essentially a closed system which is accumulating sediment and metabolic decay products which cannot be naturally flushed from the enclosed pond basin.”* The suggestion that Aimakapa is a closed system is not consistent with the fact that water is always present in the pond. If groundwater did not continually flow through the pond, evaporation of rain that falls in the pond would likely dry the pond during much of the year. See paragraph 4, where the author states *“On an annual basis rainfall is likely to be exceeded by evaporation at the proposed project site.”* Furthermore, the fact that tidal variations are observed in the pond indicates a hydraulic connection between the pond and the groundwater system.

37. Page D-22

Paragraph 4, the text states *“If all of the metabolically relevant nitrogen and phosphorus in groundwater is considered as NO₃⁻ and PO₄³⁻ then the projected increases would result in basal groundwater concentrations would be 75 μM for NO₃⁻, and 5.0 μM for PO₄³⁻. Such changes are well within the natural variability of the system, and essentially represent no change to present conditions.”*

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Page D-24

Paragraph 4, the text states “Estimates of changes in groundwater flow volume that would occur from the Kaloko Makai project are within the range of natural variability.”

Page D-24

Paragraph 4, The text states “*Increases in nutrient concentrations to groundwater from irrigation and other land use factors result in an increase in groundwater flow and nutrient loading to groundwater, along with a reduction in salinity. Such changes are within the natural variability of groundwater composition.*”

Stating that a change is within the range of natural variability does not address impacts. The fact is, some change associated with the development will occur; and this change will be superimposed on the natural variability.

38. Page D-22

Paragraph 2, the text states “*Wastewater disposal in this manner is being done at the Mauna Lani Resort without adverse impact.*” The statement of no adverse impact at Mauna Lani is stated without any reference or data source.

39. Page D-24

Paragraph 4, the text states “*In addition, it has been repeatedly documented that healthy anchialine ponds are not nutrient limited, so increases in nutrient concentrations will no effect as long as the physical and biological components of the ponds are kept intact.*” No references are provided to support this statement.

CUMULATIVE IMPACTS

40. Analysis of cumulative impacts is simply non-existent. This section consists of a recitation of the unsupported conclusions, conjecture, and speculation on the direct impacts from the proposed project found elsewhere in the Second DEIS, followed by a list of other planned residential and commercial development in the areas of the proposed project.

MISCELLANEAOUS

41. Page 3-61

While the Second DEIS states the proposed development will follow Hawaii County Hawai‘i County Code § 14 – 50 et seq. which requires the shielding of exterior lights so

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as to lower the ambient glare caused by unshielded lighting to the astronomical observatories located on Mauna Kea, it does not analyze the impacts of the greatly increased light from the proposed development on the surrounding area, including the natural resources with the National Park and along the North Kona coast.

42. Chapter 4

The DEIS fails to analyze the impacts this proposed project will have on the viewsheds from the park and therefor grossly underestimates the impacts this project will have on visitor experiences.

43. Chapter 4

The DEIS fails to analyze the impacts to this proposed project will have on the soundscape of the park.

44. Page S-2

Based on communication with the State Historic Preservation Division (SHPD), the project proponent submitted a draft for review by SHPD. SHPD has requested that the Archaeological Inventory Survey (AIS) be revised, therefore the summary document is based on an old version of the required AIS. This makes it difficult to ascertain whether significance criteria, preservation measures, and whether the inventory is accurately reflected in the Second DEIS.

45. Page 1-12

This information is based on a draft AIS that has been reviewed by SHPD and requires revisions. There are at least two trail segments that have been identified with Cultural Surveys Hawaii that are not reflected in the DEIS, or the archaeological summary.

46. Page 1-13 and pages 4-53 to 4-56

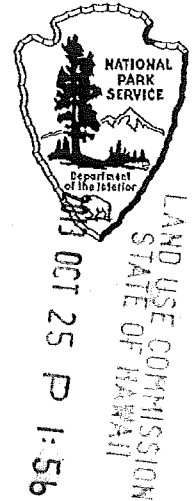
The lower section of the Kohanaiki Trail does not appear in the summary AIS presented in the Second DEIS, nor is there any discussion about the trail elsewhere in the document. The Kohanaiki Trail runs through the entire project with the exception of a section within the lower half that was destroyed by the construction of Hina Lani Road and Kaloko Light Industrial complex. The trail does re-enter the makai section of the project area on the north side of the water tank, approximately 650 feet mauka of the intersection of Hina Lani Street and Queen Ka'ahumanu Highway and extends to Queen Ka'ahumanu Highway. The trail segments are referred to in a Cultural Surveys Hawaii, Inc. report (Job Code: KALAOA 13), Archaeological Inventory Survey for the Proposed Queen Ka'ahumanu Highway Widening Phase 2 Project, Kalaoa, Kalaoa-'O'oma, 'O'oma 2, Kohanaiki, Kaloko, Honokōhau 1-2 and Kealakehe, North Kona District,

October 23, 2013 Comments by the National Park Service on the Kaloko Makai Second Draft EIS (dated August 2013)

Hawai'i Island (TMK: (3) 7-4-008, 7-3-009 & 7-3-043), dated July 19, 2012. This report identifies the Road to the Sea, or Kohanaiki Trail, on the makai, or western side of Queen Ka'ahumanu Highway as SIHP 50-10-27-10714 A, B, and C. In 2010 a site visit was conducted to SIHP 50-10-27-10714 within the Kaloko Makai project area with representatives from Department of Forestry and Wildlife-Na Ala Hele Trail and Access Program, SCD-TSA Kaloko Makai, LLC, NPS, and archeologists from Cultural Surveys Hawai'i Inc. During this site visit the trail was specifically pointed out and identified for project archeologists to include into the archaeological inventory survey. However, it was not included.



United States Department of the Interior
NATIONAL PARK SERVICE
Kaloko Honokōhau National Historical Park
73-1486 Kanalani Street, #14
Kailua Kona, Hawaii 96740



IN REPLY REFER TO:
L7621

October 5, 2011

Mr. Earl Matsukawa, AICP
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

RE: National Park Service Review of the Draft Environmental Impact Statement for the Kaloko Makai Project, North Kona, Island of Hawai'i

Dear Mr. Matsukawa:

Thank you for providing the National Park Service (NPS) with the opportunity to review and comment on the Draft Environmental Impact Statement (DEIS) for the Kaloko Makai Project, North Kona, Hawaii. The applicant (SCD-TSA Kaloko Makai, LLC) plans to petition the Land Use Commission for a Land Use District Boundary Amendment to reclassify land in Conservation and Agricultural Districts to Urban Districts, and to develop this land into a mixed-use community. As described in the DEIS, the proposed development will be a 1,142-acre, master-planned, mixed-use residential community with up to 5,000 new single- and multi-family residential units, approximately 153 acres of light-industrial/commercial/retail, an urgent care medical facility with potential for a regional hospital, two elementary schools, a middle school, a wastewater treatment plant, associated roadways, utilities, drainage, and water source and distribution system.

NPS submits these comments in furtherance of its Congressionally mandated mission to protect the natural and cultural resources within Kaloko Honokōhau National Historical Park (National Park) and the Honokōhau Settlement National Historic Landmark (NHL), and Ala Kahakai National Historic Trail (Historic Trail). Specific comments are attached to this letter. The project is located upslope and adjacent to the National Park and the NHL and the Historic Trail, and is approximately 1 mile from the coast. The project will have significant, irreversible adverse impacts to the cultural and natural resources that make these NPS lands and resources nationally significant.

Congress established the National Park in 1978 "to provide a center for the preservation, interpretation, and perpetuation of traditional native Hawaiian activities and culture, and to demonstrate historic land use patterns as well as to provide a needed resource for the education, enjoyment, appreciation of such traditional native Hawaiian activities and culture by local residents and visitors" (Public Law 95-625). Water quality and quantity are critical to this mission and to the integrity of the Park. National Park lands and waters are also significant

cultural resources, and provide habitat for 16 threatened, endangered, and candidate species. Additionally, visual and auditory resources, and air quality are of critical importance within the National Park. Light and soundscapes, viewsheds, and cultural landscapes are preserved to protect flora, fauna, cultural integrity and visitor enjoyment. Traffic congestion and noise, airborne particulates from exhaust of potentially 10,000 additional cars in the area, combined with existing sources of particulates, may affect human health as well as natural and cultural resources. Impacts resulting from changes in volume of visitor use and impacts to visitor protection services within the National Park are all of concern to the NPS and have not been addressed, or adequately addressed by the DEIS.

A fundamental purpose of an environmental impact statement as required by HRS 343 is to provide decision makers and the public with information and analysis of the nature and scope of the proposed project, the known and potential impacts that the projects presents, measures that can avoid or mitigate those impacts, and the impacts that cannot be mitigated if the project goes forward as planned. Unfortunately, the DEIS for the proposed Kaloko Makai project fails to accomplish any of these requirements.

The DEIS does not satisfy the requirements of HRS 343 because the information about the proposed project is presented at a conceptual level that lacks detail, makes speculative analyses and unsupported conclusions using partial or no analysis of existing data or scientific literature. This has resulted in misleading discussions, inadequate response to comments submitted during the review process, a lack of substantive analyses of the cumulative impacts from other existing and planned developments, and an inadequate exploration of mitigation measures. Because completion of the project is planned to take 30 years, many of the stated purposes and assumptions of the project will change—what may actually be built can be fundamentally and radically different from what is presented in the DEIS. The document appears to merely be “a self-serving recitation of benefits and rationalization of the proposed action” (HAR §11-200-14) in which impacts are downplayed throughout.

Measures to mitigate known or potential impacts are vague and not directly connected to the impacts from the proposed project (whether actually identified or not). The DEIS lacks analysis of the effectiveness of the measures described and fails to provide sufficient detail on those measures that are listed in the DEIS. In places, no mitigation measures are even identified. The NPS does note that the DEIS calls out several items to allegedly address impacts from the proposed project on groundwater resources. It appears that the project proponent and its consultants simply pulled measures imposed on or adopted by developments which are adjacent to or near the project site. Although it is somewhat encouraging that the DEIS lists these, it appears that their inclusion is to placate anticipated concerns of the NPS and others without any thought (or analysis) of their appropriateness, effectiveness, ability to be implemented, or enforceability, as they relate to the Kaloko Makai proposed project.

The fundamental problems with the DEIS are also of concern because the same developer (TSA), in the same general location, submitted a similar inadequate analysis of impacts from a development adjacent to the Kaloko Makai project site, Kaloko Light Industrial Park-Phases III and IV, over 10 years ago. In that Docket (A00-732), the Land Use Commission (LUC) found that the conclusions and analysis were inadequate or unsupported (A00-732 FFCLDO 2002). A

similar lack of analysis and unsupported conclusions from the Kaloko Industrial Park-Phases III and IV EIS and LUC proceeding are presented in the Kaloko Makai DEIS.

In the TSA matter, the LUC stated it was “. . . is acutely aware that continuous development is planned for this coastline. Although each developer might claim that only a “small amount” of pollution will result from their development and that the area’s ecosystem will show “little” effects, these developments and their impacts are cumulative and, absent strong mitigation measures, have the potential to devastate the fragile resources of the coastal and marine aquatic environments of the entire Kona coastal region.” (LUC Docket A00-732, FFCLDO, p. 103). The LUC recognized the extent and significance of the resources within the National Park and the NHL as well as the threat to those resources. In particular, the LUC, based on the “Precautionary Principle” in Hawai’i law, determined that “for all proposed development adjacent to or near a National Park that raises threats of harm to the environment, cultural resources, or human health, precautionary measures should be taken to protect the National Park cultural and natural resources, even if some cause and effect relationships are not fully established scientifically.” (Ibid, FF number 165). The LUC also acknowledged its obligations to protect the trust resources of the state, including the customary and traditional practices of Native Hawaiians, finding that “. . . native Hawaiian rights and natural and cultural resources would be damaged or destroyed by the pollution of groundwater that reaches the National Park from surrounding areas, including Petitioner’s proposed development at the Kaloko Industrial Park. Appropriate mitigation measures are, therefore, required under the Hawai’i Constitution and the Commission’s decision-making criteria in order to approve reclassification of the project area.” (Ibid, CL number 7).

The DEIS should be re-drafted to describe a phased project with appropriate detail and rigorous analyses, and supported by adequate scientific studies to enable the required public review and comment. The DEIS should be revised to incorporate relevant, well described protective mitigation measures with effective, realistic mechanisms for enforcement. The NPS is opposed to the notion of this proposed 30-year project receiving boundary amendment approval all at once. If approved, it should be only on a phased-basis, with an additional EIS and public review as required by HRS 343 at each stage. Furthermore, the LUC should not base their decision on the final EIS for this project, unless the final EIS provides sufficient detail and analysis on what will be built. Therefore another draft of this EIS should be released for public review and comment. To release a final based on this DEIS would demonstrate recklessness with county, state, and national resources on the part of the project proponent. The Land Use Commission should require this project (including environmental impact analyses) to be phased in its boundary amendment changes and should not grant the boundary amendment for the entire project all at once. Particular attention should be paid to the proposed hospital. Because the potential environmental impacts from a hospital are many, the LUC should require full analysis of the potential environmental impacts of a hospital in a hospital-specific EIS.

Our specific comments and concerns regarding the DEIS are attached. Thank you for the opportunity to provide comments on this DEIS. If you have questions regarding these comments,

please contact me at 800-329-6881 x1201, Kathy_Billings@nps.gov, or Dr. Jeff Zimpfer of my staff, at x1500, Jeff_Zimpfer@nps.gov.

Sincerely,



Kathy Billings
Superintendent

cc: Hawaii Office of Environmental Quality Control
State of Hawaii Land Use Commission
State Office of Planning
County of Hawaii Planning Department
County of Hawaii Department of Water Supply
County of Hawaii Department of Public Works
Department of Hawaiian Home Lands
Department of Land and Natural Resources
Commission on Water Resources Management
Office of Hawaiian Affairs
DLNR, State Historic Preservation Division
Advisory Council for Historic Preservation
U.S. Fish and Wildlife Service
NOAA Fisheries Protected Resources Division
State of Hawaii Coastal Zone Management Program
Department of Health Clean Water Branch
Department of Health Safe Drinking Water Branch, UIC Program
National Parks Conservation Association
NPS Pacific West Regional Office
NPS Water Rights Branch
DOI Solicitor's Office
U.S. EPA Pacific Islands Contact Office

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The National Park Service only had 60 days to review and evaluate this Draft Environmental Impact Statement. Sixty days is inadequate to review a project of this magnitude and complexity. Therefore, these comments may not represent all of the National Park Service's concerns.

1. Page 1-1. The size of the off-site potable wellfield is stated as 3.5 acres. This is inconsistent with other statements on this page, and elsewhere in the document, which refer to the size of the off-site well field as 18 acres.
2. Pages 1-12 and 4-8. The DEIS does not state how many 1, 2, 3 etc. story buildings will be constructed and where will they be located. Page 1-12 and 4-81 mention "*single story structures*" and "*multistory structures*" but not how many or where they will be located. There is no clear way to evaluate the environmental impact (e.g., aesthetics) without knowing the basic size and shape of the buildings and where they will be located relative to existing features in the area.
3. Page 1-17. Section 1.7.8, lists unresolved issues related to the DEIS but does not list the uncertainty related to the hydrologic connection between the high-level and coastal groundwater systems. The hydrologic connection between the high-level and coastal groundwater systems is one of the main factors that will control how the withdrawal of fresh groundwater for the proposed development will affect the quantity and quality of groundwater resources in downgradient areas. The DEIS (p. 3-15) states the following, which highlights the uncertainty related to the connection between the high-level and coastal groundwater systems "*In addition to it creating a substantial reservoir of potable quality water, this subsurface feature also controls the location and manner of groundwater movement into the downgradient basal lens. While the hydraulic relationship between the two groundwater bodies is not yet understood, it is undoubtedly the reason for the anomalous characteristics of basal groundwater in the Keahole to Kailua area (Nance 2008).*" Also on p. 3-15, the DEIS states "*Groundwater responses when these wells are ultimately used to their full capacity may shed light on the unknown aspects of this groundwater occurrence, including the geologic feature which creates the high-level water, the hydraulic relationships among the differing high-level groundwater compartments, and where, how and if the high-level groundwater drains into the basal lens (Nance 2008).*" Both of these statements indicate that it would be appropriate to list the uncertain hydrologic connection between the high-level and coastal groundwater systems as one of the important unresolved issues in Section 1.7.8.
4. Page 2-10. "*Kaloko Makai would consist of homes, ranging from traditional single-family homes to mixed-use, mid- and higher-density multifamily units.*" Figure 2-7, County General Plan Land Use Pattern Allocation Guide, does not indicate any medium or high-density zones at or near the proposed project.
5. Page 2-16. Section 2.1.5, ¶2 The references for the radiocarbon dates are not given.
6. Page 2-31 to 2-38 (Figures 2-11 to 2-14). The use of the term "natural zone" is unclear.

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7. Page 2-14. No explanation is provided for the proposed change in land use designation from agriculture land to urban for the dryland forest preserve. If a land use designation change is necessary, conservation would be more appropriate for a forest preserve.
8. Page 2-44. "Archaeological data created by others makai of the Queen Kaahumanu Highway" should be clarified and the references listed.
9. Page 2-44. The discussion of where and how the trail will be realigned is unclear.
10. Page 2-45. "Kaloko Makai will also incorporate two trails that run through the dryland forest" is unclear. The reader cannot tell if the trails will be protected. These also should incorporate a preservation corridor to protect the integrity of the trails as historic properties under Section 6E.
11. Page 2-48; Page 4-106; Page 5-40. The DEIS states that average potable water demand will be approximately 3.2 Mgd and maximum water demand will be 4.8 Mgd. These values are incorrect and underestimate water demand due to several miscalculations in Table 4-24. Pages 2-48, 4-106 and 5-40 should be revised to accurately reflect the estimated water demand for the project.
12. Page 2-48. The preferred alternative to supply potable water for the project involves drilling up to four mid-level wells to tap a fresh water layer underlying the basal aquifer, about 2.5 miles upgradient of the National Park. No reference to credible scientific information is provided to support the sustainability of this new source of potable water. The DEIS acknowledges on p. 3-16 that the depth, inclination and geologic nature of the formation confining this layer of fresh water in this area are not known. The possibility that all, or even some, of the potable water needs of the project can be supplied by an "underlying fresh water layer" at the project site is therefore speculative as this resource has never been developed for potable or irrigation water on the Kona Coast. The DEIS should have included information demonstrating that this resource can be developed and used in a manner that can be continued indefinitely, without causing unacceptable environmental, economic, or social consequences.
13. Page 2-48. Several alternatives being investigated to supply potable water for the proposed project, including the preferred alternative, may require an on-site desalination facility, about one mile from the National Park. However, no information is presented on the proposed quantity of brackish water needed to produce potable water, nor is any information presented on the quantity or quality of effluent that will be generated as part of the desalination process. Statements indicating that the desalination water system will have "no impact" are unsubstantiated. More specifically:
 - a. Page 2-49; Page 4-114. The statement "The desalination water system will have no impact on potable or brackish groundwater. Likewise, it will not affect nearshore waters and will not affect groundwater used by neighboring projects or anchialine pools and fishponds in the area, including nearby Kaloko-Honokōhau National Park"

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is unsupported by a quantitative analysis and no desalination plants have been used to supply potable water on a large-scale on the Kona Coast. The DEIS should have included credible scientific information to support this conclusion.

- b. The DEIS does not state the anticipated number of injection wells, their injection rate, or quality of the injected fluids that will be needed to desalinate brackish groundwater, yet finds there will be no impact on basal groundwater. The DEIS should have included this information to support the conclusion of no significant impact.
- c. The DEIS does not evaluate the cumulative impact of the proposed desalination plant in addition to The Shores at Kohanaiki desalination plant which began operating in November 2008 immediately downgradient of the proposed project site and adjacent to the National Park. This desalination plant includes eight pumping wells and one injection well and will further complicate the response of the basal aquifer to pumping and injection. The Shores at Kohanaiki are required to report chloride concentrations at all pumping wells and eight monitoring wells on a monthly basis, to monitor water quality at the injection well on a quarterly basis, and to collect a conductivity-temperature-depth profile at the deepest monitor well on a quarterly basis. The DEIS should have included a quantitative analysis of the cumulative effects of the proposed and existing desalination facility. This analysis should include a review of the monitoring data collected at the Kohanaiki desalination plant since it began operating in 2008.
- d. If desalination is required to produce potable water from on- or off-site wells, then the volume of brackish groundwater that must be pumped to produce potable water will be much greater than the water demand estimated in the DEIS. For example, The Shores at Kohanaiki estimated that the ratio of brackish (46% seawater) groundwater pumped to potable product water was about 1.5 (Kohanaiki Non-potable Water Plan). Ooma Beachside Village estimated that the ratio of brackish (78% seawater) groundwater pumped to potable product water would be about 2.25 (Exhibit 42, LUC Docket A07-774). The DEIS should have quantified the pumping rate of the on- or off-site brackish wells and evaluate the effect of pumping up to 2.25 times the estimated water demand to provide potable water for the project.
- e. The DEIS does not estimate or consider the additional source of nitrate-nitrogen to groundwater from RO injection. The actual nitrate-nitrogen added to groundwater from the Kohanaiki injection well is greater than estimated for that project by nearly a factor of three (source: Kohanaiki injection well water quality reports and 2007 Kohanaiki Non-Potable Water Plan).

14. Page 2-48. *"Kaloko Makai is committed to water conservation strategies... the goal is to reduce the total water use through a combination of water saving equipment and strategies"* The *"equipment and strategies"* are not discussed or described in any detail, and, therefore, there is now way to tell if this "commitment" is appropriate, effective, or implementable.

15. Page 2-48. The DEIS does not identify how sustainable building design and LEED concepts and certifications will be implemented. There are no specific commitments from the project

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proponent to actually follow through with implementing sustainable building design and LEED concepts.

16. Page 2-50. *“The projected wastewater generation demand for Kaloko Makai is 2.37 million gallons per day (mgd) average dry weather flow. The WWTP will be designed to reduce the concentrations of Total Nitrogen (TN) to <5 mg/l, and Total Phosphorous (TP) to <2 mg/l. Installation of the Private WWTP shall be subject to conditions of approval by the DOH, including any lower concentrations of TN and/or TP in the effluent, and HAR Chapter 11-62. The amount of recycled water produced will be essentially the same as the amount received for processing, or 2.37 mgd.”* A general rule of thumb for projecting wastewater generation (refer to Wastewater Engineering Treatment, Disposal, and Reuse by Metcalf and Eddy, EPA website, and other sources) is that it will equal the projected water use at full build-out, minus outdoor use (such as car washing and irrigation), minus loss and leakage (should be minimal). Since most of the proposed project's irrigation water is coming from R1 treated water, the projected wastewater generation demand should be approximately equal to projected water use at full build-out (3.0-3.2 mgd (average) and 4.7-4.8 mgd (max)). Therefore, the DEIS has underestimated wastewater generation by as much as half of what can be expected based on the estimated water use in the DEIS – which is itself substantially underestimated. The amount of wastewater, therefore, will be significantly larger than stated in the DEIS.

The DEIS does not provide any scientific justification for why these concentrations of TN and TP are protective and appropriate, or why lower concentrations would not be more appropriate and protective. The DEIS should provide scientific studies, not solely citations from engineering wastewater manuals, that support the selection of these concentrations. Before an appropriate analysis of the impacts from the disposal of wastewater (whether through irrigation, infiltration basins, or injection wells) on coastal and marine resources, including the resources within the National Park, can be completed, the DEIS must provide a more detailed description of the quality of the water to be discharged including what methods will be used to reduce nutrients and what methods will be used to prevent pharmaceuticals and other contaminants from reaching the National Park. If a hospital is built as part of the project as described, it is especially important to analyze the full range of potential impacts from a hospital including the fate of pharmaceuticals in treated wastewater from the facility. For a wastewater facility this close to a national park, which will include injection wells as part of waste management, wastewater treatment should include maximum nutrient removal, be treated to tertiary standards including removal of pathogens, and de-chlorination should follow chlorination steps. The DEIS should describe why dry-lining for potential hookup to the Kealakehe WWTP is not an option as was required for Lanihau and TSA developments adjacent or near the project site.

17. Page 2-59. Adequate justification is not made in the DEIS to support the density and number of housing units proposed. The NPS questions the need for an additional 4,180 multi-family units in North Kona. Especially since many thousand more single- and multi-family units are planned for construction in the immediate area. Given the impact to the community and the

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environment, the project proponents have not justified the need for the number and density of housing units in their preferred alternative.

18. Page 3-4. The statements that the soils within Kaloko Makai are not suitable for cultivation are not accurate. The project location is known for high productivity of food crops, as evidenced by the numerous examples given within this document. This DEIS notes on page 4-10 that agriculture (including farming, horticulture and subsistence planting) and animal husbandry are "*function types commonly encountered in this general area*" and that there are "*several pervasive agricultural sites in the project area with widespread clearing and planting mounds*" (Table 4-2). On page 4-43 of the DEIS, "*During the mid 1800s, Captain Charles Wilkes of the American Exploring Team comments on the agricultural use of pāhoehoe excavations (similar to the modification of pāhoehoe outcrop in the project) which he observed specifically in the Kona region.*" Page 4-50 of this document notes "*During the 1930s to 1940s, the alahe'e along with mango, banana, uhi or yam (Dioscorea alata), and pia, a Polynesian arrowroot (Tacca leontopetaloides) used as medicine and food by Hawaiians, were also widely distributed in the project area.*"

Oral histories of the area, ethnographic evidence and archeological evidence document that the upland Kaloko and neighboring areas are prime for agricultural purposes. Ethnographic and archeological evidence for the Kaloko ahupua'a is a well developed part of the Kona Field System (Tuggle and Tuggle 2006, Cordy 2000, Newman 1970, Schilt 1984). Crops from this area included sweet potato, taro, banana, mountain apple, wauke and breadfruit historically (Tuggle and Tuggle 2006, Land Commission and Boundary Commission documents) and more recently was known to be plentiful in mango, pineapple and sweet potato. Areas slightly further south at the same elevation as the project area within the Kona field system are known to be fertile for production of sweet potato, wauke, and breadfruit (Kelly 1983).

19. Page 3-14. The DEIS states that "*The groundwater lens in the Keahole vicinity is brackish and discharges freely along the coast in a narrow band of a few feet wide in the intertidal zone.*" However, later the DEIS states on Page 3-35 that "*A somewhat unusual finding is that the lowest salinities in the ocean samples were not found nearest to the shoreline off of either fishpond. Rather, the lowest salinities were measured in surface ocean samples approximately 25-50-m offshore.*" These statements appear to contradict each other. The DEIS should have clarified the area where groundwater discharges to the ocean.
20. Page 3-14. The DEIS states that "*Salinity, lens thickness and the diffuse transition zone are all indicative of a modest groundwater flow.*" The DEIS should define "modest" quantitatively. Also, the listed factors do not preclude the possibility of high groundwater flow (say greater than 5 Mgd per mile of width) with a large amount of mixing caused by hydrodynamic dispersion.
21. Page 3-15. The DEIS states that "*While the hydraulic relationship between the two groundwater bodies is not yet understood, it is undoubtedly the reason for the anomalous characteristics of basal groundwater in the Keahole to Kailua area. (Nance 2008).*" The

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- DEIS should explain what is meant by “*anomalous characteristics.*”
22. Page 3-15. The DEIS states that “*Use of Well 3857-01 at Wai'aha started in 2005.*” The State Commission on Water Resource Management lists this well as abandoned and sealed. Perhaps the correct well number should be 3857-04.
 23. Page 3-15. The DEIS states that fresh water was encountered at 1,060 ft below sea level at the Kamakana Villages Well (3959-01), but no information is provided to support this statement. Documenting the source of this information is important because this resource has never been developed for municipal use, yet it is the preferred alternative to supply over 3 Mgd of potable water for the project. The DEIS should have included credible scientific documentation of the circumstances under which fresh water was encountered at the Kamakana Well.
 24. Page 3-25. Section 3.5.1 “*Due to high permeability of the natural ground surface across the project site,surface runoff does not occur on the project site even during the most intense rainfalls. Natural drainage of the project site consists of rainfall percolation through the layers of very porous lava to the ground water table.*” The more development at the project site (and on the upslope lands), the more difficult it will be for “green space” to take-in or absorb the surface water runoff water, as the “green space” will not have the same surface area it once did to percolate. Furthermore, the claim that rainfall percolates through the layers of very porous lava to the ground water table (with respect to surface water), is contradictory to the claim that wastewater effluent disposed onsite percolating through the same layers of very porous lava to the ground water table will not have significant impact.
 25. Page 3-26. The DEIS states that reverse osmosis concentrate will be injected into the basal aquifer in strata where groundwater salinity is 30 ppt or greater, and asserts on p. 4-110 that “*Since the concentrate has a greater density than the surrounding saline groundwater, it will flow seaward without rising above the surrounding saline groundwater and will not rise to the basal freshwater layer. It is then discharged into the ocean offshore at a substantial depth and distance from the shoreline.*” At the same time, the DEIS also notes on p. 3-16 the presence of a saltwater circulation system where “*Saltwater flows landward in the deeper parts of the aquifer, rises and then mixes with seaward-flowing groundwater.*” The predicted fate and transport of the injected reverse osmosis concentrate is speculative and unsubstantiated by references to any credible scientific evidence. The DEIS should have included (1) the estimated salinity of the reverse osmosis concentrate from the proposed project, and (2) a quantitative analysis of the potential for the injected reverse osmosis concentrate to enter the saltwater circulation system and increase the salinity of inland and nearshore marine waters downgradient of the project site.
 26. Page 3-26 The DEIS should have discussed in detail how it will protect NPS resources downslope from the proposed project. The DEIS should have included a thorough and rigorous analysis of potential impacts, direct and cumulative, to groundwater and groundwater-fed ecosystems from termiticides and pesticides used on houses, buildings, grounds, and common areas; added nutrients from irrigation and fertilized green spaces;

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- potential releases of contaminants from commercial businesses in the light-industrial/commercial parks who generate hazardous wastes (e.g., metal finishing, photoprocessing, automotive maintenance, dentistry, pesticide companies, printing, etc); potential releases of medical wastes, pathogens, and pharmaceuticals from the medical facilities; nutrients, pathogens, and pharmaceuticals carried in wastewater; contaminants associated with roadways and other impermeable surfaces including petroleum products, metals, pesticides, nutrients, and other pollutants.
27. Page 3-26. *"As the excess irrigation water percolates downward through the unsaturated zone to the groundwater, natural removal of nitrogen and phosphorus from the water will be significant."* The DEIS should have quantified *"significant."* It is not possible to analyze impacts to NPS resources without an accurate understanding of the increased flow of nitrogen and phosphorous into NPS waters.
28. Pages 3-26 and 3-74. Details regarding stormwater management and impacts to NPS aquatic resources are not provided in the DEIS. Surface runoff from impermeable surfaces associated with this development will occur. DOH and County drainage regulations do not address polluted runoff, only volume of runoff. Drywells are nothing more than holes in the ground; conduits for polluted runoff to groundwater. No specific pollution reduction devices or methods with numerical removal efficiencies are proposed beyond stating BMPs will be used. Moreover, there is no discussion of how the BMPs will implemented, who will monitor the BMPs, or how they will be enforced. It is not adequate for purposes of an EIS to merely state *"Innovative and more natural ways to handle drainage improvements will be sought to comply with the County drainage standards."* The details of these *"innovative"* means should be explained. Potential environmental impacts to coastal and marine resources, including the resources in the National Park, have not been evaluated and the statement that *"Kaloko Makai is not expected to have an adverse effect on groundwater or coastal marine waters"* is completely unsupported. No data have been presented to support this conclusion.
29. Page 3-27. *"Control of contaminated surface water can be achieved through the development of a PPP designed to address all pollutants associated with the development and to identify measures that will contain and treat such pollutants in order to prevent any release into the environment, including the groundwater. There will be no anticipated adverse impact on groundwater quality from the development of this project."* These statements are highly speculative with no analysis to support the conclusion that there will be no adverse impacts to groundwater quality, and are not substantiated by any data presented. PPPs, although a statement of good intentions, are difficult to implement, monitor, or enforce. PPPs, even good ones, cannot guarantee that no contaminated surface water will reach the groundwater. There is no discussion of how the project proponent will implement the PPP, which is especially problematic given the multitude of land uses (industrial, recreational, and single and multi- family housing units) and length of time to complete this development. CCRs are an inadequate mechanism to prevent pollution offsite of the development as there is no reason for landowners to self-police for offsite damages and no governmental agency – local, state or federal – can enforce them.

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30. Page 3-28. The DEIS states: "Nutrient loading and its subsequent impact is one of the more important issues concerning conservation and protection of coral reefs" and then goes on to say "However, according to Atkinson (2003)[sic], the conclusion that nutrients are deleterious to a reef ecosystem is incorrect." Although some of the statements made in this section of the DEIS are indeed in Atkinson and Falter (2003) book chapter (cited in the DEIS as Atkinson 2003), this statement must be taken in context with other statements in Atkinson and Falter that are not mentioned in the DEIS. Overall the comments in the DEIS that were derived from Atkinson and Falter (2003) are one sided, incomplete, and are not fully supported for Kaloko-Honokohau marine waters. Atkinson and Falter (2003) focuses on the flux of nutrients in and out of coral systems, not on indirect effects of nutrients on the coral. In fact, the Atkinson and Falter (2003) states that significant anthropogenic impacts of nutrients on coral tend to occur "in areas of groundwater or surface water where relatively large areas are discharge into shallow reef flats." This is the situation at the National Park, where approximately three million gallons per day of groundwater discharge to marine waters in Honokohau and Kaloko Bays. Atkinson and Falter also state there is a need for more studies in which the organism or community responses are a function of actual nutrient loading, per area of benthos, not a function of concentration. The DEIS should have stated that nutrient impacts to coral reefs are probably indirect and long term and that it is possible that nutrients can stimulate bacteria and other disease vectors that might harm coral. Overall, the statements that are quoted from Atkinson and Falter in the DEIS seem to have been selectively picked to include only the ones that support the hypothesis that excess nutrients have little or no impacts on coral health in order to mislead the reader. The statements that tell the other side of the story, such as those quoted just above, are not included in the DEIS. There are many cases in the published scientific literature where excess nutrients, as well as the pathogens that will be associated with this development, can result in coral reef degradation due to various indirect processes. There is no conclusive evidence presented in the DEIS that corals cannot be harmed by excess nutrients and/or an unnatural ratio of organic to inorganic nutrients or human pathogens. Excessive nutrients cause excess algae growth that can lead to depletion in oxygen available for other organisms associated with a coral reef and can lead to algae blooms that take over sections of coral, blocking the sunlight and hurting its ability to thrive. The state of Hawaii is experiencing a significant decline in some of Maui's coral reefs experiencing a significant decline where excess nutrients are implicated in invasive algae blooms. Although the factors influencing Maui's reef decline are complex, the DAR reported (Williams et al 2007) "strong indications that human impacts have been very important." Supporting data include proximity of private and county sewage injection wells, which place nutrient loads close to the coral substrate, high levels of nitrogen and phosphorus, and stable isotope ratios indicative of animal waste (presumably sewage) in algae. The potential for a hospital associated with this development is another concern. Pathogens, pharmaceuticals, and endocrine disrupting compounds are associated with hospital waste, many of these are unlikely to be fully eliminated by the proposed sewage treatment plan. The effects of these pathogens and compounds on coral reefs were not mentioned or analyzed in the DEIS, therefore the DEIS is seriously inadequate to evaluate impacts to coral reefs.

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31. Page 3-29 to 3-34. "3.5.2.1.1. *Assessment of Coral Ecosystem Health of Kealakekua Bay and Honokōhau Bay.*" The discussion in this section supports the conclusion that inputs of nutrients from the Kaloko Makai development will likely result in adverse impacts to the natural and cultural resources within the National Park. None of the arguments or information presented supports the assertion that more nutrients and other pollutants will not result in impacts to the NPS natural and cultural resources. Furthermore, none of the other sites discussed in the DEIS for comparison are in pristine conditions. The NPS mission is to maintain its marine waters in as pristine conditions as possible.
32. Pages 3-33 and 3-34. "*Coral ecosystems will not normally recover from chronic stresses until the stressors are removed (Grigg, 1995; Edinger et al., 1998). If elevated nutrients and/or algal cover are chronic stressors to the coral ecosystems of this study as the results indicate, and future human population growth and development continue to increase nutrient inputs to these bays, then it is likely that future degradation is imminent ...*" The DEIS did not discuss how the coral reef ecosystems within NPS boundaries, or North Kona, will be affected by cumulative nutrient stresses associated with the proposed development and other nearby developments. Compare these pages with lack of any discussion on pages 8-2 to 8-4.
33. Page 3-34. "3.5.2.2. *Endangered Marine Species*" The presence of endangered species, and the difficulty of assigning specific impacts to specific causes in these complex environments, argues for using the precautionary principle to significantly limit additional inputs of human sewage including organic nutrients, pharmaceuticals, and other contaminants into the groundwater that flows through, under, and in the National Park.
34. Section 3.5.2.3. This section of the DEIS is a long review of very old, non-peer reviewed reports, containing in large part data collected nearly a decade or more ago. These reports and the data therein were presented in the TSA and Lanihau Dockets and were refuted by the LUC at those hearings. (TSA FFCLDO 2002, Lanihau FFCLDO 2002). The discussion and conclusions regarding nutrients, pond characteristics and groundwater level and flow in this section are wholly unsupported even by the reports cited. In addition, as in these previous proceedings, the developer and its consultants failed to conduct an environmental risk analysis. Even the most basic facts in this section are wrong; for example, Kaloko Fishpond waters are becoming less saline and are experiencing higher residence times, not the other way around. Groundwater flows into both ponds, not around them. Both ponds do not function as anchialine ponds, Kaloko is connected to the ocean. No effort was made to accurately portray the current status of the coastal water resources and ecosystems, or the endangered species that inhabit those ecosystems, nor was any effort put forward to assess direct, indirect, and cumulative impacts to the endangered species dependent upon the park's water resources.

The DEIS states "*the potential exists that the development could pose secondary threats to the National Park and to its endangered birds if noxious substances such as petroleum, oils lubricants, and sewage were to migrate downslope (makai) from the project into the Park*" (p.3-57) but then makes no attempt to analyze these threats. The DEIS also does not assess the cultural impact to Native Hawaiian traditional and customary activities resulting from

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degraded water quality and a restricted quantity of water. The project proponent appears to take the approach throughout the discussion of marine and brackish water resources that if the resources are currently experiencing degradation from anthropogenic activities then that is reason to continue to add to the degradation. The DEIS does not consider the proposed project in the context of other projects occurring in the National Park and elsewhere with regard to these resources. Moreover, the DEIS does not even attempt to analyze the amount of nutrients and other contaminants that will come from the proposed project, the fate and transport of those contaminants, or the risk posed to receptors (i.e. flora and fauna). The conclusions of no impact from the proposed development to water quality in the DEIS are unanalyzed and unsupported, and the document is utterly inadequate for decision makes and the public to understand the real consequences that will occur if the project is completed. It is pure speculation, contradictory to both common sense and logic, and unsupported by any credible scientific study to state that *"It is unlikely that there would be any effects to the nearshore marine environment as a result of increases in nutrient concentrations in groundwater."*

The NPS is concerned that the cumulative effects of the combination of restricted groundwater flow from over-withdrawal and additional nutrient/pollutant inputs when the proposed developments in close proximity to the Park are built out, poses a significant threat to endangered species at 'Aimakapā Fishpond. The U.S. Fish and Wildlife Service has identified 'Aimakapā Fishpond as core recovery habitat for endangered Hawaiian waterbirds. The endangered Hawaiian stilt (*Himantopus mexicanus knudseni*) and endangered Hawaiian coot (*Fulica alai*) are found at two fishponds at Kaloko-Honokohau National Historical Park. An avian botulism outbreak was documented there in 1994. The coot population was decimated, but the stilt population appeared to have been less impacted. Morin (1996) suggests that anthropogenic changes to water quality and quantity are likely to increase the potential for further botulism outbreaks. Because of the historical nature of the fishpond, the restoration actions are complex and traditional methods of draining and dredging are not readily available to the NPS, therefore additional nutrients and contaminants should be prevented from entering the fishponds.

35. Page 3-43. *"Future developments will be required to utilize the County wastewater treatment plants, hence eliminating the major source of nutrient subsidies."* However, in Section 4.10.2, pg 4-124, the DEIS states, *"The Kealakehe Wastewater Treatment Plant shall be expanded to accommodate the projected sewage volume from the Urban Area extending south of Hina Lani Street to the Keauhou WWTP..... Representatives from the County DEM noted that there are no plans for construction of (a) decentralized WWTP in the immediately future."* To our knowledge, there is no planned expansion of the Kealakehe WWTP. It is likely that most or all of the private developments surrounding the Park will be disposing their wastewater onsite before the County can improve their wastewater treatment capabilities; therefore, Kaloko Makai has significantly underestimated the *"cumulative changes to groundwater from the total assemblage of existing and proposed projects with the potential to alter pond and marine environments."*

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36. Page 3-45 (and pages 3-66-67 and 3-75) the DEIS also mentions a groundwater monitoring plan to detect contaminants in the groundwater below the proposed project. The proposed groundwater-monitoring plan will include monitoring wells, and a sampling and analysis plan. Parameters to be analyzed include: pH, temperature, salinity, nitrate, ammonia, dissolved organic nitrogen, TDS, TN, phosphate, dissolved organic phosphorus and TP and any other parameters required by the DOH. The project proponents are proposing to start water sampling prior to the start of grading activity, and to sample quarterly for two years, or as required by the DOH. Two years of sampling starting at the initial grading of this project means that water quality sampling will last through the initial phases of construction and no monitoring would happen for any part of the actual use of the project site, including the use of the WWTP. Two years of sampling, regardless of when it started, is insufficient to monitor the impacts to groundwater from this project and inform decision makers and the public on how the project is adversely affecting the environment. Furthermore, DOH water monitoring protocols are designed to protect human health, not the ecological integrity of aquatic ecosystems. It is unlikely that all of the effluent generated by the WWTP will be used for irrigation. It is quite costly to install water lines to distribute the effluent and there may not be a sufficient need for all of the effluent for irrigation. Furthermore, systems breakdown and backup systems need to be in place. The DEIS does not mention what type of back-up system will be used to dispose of wastewater. The DEIS should disclose to the Kona community that injection wells will be used and to what extent. The DEIS must analyze the potential impacts to coastal resources from injection wells (utilizing the information from Maui). The DEIS does mention infiltration basins as a means of disposing of treated wastewater not needed for irrigation during wet periods. Infiltration basins should be well defined and described. The impacts of infiltration basins and injection wells on the coastal and marine resources along the Kona coast, including the resources within the National Park, were not mentioned, discussed or analyzed in the DEIS
37. Page 3-62. The information cited on this page regarding groundwater resources within the National Park suffers the same problems as identified for section 3.5.2.3.
38. Page 3-62. The statement in the DEIS that *"No adverse groundwater effects have been observed from any of the existing wells in the regions, individually or cumulatively. Therefore, no adverse effect is anticipated under the Kaloko Makai on or off-site groundwater wells"* is unsupported by references to existing scientific evidence relevant to the conclusion. The conclusion ignores the rise in chlorides due to pumping and saltwater intrusion at the Kahaluu shaft wellfield (3557-01 to -05), which skims water from the basal lens and provides much of the drinking water for the North Kona System. The conclusion also ignores reasonably foreseeable significant adverse impacts from groundwater withdrawals based upon theoretical approaches or research methods generally accepted in the scientific community, including but not limited to USGS Water Resources Investigations Report 99-4070 and State of Hawai'i Department of Land and Natural Resources 2008 Hawai'i Water Plan. The DEIS should have included references to credible scientific information to support the statement that existing groundwater development has had no adverse effects.

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39. Page 3-63. Alternatives to supply potable water to the proposed project include utilizing new and existing off-site high-level wells upgradient from the National Park. According to USGS Water Resources Investigations Report 99-4070, groundwater withdrawals from wells directly upgradient of the National Park will have a greater effect on freshwater discharge within the National Park. According to the DEIS, an analytical model developed by Tom Nance, Water Resources Engineering, indicates that pumping from high-level wells in the vicinity of the proposed project has the potential to raise the salinity of groundwater within the National Park by up to 53% (Table 3-6). This predicted effect may cause unacceptable impacts to groundwater-dependent cultural and natural resources in the National Park and along the Kona coast. The NPS seeks to maintain the flow of fresh groundwater to all inland and nearshore marine waters in the National Park to fulfill the specific purposes for which the Park was established, including traditional and customary Native Hawaiian practices and the protection of endangered species. Groundwater pumping has the potential to limit both the productivity and distribution of culturally important flora and fauna. For these reasons, pumping of high-elevation wells upgradient from the National Park is not an acceptable alternative to supply water to Kaloko Makai.
40. Page 3-63. The DEIS states that “*With the addition of Palani Well No. 1, combined with the anticipated projects proposed in the region, salinity levels are estimated to increase*” in the National Park. The analysis upon which this predicted cumulative impact is based, however, did not include groundwater development associated with the proposed Kaloko Makai project (see Table 1, Appendix 7, Palani Well No. 1 (State Well No. 4158-03) North Kona, Island of Hawai‘i, State of Hawai‘i, Final Environmental Assessment). The DEIS should include the additional pumping of at least 4.8 Mgd (but this is probably an underestimate) from high-level wells upgradient from the National Park, because this alternative is being investigated to supply water to Kaloko Makai.
41. Page 3-63. The DEIS references “*Montgomery 2009*” in several locations but this reference is not included in Chapter 11 References.
42. Page 3-64. The DEIS implies that the native orange-black damselfly can tolerate increasing salinity and temperature in anchialine pools due to the effects of pumping high-level wells. This assertion conflicts with the results of controlled laboratory experiments, which reveal that the eggs and naiads of the candidate-endangered orange-black Hawaiian damselfly (*Megalagrion xanthomelas*) are sensitive to increased salinity and temperature, and that naiads exhibit a threshold response to salinity above 15 ppt, with no naiads surviving at 20 ppt (Tango, L.K.K., 2010, The effect of salinity and temperature on survival of the orange-black Hawaiian damselfly, *Megalagrion xanthomelas*. Master’s Thesis, University of Hawai‘i at Hilo, 46 p).
43. Page 3-65. While it may be true that marine water within the National Park are already in violation of the State’s water quality standards for nutrients, including nitrates, ammonia, and phosphate, and chlorophyll-a and turbidity, this does not mean more nutrients (especially organic nutrients) would not further degrade the ecological integrity of the aquatic ecosystems within the National Park. It is pure speculation, contradictory to both common

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sense and logic, and unsupported by any credible scientific analysis to state that “*It is unlikely that there would be any effects to the nearshore marine environment as a result of increases in nutrient concentrations in groundwater.*” Some of the conclusions from these older studies have been contradicted in testimony and comments on previously proposed nearby developments.

44. Page 3-65 and 3-66 “*Atkinson (1992) modeled the input of nutrients to the ocean down slope from two golf courses in West Hawai‘i over a four-year period. Results of the studies showed that at a location where fertilizer nutrients entered an embayment (Keauhou Bay) with restricted circulation relative to open coastal shorelines, nitrates increased by about 100% and phosphate increased by about 20% over natural input (Marine Research Consultants 2002).*” To our knowledge, this model has never been validated. Model results should not be accepted as facts without sufficient validation.
45. Page 3-66. “*These results indicated that even with long-term input of extremely high nutrient subsidies, there are situations where there are no negative effects to the receiving environment.*” This is a false conclusion. Only a subset of the environment was reported to be sampled; no evidence offered that the proposed development is comparable to this case. The DEIS should have provided details on which nutrients, into what volume of water and coastline.
46. Page 3-67. “*The physical and hydraulic characteristics of the vadose zone dampen the flux of water and contaminants to the water table. While transiting the vadose zone, contaminants such as fertilizers, pesticides, herbicides and industrial chemicals can be degraded by a process known as natural attenuation.*” While natural attenuation does occur in areas that are more mesic and have deeper and more developed soil profiles, with the shallow soils, young geology and arid conditions at the proposed project site, natural attenuation is unlikely to remove all of the pollutants before they reach NPS resources. The DEIS should have contained peer-reviewed sources describing the “*natural attenuation*” capability of this area’s geological and climatic conditions.
47. Pages 3-68 to 3-74. The DEIS presents a summary of neighboring developments and concludes that upgradient wells and resorts have not had a negative impacts to the surrounding ecosystems. These conclusions are not supported by references to credible scientific analysis nor are the conclusions supported by any reference to scientific data. As stated, the conclusions are the unsubstantiated opinions of consultants for the Koloko Makia project proponent. The DEIS should include credible scientific evidence to support conclusions that upgradient wells and development have not had a negative impacts. It is unclear how the discussion of three resorts is relevant to the discussion of how the proposed project will adversely impact the coastal and marine resources within the National Park and along the Kona coast. Information dealing with impacts to the National Park or from situations posing similar threats (i.e. Maui) is more relevant.

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48. 3-74 and 3-75. As mentioned before, a PPP is a statement of good intentions and is not very self-executing or enforceable. PPP's are difficult to enforce and monitor the effectiveness, and in fact, we know that they are sometimes simply ignored.
49. Page 3-75. Since this project is so large and includes a hospital, there should also be reporting for pharmaceuticals and endocrine disrupting compounds, in addition to reporting requirements to the DOH's, Wastewater Branch.
50. Page 4-2. "*Based on available information about the proposed development and the visual gravity of industrial/commercial development flanking the project area to the north and south, and Queen Kaahumanu to the west (makai), the proposed project is considered to add to an established urban trend in coastal North Kona.*" This sentence is inaccurate regarding the visual gravity of industrial/commercial development flanking the project area. The majority of the areas surrounding the proposed project area is now open space.
51. Page 4-4. "*Summary of Previous Archaeological Studies*" this section (including Figure 4-1) needs to be updated to include more information, including but not limited to the data recorded in the following survey reports:
- Emory, K.P., and L.J. Soehren
1971 Archaeological and Historical Survey, Honokōhau Area, North Kona, Hawai'i. Prepared for State Department of Land and Natural Resources. Departmental Report Series 61-1. Department of Anthropology, B.P. Bishop Museum, Honolulu.
 - O'Hare, Constance, and Susan T. Goodfellow
1992 Kohana-Iki Resort, Phased Archaeological Mitigation Program, Phase II—Data Recovery. Land of Kohana-Iki, North Kona District, Island of Hawai'i. Paul H. Rosendahl, Ph.D., Inc., Hilo.
 - Tomonari-Tuggle, M.J., and H. David Tuggle
2006 Archeological Survey of Lands Surrounding Kaloko Fishpond, Kaloko-Honokōhau National Historical Park (KAHO). International Archaeological Research Institute, Inc.
 - Monahan, Christopher M., Trevor Yucha, and Connie O'hare
2010 Draft Supplemental Archaeological Inventory Survey for the Proposed QueenKa'ahumanu Highway Widening Phase 2 Project, Kalaoa, Kalaoa-O'oma, O'oma 2, Kohanaiki, Kaloko, Honokōhau 1-2 and Kealakehe, North Kona and South Kohala Districts, Hawai'i Island. Cultural Surveys Hawai'i, Inc. Prepared for SSFM International, Inc.
 - Reinecke, John E.
1930 Survey of Sites on West Hawai'i[also, Archaeology of Kona, Hawai'i]. MS, in the files of the State Historic Preservation Division, Department of Land and Natural Resources, State of Hawai'i .

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Renger, Robert C.

1974 Human adaptation to marginal coastal environments: the archaeology of Kaloko, North Kona, Hawai'i. Ph.D. dissertation, University of California, Santa Barbara.

52. Page 4-4. Summary of Previous Archeological Studies, Information needs to be provided clarifying whether these sites have assigned SIHP numbers.
53. Page 4.8. A total number of lava tubes encountered, including synopses of caves containing cultural materials found within the project area should be presented so that the public and decision makers can make an informed decision.
54. Page 4-12. Table 4-4, this table, along with site types, functions, and mitigations should not be considered finalized until the AIS is approved by SHPD. Regarding all the trail remnants listed with mitigations of "no further work," NPS supports the SHPD stance that trail segments should be preserved and incorporated into development plans whenever possible. These trails are prehistoric and fall under the Highways Act of 1892 (HRS 264b).
55. Page 4-18. The DEIS states that "*the archaeological surveys have been submitted to SHPD for their review. At the time of the preparation of this DEIS, SHPD was still reviewing the archaeological inventory surveys.*" Until SHPD approval has been received, the information provided in the DEIS cannot be considered final as it is currently based on the unapproved AIS. If the AIS changes as a result of the SHPD's review and approval, then a new analysis will be required to analyze impacts to NPS lands, resources and associated landscapes.
56. Page 4-30 "*Historic properties north and south of the project area are of less concern due to the extensive industrial/commercial developments separating the project area from the potential sites there.*" This statement is inaccurate. The majority of the areas to the north and south are now open space, with a high concentration of historic properties. The background research for these sections should be included in this study and the analysis of impacts to the cultural resources and cultural landscape of the area.
57. Page 4-33, ¶6 All appropriate parties, including the NPS, should be allowed to comment on the burial treatment plan(s) for the proposed project area.
58. Page 4-34. ¶1 The first sentence is contradictory to the information provided on page 4-29, the "Off-Site Potable Well Field" section, paragraph two "*The AIS recommended that seven burial sites (10701, 10717, 10722, 10728, 10740, and 10754) and one heiau with a burial (10736) be preserved. Four of these sites are located within parcel 062 and the remaining are located on parcels 057, 058, and 059. SHPD concurred with the recommendations on October 24, 2005. As a result, a preservation plan was submitted and approved by SHPD in 2006 and Kaloko Heights Associates, LLC, property owner, submitted a Declaration of Archaeological Easements for the preservation of all seven sites.*" This is unclear. There should be an explanation of which surveys correlate to the offsite well field.

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59. Page 4-84. The vehicle emissions study only reports using traffic at intersections, while the proposed project is on a significant hill between two highways. Vehicles utilize greater amounts of fuel climbing up hill; the plans include 3 plus 2 lanes entering the project from the bottom of the hill vs. 1 lane entering the project from the top of the hill. The fuel usage and emissions from the bulk of a 5,000-home community driving vehicles uphill must be analyzed.
60. Page 4-52. Near Queen Ka'ahumanu Highway, near the present water tank, there are major sections of trail which are still intact and should be preserved. Kaloko Makai should consult with NPS, lineal and cultural descendants, Na Ala Hele and SHPD on this. These trail sections are not shown in any of the figures within this document and are within the Conservation area.
61. Page 4-53. The "*Mitigation Measures*" section is inadequate and does not provided specific mitigations. This section directly quotes what is outlined in the "recommendations" section of the CIA. However, no specifics are mentioned about how the Kaloko Makai project plans to use the recommendations as mitigation measures. For instance, the third bullet in this section notes that "*Efforts should be made to protect...water collection lava tubes*" yet many of these features are listed to receive no additional work in the AIS. It is unclear how these features be protected. The DEIS should have stated if these features will be avoided as a mitigation measure.
- This section should have specifically addressed how the proponent of the project will specifically address the concerns outlined in the community consultations, i.e. how Kaloko Makai will implement the recommendations into planning development.
62. Page 4-54. "*The trail entirely traverses pāhoehoe and is generally well defined throughout the eastern portion of the parcel, except near the makai parcel boundary where bulldozing and grading has nearly destroyed the ahupua'a wall and eliminated any definitive sign of the trail.*" This statement is inaccurate. There are definitive signs of trail in the makai parcel. The trail within the project area is clearly visible up until it crosses Hina Lani (near the intersection of Hina Lani and Kamanu). Furthermore, although in some areas, the wall has been historically robbed for rock, some sections may have fallen over, or been bulldozed, the remnants of the wall are in clear view and the footprint (i.e. form and outline) of the original wall remain.
63. Page 4-54. "*Archaeological data created by others makai of the Queen Ka'ahumanu Highway*" should be clarified. What are the citations.
64. Page 4-55. ¶4 First Sentence "*Since the integrity of the historic trail is lost at that point, due to Hina Lani road construction..*" is misleading. The lower portion of the trail has been identified and the NPS has recommended the appropriate preservation measures.
65. Page 4-55. "*Community members and groups responsible for the long-term care of the Kohanaiki and Kaloko Ahupua'a, as well as cultural practitioners who utilize the area for*

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gathering and for cultural and educational activities, should be further consulted regarding the above issues and other concerns throughout the planning, development and operation of the proposed housing development. This consultation should include all interested community groups and individuals who have a stake in the project area.” Using Kaloko Heights’ treatment measures that were reached between the “community” and Kaloko Heights is grossly inadequate as a treatment plan for Kaloko Makai’s preservation of the Kohanaiki/Road to the Sea Trail. NPS believes that the agreement that was accepted for Kaloko Heights is not acceptable for the remainder of the trail. Kaloko Makai has a responsibility to meet with community members, groups and cultural practitioners, as well as formally consult with the NPS to determine the best treatment for this and other trails within the project area. This trail is eligible for the National Register of Historic Places as a contributing element to the National Park and the National Historic Landmark.

66. Page 4-56 – 4-57. Potential Impacts and Mitigation Measures, NPS recommends rewriting this section to preserve the existing trail and buffer zone rather than altering it.

#1 The DEIS should explain how the trail will be “*retained in perpetuity.*”

#2. There should be a preservation corridor to be used such that schoolchildren, community members, etc. experience a more meaningful sense of place when using this ancient trail. The thirty foot trail right of way will not provide the user an authentic experience within the unique cultural landscape of this area, part of the historically significant lifeline between the historic mauka village and the makai coastal villages of Kaloko and Honokōhau, which now comprise the National Historical Landmark. Instead of a rigid thirty foot buffer, the corridor should be fluid to include significant cultural and natural features along the route. NPS archeological staff from Ala Kahakai National Historic Trail, working with descendent communities and the State Historic Preservation Division and local communities should be consulted to establish an appropriate corridor. Trail buffer areas should not be physically altered whatsoever. Altering the landscape within buffers negates the purpose of the trail buffer and adversely impacts the setting and character of the trail, as well as the integrity of the trail as a historic property.

#3. No physical scarring or alteration of existing trail features or buffer zones should take place. The priority should be that the trail is preserved. One option may be overpasses and bridges.

Cutting and filling within the trail corridor is not acceptable and should not be allowed. Altering the entire landscape and then marking where the trail used to be is not an adequate preservation measure for this trail. Removing the trail materials and replacing them in the same horizontal alignment is not acceptable treatment of a historic property under 6E or Section 106 preservation standards. State Historic Preservation Division and the NPS should be consulted as to the treatment plan for the trail. Cut and fill stepping of the landscape is not the only alternative for land modification in a subdivision. As an example, the developer could design grading pad areas only for planned structures; post and pier construction is also a method used to minimize destruction of the natural landscape and cultural features.

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#4. The trail should not be physically altered. No vertical or any other changes to this historic trail are acceptable. The text should be revised to read "*The original trail surface, and other cultural resources located within the trail corridor, including, but not limited to, existing native trees will be retained.*"

#5. The NPS agrees that cultural features along the existing Trail shall be preserved and incorporated into the preservation corridor. When significant cultural resources are located further away from the Trail, the Trail preservation corridor should be adjusted to incorporate and preserve them. Cultural and natural resources should be preserved in place, as moving them destroys the spatial context and integrity of the resource.

#6. First sentence should read "*In further consideration of existing governmental rules and regulations pertaining to preservation of historic and cultural resources any trail crossing will not physically scar or alter the original trail fabric, features or corridor in any way.*" For example: Metal (e.g., marine aluminum) grate crossings-bridges can be built for any trail crossings. Metal grates can allow the entire original trail and buffer land surface to be preserved intact, allow people to view the original trail surface and walk the original trail route within inches of the tread elevation. In many cases only two tire width grates would be needed to allow automobiles to cross trails; large trucks and heavy construction equipment can be directed to alternative entrances for their occasional access needs on the two sides of the trail. Heavy construction equipment should not cross the trail, heavy equipment entry to areas near the trail should be made from adjacent land, not across the trail. Recommend defining heavy as the weight of a horse or cow (which are likely to have used or crossed the trail before).

Recommend if the developers are not willing to propose crossings that no trail crossings, except pedestrian traffic be allowed, without another environmental assessment; roadways already exist on both sides of the trail.

The NPS requests to be consulted with in regards to any and all Trail crossings.

#7. The NPS recommends that such details should be determined in the Final Preservation Plan for the Trail after the necessary and appropriate consultation with descendants, Na Ala Hele, the SHPD and the NPS.

#8. Existing rock walls should be preserved in situ. Replace existing text with "No rock walls will be moved or altered." These are historic cultural structures to be preserved. Routes around existing rock walls will be developed or small bridges constructed for pedestrian crossing.

#6, 7 and 8 The sentence "*At this early stage of the planning process for Kaloko Makai it is premature for SCD to propose the number and location of specific Trail crossings.*" is inconsistent with the detailed figures provided in this EIS and the concept of an EIS. The numbers and locations of trail and wall crossings as well as changes in walls, trails, and

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buffer zones need to be disclosed so that their individual and cumulative effects can be evaluated in the EIS. A map-plan is provided in the DEIS. Does the above comment imply that Kaloko Makai does not intend to follow these plans? If the figures and the calculations in the DEIS are wrong, then the analysis presented of impacts to resources is premature and inadequate.

#9. This section's connection to the trail is unclear. Above it is noted that any native trees within the trail corridor will be preserved in place. NPS recommends removal of this point from this section of the EIS. In this harsh dry landscape the location where a tree can survive is uncommon and very unique. The spacing and location of the native trees can be vital to the survival of organisms that depend on them for shelter and food. Without specific details, removal of trees from this landscape is not advisable.

#11 *"Where the Trail intersects with Hina Lani Street, SCD will realign the remaining lower portion of the Trail from that point to run parallel with and adjoining the Hina Lani right-of-way down to Queen Ka'ahumanu Highway."* No existing historical structures or artifact (i.e. fragments of existing trail) should be altered; nothing existing should go away. New trails leading from the historic trail to the intersection, crosswalks, and walkways along the roads can be constructed where they do not physically alter existing historic trails and buffers. NPS should be consulted on the alignment of the trail between Ka'ahumanu Highway and the trail/Hina Lani intersection.

#12. Kaloko Makai should incorporate Hawaiian cultural perspectives into the overall planning and execution of the development including the treatment of the 'aina within the project area by preserving the natural contours, geologic features and existing cultural features, not terraforming the project area into a state unrecognizable from the original landscape.

67. Page 4-57. *"Roadways and Traffic"*. As noted in the DEIS the existing traffic conditions are currently highly impacted and this proposed project will further add congestion. Park visitors use these roads to access the Park and traffic contributes to their overall park experience. No impact analysis of traffic, or its mitigation, to the National Park is made in the DEIS.

68. Page 4-73. Noise impacts to Kaloko-Honokōhau National Historical Park are not discussed. Significant noise increases are mentioned but only mentions that these impacts are to undeveloped property. The analysis needs to describe the impacts to the NPS resources. What are the Leq levels at 50 and 100 ft on Park property (Table 4, page 13)? Based on the information in the tables in Appendix N, there appear to be significant additional noise impacts from project related traffic increases. Since Kaloko-Honokōhau National Historical Park is a noise-sensitive area, there should be discussion of how traffic noise and construction noise will impact activities at the Park and what measures will be implemented to mitigate the noise impacts.

- a. Appendix N Table 6 Discussion needs to identify where the 65 DNL and 75 DNL setback contours fall on Park property for Year 2011 and 2035.

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- b. Appendix N Page 32 Chapter VII should discuss project-related noise impacts (traffic noise and construction noise) to Kaloko-Honokōhau National Historical Park and possible mitigation measures.
69. Page 4-81. Six-foot high sound attenuation “walls” along roadways are likely to look out of place in with the existing landscape, while six-foot piles of lava rock can likely be made to look like native ‘a’a lava and edges of pahoehoe flows. Native plants on the sides and top of such a constructed lava barrier would contribute to sound attenuation and appearance of such a structure. Utility conduits and access points could be incorporated into lava rock if extensive sound barriers are necessary.
70. Page 4-84. The NPS disagrees with the conclusion that there “*may potentially result in a long-term increase in emissions.*” There will be a long-term increase in emissions. Assuming that each household on average owns 1-2 vehicles, it is safe to say that this development will mean 5-10,000 additional vehicles in the vicinity which will mean a significant amount of pollutants being introduced into the air and water in the area. The DEIS contains no analysis of impacts to NPS resources and Native Hawaiian cultural practices from increased emissions.
71. Page 4-86. Section 4.7, this section needs to address the major visual impacts that this project will have on Kaloko-Honokōhau National Historical Park and the Honokōhau Settlement National Historic Landmark. The Park and Landmark house over 400 archaeological sites, numerous ethnographic resources as protected resources. These resources are also protected under Section 106 of the National Historic Preservation Act. Under this act visual impacts must be taken into consideration as they can affect the setting of historic properties eligible for the National Register of Historic Places. These sites, ethnographic resources, the Park and the NHL as a whole will be significantly impacted by the alteration of the viewshed by this project. Mitigation measures will need to address these impacts.
72. Page 4-86. Project lighting will also have a negative effect on visual resources and nightscape in the National Park. Light pollution of the night sky will interfere with visitor experience and evening traditional cultural practices. No impact analysis of light pollution, or its mitigation, to the National Park is made in the DEIS.
73. Page 4-87. “*The proposed project will not impact significant mountain or mauka views...*” This statement is inaccurate. Currently, this proposed project area consists of large expanses of open space, this project will drastically change the viewshed and visual resources of open space, highly valued in the Kona community, to an urban landscape and thus will have major impacts on both mauka and makai views of the area. In addition, the mauka changes to viewshed from the Park and National Landmark from over 400 National Register-eligible historic properties affects the integrity of these sites by affecting the setting, feeling and association of these resources.

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74. Page 4-91. Section 4.8.5., this section does not analyze the impacts to the Park or Landmark or Ala Kahakai National Historic Trail. The plan does not address impacts that the influx of 5000 new residences in the immediate vicinity will have on resources in the park. Major impacts to Park facilities and resources will occur as a result of the Park becoming a “recreational facility” to many thousands of people. The NPS will be impacted at many levels responding to the inevitable damage to resources and increased facility demands. Protected green sea turtle habitat is dependent on low levels of human disturbance, as is other endangered waterbird habitat. The National Park is already experiencing high levels of visitation and dealing with overcrowding of facilities and overuse of resources along the coast. The introduction of thousands of new regular users would mean overextension of staff, rapid depletion of ocean resources, impacts to cultural practices and high potential of damage to cultural resources such as archaeological sites. The analysis in this section is inadequate.
75. Page 4-99. The National Park Service questions the need for 5,000 more homes in North Kona. During the 2010 census, one fifth of the homes on Hawai‘i Island were vacant (West Hawai‘i Today, June 15, 2011).
76. Page 4-107. Water demand calculated in Table 4-24 is incorrect due to several errors and results in a significant underestimation of water demand for the proposed project. Errors in Table 4-24 should be corrected to provide an accurate estimate of the water demand for this proposed project. More specifically:
- a. The 20-acre wastewater treatment plant and 1.7-acre desalination plant are not explicitly listed in Table 4-24. Revise Table 4-24 to include water demand of 4000 gpd/acre, per Hawai‘i County Department of Water Supply guidelines, or explain why a different rate was used.
 - b. Water demand for Phase 1 Parks is 54,000 gpd/acre but is 6,000 gpd/acre for Phase 3 Parks in Table 4-24. These values are not consistent with the rate of 4,000 gpd/acre listed under “Assumptions” for Table 4-24. Correct the water demand for Parks or explain why different rates were used in Table 4-24.
 - c. Water demand for Phase 2 Parks is not included in Table 4-24. Table 2-6 indicates that Phase 2 will include a 13-acre park. Revise Table 4-24 to include the water demand for a 13-acre Phase 2 Park.
 - d. The acreage for the Phase 2 School in Table 4-24 is not consistent with Table 2-6. Revise Table 4-24 to include water demand for an 18-acre Phase 2 middle school.
 - e. Water demand for the Phase 2 School in Table 4-24 is 6,000 gpd/acre, which is not consistent with water demand of 4,000 gpd/acre used for Schools in Phases 1 and 3. Revise Table 4-24 to use a consistent water use rate for Schools or explain why different values were used.
 - f. A rate of 400 gpd per unit is used to estimate residential water demand in Table 4-24. This rate is not consistent with the rate used by the Hawai‘i County Department of Water Supply to estimate water demand for North Kona. The 2011 Water Use and Development Plan Update (p. 2-12) uses a value of 1000 gpd per unit for single family residential units in North Kona based upon actual historic consumption data. Revise the residential water demand in Table 4-24 to be consistent with the

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Department of Water Supply guidelines for North Kona.

77. Page 4-107. Table 4-24, total water demand was recalculated based upon information presented in Table 2-6 of the DEIS and the Hawai'i County Water Use and Development Plan Update water consumption guidelines (p. 2-12). The revised table below indicates that the average daily water demand for the proposed project could be as high as 6.9 Mgd, over two times that estimated in the DEIS. The DEIS should have (1) evaluated whether the proposed alternatives to supply potable water are sufficient to meet this water demand, and (2) evaluated the potential effects of each alternative on the water resources and groundwater-dependent ecosystems in the area of the proposed project.

NPS Recalculated Water Demand for Kaloko Makai Draft Environmental Impact Statement:

Zoning Designation	Units	Acres	Water Use Unit Rate (gpd/unit or acre)	Average Daily Demand (gpd)
Residential housing	5000		1000	5000000
Commercial		282	3000	846000
Light Industrial		75	4000	300000
Judiciary		10	3000	30000
Schools		42	4000	168000
Parks		57	4000	228000
Hospital		40	4000	160000
Police Substation		3	3000	9000
Wastewater treatment		24	4000	96000
Desalination Plant		1.7	4000	6800
Project Total (Average Demand)				6928800
Average Demand (Mgd)				6.9
Maximum Daily Demand (Mgd)				10.4
Peak Hour Demand (Mgd)				34.6

78. Page 4-110. The DEIS states that reverse osmosis concentrate will be discharged in on-site disposal wells at depths sufficient to reach groundwater with "30 parts per trillion (ppt) salinity." The notation is also defined on Page G-5 as "parts per trillion." This is inconsistent with the more feasible definition given on Page 3-26, which states that the concentrate will be disposed in strata where groundwater salinity is "30 parts per thousand (ppt) or greater." The DEIS should be revised to confirm the targeted salinity of the strata into which reverse osmosis concentrate will be disposed.

79. Page 4-126. "Wastewater Treatment Alternatives" While the use of recycled water to the R-1 level is the appropriate treatment to reduce viral and bacterial pathogens for irrigation uses

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around residential areas, the stated level of nutrients contained in the wastewater effluent is a significant concern.

80. Page 4-129. *“During periods of wet weather, excess R-1 water will be disposed of via infiltration basins.”* The DEIS has no analysis of impacts to aquatic ecosystems resulting from the disposal of sewage effluent via infiltration basins.
81. Page 4-129. Table 4-25 lists potential uses for treated wastewater, however, there are no calculations for the actual amount of wastewater that will be disposed of via irrigation or other methods. The project will occur in phases and it is unlikely that the supply of treated wastewater and the demand for treated wastewater will be in synch. Considering the cost of installing separate waterlines for the treated wastewater, without specific volumes of wastewater and timelines, there is no guarantee that all of the treated wastewater will not be disposed of via the infiltration basins.
82. Page 4-132 *“It is assumed that approximately 15% of applied irrigation water will percolate down to the basal ground water. As the excess irrigation water percolates downward through the unsaturated zone to the groundwater, removal rates of nitrogen and phosphorus from the water will be significant.”* No scientific data or scientific studies are provided to support the assumptions that 1) fifteen percent of the irrigation water will reach groundwater and 2) nitrogen and phosphorous removal rates will be “significant.” Public review and decision-making actions cannot rely upon unsupported claims and assumptions regarding potential impacts to nationally significant resources.
83. At the proposed O’oma Beachside Village development, less than 1 mile from the proponent’s project, Waimea Water Services estimated that approximately 54% of the total irrigation water used would infiltrate into the aquifer. (The Water Development Impacts Study for the Shores of Kohanaiki, Figure 6, Waimea Water Services, Inc., 2007). There is a large discrepancy in the estimates for the two developments that are located in the same general area with the same soil composition. The DEIS should have explained this discrepancy and provide data to support the stated assumption of 15%.
84. Page 8-1. *“Relationship Between the Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity”* The DEIS fails to capture the cumulative impacts, secondary impacts, irreversible commitments of resources, and probable adverse environmental effects to the area, especially at Kaloko-Honokohau NHP, as suggested by the comments listed above.

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