STATE

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LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EPO-07-003

February 5, 2007

Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Vithanage:

SUBJECT: Draft Environmental Impact Statement for the Kona Kai Ola Project
North Kona, Island of Hawaii, Hawaii
TMK: (3) 7-4-008: 003 (portion), 071, 072, 099

Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have the following Safe Drinking Water Branch, Clean Water Branch, Clean Air Branch, and Noise, Radiation & Indoor Air Quality Branch comments.

Safe Drinking Water Branch

Page 148, Section 5.3 Permits Required for the Project, indicates that a "Source Water Use Approval" will be obtained from the Safe Drinking Water Branch. The Draft EIS is not clear about whether this project will be developing its own potable well sources, nor is it clear whether they will be utilizing these sources as a privately-owned, regulated Public Water System (PWS) or turning the developed wells, storage tanks, transmission and distribution mains over to the County of Hawaii Department of Water Supply (Section 4.10.8 Potable Water Facilities).

Should the subdivision's system be designated a new regulated PWS, they must meet the following conditions prior to operation of the water system:

Use of Approved Sources of Potable Water

In accordance with Hawaii Administrative Rules Title 11, Chapter 20, all new regulated PWSs must utilize approved sources of water for consumptive use and demonstrate technical, managerial and financial capacity. Specific sections include: HAR 11-20-29 Use of new sources of raw water for public water systems and HAR 11-20-29.5 Capacity demonstration and evaluation. Existing regulated PWSs, like the Hawaii County Department of Water Supply, that

develop new wells must obtain source approval but do not need to show capacity.

Unapproved sources must obtain source approval though water quality testing and the submittal of an engineering report by a licensed professional engineer, as outlined in the Safe Drinking Water Branch's "Guidelines for Preparation of Engineering Reports for New Potable Water Sources."

Capacity Demonstration (for NEW Public Water System)

All new community public water systems and new nontransient noncommunity public water systems must demonstrate adequate technical, managerial, and financial capacity to produce and deliver drinking water in compliance with State and Federal drinking water regulations.

1. Technical capacity refers to the physical infrastructure of the water system, including but not limited to the adequacy of the source water, infrastructure (source, treatment, storage, and distribution), and the ability of system personnel to adequately operate and maintain the system and to otherwise implement technical knowledge.

2. Managerial capacity refers to the management structure of the water system, including but not limited to ownership accountability, staffing and organization, and effective linkages to customers and regulatory agencies.

3. Financial capacity refers to the financial resources of the water system, including but not limited to revenue sufficiency, credit worthiness, and fiscal controls.

Operator Certification

Operator certification will require certified operators to operate the treatment facilities and/or distribution systems of public water systems.

Construction Plan Review

Construction plans for all onsite and offsite water system improvements for this subdivision, including connections to the WHU infrastructure, must be reviewed and approved by the Department of Health Safe Drinking Water Branch.

Should you have any questions regarding the potable water system, please contact Mr. Michael Miyahira of the SDWB Engineering Section at 586-4258 in Honolulu.

Underground Injection Control (UIC)

Injection wells used for the subsurface disposal of wastewater, sewage effluent, or surface runoff are subject to environmental regulation and permitting under Hawai`i Administrative Rules, Title 11, Chapter 23, titled Underground Injection Control (UIC). The Department of Health's approval must be first obtained before any injection well construction commences. A UIC permit must be issued before any injection well operation occurs.

Authorization to use an injection well is granted when a UIC permit is issued to the injection well facility. The UIC permit contains discharge and operating limitations, monitoring and reporting requirements, and other facility management and operational conditions. A completed UIC permit-application form is needed to apply for a UIC permit.

A UIC permit can have a valid duration of up to 5 years. Permit renewal is needed to keep an expiring permit valid for another term.

Questions about UIC may be directed to Mr. Chauncey Hew at 586-4258.

Clean Water Branch

The Department of Health (DOH), Clean Water Branch (CWB) has reviewed the limited information contained in the subject document and offers the following comments:

4. The Army Corps of Engineers should be contacted at (808) 438-9258 for this project. Pursuant to Federal Water Pollution Control Act (commonly known as the "Clean Water Act" (CWA) Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40, Code of Federal Regulations (CFR), Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

5. In accordance with HAR, Sections 11-55-04 and 11-55-34.05, the Director of Health may require the submittal of an individual permit application or a Notice of Intent (NOI) for general permit coverage authorized under the National Pollutant Discharge Elimination System (NPDES).

    a. An application for an NPDES individual permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

b. An NOI to be covered by an NPDES general permit is to be submitted at least 30 days before the commencement of the respective activity. A separate NOI is needed for coverage under each NPDES general permit. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

i. Storm water associated with industrial activities, as defined in Title 40, CFR, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi). [HAR, Chapter 11-55, Appendix B]

ii. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.** [HAR, Chapter 11-55, Appendix C]

iii. Discharges of treated effluent from leaking underground storage tank remedial activities. [HAR, Chapter 11-55, Appendix D]

iv. Discharges of once through cooling water less than one (1) million gallons per day. [HAR, Chapter 11-55, Appendix E]

v. Discharges of hydrotesting water. [HAR, Chapter 11-55, Appendix F]

vi. Discharges of construction dewatering effluent. [HAR, Chapter 11-55, Appendix G]

vii. Discharges of treated effluent from petroleum bulk stations and terminals. [HAR, Chapter 11-55, Appendix H]

viii. Discharges of treated effluent from well drilling activities. [HAR, Chapter 11-55, Appendix I]

ix. Discharges of treated effluent from recycled water distribution systems. [HAR, Chapter 11-55, Appendix J]

x. Discharges of storm water from a small municipal separate storm sewer system. [HAR, Chapter 11-55, Appendix K]

xi. Discharges of circulation water from decorative ponds or tanks. [HAR, Chapter 11-55, Appendix L]

6. In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. If applicable, please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

7. Any discharges related to project construction or operation activities, with or without a Section 401 WQC or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54.

The Hawaii Revised Statutes, Subsection 342D-50(a), requires that "[n]o person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this Chapter, or a permit or variance issued by the director."

If you have any questions, please contact Mr. Alec Wong, Supervisor of the Engineering Section, CWB, at (808) 586-4309.

Clean Air Branch

Control of Fugitive Dust

A significant potential for fugitive dust emissions exists during all phases of construction and operations. Proposed activities that occur in proximity to existing residences, businesses, public areas or thoroughfares, exacerbate potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. The plan, which doses not require the Department of Health (DOH) approval, would help with recognizing and minimizing the dust problems from the proposed project.

Activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance problems.

The contractor should provide adequate measures to control the fugitive dust from the road areas and during the various phases of construction. Examples of measures that can be implemented to control dust include, but are not limited to, the following:

a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;

b) Providing an adequate water resource at the site prior to start-up of construction activities;
c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimizing dust from shoulders and access roads;

e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling dust from debris being hauled away from the project site.

If you have any questions, please contact the Clean Air Branch at 586-4200

Noise, Radiation & Indoor Air Quality Branch

Project activities shall comply with the Administrative Rules of the Department of Health, Chapter 11-46, Community Noise Control.

Should there be any questions, please contact Russell S. Takata, Environmental Health Program Manager, Noise, Radiation and Indoor Air Quality Branch, at 586-4701.

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
SDWB
CWB
CAB
N&R/IAQ
EH-Hawaii
Department of Hawaiian Homelands, Linda Chinn
Jacoby Development, Inc., Scott Condra

ENVIRONMENTAL PLANNING OFFICE
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oceanit
innovation through engineering & scientific excellence

July 23, 2007

Kelvin H. Sunada, Manager
Environmental Planning Office
State of Hawai'i, Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

Dear Mr. Sunada:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 5, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement.

Safe Drinking Water Branch

As discussed in EIS Section 4.10.8, Potable Water Facilities, current Department of Water (DWS) sources are not adequate to support the full demand generated by Kona Kai Ola. Initial coordination with DLNR has identified two possible sources that may be used for the project and these include Keōpū Well #2 (State Well No. 3957-02) and Keōpū Well #4 (State Well No. 3857-02). DLNR anticipates a sustainable yield of each well to be approximately 1.5 million gallons per day.

We concur with your statements, and developed wells, storage tanks, transmission and distribution mains will be dedicated to the DWS. Further, should Kona Kai Ola's system be designated a new regulated Public Water System, the developer will meet conditions contained in Hawai'i Administrative Rules (HAR) Title 11, Chapter 20, specifically HAR 11-20-29 and HAR 11-20-29.5. We understand that all new community public water systems and new non-transient non-community public water system must demonstrate technical, managerial, and financial capacity to produce and deliver drinking water in compliance with State and Federal drinking water regulations.

EIS Section 5.3 identifies the permits you include in your comments, including Water Source Approval and Capacity Demonstration, Operator Certification, Construction Plan Review and Underground Injection Control Permit.

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www.oceanit.com

We note that the project will make every effort to reduce the use of potable water for non-potable purposes. Kona Kai Ola will aggressively reduce the use of potable water used in fixtures and appliances by 70 percent relative to a basecase building. The development will cut water use through the application of innovative water recycling techniques, the incorporation of water efficient fixtures and appliances, and the recycling of greywater for toilet flushing. The initial modeling of a timeshare unit demonstrated that the use of water efficient fixtures and appliances and the recycling of greywater for toilet flushing already contribute to a 50 percent reduction in potable water demands.

Further, the project will reduce or eliminate the need for potable irrigation. The reduction or elimination of potable irrigation will be accomplished using a multi-prong strategy. First, the project will focus on incorporating native Hawaiian plants, including native dryland species, in its landscaping plan. The project will retain a significant amount of the black lava features that make the Kona Kai Ola site so distinctive. Employing native vegetation and maintaining lava features will reduce water demand. To fulfill the remaining water requirements, the development may use brackish water to irrigate vegetation that is not affected by salt levels. Furthermore, the use of rainwater cisterns to collect rainwater and distribute it, while also recycling greywater from showers, laundry, dishwashers, and hand sinks can lead to further reductions in water needed for irrigation. Irrigation water may also be provided by condensation on cold water pipes buried at the root zone of landscape plants, as has been shown to be successful at the Natural Energy Laboratory of Hawai‘i.

Clean Water Branch

We concur that a Department of Army Individual Permit will incorporate requirements related to the Clean Water Act Sections 401 and 404 and this is listed in EIS Section 5.3, Permits Required for the Project.

We also concur that the Director of Health may require an individual permit application under the National Pollutant Discharge Elimination System (NPDES) process and this is listed in EIS Section 5.3, Permits Required for the Project. We also understand that a Notice of Intent is needed for coverage under each NPDES general permit, and will comply with all requirements you set forth in #5 a and b, 6 and 7.

The following is a revised listing table in EIS Section 5.3:

Table 3: Permits Required for the Project

Agency	Permit or Approval	Requirement	Time Frame
U.S. Army Corps of Engineers	Department of the Army (DOA) Individual Permit	Work in navigable waters; placing fill in waters of the U.S., placing navigation aids Will incorporate: ▪ Rivers and Harbors Act Section 10 ▪ Clean Water Act Sections 401 and 404 ▪ Coastal Zone Management Act Section 307 ▪ Endangered Species Act Section 7 ▪ National Historic Preservation Act Section 106	Prior to any in-water work or fill or placement of navigation aids or modification of terrestrial habitat that may impact species listed under Endangered Species Act
U.S. Coast Guard	Private Aids to Navigation approval	For approval for marking aids to navigation	Prior to placement. Note: placement requires DOA Permit.
State Board of Land and Natural Resources	Easement over Submerged Lands / Shared Harbor Channel Entrance	HRS Section 171-53 (6)	Prior to commencement of operations of new marina
State Department of Business, Economic Development & Tourism	Determination of Hotel Development	HRS Section 171-42	Prior to approval of Master Development Plan
State Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL)	Conservation District Use Permit (CDUP)	For any work in the conservation district ▪ Kuakini Highway extension and SWAC pipe; Shoreline Park ▪ Hawaiian Cultural Park, Ocean Front Trail	Prior to any work in the conservation district
DLNR Commission on Water Resource Management	Well Construction Permit, Pump Installation Permit	For well construction or ground water source development	Prior to construction or development
State Department of Health (DOH) Clean Water Branch	401 Water Quality Certification	Triggered by DOA permit	Start simultaneously with DOA permit
		NPDES	
	- Individual Permit	Discharge into state waters	Prior to construction
	- NOI Appendix C	Construction activities on one or more acres	Prior to construction
	- NOI Appendix G	Construction dewatering	Prior to construction
	- NOI Appendix L	Discharge of circulation water from decorative ponds	Prior to construction

Agency	Permit or Approval	Requirement	Time Frame
	All NPDES applications	Copy to DLNR/State Historic Preservation Division	Simultaneously with DOH NPDES submittals
	Zone of Mixing	Include with NPDES for discharge into state waters	Concurrent with NPDES application
DOH Safe Drinking Water Branch	Water Source Approval and capacity demonstration	For new drinking water sources	After source is identified
	Operator Certification	For operators of water systems	Before system use
	Construction Plan Review	For water system improvements and connections	Before construction
	Underground Injection Control (UIC) Permit	For injection well operations	Before operations
DOH Clean Air Branch	Dust control management plan	Recommended only, not required	During construction planning
DOH Noise, Radiation, & Indoor Air Quality Branch	No permit	Comply with Administrative Rules Chapter 11-46, Community Noise Control	During construction
County of Hawai‘i	Special Management Area (SMA) Major Permit	Work in the SMA	Prior to any construction or other work in the SMA (does not include DHHL land)
	Zoning	Must be consistent with the General Plan	After acceptance of EIS
	Building Permit	To erect a new structure including fences, swimming pools and retaining walls more than 3’-0" in height, and water catchments regardless of depth or capacity	Prior to construction
	Grading, Grubbing, and Stockpiling Permits	For volumes as specified by county	Prior to activity
	Development, subdivision, drainage and flood zone reviews	For development	Prior to construction

Clean Air Branch

Regarding your comments related to the control of fugitive dust, discussion of project impacts, which reflects your comments, is contained in EIS Section 3.5, Air Quality. It is the developer’s intention to develop a dust control management plan you suggest. The dust control measures you identify are incorporated in the

aforementioned EIS section, and will be implemented as project mitigation measures. All contractors and subcontractors working on the project will be required to adhere to the provisions of Department of Health Hawai'i Administrative Rules Section 11-60.1-33 relating to the control of fugitive dust. Attachment 1 includes text from EIS Section 3.5.

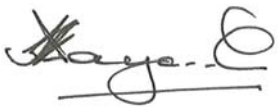
Noise, Radiation and Indoor Air Quality Branch

We acknowledge your comment on compliance with Department of Health Hawai'i Administrative Rules, Chapter 11-46 related to Community Noise Control, and EIS Section 4.4.2, Anticipated Noise Impacts and Mitigation Measures, states that mitigation of noise impacts will occur resulting from compliance with said rules. Attachment 2 includes the text from EIS Section 4.4.2.

We have reviewed your suggested website and have incorporated discussions of related project impacts and mitigation measures in appropriate sections of the EIS.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

~~Further, a National Pollutant Discharge Elimination System (NPDES) permit will be required prior to the County's issuance of a grading permit.~~

Typical Low Impact Development standards call for retention of the 1-year 24-hour storm. The State of Hawai'i Department of Health has recently discussed requiring new development designs that would retain a 2-year 24-hour storm. For the following events on the project site, the precipitation amounts are as follows:

- 1-year 24-hour is 2-2.5 inches
- 2-year 24-hour is 4-4.5 inches
- 10-year 24-hour is 4.5-6 inches

(NOAA-NWS Technical Paper No. 43)

Alternatives 1 and 2 would generate similar levels of impacts on natural drainage and thus require similar mitigation measures.

3.5 Air Quality

An air quality study was prepared by B.D. Neal & Associates and is included in Appendix ~~C~~D. The purpose of the study was to describe existing air quality in the project area and to assess short- and long-term, direct and indirect air quality impacts that could result from construction and use of the proposed facilities as planned.

3.5.1 Existing Condition

Current air quality in the project area is mostly affected by air pollutants from vehicular, industrial, natural, and/or agricultural sources. Volcanic emissions also periodically plague the project area. Air pollutant emissions from the Hawaiian volcanoes consist primarily of sulfur dioxide. Though Kilauea is more than 50 miles east of the project site, southwesterly winds carry emissions known as volcanic haze (vog) into the area.

The major industrial source of air pollution in the project vicinity is Hawai'i Electric Light Company's Keāhole Power Plant, which is located four miles to the north. Air pollution emissions from Keāhole Power Plant consist mostly of sulfur dioxide and oxides of nitrogen. Queen Ka'ahumanu Highway is the region's major arterial roadway. Emissions from vehicles are carried toward the project area by nighttime downslope winds, while afternoon onshore winds carry emissions away from the project.

During the most recent 5-year period for which data has been reported (2000-2004), the Department of Health operated an air quality monitoring site in the Kealakekua area for measuring sulfur dioxide. During the sulfur dioxide monitoring, measurements showed concentrations to be consistently low, representing about 10 percent of the state and national standard. No exceedances of the state/national 3-hour and 24-hour AAQS for sulfur dioxide were recorded.

3.5.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigation

The project will have short and long-term air quality impacts. Construction-related impacts include fugitive dust from vehicle movement and soil excavation, as well as exhaust emissions from on-site construction equipment. Additionally, there could also be indirect short-term impacts from slow-moving construction equipment traveling to and from the project site, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures of adjacent roadways. Alternative 1 would generate less air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin. Alternative 2 is expected to generate the same level of air quality impacts as the proposed project.

After construction is completed, motor vehicles coming to and from the proposed development will result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, a computerized air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at intersections in the project vicinity and to predict future levels both with and without the proposed project. Predicted Worst-Case 1-hour concentrations for all scenarios were within both the national and state ambient air quality standards.

In the year 2020 without the proposed project, concentrations remained about the same or decreased compared to the existing case. In the year 2020 with the project, predicted concentrations increased at three locations compared to the "without" project scenario, but values remained within state and federal standards. Alternative 1 would generate less long-term air quality impacts than the proposed project due to a reduction of traffic by 35 and 40 percent during, respectively, AM and PM peak traffic times.

Based on standard planning estimates, the peak electrical demand of the project when fully developed is expected to reach about 70 MW. Assuming the average demand is approximately one-half the peak demand, the annual electrical demand of the project will reach approximately 300 million kilowatt-hours.

Electrical power for the project will most probably be provided mainly by oil-fired generating facilities, but some of the project power may also be derived from geothermal energy, wind power or other sources. To meet the electrical power needs of the proposed project, power generating facilities will likely be required to burn more fuel and, hence, more air pollution will be emitted at these facilities. The following table provides estimates of indirect air pollution emissions that would result from the project electrical demand assuming all power is provided by burning more fuel oil at local power plants.

Table 2-a. Estimated Indirect Air Pollution Emissions From Kona Kai Ola Project Electrical Demand

Air Pollutant	Emission Rate (tons/year)
Particulate	86
Sulfur Dioxide	780

Carbon Monoxide	70
Volatile Organics	8
Nitrogen Oxides	340

Based on U.S. EPA emission factors for utility boilers. Assumes peak electrical demand of 70 MW and that the average electrical demand is one-half the peak demand, resulting in 300 million kw-hrs per year of electrical power use. Estimated emission rates assume low-sulfur oil used to generate power.

These values can be compared to the islandwide emission estimates for 1993 (the latest estimates available) contained in the following table. The estimated indirect emissions from project electrical demand amount to about 8 percent or less of the present air pollution emissions occurring on Hawai'i Island assuming all project power is derived from oil.

Table 2-b. Air Pollution Emissions Inventory For Island Of Hawai'i, 1993

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	30,311	9,157	39,468
Sulfur Oxides	9,345	nil	9,345
Nitrogen Oxides	4,054	8,858	12,912
Carbon Monoxide	3,357	23,934	27,291
Hydrocarbons	1,477	203	1,680

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

Mitigation measures during the construction phase will be employed based on an effective dust control plan. Further, all construction activities will comply with State Air Pollution Control regulations and the provisions of Section 11-60.1-33, HAR. All grading operations will be conducted in full compliance with dust and erosion control requirements of the County of Hawai'i's Grading Ordinance. The Hawai'i Administrative Rules require that there is no visible fugitive dust at the property line, and mitigation measures will be implemented to ensure compliance with these rules. While some degradation of air quality during construction may occur, adequate dust control measures will help to localize and shorten the duration of impact.

Additional measures to mitigate increased vehicular emissions due to disruption of traffic by construction and/or commuting construction workers will include moving equipment and personnel to the site during off-peak hours.

After construction of the project, implementation of air quality mitigation measures for long-term traffic impacts are not needed, as projected emissions are expected to remain within both state and national air quality standards.

Nevertheless, in keeping with Kona Kai Ola's environmental sustainability goals, the project will help to reduce impacts on air quality by reducing dependence on motor vehicles, as discussed in Section 4.7.7.

Attachment 2

4.4 Noise

D.L. Adams Associates conducted a noise assessment for Kona Kai Ola; it is contained in Appendix N~~M~~**.** The purpose of the assessment was to measure existing noise levels, predict future noise levels due to the project, evaluate the noise impacts anticipated from the project and recommend mitigation.

4.4.1 Existing Conditions and Methodology

Long-term and short-term noise measurements were obtained at various locations around the project site. Long-term measurements were recorded for 24 hours and the short-term measurement was recorded for about 30 minutes.

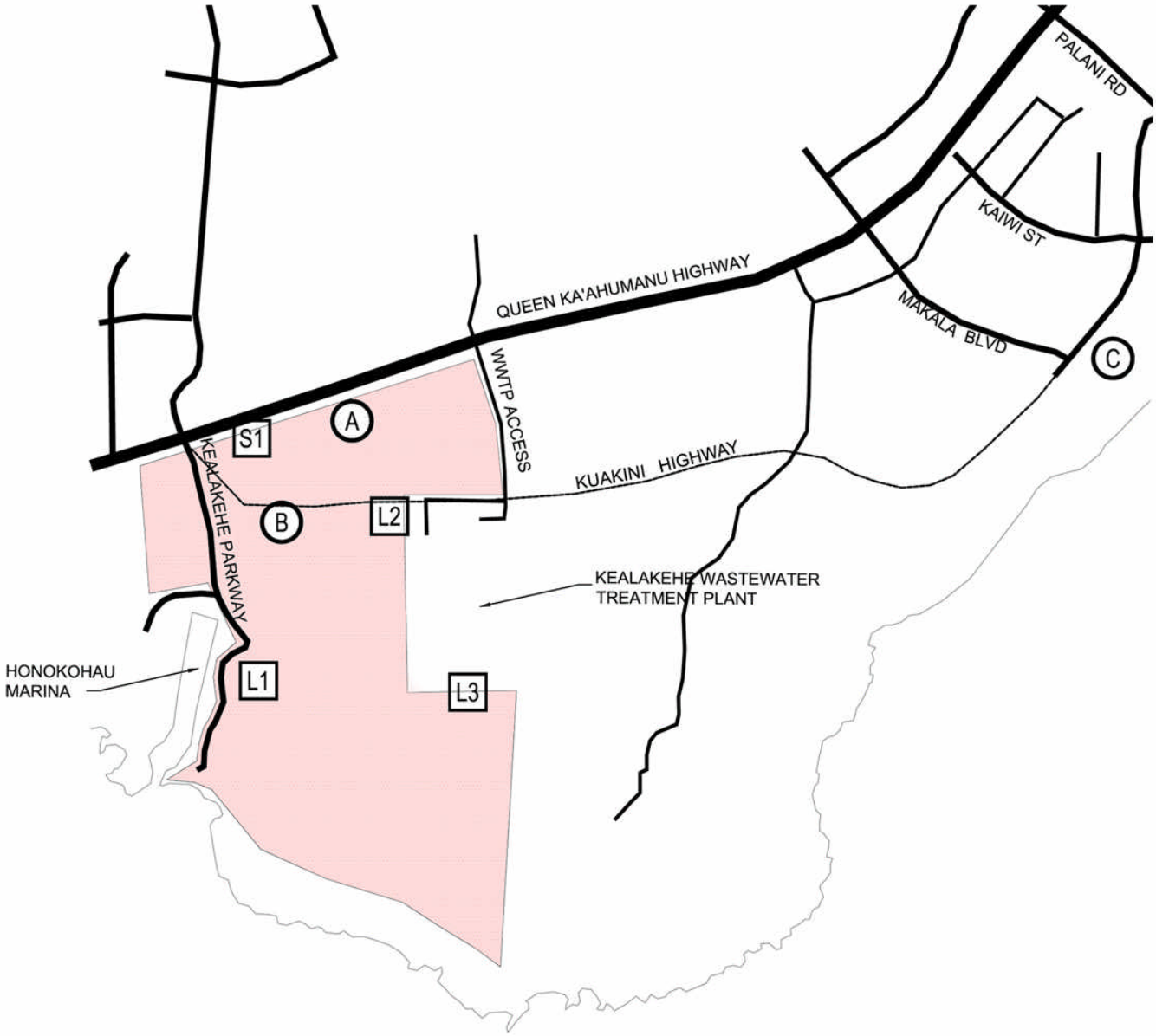
Long-term measurements showed that hourly noise levels generally ranged from 37 dBA to 56 dBA. The average calculated day-night level near the Honokōhau Harbor was 55 dBA. The average calculated levels at two locations near the Kealakehe Waste ~~W~~water Treatment Plant were 55 dBA and 58 dBA. Noise sources at the different locations included intermittent vehicular traffic on Kealakehe Parkway, wind, industrial and marina activities, occasional aircraft flyovers, and the waste-water treatment plant blower noise.

A vehicular traffic noise analysis was completed for the existing conditions, year 2020 with the project, and year 2020 without the project, using Federal standards. Three locations were used and short and long-term noise measurements were calculated. Figure V~~R~~ depicts the traffic analysis testing locations.

- At location A, along Queen Ka'ahumanu Highway, noise levels were calculated to be within the FHWA/DOT maximum noise limit of 72 dBA during peak traffic hours, at 74 feet from the roadway. Noise levels are expected to increase by less than 1 dB without the project and increase by 1 to 2 dB with the project. A 3 dB change is not considered significant.
- At location B, along the proposed Kealakehe Parkway extension, at least 40 feet from the roadway, noise levels are expected to equal the maximum noise limit of 67 dBA. Future traffic projections show that traffic noise levels are expected to increase by 3 to 5 dB with construction of the Kona Kai Ola project.
- At location C, along Kuakini Highway, noise predictions with and without the project are expected to be below the maximum noise limit of 67 dBA. The projected increase is less than 2 dB which is not a significant noise increase.

4.4.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigation

It is not expected that project-generated noise will impact adjacent properties as they are mostly vacant or industrial. The only areas that may be affected are the Honokōhau Harbor users and the Fishing Club located south of Kealakehe Parkway. Commercial, hotel and time-share buildings completed in the initial phases may also be affected from construction noise due to subsequent phases as they are in very close proximity to the construction site.



Source: D.L. Adams Associates, Ltd.

Plan is conceptual only and subject to change

Figure V: Noise Measurement Locations

- L1 Long Term Noise Measurement Location
- S1 Short Term Noise Measurement Locations
- (A) Noise Prediction Locations
- Project Location

N E S W

Not to Scale

oceanit
innovation through engineering & scientific excellence

JDI
JACOBY DEVELOPMENT, INC.

Noise impacts on the Kaloko-Honokōhau National Historical Park may result from construction activities over the duration of the 15-year construction period. However, only a small portion of the construction activities will occur in proximity to the park's property line. Additionally, construction activities must comply with requirements set forth in the State Department of Health noise permit.

On a long-term basis, noise impacts on the Kaloko-Honokōhau National Historical Park may result from the existing Honokōhau Boat Harbor and adjacent industrial uses. Industrial and mechanical activities must comply with the State Department of Health Maximum Permissible Noise limits at the property line. Noise from the new marina may be audible but the project will comply with noise regulations to ensure that noise will remain within permissible levels.

As there is a large portion of the development that has no overnight accommodations, and would contain commercial and light industrial use, noise from these uses could significantly impact the proposed noise sensitive hotel and time-share areas. Expected mechanical equipment may include air handling equipment, condensing units and other similar uses.

Aircraft noise due to the Kona International Airport may be audible, although flights over the site are infrequent and the project site is outside of the Ldn 55 airport noise contour. At the Kealakehe Wastewater Treatment Plant, noise levels are compliant with the DOH and EPA noise limits, however, noise and tonal quality from the blowers could be found objectionable.

~~At the Honokōhau Harbor, intermittent industrial noises may be audible to the adjacent Kona Kai Ola time-share community. Mechanical noise from these areas must meet the State noise rules, which stipulate maximum permissible noise limits at the property line.~~

Regarding noise generated by boats, regulations on boat noise is not currently enforced in the State of Hawai'i. Many states have approved a version of the SAE (Society of Automotive Engineers) J1970 or J2005 Standard which places restrictions on the operation of motorboats that exceed certain noise levels.

One restriction states that motorboats should not be operated in such a manner as to exceed 90 dBA when subject to a stationary sound level test (i.e., measured 1.5 meters away from the idling boat). These noise levels were applied to the existing background levels measured at the Kona Kai Ola project site. Assuming that boats entering and exiting the Honokōhau Marina are in compliance with this regulation in that they emit 90 dBA or less in idle, boat noise for noise receivers more than 150 meters (492 feet) from the channel is equivalent to or less than daytime background noise levels.

Noise receivers within 150 meters from the channel will be subject to noise levels in excess of daytime background noise levels. However, boat noise can be defined as a single noise event that is measured over the time interval between the initial and final times for which the sound level of the single event exceeds the background noise level. The noise generated by these single boat noise events takes place currently at the marina and is not expected to increase in the future.

The frequency of single boat noise events is expected to increase proportionally to the increase in boat traffic due to the proposed project Although the noise generated by a single boat event remains the same, more of these events will occur within a given time period. It is expected that noise levels within 150 meters of the marina and the channel to increase by up to 5 dB. In that a change of 3 dB is generally considered barely perceptible to the human ear, and an increase of 5 to 6 dB will be noticeable, but is not a significant noise impact.

While the level and duration of noise impacts due to boat traffic is the same with Alternative 2, Alternative 1 would generate impacts of less duration in that the number of slips is half that of the proposed project.

Construction blasting, if required for the new marina, could produce noise impacts. However, blasting at construction sites near populated areas is usually accomplished by using numerous small charges detonated with small time delays. Blast mats can also be used to assist in directing the explosive energy into the rock, controlling flying debris, and muffling the noise. With the appropriate blast design techniques, the noise from blasting can be controlled to minimize noise impacts. In addition, if the noise from blasting occurs in brief intervals, i.e., less than 10 percent of any 20 minute period, it is excluded from the State DOH noise limits.

In cases where construction noise exceeds, or is expected to exceed, the State's "maximum permissible" property line noise levels, a permit must be obtained from the State DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels.

Mitigation of noise impacts from stationary mechanical equipment will occur resulting from compliance with the State DOH Community Noise Control rules. In addition noisy equipment will be located away from neighbors and the residential units, as much as practical. Enclosed mechanical rooms may be required for some equipment.

Siting of onsite structures will also help to mitigate noise impacts. Commercial buildings that border Queen Ka'ahumanu Highway will be constructed at least 75 feet from the edge of pavement so as not to exceed FHWA's maximum exterior L_{eq} noise limit of 72 dBA. Time-share buildings that border Kealakehe Parkway should be constructed at least 50 feet from the edge of the pavement so as not to exceed the FHWA's maximum exterior Leq noise limit of 67 dBA.

Although noise levels at the perimeter of the wastewater treatment plant are compliant with DOH and EPA limits, further noise mitigation is ~~recommended~~ proposed to attenuate the high frequency buzz emitted by the blowers at the Kealakehe Waste ~~W~~water Treatment Plant. Effective noise mitigation may include the following:

- Completing a rock berm along the northern property line will provide approximately 5-10 dB noise reduction as well as a visual barrier around the site.
- Consideration should be given to replacing aging equipment at the WWTP, such as the blowers, with quieter equipment. Mechanical equipment could be enclosed and sound absorptive material installed on the interior of the enclosure. Other typical noise mitigation for stationary equipment includes mufflers, silencers, and acoustical louvers.

During marina construction, blast mats should be used to assist in directing the explosive energy into the rock, controlling flying debris, and muffling the noise. Use of appropriate blast design techniques is required. Issues relating to underwater noise are addressed in Section 3.9.4.2~~5~~.

4.5 Social Environment

Social impact assessments identify and disclose information of use to decision makers sand citizens, as they evaluate the implications of proposed development. Because the social realm is extensive and not precisely defined, assessments typically contain substantial attention to community issues and perceptions, in addition to analyses of selected issues. The social impact assessment, herein referred to as SIA, for this project is contained in Appendix ~~N~~O.

4.5.1 Existing and Anticipated Future Socio-economic Environment

4.5.1.1 Population

The Study Area of the SIA is West Hawai‘i, which includes North and South Kona, as well as South Kohala. Between 1990 and 2000, West Hawai‘i’s population increased from 43,373 to 56,301 persons, signifying a 30 percent increase. During this period, the de facto population increased by 33 percent, from 54,841 persons in 1990 to 72,673 persons in 2000. (The Hallstrom Group, 2006)

The region’s population growth correlates with the growth in the visitor industry that has been occurring along West Hawai‘i’s coast since the 1960s. The increase of accommodations that house the steady stream of visitors supports a healthy employment base, which, in turn, attracts many people to relocate to West Hawai‘i for job and entrepreneurial opportunities.

Much of the population increase is attributed to in-migration. Census data indicate the percentage of West Hawai‘i residents born outside the state of Hawai‘i rose from 39.5 percent in 1980 to 48.9 percent in 2000. Comparable percentages for the rest of the county were 25.9 percent in 1980 and 31.0 percent in 2000. Thus, in-migration has clearly been funneled into West Hawai‘i in general and North Kona in particular, more than into the rest of the county.

The forecast resident population for 2020 in West Hawai‘i is 100,357 persons, which represents an increase of 78 percent increase between 2000 and 2020. The forecast de facto population in West Hawai‘i is 126,345 persons, which is approximately a 74 percent increase ~~brom~~ from 2000 to 2020. (The Hallstrom Group, 2006)

Anticipated Impacts

It is projected that the proposed hotel and time-share units will begin generating on-site de facto population in Year 4 of development. At full build-out and stabilization in Year 15, the project is estimated to generate a de facto guest / time-share owner population of 5,321 persons (The Hallstrom Group, 2006). This on-site population would account for four percent of the forecast 2020 de facto population for West Hawai‘i. The perceived impacts related to project population impacts are discussed in Section 4.5.4.2.

Envelope Postmarked 07 Feb 2007

5 February 2007

Scott Condra
Jacoby Development, Inc.
171 17th St., Ste. 1550
Atlanta, GA 30363

Re: Environmental Impact Statement: Kona Kai Ola

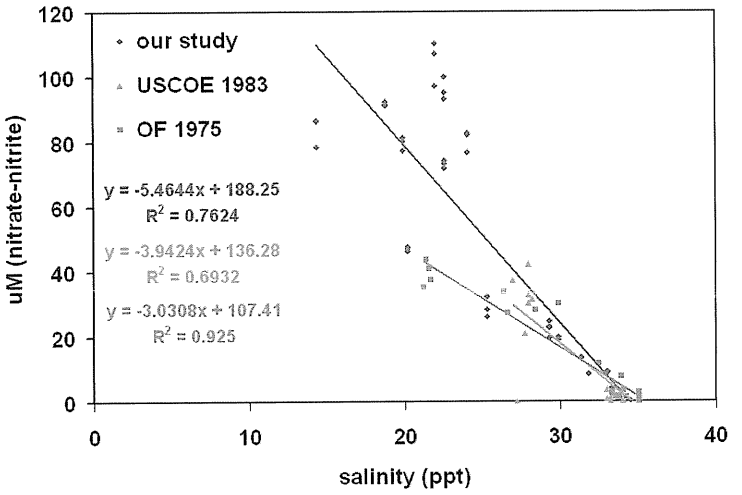
As you are well aware Honokohau is a unique marine ecosystem that is home to many endemic Hawaiian and endangered species. Kaloko-Honokohau also has strong Hawaiian culture because it was an ancient Hawaiian fishing village. For hundreds of years, people have been living in this area sustainably without causing any major destruction to the area. This ecosystem is very fragile and would not respond well to anthropogenic impacts. Major changes such as the harbor construction have already impacted the area and further impact in this area would be fatal to many marine organisms that call that area home.

I have major concerns with the DEIS that was written by Oceanit including unsupported statements and facts pertaining to the marine ecosystem in the area. I will summarize my concerns below.

1. Altering or eliminating nearby anchialine ponds. The alteration or removal of over 20 ponds would be very detrimental to this area. Anchialine ponds in the United States are only found in Hawaii and there is an estimated 520 ponds on this island. More than 70% of these ponds occur along a 53km continuous section along the Kona coast (Brock et al. 1987). Brock also estimated that 95% of the anchialine pond habitat has been lost over the past 20 years. These anchialine ponds on this island have the highest level of biodiversity as compared to any other Indo-Pacific region. This combination of geographic rarity and high levels of endemism and biodiversity establishes anchialine ponds as exceptional and valuable ecosystems. In addition, degraded ponds in the Four Seasons Hualalai Resort have been restored where invasive species have been removed allowing the native species to return.

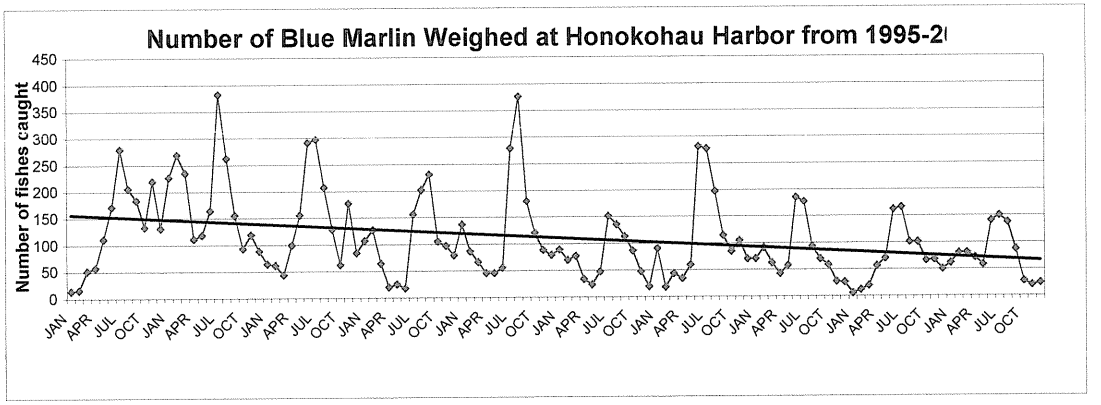
2. Facts regarding effects of nutrients upon marine ecosystems are incorrect. The authors make statements regarding the potential for nutrient impacts upon the coastal zone which contradict existing peer-reviewed scientific literature (Dollar & Atkinson 1992) and countless others. The increase of effluent from 4mgd to 79mgd would most definitely degrade the water quality in the area. The large amount of water would not dilute any pollutants, but would instead introduce more pollutants into the area. I was involved in a three year study that was conducted at Honokohau and one our main objectives was to look at the water quality in the area. In the graph below, it is showing a comparison of dilution gradients for our current study versus earlier studies (United States Army Corps of Engineers 1983, Oceanic Institute 1975). Paul Bienfang of the Oceanic

Institute led the previous studies. The graph shows regressions of how nitrate-nitrate concentrations decrease as salinity increases. The slope from our study is steeper than the others, suggesting that more nutrients are now entering Honokohau Harbor versus 20-30 years ago.



without the construction of major resorts or housing developments. With the addition of two hotels, residential houses, and timeshares, the amount of nutrients entering the area would be horrific. These severe natural stresses, plus significant anthropogenic stresses, can lead to ecosystem failure.

3. Increasing the number of fishing boats in the area could cause detrimental effects to the billfish fishery. The statement in the DEIS, "The increase in the fish catch from charter boats will be a very small percentage of the total billfish and tuna catch over these Pacific wide fisheries" is very vague and untrue. The billfish and tuna fisheries must be looked at on a local scale rather than on a regional scale.



This data taken from the Charter Desk at Honokohau shows a decrease in the catch of blue marlin over time. An increase in charter boats would surely increase fishing pressure, which would result in more fish being caught, and impacting this fishery further.

4. Ciguatera fish poisoning is a serious problem for people living in Hawaii. As the DEIS stated, the outbreak of ciguatera can be correlated with construction and hurricanes. This statement is true and increased construction in this area would greatly increase the potential of ciguatera outbreaks. Currently I am conducting research on *Gambierdiscus toxicus,* the dinoflagellate known to cause Ciguatera, and have conducted monthly monitoring for this dinoflagellate. From experience I know how difficult this research is. The dinoflagellates are microscopic and many factors affect their growth, but there is still a lot that we do not know about them such as what types of algae they prefer to live on. It is thought that the growth of the dinoflagellates is in response to certain environmental factors such as increased nutrients or increase sun exposure, but it is also thought that there is a lag time for growth to occur. Monitoring the growth during construction may not show differences from before construction because it takes time for the cells to respond. The author did not mention how the dinoflagellates will be monitored or how the levels of toxin will be measured. Honokohau is a popular spot for local fishermen. Monitoring the levels of Ciguatera in the area is very important and something that should not be overlooked; however, the statements by the author clearly show that this matter has not been investigated at the greatest extent.

This is a summary of some of the unsupported statements I found in the DEIS. There are still many more to be addressed. I do not feel that the environment has been correctly assessed for impacts and look forward to your response on the matter and will expect comments to all problems I addressed in this letter.

Sincerely,

Chelsie Settlemier
Research Assistant
Department of Marine Science
University of Hawai`i at Hilo

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July 23 2007

Chelsie Settlemier
Research Assistant
Department of Marine Science
200 W. Kawili Street
Hilo, Hawaii 96720-4091

Dear Ms. Settlemier:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Received on February 5, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement. Our responses to your comments are addressed by paragraph designation.

Paragraph 1: Anchialine ponds

In response to the Draft Environmental Impact Statement (DEIS) comments and to further study the pools south of the entrance channel of Honokohau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. The report is contained in Appendix H-2 of the Environmental Impact Statement (EIS) and is summarized in EIS Sections 3.9.2.1 and 3.9.2.2. In addition, further comment on the groundwater hydrology effects on anchialine pools was prepared by Waimea Water Services and is contained in Appendix G-3 of the EIS.

The DEIS identified 22 anchialine pools. Further studies determined that three of these pools are actually part of an estuary complex with direct connection to the ocean. Of the 19 anchialine pools, six were considered high tide pools (exposed only at medium or high tide), seven were considered pool complexes (individual pools at low tide and interconnected at high tide), and six were single isolated pools. Of the 19 anchialine pools, three pools with a combined surface area of 20 m^2 would be eliminated due to the harbor construction.

While the second survey confirmed the presence of direct human use and disturbance, such as trash receptacles and toilet facilities, it found that the greatest degradation to the majority of the anchialine and estuarine resources was due to the

presence of alien fish, including topminnows and tilapia, and introduced plants, predominantly pickelweed and mangrove.

The additional studies indicate that the remaining pools may not increase in salinity to levels unhealthy for anchialine pool fauna. Waimea Water Services found that harbor construction would cut off some of the fresher ground-water flow. However, predicting the extent of change in flow is difficult, if not impossible, even with numerous boreholes and intense sampling. The tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally, but is not quantified at this time.

Hence, the additional studies found that changes in groundwater quality may, or may not, impact biological communities in the anchialine and estuarine environment. In either case, the developer is committed to practicing good stewardship over the pools to be preserved and eliminating or reducing alien species to the extent practicable. The developer recognizes it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Mitigation measures to facilitate the long term health of the remaining anchialine pools will be based on environmental monitoring, which is vital as an early warning system to detect potential environmental degradation. A series of quantitative baseline analysis of the physio-chemical and biological components within the project site will provide a standard by which the effects of the development, anthropogenic activities, and natural phenomena on these environments can be measured.

The framework for the mitigation plan will include three measures intended to meet these objectives, including bioretention, salinity adjustment and possible new pools. These measures are described in detail in EIS Section 3.9.2, Anchialine Pools. These measures are similar to those employed at the Hualalai Resort. Attachment 1 contains Section 3.9.2, Anchialine Pools.

Paragraph 2: Nutrient Impact or Marine Ecosystems

Response: In response to DEIS comments, additional studies were conducted to explore alternatives to the proposed project. One of the studies is a three dimensional water quality model that was calibrated and run to determine the impacts of development on the water quality of the harbor and the nearshore area. The complete study report is attached as Appendix U of the EIS.

The model study found that construction of the 45-acre 800-slip marina increases the flushing time of the harbor significantly. It also modifies the two layer flow system

that currently maintains good water quality in the harbor. As an alternative a smaller (25-acre) 400 slip marina was tested in the model. The model results showed that reducing the marina size is an important factor in maintaining water quality independent of the groundwater flow increase.

Overall results of the study showed that for a 400-slip marina with brackish water inflow in the order of 30 million gallons per day or greater, the water quality conditions at both marinas, the harbor entrance and Honokohau Bay, will be very similar to the existing conditions, providing that ammonia-nitrogen load from the exhibit water is reduced. All attempts will be made to reduce the ammonia –nitrogen concentration in the exhibit effluent before reaching the harbor. The model also showed that nutrients entering the harbor with groundwater of runoff is trapped in the upper less dense layer and does not impact benthic substrate. These findings influenced the development of Alternative 1, 400-slip marina. Attachment 2 contains Section 2, Alternatives Analysis.

Paragraph 3 Detrimental Effect on Fishery

Response: The increase in the number of fishing boats will increase the pressure on fisheries. Some increase in fishing boats will occur in time, independent of the proposed development. The pressure on fisheries could only be managed by controlling the size and the number of fish that can be taken. Currently, enforcing the regulations is hampered by insufficient number of enforcing personnel, lack of boats and equipment, and lack of facilities in the existing harbor for efficient operation. With the expanded marina, space could be provided to moor boats and equipment, and part of the income from the slip users can be used to provide equipment and hire enforcing personnel to operate from the harbor.

Increased level of fisheries knowledge has spawned an atmosphere of stewardship in the general charter boat fishing community. With catch and release programs returning upwards of 40 percent of the Kona catch back to the ocean, there is an increased awareness that the value of catching the fish is often greater than the value of selling it. Facilities and programs to foster continued stewardship, fisheries science, and educational programs need to be implemented in the design of the new marina facilities.

Paragraph 4 Ciguatera Fish Poisoning

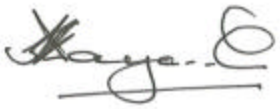
Ciguatera is discussed in Section 3.9.5, and has been acknowledged as a potential problem associated with coastal development in general. In response to your concerns we have modified our discussion of impacts to clarify that, because the ecological mechanism leading to a population bloom of the causative dinoflagellate is unknown, there can be no preventive action that monitoring is the best mitigation to protect public health. This type of monitoring has become standard in association with coastal projects and has been shown to adequately track population levels of the causative dinoflagellate and therefore predict outbreaks of ciguatera. Section 3.9.5 has been revised as follows:

Anticipated Impacts and Mitigation Measures

The potential for a bloom of ciguatera causing dinoflagellate associated with coastal construction is an ongoing concern in tropical waters. Although there does appear to be a correlation between coastal construction activities and blooms of the causative dinoflagellate, the correlation is far from conclusionary and the ecological mechanisms leading to bloom conditions are not clear. Because the mechanism is not understood, it cannot be controlled. Therefore, the only mitigation possible is to conduct monitoring and make appropriate public announcements should a bloom occur. Monitoring the causative dinoflagellate should be conducted for at least two years: 1 year prior to construction, and 1 year after populations have fallen to pre-construction levels.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

The conditions with the project constructed were found to be phosphorous limited. Several simulations were performed including and excluding the inflow from the marine exhibits which provides an additional nitrogen load and also varying the location of this inflow. It was found that the inflow from the marine exhibits can have a beneficial effect on flushing, especially when positioned within the existing harbor basin. However, its effect is significantly less than the effect due to the brackish groundwater inflow. When the exhibit inflow is excluded or positioned at the east end of the new marina, its effect is small in terms of flushing due to its high salinity. From a water quality perspective, since the loads from the exhibit inflow consist primarily of nitrogen, it does not cause increased algae growth. However, this exhibit inflow does raise the concentrations of ammonia and nitrate in the system.

Simulation results indicate that under the conditions when the post-expansion system receives an additional brackish inflow into the new 25-acre marina on the order of 30 mgd or more, water quality within the harbor system and in the surrounding waters remained similar to existing conditions. These conditions are expected to occur based on the findings reported by Waimea Water Services (2007), which states that the proposed marina would exhibit the same or similar flushing action as the existing marina.

An additional mitigation measure proposed by Waimea Water Services (2007), if sufficient inflow is not intercepted, consists of drilling holes in the bottom of the new marina to enhance this inflow and facilitate flushing within the proposed system.

~~3.9.3~~3.9.2 Anchialine ~~Ponds~~ Pools

Two studies on anchialine pools were conducted in this EIS process. The anchialine ~~ponds~~ pools water quality studies and ~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute and is~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute in October 2006 and are included as Appendix ~~G~~H-1. That survey included pools located both north and south of Honokōhau Harbor. In response to DEIS comments and to further study the pools south of entrance channel of Honokōhau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. The report is contained in Appendix H-2.

~~3.9.3.1~~3.9.2.1 Existing Conditions

Anchialine ~~ponds~~ pools exist in inland lava depressions near the ocean. Two anchialine ~~pond~~ pool complexes are located immediately to the north and south of the Honokōhau Harbor entrance channel. The complex to the north is located wholly within the designated boundaries of the Kaloko-Honokōhau National Historical Park as shown in Figure Q~~O~~. Many of the ~~ponds~~ pools in the southern complex are within the park administrative boundary as well. ~~Ponds~~ Pools in the northern complex show little evidence of anthropogenic impacts. Many contain typical vegetation and crustacean species in high abundance.

Figure R locates anchialine pools near the harbor entrance and pools~~Ponds~~ in the southern complex are depicted in Figure S.

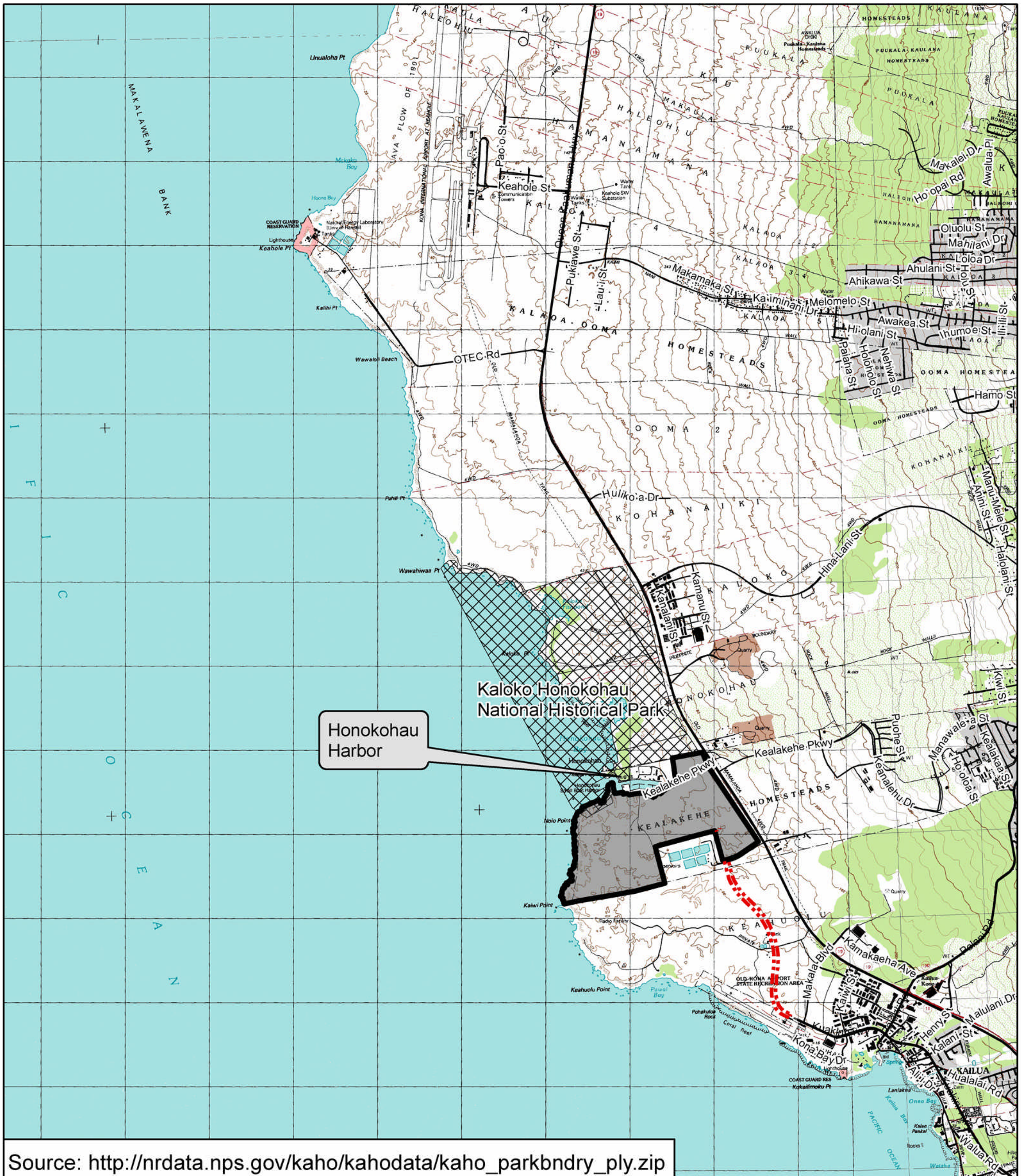


Figure Q: National Historical Park Service Legislative Boundary Map

Legend

- Project Site
- Proposed Parkway
- National Park Boundary

0 2,500 5,000 Feet

N W E S

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JACOBY DEVELOPMENT, INC.

Source: Oceanic Institute

Figure R: Anchialine Pool Locations

N
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0 2,000 4,000 Feet

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Source: Aquatic Resources Management And Design

Figure S: Anchialine Pool Locations in Southern Complex

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JACOBY DEVELOPMENT, INC.

The 2006 study identified 22 pools in the southern complex. The 2007 study found that three of the 22 pools are part of an estuary complex with direct connection to the ocean. While there were several signs of direct human use and disturbance, such as trash receptacles and toilet facilities, the greatest degradation to the majority of the anchialine and estuarine resources was due to the presence of alien fish, including topminnows and tilapia, and introduced plants, predominantly pickleweed and mangrove. ~~are moderately to heavily impacted, with many containing exotic fish that exclude the anchialine crustaceans. The ponds also show evidence of human impact, including discarded bottles, cans, wrappers, diapers, toilet paper, etc. Water quality conditions within the ponds generally reflect the conditions of the underlying groundwater.~~

~~Figure P locates anchialine ponds near the harbor entrance. The study conducted as a part of this EIS show that the anchialine ponds south of the harbor entrance are moderately to heavily impacted by human activities and introduced fish populations. The study found that the nitrogen phosphorus concentrations in these ponds are significantly higher compared to the ponds north of the harbor entrance. The sources of these additional nutrients are not known. Continuous influx of nutrients will eventually degrade the water quality to levels that could alter the pond ecology.~~

Biota surveys in the two pond systems clearly indicate that counts of typical pond denizens show a remarkable difference between the northern and southern ~~ponds~~ pools. In the northern ~~ponds~~ pools the number of *Halocaridina rubra* ranged from a low of 20–25 to too numerous to count. The biota rich pond bottoms appeared red due to the *Halocaridina rubra* numbers. The only other species visible was the predatory shrimp *Metabetaeus lohena*. In contrast, only four out of the 22 ~~ponds~~ pools examined in the southern pond complex showed a decreased presence of *Halocaridina rubra* (6 to 200) individuals in the pond, and three ~~ponds~~ pools contained *Metabetaeus lohena*. Eight of the ~~ponds~~ pools contained numbers of introduced minnows which is an apparent predator of *Halocaridina rubra* and *Metabetaeus lohena*.

The 2007 study found three of the pools identified in the 2006 study were part of an estuary complex with direct connection to the ocean, and that the southern complex contained 19 anchialine pools. The study further found that a majority of the southern pools are degraded biologically and physically, primarily due to the effects of introduced fish and plant species. Six pools are currently devoid of alien fish, but they face a high level of threat due to the proximity of pools that have these species. Of the 19 anchialine pools, six were considered high tide pools (exposed only at medium or high tide), seven were considered pool complexes (individual pools at low tide and interconnected at high tide), and six were single isolated pools. Of the 19 anchialine pools, three pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction.

The DEIS presented information stating that harbor construction would cause an increase in salinity in the anchialine pools makai of the proposed marina basin to become equivalent to the ocean at 35 ppt. and that the anchialine biology would then perish. There is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and final determination of anchialine salinity following the harbor construction. The assessment that all anchialine pools will be barren with the construction of the harbor may be premature. *Halocaridina rubra* (opae ula) are routinely drawn from high salinity wells at 30-32 ppt.

Within the 19 pools, native and non-native fauna included 14 species comprised of 5 fish, 2 mollusca, and 6 crustacea. Algae within the pools primarily consisted of a mixed assemblage of diatoms and cyanobacteria, with several pools dominated by matted filamentous *Cladophora*, sp. The darker cave/overhang pools and high tide pools had epilithic *Hildenbrandia* sp. covering the rock substrate. Riparian vegetation was dominated by introduced species consisting of Pickleweed (*Batis maritima*), Mangrove (*Rhyzophora mangle*), and Christmasberry (*Shinus terebenthifolius*). Only two species of native plants Akulikuli (*Sesuvium portulacastrum*) and Makaloa (*Cyperus laevigatus*) existed near the pools and comprised only few small patches and a single tuft (respectively).

Most of the hypogeal anchialine shrimp have adapted to the presence of minnows by foraging in the pools at night. During daylight hours, only the adult shrimp appear to coexist at low population levels with the smaller *P. reticulata*, but the larger *G. affinis* and *Oreochromis* prevent the daytime appearance of hypogeal shrimp due to predation.

The average salinity in Kealakehe pools is relatively high at 13.5 ppt compared to most other pools along the West Hawai'i coastline, having an average of approximately 7 ppt. This high salinity appears to be characteristic of this region, and is similar to the average of most pools within the adjacent ahupua'a of Honokōhau and Kaloko. The levels of nitrate-nitrogen levels are relatively high compared to other undeveloped areas, but fall in the range of some developed landscapes. Other water quality parameters, including pH and temperature, fall into normal ranges for anchialine pools.

This relatively high salinity is the likely reason aquatic insects were not found in any pools at Kealakehe. Though the rare damselfly *Megalagrion xanthomelas* has been observed and collected from Kaloko, a statewide assessment of its range has not found it to occur in water with salinity greater than 3ppt. However, there has been an unsubstantiated occurrence of the nymph in a pool of up to 8ppt (Polhemus, 1995).

Another species of concern is the hypogeal decapod shrimp *Metabetaeus lohena.* These shrimp are sometimes predatory on *H. rubra* but are more often opportunistic omnivores similar to *H. rubra.* Predusk and nocturnal sampling at high tide is clearly the optimal method to determine habitat range and population densities for this species. These shrimp were found in 13 of the 19 pools, 7 of which had *M. lohena* only at night. The occurrences of *H. rubra* were found in 16 of 19 sampled pools, 8 of which had 'Ōpae'ula observed only at night. Consequently, despite having numerous degraded anchialine resources at Kealakehe, there are opportunities for many of the pools to be restored and enhanced to a level where large populations of anchialine shrimp and other native species may return to inhabit the pools as they likely have in the past.

~~As mentioned earlier, the southern ponds also had elevated concentrations of nutrients indicating water quality degradation. These factors indicate that if no restoration or maintenance activities are instituted to reserve these ponds, these ecosystems will degrade beyond recovery.~~

~~3.9.3.2~~3.9.2.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigations

The anchialine ~~ponds~~ pools that are located north of the existing harbor are not likely to be impacted because no development activities are proposed north of the existing harbor. It is highly unlikely that existing groundwater flows to the Kaloko-Honokōhau pond system to the north of the existing harbor will be impacted by the proposed marina to the south.

Of the 19 pools in the southern complex, three would be eliminated due to harbor construction. Regarding the remaining pools, the DEIS noted that t~~T~~he change in the local groundwater flow pattern in the vicinity of the proposed marina ~~will~~ would impact the anchialine ~~ponds~~ pools that are located between the proposed marina and the shoreline south of the harbor entrance. The 2006 study (Appendix H-1) noted that t~~T~~he salinity of the anchialine ~~ponds~~ pools ~~will~~ would increase due to reduction of brackish groundwater, and that ~~. Some ponds will be excavated to make the new harbor basin. T~~those ~~ponds~~ pools that are not excavated will revert to full salinity, causing the loss of their habitat. ~~and associated aquatic flora and fauna. However, current investigations indicate that these ponds are already enriched by nutrients and the density of associated aquatic fauna is very low. In addition, trash from visitors, and introduction of minnows has already degraded the pond ecology.~~ Even without the potential impacts from the proposed marina construction, the pond ecology might change irreversibly from the nutrient input, human indifference and expansion of non native fauna species.

Further studies conducted in response to DEIS comments (Appendix H-2, and Appendix G-3) indicate that the remaining pools may not increase in salinity to levels unhealthy for *H. rubra* and *M. lohena* and other anchialine pool fauna. In addition, these studies determined that there are realistic mechanisms employed elsewhere that would mitigate changes due to groundwater changes. Waimea Water Services found that harbor construction would cut off some of the fresher ground-water flow. However, predicting the extent of change in flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore.

Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented. The mitigation plan will be based on the following objectives:

Objective 1 To preserve, maintain, and foster the long-term health and native ecological integrity of anchialine pools at Kealakehe.

Objective 2 To protect and promote cultural practices and traditions surrounding anchialine resources at Kealakehe.

Objective 3 To provide education, interpretation, and interactive opportunities for the community to learn about and appreciate the anchialine resources.

Objective 4 To acquire a pond manager to implement the program, conduct monitoring, research, and reporting, and provide education to the community about anchialine and estuarine resources.

Mitigation measures to facilitate the long-term health of the remaining anchialine pools will be based on environmental monitoring, which is vital as an early warning system to detect potential environmental degradation. A series of quantitative baseline analysis of the physio-chemical and biological components within the project site will provide a standard by which the effects of the development, anthropogenic activities, and natural phenomena on the environment can be measured. The framework for the mitigation plan will include three measures intended to meet these objectives, including bioretention, salinity adjustment and possible new pools.

As a mitigation measure, bioretention, which is a Best Management Practice (BMP) is a feasible application for the proposed development. There is a probability that nutrients and other potential pollutants will runoff landscaping and impermeable surfaces such as roadways and parking lots during medium or high rainfall events. Some of these pollutants could enter the groundwater table and into anchialine pools and ultimately the ocean. As an alternative to directing runoff into the ground through drywells, storm water should be directed into bioretention areas such as constructed surface or subsurface wetlands, vegetated filter strips, grass swales, and planted buffer areas. Storm water held and moved through these living filter systems are essentially stripped of most potential pollutants, and allowed to slowly infiltrate back to the groundwater table.

Bioretention is a Best Management Practice (BMP) that would be a highly appropriate application for the proposed development. Further, BMPs utilized in series may incorporate several storm water treatment mechanisms in a sequence to enhance the treatment of runoff. By combining structural and/or nonstructural treatment methods in series rather than singularly, raises the level and reliability of pollutant removal. Another means to reduce the potential for groundwater contamination is to increase soil depth above the standard in landscaped areas. This will allow chemicals to be held in the soils longer for more complete plant uptake and breakdown of these chemicals by soil microbes. A specific guide for chemical application by landscape maintenance personnel will be a beneficial tool to help avoid contamination of groundwater resources.

Another mitigation measure that may be included in the management plan is salinity adjustment. In the 2006 assessment regarding the impact to the southern pools from the proposed construction of the harbor, it was stated that this construction would cause the salinity in the anchialine pools to become equivalent to the ocean at 35ppt. It was then concluded that the anchialine biology would perish.

However, there is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and a final determination of anchialine salinity following the harbor construction. The dynamics of groundwater movement through a porous lava medium both seaward and laterally along the coastline is an inexact science. This is compounded by the variations in water density, including stratification of salinity within the proposed harbor and capillary movement of low-density surface water through the substrata.

The assessment that all anchialine pools will be barren with the construction of the harbor may therefore be premature. *H. rubra* are routinely drawn from high salinity wells at 30 – 32 ppt and survive in this salinity for years. Further, high populations *H. rubra* and *M. lohena* have thrived and reproduced in pool salinities of 27ppt. If the pools do become full strength seawater at 35ppt, there exists uncertainty on the long-term effects to anchialine organisms, since there are no long-term studies or examples of native anchialine ecosystems at 35ppt. Native anchialine pool vegetation also has relatively high salinity tolerance.

If the salinity were expected to rise to 35 ppt, possible mitigation in the management plan will include methods to surcharge man-made anchialine pools created adjacent to or in the vicinity of natural pools with low salinity well water. If sufficient volume is used, it is theoretically possible to lower salinity in adjacent natural anchialine pools. This surcharge method has been successfully used to raise salinity in anchialine pools and cause the salinity rise in adjacent pools of at least up to 10 meters away. Surcharging with low salinity should work as well or better since the lower density water will essentially float atop the higher salinity water at the surface layer, and move throughout the complex of natural pools. Surcharging may also be a viable mitigation to dilute and more rapidly disperse any pollutants that may be detected in the pools.

Another mitigation measure includes the creation of new anchialine pools. There is significant opportunity to create new anchialine pools and greatly expand the native habitat and resource. It has been demonstrated at several projects in West Hawai'i that anchialine pools can be created and will be colonized with a full compliment of anchialine species endemic to the area. Anchialine pools are considered focal points of higher productivity relative to the subterranean groundwater habitat around them. Their productivity promotes an increase in population levels of anchialine species within the pools themselves and throughout the subterranean habitat surrounding them.

~~No realistic mechanisms are envisioned for re-injecting fresh water into these systems to maintain their ecological balance as an anchialine system. These ponds will be changed from a brackish water system to a marine system. But, those ponds in the area of the shoreline park and cultural park will be cleaned of vegetation and protected from other physical alteration. A buffer zone around these newly established marine ponds will be protected as well.~~

~~The anchialine pond shrimp (*Metabetaeus lohena)* and the orangeback damsel fly (*Megalagrion xanthomelas)* are listed as candidate endangered species in the Federal Register and were both recorded in surveys of these anchialine ponds done in 2004 by US Geological Survey Biological Resources Division and the NPS Inventory and Monitoring Program. Low numbers of *Metabetaeus lohena* were encountered in three of the 22 ponds surveyed in the southern pond complex. *Megalagrion xanthomelas* was not encountered in any of the southern pond complex ponds during the recent study. The low density of *Metabetaeus lohena* and the observed absence of *Megalagrion xanthomelas* may be due to the impacts from high nutrient input and general degradation of the ponds.~~

~~An attempt should be made to move as much of the existing population of *Metabetaeus lohena* from these anchialine ponds before they become too saline, to possible newly excavated ponds that may be developed off-site. These shrimp should not be introduced into existing populated ponds to avoid any potential pathogenic impacts to the healthy ponds.~~

~~Public education on the unique ecology of the anchialine ponds and the need for preserving their ecology will reduce future human impacts in other healthy ponds.~~

~~Further recommended mitigation includes restoration to degraded anchialine ponds off the project site, preferably those located at the adjacent Kaloko-Honokōhau National Historical Park.~~

Attachment 2

2 Alternatives Analysis

~~In typical land development projects, the initial planning process includes the exploration of alternatives to development objectives. In the EIS process, these alternatives are presented with a disclosure of reasons for the dismissal of non-preferred alternatives.~~

~~Kona Kai Ola does not follow this same pattern of alternatives evaluation.~~ As discussed in Section 1.4, the proposed Kona Kai Ola project is the result of agreements between JDI and the State DLNR and DHHL. The agreements and leases between the State and JDI stipulate the parameters of development for this site in terms of uses, quantities and size of many features, resulting in a limited range of land uses. Unlike a private property project, JDI is required to meet the criteria outlined in the agreements, thereby affording less flexibility in options and uses. From the developer's perspective, the agreements must also provide sufficient flexibility to allow for a development product that responds to market needs and provides a reasonable rate of return on the private investment.

The agreements between JDI and DLNR specify that the proposed harbor basin is to be 45 acres and accommodate 800 slips. This development proposal is the subject of this EIS. In response to DEIS comments, additional water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor. Comments on the DEIS from DLNR, from other government agencies, the neighbors and the general community also called for the consideration of alternatives in the EIS, including a project with a smaller harbor basin and less density of hotel and time-share units.

In response to these comments on the DEIS, three alternatives are evaluated in this Final EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin including a decrease in hotel and time-share units; Alternative 2, which is an alternative that had been previously discussed but not included in the proposed project, that includes an 800-slip harbor and a golf course; and Alternative 3, the no-project alternative. Each alternative is included in the EIS with an evaluation of their potential impacts. These project alternatives are presented to compare the levels of impacts and mitigation measures of the proposed project and alternative development schemes pursuant to requirements set forth in Chapter 343, HRS.

~~JDI is required to provide a new marina basin not less than 45 acres and a minimum of 800 new boat slips. Further, the agreements provide the following options for land uses at the project site:~~

- ~~Golf Course~~
- ~~Retail Commercial Facilities~~
- ~~Hotel Development Parcels~~
- ~~Marina Development Parcels~~
- ~~Community Benefit Development Parcels~~

~~JDI is not pursuing the golf course option and is proposing instead to create various water features throughout the project site. All other optional uses have been incorporated in Kona Kai Ola.~~

2.1 Project Alternatives

2.1.1 Alternative 1: 400-Slip Marina

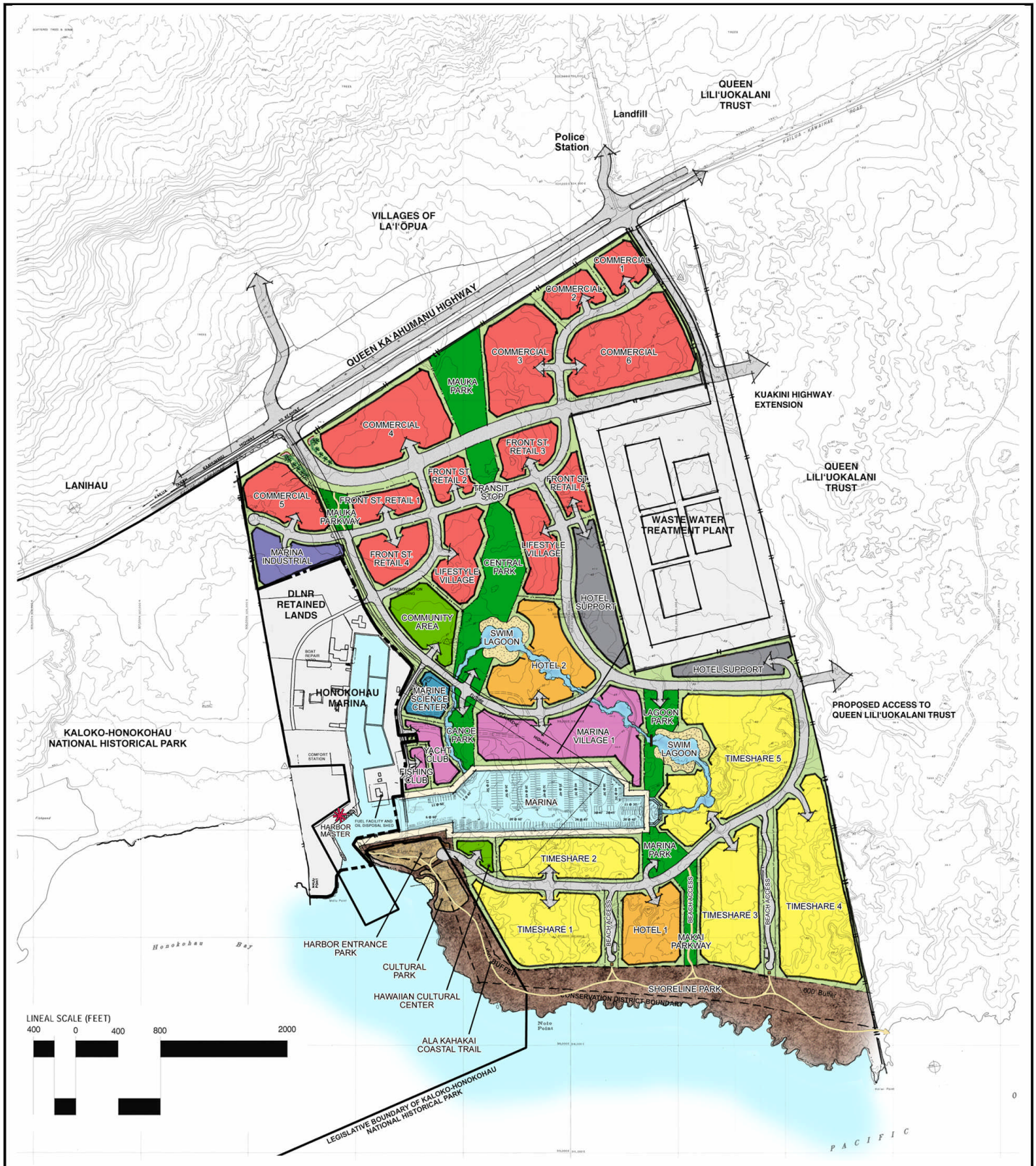
Studies conducted in response to DEIS comments found the construction and operation of an 800-slip marina may significantly impact the water quality within the marina and along the shoreline. Specifically, the Harbor Water Quality Modeling Study, as contained in Appendix U, found that the water circulation in a 45-acre 800-slip harbor was insufficient to maintain an acceptable level of water quality. Further, the existing harbor channel, which would serve both the existing and new harbors, could not adequately serve the increased boat traffic generated by an 800-slip marina during peak traffic. Mitigation measures to accommodate peak boat traffic included the widening of the existing channel, an action that would entail a complex process of Federal and State approvals and encounter significant environmental concern.

Concerns related to the proposed density of hotel and time-share units were also expressed in comments to the DEIS from members of the public, neighbors to the project site, especially the Kaniohale Community Association, and government agencies. Common themes in DEIS comments were related to impacts regarding traffic, project requirements of potable water and infrastructure systems, including sewer, drainage, utility and solid waste systems, and socioeconomic impacts.

In response to the water quality study results, and to the DEIS comments, an alternative plan was developed with a smaller marina with less boat slips, and a related decrease in hotel and time share units. Illustrated in Figure G, Alternative 1 reflects this lesser density project, and features a 400-slip marina encompassing 25 acres. For the purposes of the Alternative 1 analysis, JDI assumed 1,100 time-share units and 400 hotel rooms. Project components include:

- 400 hotel units on 34 acres
- 1,100 time-share units on 106 acres
- 143 acres of commercial uses
- 11 acres of marina support facilities
- 214 acres of parks, roads, open spaces, swim lagoons and community use areas

In addition, Alternative 1 would include the construction of a new intersection of Kealakehe Parkway with Queen Ka'ahumanu Highway, and the extension of Kealakehe Parkway to join Kuakini Highway to cross the lands of Queen Lili'uokalani Trust, and connecting with Kuakini Highway in Kailua-Kona. This is a significant off-site infrastructure improvement and is included in the agreements between the State and JDI.



Source: PBR HAWAII

Plan is conceptual only and subject to change

Figure G: Alternative 1: 400-Slip Marina

LEGEND

- TIME SHARE
- HOTEL
- RETAIL / COMMERCIAL
- MARINA RETAIL
- MARINA SUPPORT / COMMERCIAL
- MARINE SCIENCE CENTER
- COMMUNITY AREA / CULTURAL CENTER
- SWIM LAGOON
- MARINA
- UTILITIES
- PARKS & GREEN SPACE
- SHORELINE
- HARBOR ENTRANCE PARK / CULTURAL PARK

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Like the proposed project, Alternative 1 would have a strong ocean orientation, and project components that support this theme would include various water features including seawater lagoons and a marine science center. The new Alternative 1 harbor would include a yacht club, fishing club, a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. The coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and 'Alula for community use. Additional Alternative 1 community areas would include facilities and space for community use, including programs of the Kona Kai Ola Community Foundation, which supports community programs in health care, culture, education, and employment training for the local community, especially to native Hawaiians. Like the original proposed plan, Alternative 1 includes 40 percent of the land in parks, roads, open spaces, swim lagoons and community use areas.

2.1.2 Alternative 2: Golf Course Feature

Alternative 2 was among the alternatives discussed at a community charrette in September 2003. It includes a golf course, which is a permitted use in the DLNR agreement and DHHL lease. As Figure H illustrates, an 18-hole championship golf course would occupy 222 acres on the southern portion of the project site. As with the proposed project, Alternative 2 includes an 800-slip marina on a minimum of 45 acres.

To support the economic viability of the project, other Alternative 2 uses include:

- Golf course clubhouse on three acres
- 1,570 visitor units on 88 acres fronting the marina
- 118 acres of commercial uses
- 23 acres of community uses

Community uses in Alternative 2 include an amphitheater, a canoe facilities park, a community health center, a Hawaiian cultural center and fishing village, a marine science center and employment training center. The sea water lagoon features contained in the proposed project and Alternative 1 are not included in this alternative.

2.1.3 Alternative 3: No Action

In Alternative 3, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.

~~The economic viability and sustainability of the project is determined by the density and uses proposed. Because JDI is obligated to develop an 800-slip marina for the State, complete road improvements, and provide various public enhancement features at its own expense, the density proposed for the income generating features of the development must be sufficient to provide an acceptable level of economic return for JDI. The market study, which is discussed in Section 4.6, reviewed various development schemes and determined that the currently proposed density and mix is the optimum to meet the anticipated financing and development cost obligations for the public features associated with the development.~~

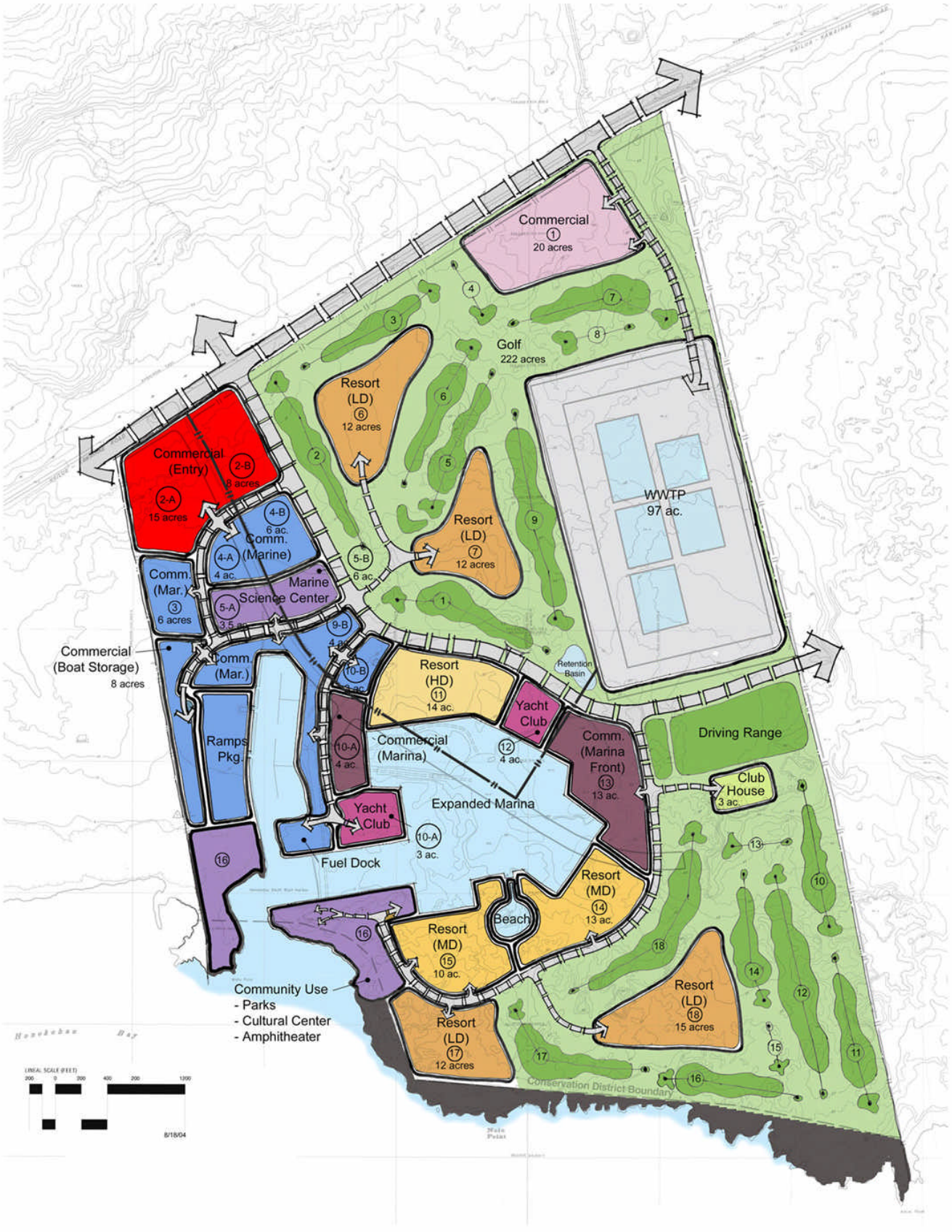

Figure H. Alternative 2: Golf Course Alternative

Legend

N E S W

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2.2 Alternatives Analysis

As discussed in Section 2.1, the proposed Kona Kai Ola project (also referred to as "proposed project") is defined by development requirements related for a marina and the related uses that would be needed to generate a reasonable rate of return that covers development costs.

Beginning with Section 2.2.1, the alternative development concepts are comparatively assessed for potential impacts that may reasonably be expected to result from each alternative. Following is an overview of the primary observations of such assessment.

Alternative 1 includes half of the State-required boat slips and 60 percent of the proposed hotel and time-share units and, due to the decreased density, this alternative would generate significantly less environmental and socio-economic impacts. A harbor water quality model found the reduction of the volume of the new marina basin by about half (approximately 25 acres) significantly improved the water circulation and quality. Further, the reduced number of boat slips would generate less boat traffic, thereby reducing congestion and the need to mitigate impacts further by the widening of the existing harbor channel.

A project with fewer hotel and time-share units and increased commercial space with a longer (14 years) absorption period would change the mix of employment offered by the project, and slightly increase the overall employment count. The public costs/benefits associated with Alternative 1 would change, compared to the proposed project, with a general increase in tax collections, and a general decrease in per capita costs. Detailed discussion of Alternative 1 potential economic impacts are provided in Section 4.6.6. Comparisons of levels of impact are presented throughout this FEIS.

While this analysis might indicate that the 25-acre marina in Alternative 1 would be the more prudent choice, the DLNR agreement establishes the minimum size and slip capacity of the marina at 45 acres and 800 slips, respectively. Amendments to the DLNR agreement would be required in order to allow Alternative 1 to proceed as the preferred alternative. Hence, selection of the preferred alternative is an unresolved issue at the writing of this FEIS.

Alternative 2, the golf course alternative, was not previously considered to be the preferred alternative primarily because market conditions at the time of project development might not likely support another golf course. Further, DHHL has a strategy goal to have more revenue-generating activities on the commercial lease lands within the project area. In addition, concerns have been expressed as to environmental impacts of coastal golf courses, including the potential adverse impact on Kona's water supply if potable water is used for golf course irrigation.

While Alternative 3, the no-project alternative, would not generate adverse impacts related to development of these lands associated with the construction and long-term operations, it would also not allow for an expanded public marina that would meet public need and generate income for the public sector. Further, the no-project alternative would foreclose the opportunity to create a master-planned State-initiated development that would result in increased tax revenue, recreation options and community facilities. Crucial privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities, and public access would not be contributed.

~~Hence, the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.~~

~~The no-project alternative would therefore not generate adverse impacts associated with the construction and long-term operations would not occur.~~

~~Likewise, the creation of a master-planned state-initiated development, resulting in increased employment, tax revenue, recreation options and community facilities, would not be created. Privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities and public access would not be contributed.~~

Further, the creation of revenue-producing businesses on the DHHL property to fund homestead programs would not occur, resulting in fewer potential benefits for Hawaiians.

Hence, the agreements and leases between the State and JDI indicate that the no-action alternative is not in the public interest~~has been rejected at this time~~.

2.2.1 Impact Comparison

Grading and Excavation

The proposed project requires grading and excavation. Both actions may impact groundwater due to rainfall runoff during construction. Alternative 1 would require a significantly smaller excavation for the marina basin and would therefore carry a lesser risk of potential adverse effects on water quality. Alternative 2 would require the same basin excavation as the proposed project, and would also include extensive grading and filling to build the golf course, the latter of which would generate additional impacts. Alternative 3 would result in no change to the geography, topography and geology.

Further discussion on grading and excavation is contained in Section 3.3.

Natural Drainage

Most precipitation infiltrates into the porous ground at the site, and no significant sheet flow is likely. Alternative 1 would generate similar levels of impacts on natural drainage as those of the proposed project and thus require similar mitigation measures. The golf course in Alternative 2 would not be as porous since the site would be graded, soil would be placed, and grass and other landscaping would be grown. Sheet flow and runoff can occur on a golf course, and drainage patterns might change. Alternative 3 would result in no change to the existing natural drainage pattern. Further discussion on natural drainage is contained in Section 3.4.

Air Quality

Air quality will be affected by construction activities, as well as pollutants from vehicular, industrial, natural, and agricultural sources. Alternative 1 would generate less construction air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin and fewer long-term impacts by reducing traffic 35 and 40 percent during, respectively, AM and PM peak traffic times. Construction of Alternative 2 would result in fugitive dust and exhaust from equipment and is expected to generate the same level of air quality impact as the proposed project. Alternative 3 would result in no change to existing air quality. Further discussion on air quality is contained in Section 3.5.

Terrestrial Environment

To provide additional habitat for shorebirds and some visiting seabirds, the project proposes to construct a brackishwater pond area suitable for avian fauna, including stilts, coots and ducks. While habitat expansion is beneficial, there is also a possibility that these species may be exposed to activity that may harm them. Alternative 1 would not include a brackish water pond, but will include 5 acres of seawater features, which is 74 percent less than the 19 acres of seawater features in the proposed project. While this would reduce beneficial impacts, it would also decrease exposure to potentially harmful activity. Alternative 2 does not include the brackish water pond features, but would include drainage retention basins that would attract avian fauna and expose them to chemicals used to maintain golf course landscaping. While Alternative 3 would result in no increase in potentially harmful activity, it would also not provide additional habitat for avian fauna. Further discussion on the terrestrial environment is contained in Section 3.7.

Groundwater

Groundwater at the project site occurs as a thin basal brackish water lens. It is influenced by tides and varies in flow direction and salt content. The existing Honokōhau Harbor acts as a drainage point for local groundwater. Any impact to groundwater flow from the proposed harbor is likely to be localized. The proposed marina basin will not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance.

There will be differences in the flow to the marina entrance between the proposed project and Alternative 1. Alternative 1, being smaller in size, will have less impact on groundwater flow than the proposed marina. Alternative 2 will have a similar impact to groundwater quality as the proposed project. Alternative 2 may also impact water quality by contributing nutrients and biocides to the groundwater from the golf course. Alternative 3 would result in no change in existing groundwater conditions. Further discussion on groundwater is contained in Section 3.8.1.

Surface Water

There are no significant natural freshwater streams or ponds at the site, but there are brackish anchialine pools. Surface water at the project site will be influenced by rainfall. Runoff typically percolates rapidly through the permeable ground. The proposed project will include some impermeable surfaces, which together with building roofs, will change runoff and seepage patterns.

Alternative 1 is a lower density project that is expected to have proportionally less impact on surface water and runoff patterns and less potential impact on water quality than the proposed project. Alternative 2 would have more impact on surface water quality than the proposed project due to fertilizers and biocides carried by runoff from the golf course. Alternative 3 would result in no change to surface water conditions. Further discussion on surface water is contained in Section 3.8.2.

Nearshore Environment and Coastal Waters

The potential adverse impacts to the marine environment from the proposed project are due to the construction of an 800-slip marina and the resulting inflow of higher salinity seawater and inadequate water circulation, both of which are anticipated to impair water quality to the extent of falling below applicable standards. One possible mitigation measure is to significantly reduce the size of the marina expansion.

The reduced marina size (from 45 to 25 acres) and reduced lagoon acreage in Alternative 1 are expected to result in a proportionate reduction in seawater discharging into the new harbor and increased water circulation. Alternative 2 includes the same marina basin size and is therefore subject to the same factors that are expected to adversely affect water quality.

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water quality in the proposed harbor depends on several components. These include salinity, nutrients, and sediments that come from the ocean, rainfall runoff, water features with marine animals, and dust. The smaller project offered as Alternative 1 is expected to produce a reduced amount of pollutants and reduce the risk of adverse impact upon water quality.

It is notable that the 45-acre marina basin planned in the proposed project and Alternative 2 only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd. The resulting flushing from such inflow would be expected to better maintain water quality. However, it is unclear whether 60 mgd of brackish groundwater would be available. As proposed in Alternative 1, reduction of the volume of the new marina basin by 45 percent will significantly improve the flushing and water quality because the lower volume can be flushed by the available groundwater flow.

In addition, there could be higher rainfall runoff from the Alternative 2 golf course into the harbor, because the grassed golf course will be less porous than the natural surface. The golf course will also require relatively high levels of fertilizer, biocides, and irrigation, all of which could contribute to adverse water quality impacts.

Further discussion on nearshore environment and coastal waters is contained in Section 3.9.1.

Anchialine Pools

Anchialine pools are located north of Honokōhau Harbor, and south of the harbor on the project site. The marine life in these pools is sensitive to groundwater quality, and changes due to construction and operation of the project could degrade the viability of the pool ecosystem. In the southern complex, 3 anchialine pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction in the proposed project and Alternatives 1 and 2.

Predicting the extent of change in groundwater flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is therefore extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Due to the uncertainty of changes in groundwater flow and quality due to marina construction, the variability in impacts between the proposed project and Alternatives 1 and 2 is unknown at this time. Alternative 3 would result in no change in groundwater flow. While this would eliminate the potential for adverse impacts, Alternative 3 would also continue the pattern of existing degradation related to human activity and the introduction of alien species. Further discussion on anchialine pools is contained in Section 3.9.2.

Marine Fishing Impacts

The proposed marina will increase the number of boats in the area and it is reasonable to assume that a portion of these new boats will engage in fishing activities. The increase in boats in the area would be primarily related to the marlin and tuna / pelagic fishery, coral reefs due to extractive fisheries, and SCUBA activities. The pressure on fish and invertebrate stocks is expected to increase with or without the marina. Harbor expansion provides the opportunity to address existing conditions to consolidate, focus, and fund management and enforcement activities at one location.

Compared to the proposed project, Alternative 1 would result in a 21 percent decrease in boat traffic, thereby lessening the potential for marine fishing impacts. The level of impacts in Alternative 2 would be similar to that of the proposed project. Alternative 3 would result in no change in existing marine fishing conditions, and no opportunity to address already existing pressure on fish and invertebrate stocks. Further discussion on marine fishing impacts is contained in Section 3.9.3.

Cultural and Archaeological Resources

The proposed project will integrate cultural and archaeological resources in the overall development. Archaeological sites recommended for preservation will be preserved, and cultural practices will be encouraged. Kona Kai Ola includes a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. Proposed is a 400-foot shoreline setback that would serve as a buffer between the ocean and developed areas. This coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and ʻAlula for community use.

Alternative 1 would contain all of the cultural archaeological features and the shoreline setback area would be 400 feet in the northern portion of the site and increase to 600 feet in the southern portion. Alternative 2 would preserve cultural and archaeological resources, but does not include a 400-foot shoreline setback. Alternative 3 would result in no change to existing cultural and archaeological resources and no addition of cultural and community facilities and activities. Further discussion on cultural and archaeological resources is contained in, respectively, Sections 4.1 and 4.2.

Noise

Project-generated noise is due to construction equipment and blasting, boats, marina activities, vehicle traffic, and the Kealakehe Wastewater Treatment Plant operations. Alternative 1 would generate less noise impacts due to reduced construction activities, fewer boats, less traffic and less on-site activity. Alternative 2 would also generate less noise due to reduced traffic and less on-site activity, but noise related to the excavation of the marina basin and an increase in the number of boats would be similar to that of the proposed project. Further discussion on noise impacts is presented in Section 4.4.

Socioeconomic Impacts

The proposed project will generate an increase in de facto population of an estimated 5,321 persons due to the increase in hotel and time-share units. The estimated de facto population increase in Alternative 1 is 37 percent less, at 3,363 persons, than the proposed project. The de facto population increase in Alternative 2 is similar to Alternative 1.

Employment in the commercial components will nearly double in Alternative 1, from a stabilized level of 1,429 full-time equivalent (FTE) positions in the proposed project to 2,740 in the Alternative 1.

Under Alternative 1, the total operating economic activity at Kona Kai Ola will increase due to the added commercial space more than off-setting the fewer visitor units, moving upward from $557.6 million per year to circa $814.3 million annually. The total base economic impact resulting from development and operation of Alternative 1 will similarly be higher by between 35 and 45 percent than that of the proposed project.

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County revenues. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The estimated absorption periods for marketable components of Alternative 1 are generally shorter than those for the same components in the proposed project. Marina slips under Alternative 1 are estimated to be absorbed within 2 years after groundbreaking, as compared with 9 years for absorption of slips in the proposed project. Hotel rooms under Alternative 1 are estimated to be absorbed within 4 years after groundbreaking, as compared with 7 years under the proposed project. Time-share units would be absorbed within 10 years under Alternative 1, while 15 years are projected under the proposed project. Due to the planned increase in commercial facilities under Alternative 1, the absorption period of commercial space is estimated at 14 years, as compared with 8 years for absorption of such facilities under the proposed project.

The State and County will still both receive a net benefit (tax receipts relative to public expenditures) annually on a stabilized basis under the Alternative 1. The County net benefits will be some $12.2 million per year under the Alternative 1 versus $14.9 million under the proposed project. The State net benefits will increase under the Alternative 1 to about $37.5 million annually, up substantially from the $11.4 million in the proposed project.

Due to the lower de facto population at build-out, the effective stabilized public costs for both the State and County will decline meaningfully under the Alternative 1, dropping from $7.7 million annually for the County and $36.5 million for the State, to $4.9 million and $23 million per year, respectively.

Alternative 3 would result in no increase in de facto population and improvement to economic conditions. Further discussion on social and economic impacts are contained in, respectively, Sections 4.5 and 4.6.

Vehicular Traffic

The proposed project will impact the nearby road network that currently is congested during peak traffic times. The proposed project includes roadway improvements that would reduce the impact and improve roadway conditions for the regional community.

Alternative 1 includes the same roadway system improvements as the proposed project, yet would reduce vehicular traffic by 35 percent when compared to the proposed project. Alternative 2 would have similar traffic conditions and roadway improvements as Alternative 1. Alternative 3 would result in no increase in traffic and no roadway improvements.

Marina Traffic Study

The increase in boat traffic due to the proposed 800-slip marina would cause entrance channel congestion during varying combinations of existing and new marina peak traffic flow. Worst case conditions of active sport fishing weekend and summer holiday recreational traffic result in traffic volumes exceeding capacity over a short afternoon period. Mitigation to address boat traffic in the proposed project include widening the entrance channel, traffic control, implementation of a permanent traffic control tower, or limiting vessel size.

Alternative 1 would result in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent reduction during peak existing conditions. The reduction to 400 slips also reduces the impacts of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Alternative 2 would have the same level of boat traffic as the proposed project. Alternative 3 would not meet the demand for additional boat slips and would not generate additional boat traffic. Further discussion on marina traffic is contained in Section 4.8.

Police, Fire and Medical Services

The proposed project will impact police, fire and medical services due to an increase in de facto population and increased on-site activity. Alternatives 1 and 2 would have similar levels of impact as the proposed project due to increased on-site activity. Further discussion on police, fire and medical services are contained, respectively, in Sections 4.10.1, 4.10.2 and 4.10.3.

Drainage and Storm Water Facilities

The proposed project will increase drainage flows, quantities, velocities, erosion, and sediment runoff.

Alternative 1 involves a reduction of the project density that would reduce storm runoff from the various land uses due to a reduction in impervious surfaces associated with hotel and time-share development and to the creation of more open space. However, roadway areas will increase by about 30 percent in Alternative 1. Storm runoff from proposed streets would therefore increase; thus requiring additional drainage facilities and possibly resulting in no net savings. The golf course in Alternative 2 may also change drainage characteristics from those of the proposed project and may not reduce impacts. Alternative 3 would result in no change in existing conditions and no improvements to drainage infrastructure. Further discussion on drainage and storm water facilities is contained in Section 4.10.5

Wastewater Facilities

The proposed development is located within the service area of the Kealakehe WWTP and a sewer system will be installed that connects to the WWTP. The sewer system will be comprised of a network of gravity sewers, force mains, and pumping stations which collect and convey wastewater to the existing Kealakehe WWTP. Project improvements will incorporate the usage of recycled / R1 water. Improvements implemented by the proposed project will also accommodate the needs of the regional service population.

Alternative 1 would generate approximately 10 percent less wastewater flow than the proposed project. Wastewater flow in Alternative 2 is undetermined. Alternative 3 would result in no additional flow, as well as no improvements that will benefit the regional community. Further discussion on wastewater facilities is contained in Section 4.10.6.

Potable Water Facilities

The proposed project average daily water demand is estimated at 1.76 million gallons per day. Existing County sources are not adequate to meet this demand and source development is required. The developer is working with DLNR and two wells have been identified that will produce a sustainable yield that will serve the project. These wells will also serve water needs beyond the project.

Alternative 1 would result in net decrease of about five percent of potable water demand. Alternative 2 may have a lower water demand than the proposed project as long as potable water is not used for irrigation. Alternative 3 would result in no additional flow, as well as no source development that will benefit the regional community. Further discussion on potable water facilities is contained in Section 4.10.8.

Energy and Communications

Regarding Alternative 1, preliminary estimates for electrical, telecommunications, and cable resulted in a net demand load that remains similar to the proposed project. Further discussion on energy and communications is contained in Section 4.10.9.1.

The proposed project will increase the demand for electrical energy and telecommunications. The demand would be reduced in Alternative 1 because the number of boat slips and units would decrease. Similarly, Alternative 2 would have fewer units than the proposed project and therefore reduce energy demands. Further reduction in energy demand for either alternative could be achieved by using seawater air conditioning (SWAC) and other energy reduction measures, as planned by the developer. Further discussion on energy and telecommunications is contained in Section 4.10.9.2.

Water Features and Lagoons

The proposed project includes a brackishwater pond, lagoons, and marine life exhibits supplied by clean seawater. The water features in Alternative 1 would significantly decrease by 74 percent from 19 acres in the proposed project to five acres in Alternative 1. This decrease in water features would result in a corresponding decrease in water source requirements and seawater discharge. Alternative 2 does not include the seawater features. Alternative 3 would result in no additional demand for water source requirements and seawater discharge.

2.2.2 Conformance with Public Plans and Policies

State of Hawai'i

Chapter 343, Hawai'i Revised Statutes

Compliance with this chapter is effected, as described in Section 5.1.1 in regard to the proposed project and the alternatives discussed.

- State Land Use Law, Chapter 205, Hawai'i Revised Statutes

  The discussion in Section 5.1.2 is directly applicable to Alternative 1, the proposed project. Alternative 1 will involve a setback of 400 feet that increases to 600 feet along the southern portion of the project site's shoreline area. Alternative 2 does not provide for such a setback, but may still require approvals from DLNR for cultural, recreational, and community uses and structures within the Conservation district.

- Coastal Zone Management Program, Chapter 205A, Hawai'i Revised Statutes

  Recreational Resources:

  In addition to the discussion of consistency with the associated objective and policies, as described in Section 5.1.3, the reduction from the proposed project's 800-slip marina to a 400-slip marina under Alternative 1 will still expand the region's boating opportunities and support facilities. The existing harbor entrance will still be utilized under this alternative; however, potential risks relating to boat traffic and congestion in the marina entrance area will be reduced significantly. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities, and marine science center remain important recreational components under Alternative 1.

Alternative 2 includes a golf course component, which would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Alternative 2, like the proposed project, will expand the region's boating opportunities and support facilities through its 800-slip marina. However, the potential adverse impacts of increased boat traffic from the size of the marina are significant enough to offset the benefits of increased boating opportunities.

Coastal Ecosystems:

The discussion in Section 5.1.3 is directly applicable to Alternative 1.

Alternative 1 not only reduces the number of slips proposed by 50 percent, but it also reduces the size of the marina from 45 acres to 25 acres. The 25-acre marina will increase the body of water within the existing harbor, but to a significantly lesser extent than the proposed project's estimated increase, which is also applicable to the 45-acre size that is proposed for the marina under Alternative 2.

The findings of the Harbor Water Quality Modeling Study conclude that a reduction in the size of the harbor expansion is an alternative that will mitigate the risk of significant impacts upon water quality within the marina and existing harbor. Accordingly, the reduction in both the number of slips and the size of the marina basin under Alternative 1, in combination with proper facilities design, public education, and enforcement of harbor rules and regulations, would result in fewer long-term impacts to water quality and coastal ecosystems. Short-term (construction-related) impacts would likely remain the same although the reduction in the total acreage of excavation is expected to result in a shorter duration of such impacts.

In addition to its 800-slip marina and potential adverse impacts upon water quality and the marine environment, Alternative 2 includes a golf course component, which has the potential to impact coastal ecosystems by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Economic Uses

Although reduced in the number of slips, the smaller marina under Alternative 1 will nevertheless serve public demand for more boating facilities in West Hawai'i and is consistent with the objective and policies and discussion set forth in Section 5.1.3. The economic impacts of Alternative 2, while comparable to those of the proposed project's marina development, are notably marginal as to the golf course component, based on the marketability analysis that indicates a condition of saturation within the region.

Coastal Hazards

The discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Tsunami risks mainly affect the large shoreline setback area that is proposed for the project and Alternative 1. Alternative 2 projects a transient accommodation site that is partially within the tsunami hazard zone and thus carries a higher hazard risk. However, the essential requirement for these alternatives, as well as the proposed project, is a well-prepared and properly implemented evacuation plan.

Beach Protection

Discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Alternative 1 and, to a lesser extent, Alternative 2, will retain the shoreline area in its natural condition.

Similar to the proposed project, Alternative 1 provides for a shoreline setback of considerable width within which no structure, except for possible culturally-related structures, would be allowed. Alternatives 1 and 2 will thus be designed to avoid erosion of structures and minimize interference with natural shoreline processes.

Marine Resources

The discussion in Section 5.1.3 is also applicable to Alternative 1 which is described to be an alternative that is specifically projected to mitigate anticipated adverse impacts on water quality and the marine environment that might otherwise result from the original harbor design and scale, which is also incorporated in Alternative 2 . The reduced marina size under Alternative 1 is projected to meet water quality standards and enable greater compliance with the objective and policies addressed in this section.

Alternative 2 includes a golf course component and thus the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Hawai'i State Plans, Chapter 226, Hawai'i Revised Statutes

Section 226-4 (State goals), 5 (Objectives and policies for population, and 6 (Objective and policies for economy in general):

The discussion in Section 5.1.4 is applicable to Alternatives 1 and 2, in addition to the proposed project. These development concepts generally conform to the goals, objectives, and policies set forth in these sections because they will provide some degree of economic viability, stability, and sustainability for future generations. Kona Kai Ola will convert essentially vacant land into a mixed-use development with a distinctive marina and boating element, providing a wide range of recreational, business, and employment opportunities to the community.

Section 226-8 Objective and policies for the economy – the visitor industry:

Alternatives 1 and 2 will be consistent with the State's economic objective and policies relating to the tourism industry for the same reasons that are discussed in regard to the proposed project in Section 5.1.4. They will incorporate JDI's commitment to sustainability principles in the planning and design of the development concepts in Alternatives 1 and 2. Although the total hotel and time-share unit count is reduced to approximately 1,500 in Alternatives 1 and 2, the transient accommodations component of these alternatives will still further the State's objective and policies for increased visitor industry employment opportunities and training, foster better visitor understanding of Hawai'i's cultural values, and contribute to the synergism of this mixed-use project concept that addresses the needs of the neighboring community, as well as the visitor industry.

Section 226-11 Objectives and policies for the physical environment: land-based, shoreline and marine resources:

Alternative 1 is expected to involve less potential adverse impacts upon these environmental resources than the proposed project. Likewise, and Alternative 2 would have less adverse impact because of its reduction in the size of the marina and in the total hotel and time-share unit count. Alternative 1 carries less potential risk to water quality and related impacts upon the marine environment and anchialine pool ecosystems. Although approximately three anchialine pools are expected to be destroyed, the great majority of pools will be preserved within and outside of the proposed 400-foot shoreline setback.

The golf course component in Alternative 2 has the potential to impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the marina basin and nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools by introducing the chemicals into the pond systems.

Section 226-12 Objective and policies for the physical environment: scenic, natural beauty, and historic resources:

The discussion in Section 5.1.4 is directly applicable to Alternative 1 and describes the compliance with the objective and policies addressed.

The golf course component of Alternative 2 would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area.

Just as with the proposed project, Alternatives 1 and 2 would also be designed to blend with the natural terrain and to honor and protect the cultural history, resources, and practices of these lands.

Section 226-13 Objectives and policies for the physical environment: land, air and water quality:

As stated above, because of the reduction in both the number of slips and the size of the marina basin, with proper facilities design, public education and enforcement of harbor rules and regulations, Alternative 1 is anticipated to cause fewer long-term impacts to water quality than either the proposed project or Alternative 2. Based on the findings of the Harbor Water Quality Modeling Study, water quality resulting from a reduced marina basin size as proposed under Alternative 1 is expected to be similar to existing conditions.

As previously noted, Alternative 2 has the potential to adversely impact water quality by increasing the nutrient loading in surface runoff and groundwater by introducing pesticides, herbicides and other chemicals common in golf course development and maintenance into the marina basin and nearshore waters surrounding the project site.

Section 226-14 Objectives and policies for facility systems - general:

Alternatives 1 and 2 will conform to the objective and policies of this section on the grounds that are discussed in regard to the proposed project in Section 5.1.4. The master-planning and phasing of the project concepts under these alternatives will be coordinated with associated public and private infrastructural planning and related private and public infrastructural financing. The cost of the marina construction and project-related infrastructure is to be borne by the developer, resulting in considerable savings for the public. In addition, the projected lease revenue from these public lands will provide additional public benefits by establishing a revenue stream for capital improvements and maintenance of a range of State facilities.

Section 226-15 Objectives and policies for facility systems - solid and liquid wastes:

In addition to the developer's commitment to sustainable development design, the project will involve upgrades to the County of Hawai'i's Kealakehe Wastewater Treatment Plant to meet current needs, as well as the project's future needs. This commitment is applicable to Alternatives 1 and 2, as well as the proposed project that is discussed in Section 5.1.4.

Section 226-16 Objectives and policies for facility systems – water:

The discussion of water conservation methods and the need to secure additional potable water sources in Section 5.1.4 is also applicable to Alternative 1 and demonstrates conformity to the objective and policies for water facilities. Alternative 2 involves greater irrigation demands in regard to its golf course component and greater potable water demands for human consumption than those for Alternative 1. Alternative 2 is expected to face more serious challenges in securing adequate and reliable sources of water.

Section 229-17 Objectives and policies for facility systems – transportation:

Alternatives 1 and 2 will conform to this objective and policies because they will present water transportation opportunities, including the possible use of transit water shuttles to Kailua-Kona, as described in regard to the proposed project in Section 5.1.4.

Section 226-18 Objectives and policies for facility systems – energy:

Alternatives 1 and 2 conform to these objective and policies through the use of energy efficient design and technology and commitment to the use and production of renewable energy to serve the project's needs. Solar energy production, solar hot water heating, and the use of deep cold seawater for cooling systems are currently identified as means of saving substantial electrical energy costs for the community and the developer.

Section 226-23 Objectives and policies for socio-cultural advancement – leisure:

Alternative 1 conforms to this objective and related policies for the reasons offered in Section 5.1.4 in regard to the proposed project. Alternative 1 will be of greater conformity with the policy regarding access to significant natural and cultural resources in light of the 400-600 foot shoreline setback that has been designed for this alternative.

Although it does not propose the considerable shoreline setback that is planned for Alternative 1, Alternative 2 is consistent with this objective and related policies in incorporating opportunities for shoreline-oriented activities, such as the walking trails. In addition, the golf course component adds a more passive recreation alternative to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Section 226-25 Objectives and policies for socio-cultural advancement-culture:

The discussion in Section 5.1.4 is relevant to Alternatives 1 and 2 and demonstrate their conformity the objective and policies of this section.

Both alternatives involve the preservation and protection of cultural features that have been identified by the Cultural Impact Assessment and archaeological studies for the project area. Both provide for public shoreline access, and both will continue the policy of close consultation with the local Hawaiian community and cultural and lineal descendants in the planning of cultural resource preservation and protection.

Section 226-103 Economic priority guidelines:

Alternatives 1 and 2 conform to these guidelines for the same reasons that are set forth in Section 5.1.4. They involve private investment in a public project that will create economic diversification through a mix of marina, industrial, commercial, visitor, and cultural facilities. This presents a wide range of entrepreneurial opportunities, long-term employment opportunities, and job training opportunities.

Section 226-104 Population growth and land resources priority guidelines:

As described in Section 5.1.4, the policy support for the proposed project also extends to the similar development concepts considered in Alternatives 1 and 2. Those alternatives conform to the guidelines of this section because they involve an urban development under parameters and within geographical bounds that are supported by the County's General Plan, a preliminary form of the Kona Community Development Plan, the County's Keahole to Kailua Regional Development Plan, and the reality of being located along the primary commercial/industrial corridor between Keahole Airport and Kailua-Kona. As with the proposed project, the development concepts of Alternatives 1 and 2 are essentially alternatives for the implementation and "in-filling" of the urban expansion area in North Kona.

DHHL Hawai'i Island Plan

This 2002 plan projects DHHL's Honokōhau makai lands for commercial use. As compared to the proposed project and Alternative 2, Alternative 1 presents an expanded commercial component that provides greater compliance with the plan, while addressing certain beneficiaries' concerns about the scale of the marina originally required in the Project. Alternative 2 also conforms to the recommended commercial uses in the makai lands but to a lesser degree than Alternative 1 because of its more limited commercial component. Like the proposed project, its marina size and number of slips raise environmental issues, as more specifically discussed in Part 3, and community concerns.

County of Hawai'i General Plan

HCGP Section 4 – Environmental Quality Goals, Policies and Courses of Action:

Alternative 1 is consistent with this section. It presents a reduction in both the number of slips and the size of the marina basin that, in combination with proper facilities design, public education and enforcement of harbor rules and regulations, would result in very few long term impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions.

Alternative 2 is the least consistent with this section. In addition to the potential significant impacts of its 800 slip marina basin, its golf course component has the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides and other chemicals common in golf course use and management into the nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools beyond their current conditions by introducing such substances into the pool systems.

HCGP Section 7 – Natural Beauty Goals and Policies:

Alternative 2 conforms to some degree with this section. Its golf course component would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area, as demonstrated in other makai golf courses within the region.

HCGP Section 8 – Natural Resources and Shoreline:

Alternative 1 is most consistent with the goals and policies of this section. It would require considerably less marina excavation than the proposed project and Alternative 2 and would reduce the potential risk of long-term adverse impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions with the degree of reduction in marina basin size that is proposed under Alternative 1. This reduction is also expected to reduce potential impacts upon anchialine pools and their ecosytems, as well as shoreline and marine resources that are affected by water quality. Alternative 1 also retains the shoreline preservation and protection concepts that are proposed in and described for the Project.

HCGP Section 10 – Public Facilities Goals and Policies:

The discussion in Section 5.2.1. in relation to the proposed project is applicable to Alternatives 1 and 2. Improvements to public facilities are are integral to the Kona Kai Ola development. The provision of additional boat slips and numerous road improvements, including a makai extension of Kuakini Highway south to Kailua-Kona are incorporated into plans for the project's development. In light of these elements, Alternatives 1 and 2 are consistent with the goals and policies of this section.

HCGP Section 11 – Public Utility Goals, Policies:

As with the proposed project, Alternatives 1 and 2 are consistent with the goals and policies of this section, based on the relevant grounds set forth in Section 5.2.1. The developer is committed to design, fund, and develop environmentally sensitive and energy efficient utility systems to the extent possible, as described previously in Part 5. Its master planning provides for the coordinated development of such systems with the objective of achieving significant savings for the public. As previously-mentioned example, the project development involves the upgrading of the Kealakehe Wastewater Treatment Plant.

HCGP Section 12 – Recreation:

Alternative 1 is consistent with the goals, policies, and courses of action for North Kona in this section.

Although the number of slips is reduced under Alternative 1, the region's boating opportunities and support facilities will still be expanded. The existing marina entrance would still be utilized under this alternative. However, concerns relating to increased activity leading to increased congestion in the marina entrance area would be mitigated to a certain extent. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities and marine science center remain important components of Alternative 1.

The golf course component of Alternative 2 would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola. Alternative 2 is also considered to be consistent with this section.

HCGP Section 13 and 13.2 – Transportation:

The reduced marina component under Alternative 1 will still provide transportation opportunities and provide for possible use of transit water shuttles to Kailua-Kona, although to a lesser degree than under the proposed project and Alternative 2 . However, in each scenario, internal people-movers are planned, and numerous roadway improvements are planned for coordination with public agencies, including but not limited to the construction of the Kuakini Highway extension between Honokōhau and Kailua-Kona. Accordingly, both Alternatives 1 and 2 are consistent with the goals, policies, and courses of action for North Kona under these sections of the General Plan.

HCGP Section 14.3 – Commercial Development:

For the reasons presented in the discussion under Section 226-104 of the State Plan, the planned commercial component under Alternatives 1 and 2 are consistent with this section.

HCGP Section 14.8 – Open Space:

Alternatives 1 and 2 are consistent with the goals and policies of this section. Alternative 1 provides a considerable (400-600 foot) shoreline setback along the entire ocean frontage of the project site as a means of protecting the area's scenic and open space resources, as well as natural and cultural resources. Although it does not incorporate the shoreline setback planned in Alternative 1, Alternative 2 provides a golf course component would contribute to the amount of open space that is currently proposed and allow additional view corridors to be created.

Community Development Plans

Community development plans are being formulated for different regions in the County in order to supplement the County's General Plan. The Kona Kai Ola project is located in the Kona Community Development Plan (CDP) area. Maps associated with the preliminary work phases

of the Kona CDP include the Kona Kai Ola project site within the "Preferred Urban Growth" boundary of the North Kona district. The Kona CDP process is guided by a Steering Committee composed of a broad cross-section of the community. The Steering Committee will eventually complete its work and recommend the CDP's adoption.

After the DEIS was published, the Kona CDP has progressed to the development of plans for the major urban growth corridor north of Kailua-Kona. The Kona CDP has produced a draft plan showing a transit oriented development that includes a midlevel public transit corridor along the mauka residential elevation, and a makai transit corridor that runs along a proposed new frontage road just makai and parallel to Queen Kaahumanu Highway. The development plan for Alternative 1 includes the Kuakini Highway as part of this proposed frontage road and transit line from Kailua Kona to the Kealakehe area, along with a transit stop at Kona Kai Ola. The Alternative 1 plan also includes a road that could be extended to be part of the proposed frontage road should it be approved and implemented. In addition, the Kona CDP has continued to emphasize the principles of smart growth planning with mixed use urban areas where people can live, work, play and learn in the same region. Kona Kai Ola has been specifically designed to be consistent with this policy in order to provide a stable employment base close to where people live in the mauka residential areas already planned for DHHL and HHFDC lands.

It should be noted that currently and over the years, the 1990 Keāhole to Kailua Development Plan (K-to-K Plan) guides land use actions by the public and private sectors. It is intended to carry out the General Plan goals and policies related to the development of the portion of North Kona area, including the Kona Kai Ola site. The "Preferred Growth Plan" of the Keāhole to Kailua Development Plan identifies the project site as a new regional urban center to include commercial, civic, and financial business related uses, an expanded "Harbor Complex," a shoreline road, and a shoreline park. The proposed project and the development concepts in Alternatives 1 and 2 are therefore consistent with the recommendations in the Keāhole to Kailua Development Plan.

Hawai'i County Zoning

As shown on Figure AA, the project site is zoned "Open". Under Section 25-5-160 of the Hawai'i County Code, "The O (Open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands)".

Some of the proposed uses at Kona Kai Ola are permitted uses in the Open zone such as:

- Heiau, historical areas, structures, and monuments;
- Natural features, phenomena, and vistas as tourist attractions;
- Private recreational uses involving no aboveground structure except dressing rooms and comfort stations;

- Public parks;
- Public uses and structures, as permitted under Section 25-4-11.

In addition to those uses permitted outright, the following uses are permitted after issuance of a use permit:

- Yacht harbors and boating facilities; provided that the use, in its entirety, is compatible with the stated purpose of the O district.
- Uses considered directly accessory to the uses permitted in this section shall also be permitted in the O district.

The proposed time-share and hotel units and commercial uses would not be consistent with the zoning designation of "Open". Project implementation therefore requires rezoning of portions of the project to the appropriate zoning category or use permits for certain uses.

Special Management Area

As shown in Figure AB, the entire project area up to the highway is within the coastal zone management zone known as the Special Management Area ("SMA"). At the County level, implementation of the CZM Program is through the review and administering of the SMA permit regulations. Kona Kai Ola complies with and implements the objectives and policies of the Coastal Zone Management (CZM) Program, and a full discussion is provided in Section 5.1.3. The development concepts in the proposed project and Alternatives 1 and 2 will be subject to applicable SMA rules and regulations.

FAX TRANSMITTAL SHEET

ENVIRONMENTAL CENTER
University of Hawaii
2500 Dole Street, Krauss Annex 19, Honolulu, HI 96822
Telephone: (808) 956-7361 Fax: (808) 956-3980

DATE: 2/6/2007

FROM: Peter Rappa
Environmental Review Coordinator

TO: Dayan Vithanage, Oceanit (531-3177)

Linda Chinn, Hawaiian Homelands (586-3857)

Scott Condra, Jacoby Development (770-206-9150)

OEQC (586-4186)

SUBJECT: **REVIEW OF DRAFT EIS**
KONA KAI OLA
NORTH KONA, HAWAII

We apologize for the error on the subject title of our fax transmittal sheet.

No. of Pages: including cover sheet: _____

FAX TRANSMITTAL SHEET

ENVIRONMENTAL CENTER
University of Hawaii
2500 Dole Street, Krauss Annex 19, Honolulu, HI 96822
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Scott Condra, Jacoby Development (770-206-9150)

OEQC (586-4186)

SUBJECT: **REVIEW OF DRAFT EIS**
LA`AU POINT
WEST MOLOKAI, HAWAII

No. of Pages: including cover sheet: 7

UNIVERSITY OF HAWAI'I AT MANOA
Environmental Center

February 6, 2007
RE:0759

Mr. Dayan Vitanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Vitanage:

Draft Environmental Impact Statement
Kona Kai Ola
Kealakehe, North Kona, Hawaii

Jacoby Development, Inc. (JDI) has been selected by the State to develop Kona Kai Ola on approximately 530 acres in Kealakehe, North Kona. The vision for Kona Kai Ola is an environmentally sustainable marina-focused development featuring an 800-slip marina, and mix of uses including visitor and resident-serving commercial enterprises, 700 hotel units, 1,803 time-share units, marina services, open space and community-benefiting facilities including public infrastructure improvements in a pedestrian friendly setting surrounding the marina and seawater lagoons. Although the agreement between the State and JDI prohibits the development of residences that are marketed or intended for use as primary or permanent residences, JDI is planning to construct worker housing on a nearby site that will be leased at below market rents.

This review was conducted with the assistance of Richard Brock, Sea Grant College Program; Jene Michaud, Geology Department/UH Hilo; Tracy Wiegner, Marine Science/UH Hilo; and Jason Turner, UH Hilo.

General Comments

Our major concern with this draft environmental impact statement (DEIS) is with the treatment of the anchialine ponds (p. 47-51) located in the proposed project site. Not surprisingly, the opinions of our reviewers varies over what to do with the ponds, but there was general agreement that at least some of the ponds should be protected. Given the scarcity of anchialine ponds worldwide and their unusual biota, they are a unique resource that needs to be protected from development. Hawaii is the only state in the United States with natural anchialine ponds. The Big Island has by far the largest number of anchialine ponds and of the estimated 520 ponds on the island, more than 70% occurred along a 53 km continuous section of the Kona coast. These anchialine ponds have the highest level of biodiversity as compared

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to any other Indo-Pacific region. Currently, anchialine ponds are not protected by the state of Hawaii for preservation or water quality. If these ponds are to be maintained and preserved, establishment of a management program is essential and water quality standards must be established. Without development of an anchialine protection/ management program, anchialine ponds will most likely disappear within the next two decades.

One reviewer felt the mitigation measures proposed were not enough. The proposed project plans to excavate ponds for the new harbor and the ones not excavated will revert to full salinity. Two organisms found in the ponds on the property (*Metabetaeus lohena* and *Megalagrion xanthomelas*) are candidates for the endangered species Federal Registry. The habitats for these organisms, while presently degraded, could be restored as has been done with anchialine ponds at the Four Seasons Hulalai Resort. Destruction of the ponds will only eliminate this precious and endangered coastal resource in Hawaii. The proposed solution to dealing with these organisms was to move them to other less degraded ponds. This solution does not make ecological sense. If these organisms are to be protected, their habitat needs to be protected and restored, not destroyed. Additionally, all the organisms living in the ponds will be ultimately affected when the ponds are excavated and/or filled in with seawater.

If protecting all the ponds in the area of the proposed project is not feasible we suggest the developer and the state should concentrate their efforts to save those that can be. There are two groups of anchialine pools discussed here in the DEIS. The north complex is essentially under the control of the National Park and probably won't be impacted by the proposed project, however, the south complex of 22 ponds will be impacted. Of the 22 present, about 7 appear to have visually obvious native species. Since we have "lost" more than 95% of the anchialine pool habitat on the West Hawaii coast to alien fish in the last 35+ years, loss of these 7 pools (because they will be cut off from the natural groundwater flow and become full strength salinity pools), should be avoided. This cutting off of the natural flow is really no different from filling them, something that is not permitted under law.

We also feel that there was not complete assurance that the anchialine pools north of the existing harbor will be unaffected. The existing harbor, the new marina, and the new lagoon are all places where the water table is (or will be) effectively lowered to sea level. This changes the direction and magnitude of the hydraulic gradient that drives groundwater flow. This can potentially shift the direction of groundwater flow so that it no longer flows straight towards the coast, but angles very slightly toward the harbor. (Also, the magnitude of the hydraulic gradient would be altered, which would increase the groundwater flow rate.) While any such impacts on groundwater would be greatest near the harbor and marina, there is a ripple effect that that extends up gradient (uphill, but also laterally, depending on how the water table slopes). Any such impacts to groundwater due to the proposed development would be most pronounced south of the existing harbor. North of the harbor, it is difficult to predict if there will be noticeable impacts. In view of the extreme sensitivity of the anchialine pools in Kaloko-Honokohau Park, however, one cannot rule out the possibility of subtle impacts to groundwater within the Park. This is due, fundamentally, to the fact that the alternations to the

water table by the new harbor and lagoon will impact groundwater flow in all directions, not just the down gradient direction.

It is hard to believe that there is "no realistic mechanism" for re-injecting fresh water into the salinized anchialine pools in order to preserve their ecosystems. If 75 mgd of deep seawater can be pumped into a lagoon then small amounts of fresh water can be pumped into the affected ponds. Preserving the pools through freshwater injection would be consistent with the environmental goals of the proposed project, would be more effective than many of the proposed remediation actions, and would be an excellent educational opportunity. If the cost of the freshwater injection is a barrier to preserving the ponds, then the DEIS should acknowledge this.

Finally, one reviewer felt that the anchialine ponds should be restored and preserved not destroyed. Anchialine ponds with native fauna, no matter how impacted, should be restored and preserved. We have seen too many ponds destroyed during past development activities and now know them to be one of the rarest native habitats left in the Hawaiian islands.

In section 3.9.3.2, the DEIS states "The change in the local groundwater flow pattern in the vicinity of the proposed marine will impact the anchialine ponds that are located between the proposed marina and the shoreline south of the harbor entrance. The salinity of the anchialine ponds will increase due to reduction of brackish groundwater. Some ponds will be evacuated to make the new harbor basin. Those ponds that are not evacuated will revert to full salinity, causing the loss of their habitat and associated aquatic flora and fauna."

Although these ponds were deemed "enriched by nutrients" and "degraded", destroying 22 anchialine ponds during any development in unacceptable. Mitigation proposed by the DEIS would be to "move as much of the existing population of *Metabetaeus lohena* to possible newly evacuated ponds that may be developed off site". This approach is suspect. The developer's view that new anchialine ponds can be created that match the existing water quality and ecological subtleties of a natural anchialine pond may not be well founded.

Another general comment deals with what is being proposed on this site. We find it odd that the developers would propose to build three hotels in the vicinity of a sewage treatment plant. It would seem to us that visitors would find this an unattractive location to stay in Hawaii. There have been complaints in the past from residents living near the Hawaii Kai Sewage Treatment facility about odor. Perhaps the developers will be able to mask the sewage treatment facility using landscaping.

In addition to our general comment, we had the following specific comments.

Map Orientation

The orientation on the figures containing maps and graphic representation of the proposed project are not consistent throughout the document. Figures D, E, and F are oriented differently then the following figures making it difficult to envision the proposed project. We suggest that all figures be oriented in the same direction throughout the DEIS.

Ground Water (p. 36)

It was surprising that the nutrient data collected for this DEIS was not compared to State Department of Health (DOH) water quality standards. These standards are used to evaluate whether a particular location is in or out of compliance with state and federal regulations. From the DEIS, it is apparent that the authors were aware of the standards because they used them to select which parameters water samples should be analyzed for. Yet, they did not place their results in context of the standards.

Here is an example of how these standards can be used effectively to assess a site and make recommendations. Groundwater below the sewage treatment plant at Honokohau has concentrations that are 590 mg/l (note, in the report they report them in µg/l units to make them look lower). The DOH standards for streams, which at baseflow are comprised solely of groundwater, cannot have total nitrogen (TN) concentrations exceeding 250 mg/l. Data from the Honokohau groundwater well suggests that there are already serious environmental problems in this area prior to the proposed development. The proposed development will only worsen the conditions, as fertilization from landscaping, increased boating, and coastal pond exhibits will increase the amount of nutrients entering the coastal waters in this area. Additionally, phosphate concentrations were reported to be 'high', but no values were documented. Hawaiian waters are typically depleted in phosphate because of the high iron content of the parent rock and soils. If phosphate is being detected in the groundwater already and is 'high' according the authors, there is reason for concern. If both nitrogen and phosphorus are high, nutrient limitation of phytoplankton and macroalgae in the coastal waters may be relieved. These environmental conditions may possibly result in algal blooms like those documented in Maui that have resulted in the loss of millions of dollars in tourist revenue and money from the county to clean up the beaches, and ultimately a loss a precious ecological resource, the coral reefs.

In the DEIS, the authors state that measures will be taken to mitigate impacts of the projects on coastal water quality. Yet no mitigation activities were listed and the effects of the efforts on water quality were not stated. Additionally, the DEIS did not state who would be responsible and ultimately pay for the remediation.

Additionally, in the groundwater sampled, phenol was detected. Phenol is a known carcinogen, which when handled in the laboratory must be used under a hood with gloves,

goggles, and a coat. Work should be done to trace the source of this pollutant in order to remediate this problem.

Nearshore Environment and Coastal Waters (p. 41)

At Honokohau harbor, there is a large freshwater plume in the nearshore area from the groundwater that discharges at the coast. This groundwater, as documented in the DEIS, already has high nutrient concentrations. The present flow of water out of the harbor is 3 to 4 mgd of water per day, with an average salinity of 5 ppt. The proposed project will include marine features (anchialine ponds converted to marine ponds) that will be supplied with seawater from 100 to 300 ft below the surface. The resulting discharge from the harbor will be 79 mgd, with a predicted salinity of 34 ppt. First, the dramatic change in flow out of the harbor (20 times higher) could affect the organisms living there as they are adapted for a low flow environment. Additionally, the salinity will be seven times higher than present conditions. Organisms living in these environments are adapted for particular salinities. These dramatic changes in salinity may cause the brackish biological community present to change to a marine community.

The water that will be pumped up from depth for these new marine features does contain nutrients (not at low, levels like stated in the DEIS- they are comparable to values measured in the Hudson River in New York). The water flowing out of the new proposed marina will not only have the nutrients currently present in the water, but nutrients from this deep water and the flow rate of water will be higher. The consequence is that there will be more nutrients flowing out of the harbor at a higher rate (higher flux). This could have a great impact on the AA waters outside the harbor which are used to oligotrophic conditions. Changes in the biotic community composition, from bacteria to fish, may occur as a result of this higher nutrient flux to the coastal waters.

Anticipated Impacts and Recommended Mitigation (p. 52-53)

In section 3.9.4.2 it is mentioned in the second paragraph at the top of the page that there will be a marine science center. We are wondering who will staff the center and who will be responsible for funding and maintaining it?

Marine Mammals and Sea Turtles (p. 53-57)

Activities causing significant underwater sound production should be assessed. Any blasting or pile driving activities (as proposed by the DEIS) should involve certified biological observers to survey the area for sea turtle and marine mammal activity (prior to and during blasting) and to assess the impact on fish populations afterward (i.e. subsequent fish kill).

In section 3.9.5.2 (p. 57) the authors mention that "To mitigate impacts related to noise generation by construction activities, such as blasting and pile driving, a program to monitor

sounds levels and the presence of marine mammals and sea turtles will be implemented." We strongly recommend that this program be implemented by trained observers who have the authority to halt blasting activities when sea turtle or marine mammals come into close proximity with construction activities. Further, a team should be on site to evaluate the lethal (if any) impacts upon fish communities. Typically when blasts occur close to fish population, swim bladders become compromised, and fish become disoriented, stunned, or killed. Any subsequent impacts, whether regarding sea turtles, marine mammals, or fish.

We also note in this section that the scientific names for monk seals and sea turtles are omitted on pages 54 and 55 while all other species are cited by their scientific names.

Probable Adverse Environmental Impacts Which Cannot be Avoided (p. 159)

The destruction or salinization of anchialine pools containing candidate endangered species is a notable environmental impact. Section 9 needs to acknowledge that some of the ponds that will be destroyed or salinized contain candidate endangered species. It is, of course, worth noting that the habitat is appears to be degrading anyway.

Thank you for the opportunity to review this Draft EIS.

Sincerely,

Peter Rappa

Peter Rappa
Environmental Review Coordinator

cc: OEQC
Scott Condra, Jacoby Development Inc.
Linda Chinn, Department of Hawaiian Homelands
James Moncur
Jene Michaud
Dick Brock
Jason Turner
Tracy Wiegner

oceanit
innovation through engineering & scientific excellence

July 23, 2007

Peter Rappa
Environmental Review Coordinator
Environmental Center
University of Hawaii
2500 Dole Street, Krauss Annex 19
Honolulu, Hawai'i 96822

Dear Mr. Rappa:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Received on February 5, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement. Our responses to your comments are addressed below:

General Comments on Anchialine Ponds:

In response to DEIS comments and to further study the pools south of the entrance channel of Honokohau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. In addition, further comment on the groundwater hydrology effects on anchialine pools was prepared by Waimea Water. The reports are summarized in Sections 3.9.2.1 and 3.9.2.2.

The DEIS identified 22 anchialine pools. Further studies determined that three of these pools are actually part of an estuary complex with direct connection to the ocean. Of the 19 anchialine pools, six were considered high tide pools (exposed only at medium or high tide), seven were considered pool complexes (individual pools at low tide and interconnected at high tide), and six were single isolated pools. Of the 19 anchialine pools, three pools with a combined surface area of 20m2 would be eliminated due to the harbor construction.

While the second survey confirmed the presence of direct human use and disturbance, such as trash receptacles and toilet facilities, it found that the greatest degradation to the majority of the anchialine and estuarine resources

was due to the presence of alien fish, including topminnows and tilapia, and introduced plants, predominantly pickelweed and mangrove.

The additional studies indicate that the remaining pools may not increase in salinity to levels unhealthy for anchialine pool fauna. Waimea Water Services found that harbor construction would cut off some of the fresher ground-water flow. However, predicting the extent of change in flow is difficult if not impossible even with numerous boreholes and intense sampling. .The tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Hence, the additional studies found that changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, the developer is committed to practicing good stewardship over the pools to be preserved and eliminating or reducing alien species to the extent practicable. The developer recognizes it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Mitigation measures to facilitate the long term health of the remaining anchialine pools will be based on environmental monitoring, which is vital as an early warning system to detect potential environmental degradation. A series of quantitative baseline analysis of the physio-chemical and biological components within the project site will provide a standard by which the effects of the development, anthropogenic activities, and natural phenomena on these environments can be measured.

The framework for the mitigation plan will include three measures intended to meet these objectives, including bioretention, salinity adjustment and possible new pools. These measures are described in detail in Section 3.9.2, Anchialine Pools, which is included as Attachment 1 of this letter.

General Comment on Building Hotels in the Vicinity of a Sewage Treatment Plant

The siting of proposed uses will include adequate buffer between the Kealakehe Waste Water Treatment Plant (WWTP) and proposed hotel and time-share facilities. Landscaping and building orientation will provide visual buffers. Further, the developer will be working with the County of Hawai‘i to upgrade the existing wastewater treatment plant to tertiary treatment level. Improvement of the Kealakeha WWTP will enable facility upgrades that will mitigate odor impacts.

Specific Comments

Map orientation - The figures to which you refer are oriented to enable the maximum viewing framework of a site-specific area. Further, a north arrow and a graphic scale to relate site features to the map is provided in each map

Ground Water - We disagree with your comments on comparing the groundwater nutrient concentrations with Department of Health Water (DOH) Quality Standards. DOH does not have water quality standards for groundwater. Please refer to Hawai'i Administrative Rules, Title 11, Department of Health, Chapter 54, Water quality Standards.

Regarding your comment that "groundwater below the sewage treatment plant at Honokohau has concentrations that are 590 mg/l," we cannot respond accurately to this comment because you are not referring to a water quality parameter. We assume that you are referring to Total Nitrogen concentrations. The total nitrogen concentrations we have reported for the groundwater are 0.59 mg/l or 590 micrograms per liter (µg/l). The total nitrogen concentration in the treated wastewater from the Kealakehe WWTP is 5.90 mg/l. The value of 590 mg/l for groundwater is inaccurate if you are referring to total nitrogen.

We also disagree with your statement that "the DOH standards for streams, which at base flow are comprised solely of groundwater, cannot have total nitrogen (TN) concentrations exceeding 250 mg/l. Water quality standards for streams is given in Section 11-54-5.2 (b) of Water Quality Standards. The geometric mean of total nitrogen concentration should not exceed 250 ug N/l during the wet season and 180 ug N/l for the dry season. (µg is defined in the standards as 0.000001 grams). Your comment on the DOH stream water quality standard for total nitrogen is totally inaccurate. We cannot respond meaningfully to the rest of the paragraph referring to total nitrogen concentration because of the inaccuracy.

Total phosphorus concentrations measured are given in Appendix G-1 of the EIS. Concentrations range from 0.07 mg/l at the harbor spring close to the WWTP to 2.71 mg/l in well #2 upstream of the WWTP. Total phosphorus concentration in the wastewater treatment plant effluent is 3.7 mg/l. Currently, water quality in the harbor is maintained by a two layer circulation that flushes the harbor in about 12 hours. A three dimensional water quality model was calibrated and operated to determine the impact of the proposed development on the harbor and nearshore water quality. Results indicated that a 45-acre 800 slip marina will impact harbor water negatively by altering thee existing two layer flow. As an alternative a 25-acre 400-slip marina was tested in the model. Results showed that with the smaller marina the two layer circulation will be maintained and there will be no negative impacts on nearshore benthic environment.

You note that, in the groundwater sampled, phenol was detected. During an earlier study conducted by the United States Geological Surveys, phenol was

detected at 4-10 µg/l in one of the National Park Service wells. Oceanit re-sampled the two on-site wells (2 and 6), the Quarry well east of the site and the National Historic Park well at 80 feet elevation, a control well (O'oma) located north of the project site to test for priority pollutants. Results of the analysis showed all chemicals below detectable levels with the exception of Bis (2-Ethylhexyl) Pthalate in the quarry well at 14 ug/l just above detection limit. Section 3.8.1.3, Groundwater Nutrients and Pollutants, was revised to include this information, as follows:

> Oceanit re-sampled the two on-site wells (2 and 6), the Quarry well east of the site, and an additional control well (O'oma) located just north of both the project site and the Kaloko-Honokohau National Historical Park well at an elevation of about 80 feet. These samples were all obtained during low tide to assure maximum concentration of groundwater constituents and were analyzed at a separate laboratory using different analyses techniques including EPA 8270C (semi-volatile), 8081 (pesticides), and EPA 8260 (volatile). Results of the analyses showed all chemicals below detectable levels with the exception of the detection of a low concentration of Bis(2-Ethylhexyl) Phthalate (a component of PVC pipes and glo-sticks among other uses) in the Quarry well at 14 µg/L, just above the detection level.

Comments on the Nearshore Environment and Coastal waters.

You note that "the dramatic change in flow out of the harbor (20 times greater) could affect the organisms living there as they are adapted for a low flow environment." This is an inaccurate portrayal of the amount of water flowing out of the harbor. Groundwater discharge from the land to the ocean is estimated to be about 3 to 4 mgd per mile of coastline. The area is relatively porous and there is no formation of a fresh water lens. Because of this, ocean tides drive a large scale vertical circulation as proposed by Oki[1]. According to Oki's hypothesis, salt water moves landwards underneath the fresh water and mixes with upper fresh water layers. This mixed layer then circulates back into the ocean. The salinity of groundwater entering the harbor is about 22 ppt. This supports Oki's Hypothesis. Studies conducted by Galleger, and Oceanic institute has shown that the existing harbor receives an inflow of 25 to 30 mgd of brackish water. The increase therefore will be 3 times and not 20 times as indicated in the comment.

In response to DEIS comments regarding water quality, a three dimensional water quality model was calibrated and run to determine the impacts of development on the water quality of the harbor and the nearshore area. The model simulated different scenarios and determined the changes to the harbor and nearshore environment.

[1] Oki, D.S. (Oki, D.S., 1999). *Geohydrology and numerical simulation of the ground-water flow system of Kona, Island of Hawai'i*. Prepared for the U. S. Geological Survey, Water-Resources Investigation Report 99-4073, p. 70. 1999.

The model study revealed that construction of the 45-acre 800-slip marina as described in the Conceptual Master Plan increases the flushing time of the harbor significantly. It also modifies the two layer flow system that currently maintains good water quality in the harbor. As an alternative a smaller 25-acre 400-slip marina was tested in the model. The model results showed that reducing the marina size is an important factor in maintaining water quality independent of the groundwater flow increase.

Overall results of the study showed that for the 400-slip marina with brackish water inflow in the order of 30 million gallons per day or greater, the water quality conditions at both marinas, the harbor entrance and Honokohau Bay will be very similar to the existing conditions, provided that ammonia-nitrogen load from the exhibit water is reduced. All attempts will be made to reduce the ammonia – nitrogen concentration in the exhibit effluent before reaching the harbor. The model also showed that nutrients entering the harbor with groundwater of runoff is trapped in the upper less dense layer and does not impact benthic substrate.

Attachment 2 contains Section 3.9.1, Nearshore Environment and Coastal Waters, which has been revised to summarize these findings.

Anticipated Impacts and Recommended Measures (p. 52-53)

Staffing and other operational matters related to the marine science center will be determined as the project progresses.

Marine Mammals and Sea Turtles

In response to DEIS comments, Marine Acoustics, Inc., (MAI) was retained to conduct three studies, as follows:

- Description of Marine Mammal and Sea Turtles
- Ambient Noise Measurements and Estimation Study
- Acoustic Analysis of Potential Impacts

These studies have significantly increased the EIS discussion on the affected marine environment and noise impacts that may be generated by the proposed project. Information sources are accurately represented, and modeling techniques provide a reliable indication of possible project-related impacts. The model results showed that the noise levels in the developed scenario did not exceed the level A impacts to marine mammals. Level B impacts to marine mammals and sea turtles generally occur within a range of ten meters. Although noise impacts may occur during blasting the new marina, these impacts could be greatly minimized with effective construction techniques.

Your comments are addressed in these studies and we are including Section 3.9.4, Marine Mammals and Sea Turtles, as Attachment 3 in this letter.

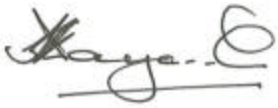
Probable Adverse Environmental Impacts Which Cannot Be Avoided

The EIS has been revised as follows:

> Construction of the new marina will cause the removal of three anchialine pools, as well as possibly change the salinity in the remaining anchialine pools makai of the new harbor. Monitoring, management and mitigation measures to protect the health of these anchialine pool ecosystems is described in Section 3.9.2.2.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate in your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed of electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

The conditions with the project constructed were found to be phosphorous limited. Several simulations were performed including and excluding the inflow from the marine exhibits which provides an additional nitrogen load and also varying the location of this inflow. It was found that the inflow from the marine exhibits can have a beneficial effect on flushing, especially when positioned within the existing harbor basin. However, its effect is significantly less than the effect due to the brackish groundwater inflow. When the exhibit inflow is excluded or positioned at the east end of the new marina, its effect is small in terms of flushing due to its high salinity. From a water quality perspective, since the loads from the exhibit inflow consist primarily of nitrogen, it does not cause increased algae growth. However, this exhibit inflow does raise the concentrations of ammonia and nitrate in the system.

Simulation results indicate that under the conditions when the post-expansion system receives an additional brackish inflow into the new 25-acre marina on the order of 30 mgd or more, water quality within the harbor system and in the surrounding waters remained similar to existing conditions. These conditions are expected to occur based on the findings reported by Waimea Water Services (2007), which states that the proposed marina would exhibit the same or similar flushing action as the existing marina.

An additional mitigation measure proposed by Waimea Water Services (2007), if sufficient inflow is not intercepted, consists of drilling holes in the bottom of the new marina to enhance this inflow and facilitate flushing within the proposed system.

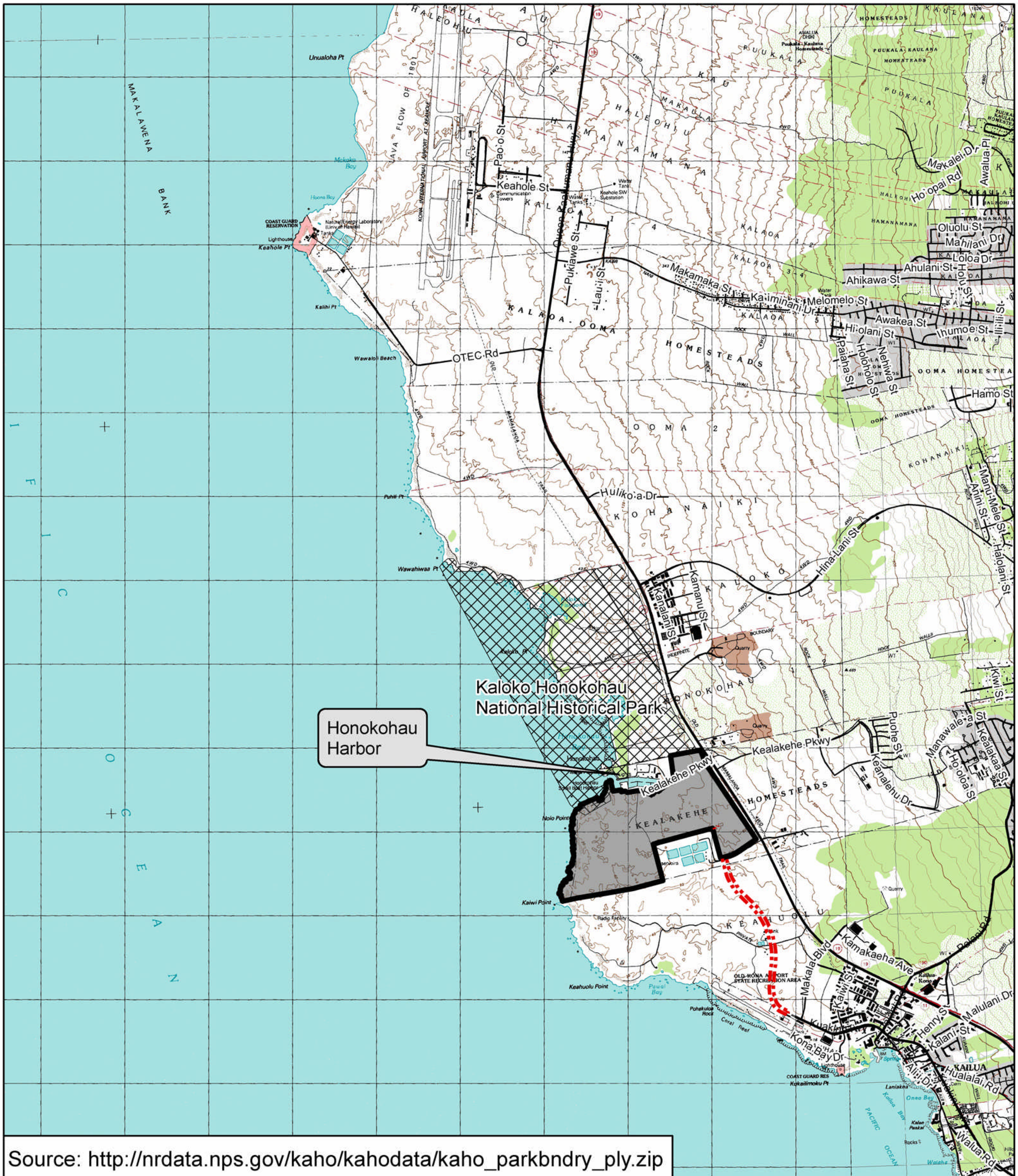
~~3.9.3~~3.9.2 Anchialine ~~Ponds~~ Pools

Two studies on anchialine pools were conducted in this EIS process. The anchialine ~~ponds~~ pools water quality studies and ~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute and is~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute in October 2006 and are included as Appendix ~~G~~H-1. That survey included pools located both north and south of Honokōhau Harbor. In response to DEIS comments and to further study the pools south of entrance channel of Honokōhau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. The report is contained in Appendix H-2.

~~3.9.3.1~~3.9.2.1 Existing Conditions

Anchialine ~~ponds~~ pools exist in inland lava depressions near the ocean. Two anchialine ~~pond~~ pool complexes are located immediately to the north and south of the Honokōhau Harbor entrance channel. The complex to the north is located wholly within the designated boundaries of the Kaloko-Honokōhau National Historical Park as shown in Figure Q~~O~~. Many of the ~~ponds~~ pools in the southern complex are within the park administrative boundary as well. ~~Ponds~~ Pools in the northern complex show little evidence of anthropogenic impacts. Many contain typical vegetation and crustacean species in high abundance.

Figure R locates anchialine pools near the harbor entrance and pools~~Ponds~~ in the southern complex are depicted in Figure S.



Source: http://nrdata.nps.gov/kaho/kahodata/kaho_parkbndry_ply.zip

Figure Q: National Historical Park Service Legislative Boundary Map

Legend

- Project Site
- Proposed Parkway
- National Park Boundary

N W E S

0 2,500 5,000 Feet

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Source: Oceanic Institute

Figure R: Anchialine Pool Locations

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0 2,000 4,000 Feet

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Source: Aquatic Resources Management And Design

Figure S: Anchialine Pool Locations in Southern Complex

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The 2006 study identified 22 pools in the southern complex. The 2007 study found that three of the 22 pools are part of an estuary complex with direct connection to the ocean. While there were several signs of direct human use and disturbance, such as trash receptacles and toilet facilities, the greatest degradation to the majority of the anchialine and estuarine resources was due to the presence of alien fish, including topminnows and tilapia, and introduced plants, predominantly pickleweed and mangrove. ~~are moderately to heavily impacted, with many containing exotic fish that exclude the anchialine crustaceans. The ponds also show evidence of human impact, including discarded bottles, cans, wrappers, diapers, toilet paper, etc. Water quality conditions within the ponds generally reflect the conditions of the underlying groundwater.~~

~~Figure P locates anchialine ponds near the harbor entrance. The study conducted as a part of this EIS show that the anchialine ponds south of the harbor entrance are moderately to heavily impacted by human activities and introduced fish populations. The study found that the nitrogen phosphorus concentrations in these ponds are significantly higher compared to the ponds north of the harbor entrance. The sources of these additional nutrients are not known. Continuous influx of nutrients will eventually degrade the water quality to levels that could alter the pond ecology.~~

Biota surveys in the two pond systems clearly indicate that counts of typical pond denizens show a remarkable difference between the northern and southern ~~ponds~~ pools. In the northern ~~ponds~~ pools the number of *Halocaridina rubra* ranged from a low of 20–25 to too numerous to count. The biota rich pond bottoms appeared red due to the *Halocaridina rubra* numbers. The only other species visible was the predatory shrimp *Metabetaeus lohena*. In contrast, only four out of the 22 ~~ponds~~ pools examined in the southern pond complex showed a decreased presence of *Halocaridina rubra* (6 to 200) individuals in the pond, and three ~~ponds~~ pools contained *Metabetaeus lohena*. Eight of the ~~ponds~~ pools contained numbers of introduced minnows which is an apparent predator of *Halocaridina rubra* and *Metabetaeus lohena*.

The 2007 study found three of the pools identified in the 2006 study were part of an estuary complex with direct connection to the ocean, and that the southern complex contained 19 anchialine pools. The study further found that a majority of the southern pools are degraded biologically and physically, primarily due to the effects of introduced fish and plant species. Six pools are currently devoid of alien fish, but they face a high level of threat due to the proximity of pools that have these species. Of the 19 anchialine pools, six were considered high tide pools (exposed only at medium or high tide), seven were considered pool complexes (individual pools at low tide and interconnected at high tide), and six were single isolated pools. Of the 19 anchialine pools, three pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction.

The DEIS presented information stating that harbor construction would cause an increase in salinity in the anchialine pools makai of the proposed marina basin to become equivalent to the ocean at 35 ppt. and that the anchialine biology would then perish. There is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and final determination of anchialine salinity following the harbor construction. The assessment that all anchialine pools will be barren with the construction of the harbor may be premature. *Halocaridina rubra* (opae ula) are routinely drawn from high salinity wells at 30-32 ppt.

Within the 19 pools, native and non-native fauna included 14 species comprised of 5 fish, 2 mollusca, and 6 crustacea. Algae within the pools primarily consisted of a mixed assemblage of diatoms and cyanobacteria, with several pools dominated by matted filamentous *Cladophora*, sp. The darker cave/overhang pools and high tide pools had epilithic *Hildenbrandia* sp. covering the rock substrate. Riparian vegetation was dominated by introduced species consisting of Pickleweed (*Batis maritima*), Mangrove (*Rhyzophora mangle*), and Christmasberry (*Shinus terebenthifolius*). Only two species of native plants Akulikuli (*Sesuvium portulacastrum*) and Makaloa (*Cyperus laevigatus*) existed near the pools and comprised only few small patches and a single tuft (respectively).

Most of the hypogeal anchialine shrimp have adapted to the presence of minnows by foraging in the pools at night. During daylight hours, only the adult shrimp appear to coexist at low population levels with the smaller *P. reticulata*, but the larger *G. affinis* and *Oreochromis* prevent the daytime appearance of hypogeal shrimp due to predation.

The average salinity in Kealakehe pools is relatively high at 13.5 ppt compared to most other pools along the West Hawai'i coastline, having an average of approximately 7 ppt. This high salinity appears to be characteristic of this region, and is similar to the average of most pools within the adjacent ahupua'a of Honokōhau and Kaloko. The levels of nitrate-nitrogen levels are relatively high compared to other undeveloped areas, but fall in the range of some developed landscapes. Other water quality parameters, including pH and temperature, fall into normal ranges for anchialine pools.

This relatively high salinity is the likely reason aquatic insects were not found in any pools at Kealakehe. Though the rare damselfly *Megalagrion xanthomelas* has been observed and collected from Kaloko, a statewide assessment of its range has not found it to occur in water with salinity greater than 3ppt. However, there has been an unsubstantiated occurrence of the nymph in a pool of up to 8ppt (Polhemus, 1995).

Another species of concern is the hypogeal decapod shrimp *Metabetaeus lohena.* These shrimp are sometimes predatory on *H. rubra* but are more often opportunistic omnivores similar to *H. rubra.* Predusk and nocturnal sampling at high tide is clearly the optimal method to determine habitat range and population densities for this species. These shrimp were found in 13 of the 19 pools, 7 of which had *M. lohena* only at night. The occurrences of *H. rubra* were found in 16 of 19 sampled pools, 8 of which had 'Ōpae'ula observed only at night. Consequently, despite having numerous degraded anchialine resources at Kealakehe, there are opportunities for many of the pools to be restored and enhanced to a level where large populations of anchialine shrimp and other native species may return to inhabit the pools as they likely have in the past.

~~As mentioned earlier, the southern ponds also had elevated concentrations of nutrients indicating water quality degradation. These factors indicate that if no restoration or maintenance activities are instituted to reserve these ponds, these ecosystems will degrade beyond recovery.~~

~~3.9.3.2~~3.9.2.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigations

The anchialine ~~ponds~~ pools that are located north of the existing harbor are not likely to be impacted because no development activities are proposed north of the existing harbor. It is highly unlikely that existing groundwater flows to the Kaloko-Honokōhau pond system to the north of the existing harbor will be impacted by the proposed marina to the south.

Of the 19 pools in the southern complex, three would be eliminated due to harbor construction. Regarding the remaining pools, the DEIS noted that t~~T~~he change in the local groundwater flow pattern in the vicinity of the proposed marina ~~will~~ would impact the anchialine ~~ponds~~ pools that are located between the proposed marina and the shoreline south of the harbor entrance. The 2006 study (Appendix H-1) noted that t~~T~~he salinity of the anchialine ~~ponds~~ pools ~~will~~ would increase due to reduction of brackish groundwater, and that ~~. Some ponds will be excavated to make the new harbor basin. T~~those ~~ponds~~ pools that are not excavated will revert to full salinity, causing the loss of their habitat. ~~and associated aquatic flora and fauna. However, current investigations indicate that these ponds are already enriched by nutrients and the density of associated aquatic fauna is very low. In addition, trash from visitors, and introduction of minnows has already degraded the pond ecology.~~ Even without the potential impacts from the proposed marina construction, the pond ecology might change irreversibly from the nutrient input, human indifference and expansion of non native fauna species.

Further studies conducted in response to DEIS comments (Appendix H-2, and Appendix G-3) indicate that the remaining pools may not increase in salinity to levels unhealthy for *H. rubra* and *M. lohena* and other anchialine pool fauna. In addition, these studies determined that there are realistic mechanisms employed elsewhere that would mitigate changes due to groundwater changes. Waimea Water Services found that harbor construction would cut off some of the fresher ground-water flow. However, predicting the extent of change in flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore.

Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented. The mitigation plan will be based on the following objectives:

Objective 1 To preserve, maintain, and foster the long-term health and native ecological integrity of anchialine pools at Kealakehe.

Objective 2 To protect and promote cultural practices and traditions surrounding anchialine resources at Kealakehe.

Objective 3 To provide education, interpretation, and interactive opportunities for the community to learn about and appreciate the anchialine resources.

Objective 4 To acquire a pond manager to implement the program, conduct monitoring, research, and reporting, and provide education to the community about anchialine and estuarine resources.

Mitigation measures to facilitate the long-term health of the remaining anchialine pools will be based on environmental monitoring, which is vital as an early warning system to detect potential environmental degradation. A series of quantitative baseline analysis of the physio-chemical and biological components within the project site will provide a standard by which the effects of the development, anthropogenic activities, and natural phenomena on the environment can be measured. The framework for the mitigation plan will include three measures intended to meet these objectives, including bioretention, salinity adjustment and possible new pools.

As a mitigation measure, bioretention, which is a Best Management Practice (BMP) is a feasible application for the proposed development. There is a probability that nutrients and other potential pollutants will runoff landscaping and impermeable surfaces such as roadways and parking lots during medium or high rainfall events. Some of these pollutants could enter the groundwater table and into anchialine pools and ultimately the ocean. As an alternative to directing runoff into the ground through drywells, storm water should be directed into bioretention areas such as constructed surface or subsurface wetlands, vegetated filter strips, grass swales, and planted buffer areas. Storm water held and moved through these living filter systems are essentially stripped of most potential pollutants, and allowed to slowly infiltrate back to the groundwater table.

Bioretention is a Best Management Practice (BMP) that would be a highly appropriate application for the proposed development. Further, BMPs utilized in series may incorporate several storm water treatment mechanisms in a sequence to enhance the treatment of runoff. By combining structural and/or nonstructural treatment methods in series rather than singularly, raises the level and reliability of pollutant removal. Another means to reduce the potential for groundwater contamination is to increase soil depth above the standard in landscaped areas. This will allow chemicals to be held in the soils longer for more complete plant uptake and breakdown of these chemicals by soil microbes. A specific guide for chemical application by landscape maintenance personnel will be a beneficial tool to help avoid contamination of groundwater resources.

Another mitigation measure that may be included in the management plan is salinity adjustment. In the 2006 assessment regarding the impact to the southern pools from the proposed construction of the harbor, it was stated that this construction would cause the salinity in the anchialine pools to become equivalent to the ocean at 35ppt. It was then concluded that the anchialine biology would perish.

However, there is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and a final determination of anchialine salinity following the harbor construction. The dynamics of groundwater movement through a porous lava medium both seaward and laterally along the coastline is an inexact science. This is compounded by the variations in water density, including stratification of salinity within the proposed harbor and capillary movement of low-density surface water through the substrata.

The assessment that all anchialine pools will be barren with the construction of the harbor may therefore be premature. *H. rubra* are routinely drawn from high salinity wells at 30 – 32 ppt and survive in this salinity for years. Further, high populations *H. rubra* and *M. lohena* have thrived and reproduced in pool salinities of 27ppt. If the pools do become full strength seawater at 35ppt, there exists uncertainty on the long-term effects to anchialine organisms, since there are no long-term studies or examples of native anchialine ecosystems at 35ppt. Native anchialine pool vegetation also has relatively high salinity tolerance.

If the salinity were expected to rise to 35 ppt, possible mitigation in the management plan will include methods to surcharge man-made anchialine pools created adjacent to or in the vicinity of natural pools with low salinity well water. If sufficient volume is used, it is theoretically possible to lower salinity in adjacent natural anchialine pools. This surcharge method has been successfully used to raise salinity in anchialine pools and cause the salinity rise in adjacent pools of at least up to 10 meters away. Surcharging with low salinity should work as well or better since the lower density water will essentially float atop the higher salinity water at the surface layer, and move throughout the complex of natural pools. Surcharging may also be a viable mitigation to dilute and more rapidly disperse any pollutants that may be detected in the pools.

Another mitigation measure includes the creation of new anchialine pools. There is significant opportunity to create new anchialine pools and greatly expand the native habitat and resource. It has been demonstrated at several projects in West Hawai'i that anchialine pools can be created and will be colonized with a full compliment of anchialine species endemic to the area. Anchialine pools are considered focal points of higher productivity relative to the subterranean groundwater habitat around them. Their productivity promotes an increase in population levels of anchialine species within the pools themselves and throughout the subterranean habitat surrounding them.

~~No realistic mechanisms are envisioned for re-injecting fresh water into these systems to maintain their ecological balance as an anchialine system. These ponds will be changed from a brackish water system to a marine system. But, those ponds in the area of the shoreline park and cultural park will be cleaned of vegetation and protected from other physical alteration. A buffer zone around these newly established marine ponds will be protected as well.~~

~~The anchialine pond shrimp (*Metabetaeus lohena)* and the orangeback damsel fly (*Megalagrion xanthomelas)* are listed as candidate endangered species in the Federal Register and were both recorded in surveys of these anchialine ponds done in 2004 by US Geological Survey Biological Resources Division and the NPS Inventory and Monitoring Program. Low numbers of *Metabetaeus lohena* were encountered in three of the 22 ponds surveyed in the southern pond complex. *Megalagrion xanthomelas* was not encountered in any of the southern pond complex ponds during the recent study. The low density of *Metabetaeus lohena* and the observed absence of *Megalagrion xanthomelas* may be due to the impacts from high nutrient input and general degradation of the ponds.~~

~~An attempt should be made to move as much of the existing population of *Metabetaeus lohena* from these anchialine ponds before they become too saline, to possible newly excavated ponds that may be developed off-site. These shrimp should not be introduced into existing populated ponds to avoid any potential pathogenic impacts to the healthy ponds.~~

~~Public education on the unique ecology of the anchialine ponds and the need for preserving their ecology will reduce future human impacts in other healthy ponds.~~

~~Further recommended mitigation includes restoration to degraded anchialine ponds off the project site, preferably those located at the adjacent Kaloko-Honokōhau National Historical Park.~~

Attachment 2

3.9.1 Nearshore Environment and Coastal Waters

3.9.1.1 Existing Conditions

Along the Kona Coast the nature of the benthic community is largely a function of depth and wave action. Because the island is relatively young, fringing reef structures have not yet developed and there has been no significant terra-forming through riverine processes. Coral reefs therefore develop over raw volcanic base in accordance with light availability (primarily a function of depth), wave and current action, substrate condition, and ecological interspecific competition factors.

The USGS (2007) has recently completed a benthic habitat survey of the waters off shore of the Kaloko-Honokōhau National Historical Park and fronting the Honokōhau Harbor. This study has identified 21 separate benthic habitat classes, the distribution of which is primarily controlled by the character of the submerged volcanic flows. Twelve habitat zones are identified which are controlled primarily by water depth, benthic slope, and substrate structure. The dominant structure is a large shallow bench between the shoreline and extending up to 700 meters off shore where it ends in a shallow escarpment. Coral cover is highly variable over the entire submerged park area, but some of the highest coverage is located to the north and south of the harbor channel entrance. This study identifies an area at a depth of about 10-15 meters (~40 feet) off the harbor mouth with lower than expected coral cover.

Prior to the release of the USGS study a separate effort was undertaken by Oceanic Institute to characterize the marine environment within and off shore of the Honokōhau Harbor. ~~Coral and fish communities within Honokōhau Bay and off the Kona Kai Ola site are generally typical of West Hawai'i reefs, with little evidence of anthropogenic impacts.~~ Quantitative transects conducted at locations north, south, and fronting the harbor concluded that ~~S~~species composition of corals was typical for Kona reefs, with Lobe coral (*Porites lobata*) and Rose-Coral (*Pocillopora meandrina*) abundant in the shallow and mid-reef zones and Finger Coral (*Porites compressa*) more abundant in deeper zones. Highest coral abundance was observed at locations immediately to the north and south of the Honokōhau Harbor entrance channel. Coral cover at locations in the Kaloko-Honokōhau National Historical Park to the north and on the other side of the point to the south of the harbor~~of these~~ were not statistically significantly different; however, reefs to the north of Honokōhau Harbor in general showed higher coral cover than reefs to the south.~~,~~ This higher density is possible ~~primarily~~ because the southern reefs are more exposed to strong surf and associated damage and scour. Coral and fish communities within Honokōhau Bay and off the Kona Kai Ola site are generally typical of West Hawai'i reefs, with little evidence of anthropogenic impacts.

~~Water quality conditions within Honokōhau Harbor, adjacent anchialine ponds and coastal waters of Honokōhau Bay are modified by the effects of groundwater influx. Oceanic Institute in conjunction with AECOS Laboratory of Hawaii, LLC completed water quality testing and marine biological baseline monitoring surveys as a part of this Environmental Impact Statement. These surveys were conducted to determine the existing water quality, aquatic resources and habitats within and adjacent to Honokōhau Harbor, the proposed Kona Kai Ola site, and at sites potentially impacted by the proposed development.~~

It is known and documented that freshwater intrusion into the current marina and near shore areas causes many water quality parameters to deviate from typical nearshore waters that are unaffected by large amounts of groundwater. Specific criteria established by the State Department of Health for conducting baseline water quality surveys along the Kona Coast of the Island of Hawai'i and guidelines established by the West Hawai'i Coastal Monitoring Task Force were followed in water sampling and analysis procedures (WHCMTF 1992).

Water quality testing efforts were coordinated with Waimea Water Services and Oceanic Institute to select proper sites for groundwater/springs. Water samples were collected from all significant anchialine ~~ponds~~ pools located within the project boundaries, on either side of the harbor entrance channel. ~~Pollutant~~ Water quality testing was limited to ~~ones that are reasonable to be suspected on or near the site.~~ nutrients and physical parameters known to be primary factors in pond and nearshore ecosystems function. Testing parameters were discussed with the National Historical Park Service and other stakeholder agencies. The report on Marine Water Quality and Marine Biological Baseline Studies and Impact Analysis is included in Appendix ~~G~~H-1.

Coastal waters of the site are seen as a continuous and interconnected system from the shallow low salinity groundwater flowing through the harbor, anchialine ~~ponds~~ pools, and emerging into the ocean through the harbor mouth and sub-surface springs. The less dense brackish water with its load of land-derived nutrients enters the nearshore water and spreads out as a surface layer. The degree of mixing and impacts to nearshore marine resources is determined by coastal currents, wind waves, and ocean swells.

~~Currently 3 to 4 mgd of brackish water with salinities of about 5 ppt flow through the existing harbor into the ocean. The proposed development includes marine features mauka of the proposed marina. The marine features will be supplied with up to 75 mgd of clean salt water from 100 to 300 foot depth for marine wildlife exhibits. This water will be discharged into the proposed marina and will flow back eventually into the ocean. The salinity of the discharge water from the marina will be about 34 ppt and the average discharge volume will be 79 mgd.~~

Brackish groundwater discharge input into Honokōhau Harbor was calibrated for the hydrodynamic model using salinity profiles (OI Consultants, 1991 and Glenn, 2006) and the Harbor flushing time (OI Consultants, 1991). This calibration and analysis is described in Appendix U. The calibration period was selected to coincide with the flushing study conducted in 1991. Both OI Consultants (1991) and Glenn (2006) showed salinity profiles that did not go below about 25 ppt at the back of the harbor and the contours are well defined and mainly confined within the top 2-3 feet of the harbor. This indicates that the brackish groundwater entering the system is likely to be in the range of 20 ppt (indicated by the maintained stratification or low mixing and mid-20 ppt contours near the wall). Ziemann (2006) noted in his observations that it appeared that a single source of brackish groundwater at the back of the Harbor was predominantly responsible for inputs. Therefore, the model discharge condition was placed in the cells along the back wall of the harbor. The quantity and salinity of the inflow as well as the dispersion coefficient were varied until the salinity contours appeared to match with reported values and the flushing time was close to 12 hours as reported in OI Consultants. It was found that the most reasonable value was 30 mgd at 22 ppt. This is close to the value reported by Gallagher (1980) of 27 mgd of brackish water entering Honokōhau Harbor.

A detailed analysis of the change in flow velocities through the harbor entrance is described within the 3D model shown in Appendix U. It was found that tidally averaged velocities through the harbor entrance may increase by 3-4 cm/s post-expansion. This is due to the increased tidal prism, the addition of the exhibit water, and the increased flow of brackish groundwater into the system.

3.9.1.2 Methodologies and Studies

Three studies were conducted to evaluate project impacts on nearshore and coastal waters. Oceanit completed a Zone of Mixing study that was presented in the DEIS and is contained in Appendix ~~H~~I. This study was tasked with determining the mixing and dispersion of flows emerging from the harbor into the adjacent shallow nearshore waters. To accomplish this, data from previous studies were reviewed and field research was conducted to measure stratification and currents adjacent to the harbor entrance and out into the ocean. A "Zone of Mixing" area was determined outside of which there is no discernable influence to water quality from the existing harbor effluent. This information was used to assess impact from modifications to groundwater inflow from marina expansion, and the seawater effluent flow from the marine water features.

~~The model analysis for mixing and water flow through the existing harbor and the proposed marina included existing water exchange between harbor and ocean and the future water exchange resulting from the expanded marina area and the discharge from the marine water features. The model results include three dimensional water flow patterns as well as water quality distribution details.~~

A Wave Penetration Study was prepared by Moffat and Nichol to determine wave characteristics within the existing harbor and the proposed expansion basin. This study was presented in the DEIS and is contained in Appendix J.

In response to DEIS comments, a Harbor Water Quality Modeling Study was prepared by Moffat and Nichol and is presented in Appendix U of this FEIS.

3.9.1.3 Zone of Mixing ~~Anticipated Impacts and Recommended Mitigation~~

~~Oceanit completed a Zone of Mixing study that is contained in Appendix H. This study was tasked with determining the mixing and dispersion of flows emerging from the harbor into the adjacent shallow nearshore waters. To accomplish this, data from previous studies were reviewed and field research was conducted to measure stratification and currents adjacent to the harbor entrance and out into the ocean. A "Zone of Mixing" area was determined outside of which there is no discernable influence to water quality from the existing harbor effluent. This information was used to assess impact from modifications to groundwater inflow from marina expansion, and the seawater effluent flow from the marine water features.~~

The model analysis for mixing and water flow through the existing harbor and the proposed marina included existing water exchange between harbor and ocean and the future water exchange resulting from the expanded marina area and the discharge from the marine water features. The model results include three-dimensional water flow patterns as well as water quality distribution details.

The three-dimensional model was extended outside of the harbor entrance in order to examine relative changes from baseline conditions. Due to the lack of available data regarding specific brackish discharge events along the coastline, the model is not calibrated outside of the harbor entrance, and any changes predicted in this region are only referred to in terms of relative changes (in relation to model predicted existing conditions). This analysis is shown in Appendix I. It was found that the significance of the additional brackish groundwater inflow into Kona Kai Ola Marina also has an effect on the surrounding surface waters of Honokōhau Bay. The concentrations of nutrients in low flow scenarios are less than existing conditions due to the lack of additional nutrients to the system. However, with higher brackish inflow, the relative growth of algae is more contained while nutrient concentrations relatively increase. Relative nitrogen concentrations in the bottom layers can be maintained in scenarios without additional exhibit flow included, however with the additional saline flow, there is more of a nitrogen load in the bottom layers.

Anticipated Impacts and Mitigation Measures

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water for the water features will be pumped from 100 to 300 foot depth. The total amount of water supplied to the water features will be 75 million gallons per day. The rate of pumping is designed to achieve an approximate 4 hour residence time within the ponds (pers. comm. Cloward H2O, 2007) and to prevent build up of pollutants from users and marine animals. ~~The water for the water features will be pumped from 100 to 300 foot depth. The total amount of water supplied to the water features will be 75 million gallons per day. The rate of pumping is designed to achieve rapid turnover of water within the ponds and to prevent build up of pollutants from marine animals and users. Currently, the nutrient concentrations at the existing marina entrance are very high (1,200ug/l of total dissolved nitrogen (TDN) and 83 ug/l of total dissolved phosphorus (TDP)). The intake water for the features has low levels of nutrients (185 ug/l TDN and 5.6 ug of TDP).~~

The anticipated impacts and mitigation measures discussed below assume construction of an 800-slip harbor. One possible mitigation measure would be to reduce the size of the harbor expansion. Any modification of the final design size of the marina would require modification of contract language with the DLNR. In that Alternative 1 would include a smaller marina and smaller seawater lagoons, the latter of which would represent a 74 percent decrease from 19 acres in the proposed project to five acres in Alternative 1, there would be a proportionate reduction in seawater discharging into the new harbor.

The intake water for the features has low levels of nutrients (185 µg/l TDN and 5.6 µg of TDP). This amount will be modified by the generation of nutrients by marine animals. This quantity was modeled via calculations performed by ClowardH2O (pers. comm., 2007). Through modeling, this level of nutrient input was found to have an effect on both ammonia and nitrate concentrations outside of the harbor. However, the modeled input did not contribute significantly to eutrophication potential due to the limiting nature of phosphorous within the system. These processes and sensitivity tests are described at length in Appendix U.

Although the total amount of nutrients that will be generated per day will increase from the nutrient output of marine animals and users, the concentration of the nutrients will be lower due to the large amount of water available for mixing within the basin. The overall impact will be a reduction of nutrient concentration in the outflowing water.

The boats used in the marina will be small, and spills could occur from boats or while fuelling. These amounts in a majority of cases will be relatively small. The entrance to the marina is relatively narrow and in case of a fuel spill, the traffic will be stopped and a containment boom will be installed to contain the spill within the basin.

Adequate numbers of containment booms, absorption units and oil removal facilities will be at the fueling station and also provided to an identified emergency response station. Personnel will be trained to respond in case of a spill. In addition, the local fire station, police and civil defense and other agencies will be informed in case of a larger spill.

The proposed new marina would significantly increase the size of the water body, but would utilize the existing marina entrance for access to the ocean. This will increase the tidal prism in addition to the extra anticipated inflows to the new marina. It would be expected to intercept additional groundwater, adding these flows to the existing harbor outflow in addition to being the outfall location for the exhibit flows. Model results presented in Appendix U show that the increase in depth-averaged velocities through the harbor entrance can be as great as 4 cm/s under typical conditions,

The proposed marina basin will therefore not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance. There will be an expanded zone of mixing between the brackish effluent and the surrounding ocean waters due to the concentration of flows at the harbor mouth. The addition of effluent water from the marine water features will result in an additional increase outflow across the marina entrance from 30 mgd to an expected value of greater than 135 mgd after development of the marine water features. ~~to the south will intercept additional groundwater, adding these flows to the existing harbor outflow. The proposed marina will therefore not result in any significant increase in groundwater flow to the coastline, but rather a concentration of the existing flows to the harbor entrance. There will be an expanded zone of mixing between the brackish effluent and the surrounding ocean waters due to the concentration of flows at the harbor mouth. The addition of effluent water from the marine water features will result in an additional increase outflow across the marina entrance from 4 mgd at present to 79 mgd after development of the marine water features. The effluent from the marine water features will contain low amounts of nutrients because of the high flow through. The large amount of water will dilute any pollutants that enter the harbor basin from groundwater or surface water. This will improve the water quality and will be a positive impact on the nearshore environment.~~

Despite its proximity to the WWTP, sewers do not service the existing adjacent State harbor or surrounding private structures. All sewage from existing facilities is treated in on-site septic systems with resulting effluent flowing to groundwater that almost certainly flows directly to the existing harbor. Under post-development conditions all of these flows would be connected to the Kona Kai Ola sewage system resulting in a positive impact by eliminating this existing pollutant load into the harbor. Sewage from facilities at the existing marina will be connected to the Kona Kai Ola sewage system. Sumps, connection lines and pumping facilities will be constructed to move the sewage from the present septic tank systems directly to the larger collection system. The work needed for this conversion will be included in the sewage infrastructure design and construction.

~~Hydrogeological studies have concluded that the expansion of the marina does not increase the groundwater flux through the harbor mouth into the ocean significantly. The groundwater from the brackish aquifer already converges to the existing harbor and does not show flow across the planned marina basin area into the ocean.~~

~~It is estimated that the average groundwater discharge is 3 to 4 million gallons per day (mgd). The salinity of the water that discharges from the brackish aquifer is about 12 percent of seawater or about 4.3 parts per thousand (ppt). In addition, 52,000 gallons per minute of surface seawater (36 ppt) will be pumped from the nearshore area for use in the marine lagoon features. This amounts to approximately 75 mgd. This water eventually is discharged into the harbor basin and into the ocean. This water is not expected to reach the existing marina basin because the proposed basin connects to the existing one very close to the common entrance. Therefore the impacts to the existing marina environment from the additional discharge are expected to be negligible.~~

At present, the salinity of the water column remains entirely saline in the bottom layers with more brackish influences near the surface (about 30 ppt). Model results displayed in detail within Appendix U show that salinity differences near the harbor entrance are completely confined to the surface layers and are at maximum about 0.5 ppt less than the current conditions of about 30 ppt (surface). Salinity at the marina entrance, at 10 foot depth is not affected by the brackish water discharge. The benthic flora and fauna close to the marina entrance and at less than 10 feet water depth face variations of salinity from 34.5 ppt to 36.0 ppt.

~~At present the depth averaged salinity of the water exiting the existing basin is about 33.5 ppt close to the marina entrance. The brackish water stays at the surface and shows its influence for distance of about 2,000 feet. Salinity at the marina entrance, at 10 foot depth is not affected by the brackish water discharge. The benthic flora and fauna close to the marina entrance and at less than 10 feet water depth face variations of salinity from 34.5 ppt to 36.0 ppt.~~

~~A straight forward mass balance calculation shows the following changes to the existing flow and salinity. The average outflow from the harbor will increase from 4 mgd to 79 mgd. The salinity of the water will change from an average of 33.5 ppt to about 34.4 ppt. The water will still be less dense, and the depth of impact will be limited to the surface 3 to 4 feet. The benthic flora and fauna will face a smaller variation in salinity that will discourage opportunistic biota dominance and lead to a healthier and more diverse benthic community. This is a positive impact on the benthic environment. The increase in the outflow will cause a very slight increase in water velocities, but this is well below the existing velocity variations in the entrance channel vicinity.~~

Construction of a new marina basin will have ~~short-~~short-term negative impacts on coastal marine resources. Direct construction impacts are likely to be small. Marina construction will be accomplished with a berm separating the construction area from adjacent marine waters, minimizing the discharge of sediment from excavation and dredging. Excess sediment remaining in excavated marina will be removed before the land bridge is removed in order to minimize any temporary sediment plume. When the final land bridge is removed, a temporary sediment plume is anticipated. Silt curtains will be used to ~~minimize the~~prevent suspended sediment entering ocean waters.

Although the runoff at the site is small due to the dry climate and the high porosity of the land, during high rainfall, some runoff might reach the harbor basin as overland sheet flow. The new marina will serve as a collection point for materials utilized or generated at the development site, either through direct runoff or by interception of groundwater flow. There is the potential that fertilizers, pesticides, petroleum products, road wastes, etc, could be discharged from the mouth of Honokōhau Harbor into the coastal marine environment. Structural Best Management Practices (BMPs) will be designed and installed to remove as much of pollutants as possible from the run off during such unusual conditions.

Small boat harbors have been found to be consistent sources of certain types of pollutants to the surrounding environment. These pollutants in general include:

- Heavy metals (zinc, copper, tin, lead) associated with bottom paint or sanding of painted surfaces during maintenance activities;
- Petroleum product release from fueling operations, and bilge discharges exacerbated by the large number of boats and range of operator skills;
- Trash and debris from boat operations and surrounding harbor activities;
- Sewage from intentional or accidental releases from on-board waste systems;
- Biological waste from fish cleaning;
- Waste streams from land-side boat washing and maintenance activities;

Most of the impacts can be minimized through the use of Best Management Practices (BMPs), which are a combination of activities, education and devices that help prevent or reduce water pollution. A "Clean Marina Program" similar to the International Blue Flag Marina Program or the Clean Marinas California Program will be implemented at the new marina and include key elements such as promoting and enforcing:

- Boater education signage, literature and programs
- Emergency and spill response plans
- Safe fuel, hazardous material, sewage and bilge water handling practices
- Use of sewage marina pump out, waste and oil recycling facilities
- Environmentally sensitive boat maintenance and cleaning practices
- Environmentally sensitive hull cleaning practices
- Good housekeeping practices on boats and docks
- Use of fish cleaning stations / receptacles and fish waste composting

- Enforcement of harbor rules and regulations

3.9.1.4 Wave Impacts to the Existing Honokōhau Harbor

The wave climate within the existing Honokōhau Harbor and the proposed marina was analyzed using a numerical model that is further discussed in Appendix ~~J~~J. A wave measurement study was conducted to determine the wave response of the existing harbor to outside wave climate. A directional wave gage at a depth of sixty feet directly in front of the existing harbor entrance and a non directional wave gage inside the existing harbor basin were installed to measure wave climates simultaneously. The results of the wave measurements were provided for wave transformation model calibration.

Results of the wave climate analysis with and without the expansion were used to predict wave agitation impacts to the existing harbor. The model was operated for waves with a 9-second period and swells of 13-second period as the dominating waves for the offshore area.

Anticipated Impacts and Proposed Mitigation

Wave climate in the existing harbor from the proposed marina construction depended on the period of the incoming waves. There was a slight decrease in the wave height in the existing basin for outside waves of a 9-second period. For longer period swells, there was no significant change in the wave height in the basin.

For waves with a 9-second period, the wave height at the inner end of the outer basin attenuated to 40 percent of the incident wave. There was no additional wave attenuation due to the presence of the proposed marina. Within the existing harbor inner basin, the wave height attenuated to about 20 percent of the incident wave. The wave height in the inner harbor decreased by about 10 percent with the construction of the proposed marina.

For longer period swells, the wave height in the outer basin remained at 50 percent attenuation. In the inner basin, the wave height reduced to about 20 to 30 percent of the incident wave. There was no significant change in the wave height in the inner basin from marina construction.

The analysis shows that under short storm wave conditions, the proposed marina construction causes a positive impact by reducing the wave height by 10 percent in the existing marina. However, under swell conditions there is no change in wave agitation in the mooring area of the existing harbor with the proposed marina. Overall, the impact of construction of the proposed marina basin is positive since the existing harbor will experience less wave agitation. This may be due to the fact that the amount of wave energy entering through the harbor entrance remains the same, while additional water area and frictional surfaces (both sides and bottom) provide for greater wave dissipation after the expansion. No mitigation is ~~recommended~~ proposed due to the project's positive effect.

3.9.1.5 Harbor Water Quality

A three dimensional hydrodynamic and water quality model of Honokōhau Harbor and its surrounding waters was developed using the Delft3D modeling suite and is described in detail in Appendix U. The model was driven at its offshore boundaries by tidal predictions, and calibrated to reproduce available measurements of water levels, currents, salinity and temperature.

Model results suggested that the brackish groundwater inflow to Honokōhau Harbor was approximately 30 million gallons per day (mgd), with an average salinity of 22 parts per thousand (ppt), in order to reproduce the salinity profiles observed from a number of available data sets. In addition, this flow rate is in very good agreement to the published values of brackish groundwater inflow to Honokōhau Harbor. The model also showed that under these conditions, Honokōhau Harbor maintained a flushing time of approximately 12 hours, which is consistent with available studies and data. The flushing within the harbor was found to be primarily due to the density currents that result from the salinity gradient within the Harbor created by the brackish groundwater inflow. This finding also corroborated with study findings that this flushing mechanism results in water exchange in the harbor on the order of seven times faster than if it were flushed via tidal action alone.

A water quality model was developed to replicate typical conditions experienced in Honokōhau Harbor and its environs. Water quality parameters were calibrated and validated using two available datasets. It was found that the water quality within Honokōhau Harbor is primarily maintained due to the high rate of circulation. The nutrient loads entering the harbor through the brackish groundwater inflow are high, and without high flushing, water quality within the Harbor would not be able to be maintained.

Anticipated Impacts and Mitigation Measures

The water quality model was applied to predict the post-project conditions after the addition of the Kona Kai Ola Marina. Per the Conceptual Master Plan, the marina consists of a 45 acre marina basin with 800 boat slips. Brackish groundwater inflows into the new marina basin were bracketed between 0 mgd and 60 mgd. The two simulated extremes represent scenarios where no additional brackish groundwater will be intercepted by the new marina, which is not consistent with the observed conditions, and when brackish groundwater inflow into the new marina is twice the amount that will be still flowing into the existing marina, respectively.

The model results demonstrated, relative to the increased area, that water quality within the proposed 45-acre marina basin system could not be maintained. Inflow of brackish groundwater to the new marina was found to be fundamental to the flushing and water quality of the proposed system. However, even for the largest simulated inflow of 60 additional mgd entering the new marina, water quality was still degraded post-expansion. This is primarily due to the fact that the proposed marina basin has five times the volume of the existing harbor. In addition, the geometry of the system led to internal circulation between the existing harbor and new marina basin. The 45-acre new marina basin only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd.

Alternatives to the aforementioned system that could maintain the flushing and water quality, as observed under existing conditions, were investigated. It was found that the reduction of the volume of the new marina basin by 45 percent significantly improved the flushing and water quality. Broad range sensitivity tests were also performed to determine the effect that various parameters had on the proposed system. For example, addition of nitrogen and phosphorous loads were tested to determine the limitation of the system.

The conditions with the project constructed were found to be phosphorous limited. Several simulations were performed including and excluding the inflow from the marine exhibits which provides an additional nitrogen load and also varying the location of this inflow. It was found that the inflow from the marine exhibits can have a beneficial effect on flushing, especially when positioned within the existing harbor basin. However, its effect is significantly less than the effect due to the brackish groundwater inflow. When the exhibit inflow is excluded or positioned at the east end of the new marina, its effect is small in terms of flushing due to its high salinity. From a water quality perspective, since the loads from the exhibit inflow consist primarily of nitrogen, it does not cause increased algae growth. However, this exhibit inflow does raise the concentrations of ammonia and nitrate in the system.

Simulation results indicate that under the conditions when the post-expansion system receives an additional brackish inflow into the new 25-acre marina on the order of 30 mgd or more, water quality within the harbor system and in the surrounding waters remained similar to existing conditions. These conditions are expected to occur based on the findings reported by Waimea Water Services (2007), which states that the proposed marina would exhibit the same or similar flushing action as the existing marina.

An additional mitigation measure proposed by Waimea Water Services (2007), if sufficient inflow is not intercepted, consists of drilling holes in the bottom of the new marina to enhance this inflow and facilitate flushing within the proposed system.

~~3.9.3~~3.9.2 Anchialine ~~Ponds~~ Pools

Two studies on anchialine pools were conducted in this EIS process. The anchialine ~~ponds~~ pools water quality studies and ~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute and is~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute in October 2006 and are included as Appendix ~~G~~H-1. That survey included pools located both north and south of Honokōhau Harbor. In response to DEIS comments and to further study the pools south of entrance channel of Honokōhau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. The report is contained in Appendix H-2.

~~3.9.3.1~~3.9.2.1 Existing Conditions

Anchialine ~~ponds~~ pools exist in inland lava depressions near the ocean. Two anchialine ~~pond~~ pool complexes are located immediately to the north and south of the Honokōhau Harbor entrance channel. The complex to the north is located wholly within the designated boundaries of the Kaloko-Honokōhau National Historical Park as shown in Figure Q~~O~~. Many of the ~~ponds~~ pools in the southern complex are within the park administrative boundary as well. ~~Ponds~~ Pools in the northern complex show little evidence of anthropogenic impacts. Many contain typical vegetation and crustacean species in high abundance.

Figure R locates anchialine pools near the harbor entrance and pools~~Ponds~~ in the southern complex are depicted in Figure S.

Attachment 3

The increased level of fisheries knowledge has spawned an atmosphere of stewardship in the general charter-boat fishing community. With catch and release programs returning upwards of 40 percent of the Kona catch back to the ocean there is an obvious awareness that the value of catching the fish is often far greater than the value of selling it. It is ~~recommended~~ proposed that facilities and programs to foster continued stewardship, fisheries science, tracking of all fish catch, and educational programs be implemented in the design of the new marina facilities.

The proposed marina, marina support facilities, public marina promenade, fishing club, and marine science center will provide a venue for implementing the following efforts:

- Efforts to promote tag and release will be fostered through public education and the implementation of more "Catch and Release – Only" tournaments.
- Promote management through catch limits to possibly include slot weight catch limits, ~~ie.~~i.e. must tag & release animals between 250–950 pounds
- Promote various other stewardship measures relating to fisheries conservation.

~~3.9.5~~3.9.4 Marine Mammals and Sea Turtles

In addition to water quality, which is discussed in Section 3.9.1.3, other environmental impacts that may affect marine mammals and sea turtles include noise and vessel collisions. The following sections describe existing conditions, potential impacts and suggested mitigations to prevent negative impacts to marine mammals and sea turtles from noise and vessel collisions.

~~3.9.5.1~~3.9.4.1 ~~Existing Conditions~~Affected Environment

A number of marine mammal and turtle species are found in Hawaiian waters near the Kona Kai Ola project site. Detailed information on the abundance, behavior, threats to the species, hearing ability and vocalization data is provided for all species in Appendix S. Data on the most prevalent endangered species and species of particular interest are summarized here.

Humpback Whales: The population of h~~H~~umpback whales (*Megaptera novaeangliae*) around Hawai'i was estimated to be between ~~are mammals and belong to the baleen whale suborder, *mysticeti*. An estimated~~ 4,500-6,500 in 2000 ~~whales migrate between subpolar Alaska and Hawai'i each year~~ (Mobley et al 2001). The population growth rate between 1993 and 2000 is estimated to be seven percent indicating that the population is recovering from its dramatic reduction due to commercial whaling. It is worth noting that this is considered a high rate of increase for a mammalian species.

The highest densities of animals are found within the 100 fathom isobath. ~~and seek refuge in shallow waters close to shore.~~ Most humpbacks off Hawai'i are found north of Honokōhau in the waters of the Hawaiian Islands Humpback Whale National Marine Sanctuary. Nevertheless, they are commonly seen off Honokōhau in winter months. Humpbacks are not deep diving animals. Whales in Hawai'i typically dive to less than 100 feet, although occasional deeper dives are possible (Hamilton et al. 1997)The whales breed and give birth while in Hawai'i during the winter months, and migrate north to feed each spring.

~~Humpback whales found in Hawai'i's waters are part of a global population of Humpback whales that was reduced by over 250,000 individuals, or 90 percent, due to hunting (Johnson et al 1984). In 1966, the International Whaling Commission instituted a moratorium on all hunting of whales globally, and populations have begun to rebound. The North Pacific population of humpback whales, with a population of approximately 15,000 prior to hunting, is recovering from an estimated low of 1,000 individuals (Rice 1978, Johnson et al 1984). Humpback whales are also protected under the Federal Endangered Species Act. It is estimated that Hawai'i's population of Humpback whales is growing by 7% annually (Mobley et al 2001).~~

Congress designated the Hawaiian Islands Humpback Whale National Marine Sanctuary (HINMS) on November 4, 1992, and was followed by the Governor of Hawai'i's formal approval in 1997. The Sanctuary's purpose includes protecting humpback whales and their habitat within the Sanctuary, educating the public about the relationship of humpback whales to the Hawaiian Islands marine environment, managing the human uses of the Sanctuary, and providing for the identification of marine resources and ecosystems of national significance for possible inclusion in the Sanctuary. The sanctuary is approximately four nautical miles north of Honokōhau Harbor.

~~While waters surrounding the main Hawaiian islands constitute one of the world's most important North Pacific humpback whale habitats (Calambokidis et al. 1997), the Sanctuary actually encompasses five noncontiguous marine protected areas across the Main Hawaiian Islands, totaling 1370 square miles. Almost half of this area surrounds the islands of Maui, Lāna'i and Moloka'i. Smaller areas are designated on the North shore of Kaua'i, North and Southeast shores of O'ahu, and Hawai'i's Kona Coast. On Hawai'i's Kona Coast, the Sanctuary encompasses the entire northwest-facing coast, consisting of submerged lands and waters seaward of the shoreline to the 100-fathom (183 meter) isobath from 'Upolu Point southward to Keāhole Point, which is approximately four nautical miles north of Honokōhau Harbor.~~

Whales have very sensitive hearing, so any loud underwater sound has ~~may have~~ the potential to disturb these animals. ~~Vessel collisions are also a concern with whales.~~ Playback experiments have estimated that humpback whales will respond to biologically meaningful sound at levels as low as 102 dB re 1 µPa, a level that is similar to background ambient noise (Frankel et al. 1995). Increases in vessel numbers will lead to an increase in noise from operating boats. However, even at its greatest predicted increase, the median sound level from active boats is not expected to raise sound levels to an intensity that would be considered an impact (Level B take) to marine mammal population (See Appendices T-2 and T-3). Humpback whale song ranges from 20 Hz to over 10,000 Hz, with most acoustic energy typically concentrated in the 100-1000 Hz range. This vocal production and the anatomy of their inner ear indicate that these animals are most sensitive to low-frequency sound (Ketten 1992).

Numerous studies have shown that human activity can affect humpback whale behavior, including vessel activity (Bauer 1986; Norris 1994; Corkeron 1995; McCauley et al. 1996; Scheidat et al. 2004), oceanographic research (Frankel and Clark 2000; Frankel and Clark 2002), and sonar (Miller et al. 2000; Fristrup et al. 2003). If the humpback whale population continues to expand at its present rate (8%/year) it can be expected that greater numbers of whales will extend into waters off the Kona Coast. This is likely to increase the demand for whale watching vessels from the new harbor and this increase will have a negative impact on the whale population expansion. The increase in both the number of vessels and number of whales increases the chance for collisions.

Vessel collisions are also a major concern. The majority of whale strikes occur~~red~~ where whales and boats are most common, such as in ~~and boats watching are common as in~~ shallow waters between Lāna‘i and Maui. In a recent study, three of ~~conducted by NMFS on~~ 22 ~~27~~ recorded whale-vessel collisions ~~strikes~~ in the main Hawaiian Islands ~~, only two were recorded~~ occurred off the Kona coast. (Lammers et al. 2003). That study also found that 14 of the 22 collisions were reported between 1995 and 2003. This observed increase may result from more awareness of the issue, or from the greater number of both whales and vessels in Hawaiian waters. In Hawai‘i, data from 1972 to 1996 reveal at least six entanglements of humpback whales in commercial fishing equipment (Mazzuca et al. 1998). These data also indicate an increasing trend of entanglement since 1992 and a three-fold increase in death and entanglement occurrences related to human activity in 1996.

It is highly unlikely that humpback whales will approach to within the Level A or Level B impact “take” zones created by the explosive blasts of harbor construction. However, the sounds generated by these explosions will be within the frequency hearing range of humpback whales and could potentially be heard by whales between Kona and Maui. Modeling predicts that the maximum sound level two miles offshore the site is less than 150 dB re1 µPa, which is less than the threshold for Level B impacts. As the explosions are planned to occur daily for up to 9 months, the cumulative impact of this noise must be considered if construction is anticipated when whales are expected in the area (December 15 – March 30).~~In one instance, a fishing boat was pulling in a catch and was lifted by a whale. In the other instance, a whale was struck by a dive boat heading towards its diving spot.~~

Dolphins: A number of dolphin species are found in the waters near Honokōhau Harbor. Detailed information on all of these can be found in Appendix S. Spinner dolphins (*Stenella longirostris*) are regularly seen in shallow water and in close proximity to the project site. ~~Spinner dolphins (*Stenella longirostris*), often inhabit waters within Honokōhau Bay and at times intentionally congregate near the harbor channel to take advantage by bow-riding outgoing vessels. "Spinners" common name stems from their habit of leaping clear of the water and twirling in the air.~~ They are the smallest dolphins typically seen in Hawai‘i, with a mature size of 6 feet in length and 160 pounds.

Spinners school in pods of a few animals to ~~100~~ 180 or more, with pod sizes of 1-20 being most common (Östman-Lind et al. 2004). They ~~and show community behavior when~~ feed~~ing in~~ on mesopelagic fish, squid and shrimp in deep water at night, and rest in nearshore shallow waters during the day (Norris and Dohl 1980; Benoit-Bird et al. 2001). ~~when they come near shore to play and rest. On the Island of Hawai'i, Kealakekua Bay is one location of almost daily spinner visits, but they frequent many other bays along the coast and regularly rest in Honokōhau Bay.~~ There are seven primary resting areas along the Kona coast of Hawai'i, including Honokōhau Bay, where spinners are regularly seen near the harbor entrance (Östman-Lind et al. 2004). There is some evidence that the spinner dolphins may be resident to the area (Östman-Lind et al. 2004), making them more susceptible to repeated disturbance.

The hearing ability of spinner dolphins has not been measured. However, hearing of the related striped dolphin (*Stenella coeruleoalba*) was measured between 500 Hz and 160 kHz, with maximum sensitivity at 64 kHz (Kastelein et al. 2003). The hearing response of this single dolphin was less sensitive below 32 kHz than other dolphins. ~~As all marine mammals have very sensitive hearing, any loud underwater sounds have the potential to disturb dolphins as well. Given the sporting habit of spinners and other dolphins of bow-riding ships and small boat wakes, they are apparently not overtly impacted by vessel traffic noises.~~

Despite their limited sensitivity to low frequency sound, spinner dolphins have been shown to be impacted by human activity. Examples include interruption of resting activity and increases in the number of higher energy behaviors (Luna-Valiente and Bazúa-Durán 2006). Numerous studies describe changes in distribution (Haviland-Howell et al. in press) and short-term behavioral changes of dolphins in response to vessel traffic (Bejder et al. 1999; Scarpaci et al. 2000; Gregory and Rowden 2001; Nowacek et al. 2001; Van Parijs and Corkeron 2001; Ritter 2002; Lusseau 2003; Ng and Leung 2003). However, it has been established that for at least one population of bottlenose dolphins, these repeated short-term effects translate into long-term detrimental effects on the affected population (Bejder et al. 2006a; Bejder et al. 2006b).

In Hawai'i, some entanglements of spinner dolphins have been observed (Nitta and Henderson 1993; Rickards et al. 2001) but no estimate of annual human-caused mortality and serious injury is available. A habitat issue of increasing concern is the potential effect of swim-with-dolphin programs and other tourism activities focused on spinner dolphins around the main Hawaiian Islands (Östman-Lind et al. 2004).

Hawaiian Monk Seals: Endangered Hawaiian Monk Seals (*Monachus schauinslandi*, Hawaiian Name: 'Ilio holo I ka uaua) ~~are on the endangered species list . They~~ are rare, but not unknown along the Kona Coast. ~~Fortunately, monk seals are air breathing and spend the majority of their time above water where they are easily observed. If a monk seal is reported observed in the area, Kona Kai Ola would work with relevant agencies to protect the seal.~~ Most monk seals are found in the Northwest Hawaiian Islands, but recent aerial surveys estimated that there are 52 seals in the main Hawaiian Islands (Baker and Johanos 2004). There have been 13 sightings between 2003 and 2006 in the vicinity of Kaloko-Honokōhau National Historical Park (NOAA protected species division data) indicating regular, albeit low-level use of these areas by monk seals. ~~One~~Two birth on the Island of Hawai'i have~~s~~ been reported (Baker and Johanos 2004).

The best population estimates for Hawaiian monk seals (as of 2003) was 1,244 (Carretta et al. 2004). However the population is currently showing a decline that has been continuing since the 1950s (Antonelis et al. 2006).

Underwater hearing in the Hawaiian monk seal has been measured between 300 Hz to 40 kHz. Their most sensitive hearing is at 12 to 28 kHz, which is a narrower range compared to other phocids. Above 30 kHz, their hearing sensitivity drops markedly (Thomas et al. 1990).

Monk seals are very intolerant of human activity and are easily disturbed. When the U.S. military inhabited Sand Island and the Midway Islands and Kure Atoll, the monk seals disappeared until after the military left. Monk seals prefer to be solitary animals (Reeves et al., 2002).

Sea Turtles: Five species of sea turtles are known to frequent Hawaiian waters, with Hawaiian green sea turtles (*Chelonia mydas*) by far the most abundant at 97% of the total numbers, hawksbill turtles (*Eretmochelys imbricata*, 1.7% of total), olive ridley turtles (*Lepidochelys olivacea*, 0.8%), and occasional sightings of leatherback (*Dermochelys coriacea*) and loggerhead sea turtles (*Caretta caretta*, Chaloupka, et al, 2006, from stranding reports). Green sea turtles are the most plentiful large marine herbivore in the world and have experienced a very successful population recovery in Hawaiian waters since 1974 when harvest was outlawed in Hawai'~~i~~i, and 1978 when they became protected under the Endangered Species Act (Balazs, et al. 2004). Both green sea turtles and hawksbills are known to breed and nest on beaches within the main Hawaiian Islands, and have a 25-30 year generation time with a life span of 60-70 years (Balazs et al 2004). Total population numbers of green sea turtles in the Hawaiian archipelago have not been estimated, but the population has at least tripled since the 1970s and may now be approaching the carrying capacity of the islands (Chaloupka, et al. 2006).

Bartol et al. (1999) measured the hearing of juvenile loggerhead sea turtles using auditory evoked potentials to low-frequency tone bursts found the range of hearing to be from at least 250 to 750 Hz. The frequency range that was presented to the turtles was from 250 Hz to 1000 Hz (Bartol et al. 1999).

Most recently, Bartol and Ketten (2006) used auditory evoked potentials to determine the hearing capabilities of subadult green sea turtles and juvenile Kemp's ridleys. Subadult Hawaiian green sea turtles detected frequencies between 100 and 500 Hz, with their most sensitive hearing between 200 and 400 Hz. However, two juvenile green turtles tested in Maryland had a slightly expanded range of hearing when compared to the subadult greens tested in Hawai'i. These juveniles responded to sounds ranging from 100 to 800 Hz, with their most sensitive hearing range from 600 to 700 Hz. The two juvenile Kemp's ridleys had a more restricted range (100 to 500 Hz) with their most sensitive hearing falling between 100 and 200 Hz (Bartol and Ketten 2006).

Adult ~~G~~green turtles are primarily herbivorous often seen on reefs as deep as 100+ feet but much more common in shallower waters. Foraging behavior of green turtles is well documented and in Hawai‘i is typically characterized by numerous short dives (4 to 8 min) in shallow water (typically less than 3 m) with short surface intervals (less than 5 sec) (Rice et al. 1999).Resting periods are characterized by longer dives (over 20 min) in deeper water (4 to 40 m) with surface intervals averaging 2.8 min (Rice et al. 1999). The amount of time that turtles spend foraging versus resting is still largely unknown. Green turtles in Hawai‘i frequently use small caves and crevices in the sides of reefs as resting areas, and spend significant amounts of time on the tops of reefs (Balazs et al. 1987). Green turtles are known to be resident in Kiholo Bay, Hawai‘i (Balazs et al. 2000), and presumably other areas as well, potentially increasing their susceptibility to vessel collision and/or repeated disturbance. Two turtle “cleaning stations” have been reported near the mouth of Honokōhau Harbor. ~~During periods of calm water green sea turtles are often seen over very shallow reef flats where the choicest of algae are to be found. While some turtles may "rest" upon the surface, it is much more common to find them in small caves or wedged between coral heads where they are less subject to shark attacks. Green sea turtles may occasionally be seen far at sea (they nest in French Frigate Shoals in the NW Hawaiian Islands), but they are much more prevalent over the shallow shoreline areas where they forage for food.~~

Vessel collisions and potential noise impacts are a concern with regard to turtles. In a study of 3,861 turtle strandings in the main Hawaiian Islands from 1982 – 2003 (Chaloupka, et al. 2006), boat strikes accounted for only about 2.7 percent of the cases and were almost always fatal (95 percent). Entanglement in gill nets accounted for about six percent of strandings and also had a high rate of mortality (75 perce~~d~~nt). Hook and line entanglement (seven percent of strandings) was much less likely to result in the death of the turtle (52 percent mortality). At least 20 green sea turtles have stranded in Honokōhau Harbor or along the boundaries of Kaloko- Honokōhau National Historical Park. ~~Of all 3,861 strandings recorded in the Main Hawaiian Islands since 1982 only three occurred within 10 miles north or south of Honokōhau Harbor (Balazs, personal communication from NMFS database).~~

Recent increases in longline fisheries may be a serious source of mortality. Greens comprised 14% of the annual observed take of all species of turtles by the Hawai‘i-based longline fishery between 1990 to 1994 (NMFS 1998a). Over the period of 1994 to 1999, it was estimated that an annual average of 40 green sea turtles were caught by the Hawai‘i-based longline fishery (McCracken 2000).

Recent proliferation of a tumorous disease known as fibropapillomatosis (Herbst 1994) may reverse improvements in the status of the Hawaiian stock (NMFS 1998a), although recent modeling suggests that population levels continue to increase despite the disease (Chaloupka and Balazs 2005). The disease is characterized by grayish tumors of various sizes, particularly in the axial regions of the flippers and around the eyes. This debilitating condition can be fatal and neither a cause nor a cure has been identified.

Hawksbill turtles (Eretmochelys imbricate) are observed less often than green sea turtles near Honokōhau. About 20-30 female hawksbills nest annually in the Main Hawaiian Islands (NMFS 1998b). In 20 years of netting and hand-capturing turtles at numerous nearshore sites in Hawai‘i, only eight hawksbills (all immatures) have been encountered at capture sites including Kiholo Bay and Ka‘u (Hawai‘i), Palo‘ou (Moloka‘i) and Makaha (O‘ahu) (NMFS 1998b). It was only recently discovered that hawksbills appear to be specialist sponge carnivores (Meylan 1988). Previously they had been classified as opportunistic feeders on a wide variety of marine invertebrates and algae.

Increasing human populations and the concurrent destruction of habitat are also a major concern for the Pacific hawksbill populations (NMFS 1998b). Hawksbill turtles appear to be rarely caught in pelagic fisheries (McCracken, 2000). However, incidental catches of hawksbill turtles in Hawai‘i do occur, primarily in nearshore gillnets (NMFS 1998b). The primary threats to hawksbills in Hawai‘i are increased human presence, beach erosion and nest predation (*e.g.,* by mongooses) (NMFS 1998b).

~~3.9.5.2~~3.9.4.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigation

A complete analysis of the in-air and in-water potential acoustic impacts from the construction of the Kona Kai Ola small boat harbor was completed by Marine Acoustics, Inc.(MAI) and is included in this document as Appendix T-3. In conducting this analysis, the best available scientific, environmental, geologic, and meteorological data were obtained and used to calculate the acoustic transmission loss (TL) and subsequently to predict the received levels (RLs) at the five receiver sites. State of the art acoustic propagation models were employed in this analysis to determine in-air and in-water TL. MAI used the Acoustic Integration Model© (AIM©) to assess the impact of the predicted acoustic sound field on the species of marine mammals that could conceivably occur near the Kona Kai Ola project site.

The conclusion of that report determined that the criteria for Level A impacts to marine mammals for either in-air or in-water conditions at the receiver sites were never exceeded for the model source and receiver locations for non-blasting activities. However, these thresholds could be exceeded by the explosive blasting used to create the new harbor. For both in-air or in-water acoustic propagation, this only occurred when an animal was within about 200 meters (656 ft) of the explosion, This condition could only occur when the explosive source was at locations farthest north in the new harbor and closest to the existing harbor. This condition mandates that a safety range out to at least 200 meters (656 ft) of the source be shown to be clear of all marine mammals and sea turtle prior to each blast to preclude potential Level A takes.

The MAI report indicated that the in-air RLs for the explosive sources would exceed the assumed 100 dBA threshold for Level B harassment of pinnipeds (seals) for ranges out to about 0.4 nm (i.e., 800 yds [731 m]). This threshold is nominally for pinnipeds, but it should be extended to surface resting marine mammals and basking or beached sea turtles. Therefore, an in-air safety buffer of at least 731m from any explosive source is proposed, that should be maintained and found clear of marine mammals and basking or beached sea turtles prior to any blasts. It should be noted that although a receiver site was not modeled specifically in the existing harbor, that area is often within the range of this safety buffer and that extra care should be taken to ensure that no marine mammals or sea turtle are in the existing harbor prior to any blast. Analysis of the most restrictive Level B in-water explosive threshold shows that it is only exceeded when an animal is closer than 300 m (984 ft) from the explosive source.

Although the possibility exists for Level B impacts to marine mammals, based purely on the sound fields produced by the explosive blasts, analysis is the marine mammal distribution and movement as predicted by the AIM model, indicates that this is very unlikely situation. Therefore, it is expected that there will be much less than 0.5 Level B takes, with or without mitigation. But the mitigation safety buffer must still be enforced to preclude the unlikely possibility of marine mammals or sea turtle being near the explosive sources when they are used.

It should be recognized that several mitigation measures are already built into the proposed project. For example, the proposed practice to maintain a rock "dam" separating the construction site from the existing harbor reduces acoustic energy propagating to area potentially containing marine mammals or sea turtles. Also, this dam precludes animals from entering the construction area. This dam or land-bridge will be in place for all drilling and dredging activities, except for the removal of the land bridge itself.

Several other possible methods of mitigation are available to the Kona Kai Ola project, and feasibility, practicality, and benefit will be discussed with the National Marine Fisheries Service (NMFS) during consultation, and may be implemented subsequent to that consultation. The first possible mitigation technique is to acoustically monitor the potentially impacted areas during construction to: a) assess the accuracy of the modeling and b) to interact proactively with construction personnel to ensure that the identified threshold levels are not exceeded. Although the best available science and data was used to model the acoustics of the area, numerous conservative assumptions needed to be built into the modeling. By monitoring the actual levels received, in-situ corrections/updates to modeled parameters could potentially reduce the built--in conservativeness and reduce the potentially impacted areas. For example, the modeling assumes that all of the small voids in the bedrock are water-filled and therefore impart minimum attenuation on the acoustic signal as it propagates through. If even a small percentage of the voids are gas-filled, this attenuation would increase greatly and the impacted area would be reduced.

Another possible mitigation technique would be to augment the land-based visual observer, who it is assumed would verify that the area was clear the animals, with boat-based observers. This would increase the effectiveness of recognizing the presence of marine mammals and sea turtles in the potentially affected areas.

Additionally, interactions with the construction teams to alter the blasting methods modeled could potentially mitigate and reduce acoustic impacts to marine animals. A blasting expert will be consulted to develop a discontinuous non-linear blasting plan that will optimize cancellation of the explosion pressure wave into the marine environment. Examples of possible changes include: reducing charge size, reducing the depth drilled and blasted during any blast, reducing the number of blast holes or the volume of each blast, etc. The combination of these techniques with acoustic monitoring could potentially allow a large portion of the northern third of the harbor to be excavated with little or no potential impact to marine animals.

Interactions with NMFS during the consultation period will be used to examine these or any other techniques which may be identified. Also, the project is requesting help in identifying any possible method known to NMFS to establish and maintain turtle exclusion areas, especially in the existing harbor, without harassing the turtles. It may become apparent during those consultations that even with the identified buffer zones and mitigation techniques that an Incidental Harassment Authorization (IHA) is required, especially for the northern third of the proposed harbor.

Marine Acoustics, Inc. also completed a study of the expected ambient noise levels in Honokōhau Bay as a result of the increased vessel traffic from the expanded harbor. This report is included in this document as Appendix T-2. That report concluded that the average maximum daytime ambient noise levels would be expected to increase about 9.7 dB across the frequency spectrum from 100 Hz – 2 kHz, with the quadrupling of the vessels using the expanded harbor (i.e., the proposed action). Although significant, this increase would occur primarily during daylight hours, and the predicted median ambient noise would still be below 100 dB for all frequencies. The other significant factor is that there will be a quadrupling of the number of localized (i.e., small) individual sound fields in the area. These sound fields surround the individual boat that are contributing to the overall ambient noise. Noise levels in excess of 120 dB extend out to about 550 m (1804 ft) from these boats, with even high levels at closer ranges. Short of actual collisions with animals, Level A impacts are unlikely for noise levels typically generated by small boats. The Level B threshold nominally extends to approximately ten meters around each boat (depending on equipment such as size of motor, conditions of propeller and other equipment). Therefore potential Level B impacts to marine mammals and sea turtles would only occur within this range. Therefore, the chance for potential Level B impacts is small.

Completion of the harbor expansion project will increase the vessel traffic crossing the Hawaiian Islands Humpback Whale National Marine Sanctuary, the southern boundary of which is approximately four nautical miles north of Honokōhau Harbor. At a time when the whale population is growing, an increase of vessel traffic may increase the likelihood of vessel-whale collisions. Related to vessel traffic, an increase in whale watching activities is also likely. Vessels participating in these activities directly seek out higher whale population densities, increasing the likelihood of collisions, but also having the potential for disrupting whale behaviors such as resting, courting, mating or birthing.

As noted earlier, however, of the ~~27~~ 22 recorded whale strikes in the main Hawaiian Islands, only ~~two~~ three were recorded off the Kona coast. Sanctuary managers may need to implement additional regulations for private and/or commercial activities directly involving whale encounters. Mariner education programs, already in place as part of Sanctuary operations, will help to mitigate possible impacts due to increased boaters, and the proposed marine science center will complement Sanctuary educational programs.

~~Impacts to turtles may occur during construction of the marina. Since most of the marina will be excavated in a land-locked condition, turtles will not be subject to any potential harm from excavation. Experience during construction of the Ko Olina lagoons, and the expansion of the Barber's Point Harbor on O'ahu indicate that turtles abandoned their offshore (30-100 ft depth) resting habitats and concentrated in very near shore waters adjacent to the harbor and, at times, even within the active construction areas as soon as blasting and excavation began. Although no turtle injuries or mortalities were reported during either of those harbor construction activities, this should serve as a cautionary example for future coastal construction activities.~~

An increased level of impacts to turtles from increased boating and fishing activities may occur. ~~The level of impact documented by National Marine Fisheries Service is limited to only three turtle mortalities confirmed, since 1982, from a total of 3,861 strandings throughout the Main Hawaiian Islands~~. Of the 3,861 turtle strandings recorded from the Main Hawaiian Islands since 1982, 75% were mortalities, and of these about 4% (~est. 116, from Figure 3 of Chaloupka, et.al.) were from boat strikes and 3 of these occurred within 10 miles of Honokōhau Harbor. Data from NPS staff at the adjacent Kaloko-Honokōhau National Historical Park show a total of 20 strandings within the parking (19) and harbor (1) between 2000 and 2006 with one attributed to boat strike and 6 to fishing gear entanglement. Eleven additional gear entanglements and one additional boat strike were also recorded but not listed as strandings. Human caused impacts from fishing and boat strikes are anticipated to increase as turtle populations continue to increase and boating /fishing activities increase with the expanding harbor.

~~It would appear that anthropomorphic impact to turtles from boat strikes and fishing activities is very low along the Kona Coast adjacent to the existing harbor. It is likely that this is due in part to the relatively steep ocean bottom that limits the habitat of the turtles to the very nearshore areas away from the areas of heavy boat traffic~~. Recognition by the general public that sea turtles are protected ~~also~~ puts a heavy social pressure on fishermen who may inadvertently catch a sea turtle, and is likely a factor in the recovery of this species. Although no adverse impacts to turtles have been documented within the existing harbor, the close proximity of boats and turtles in this environment is cause for concern.

~~During land-based construction of the marina, no mitigation is necessary as previous experience has shown that turtles are not adversely impacted by these activities.~~ Once the land bridge is open, ~~however,~~ it is highly likely that turtles will be attracted into the new harbor and be subject to potential harm from in-water construction of piers or other facilities. During this period of time and until the harbor is operational, ~~it is recommended that a~~ mesh barrier will be ~~is~~ erected across the new harbor channel to exclude turtles from the inner basin. The mesh size needs to be selected in consultation with ~~regulatory~~ NMFS ~~agencies~~ to make sure it does not entangle turtles.

As the new harbor area will ~~likely~~possibly attract turtles to the basin (similar to the existing harbor) and an increase in boat traffic is expected in the harbor channel there will be an increased possibility of turtle strikes within the channel and new harbor area. To minimize this possibility it is ~~recommended~~ proposed that educational signs be erected around the harbor describing the turtles and warning boaters to be cautious while traversing harbor channels. The slow no-wake lane in the entrance channel should also be strictly enforced and the State should consider extending the slow no-wake zone further out to the first green buoy.

~~As all marine mammals have very sensitive hearing, any loud underwater sounds have the potential to disturb these creatures. Potential underwater acoustics may impact marine mammals and sea turtles during construction activities, such as blasting and pile driving. Appendix Q contains a study of underwater noise impacts during the construction and operation of the proposed project.~~

~~To mitigate impacts related to noise generated by construction activities, such as blasting and pile driving, a program to monitor sound levels and the presence of marine mammals and sea turtles will be implemented. Construction activities will be adjusted if whales, monk seals, dolphins or sea turtles are in the vicinity. Further, keeping the land bridge closed to the ocean until all major pile driving and blasting are completed will further avoid adverse impacts.~~

~~Increased boat traffic will result in increased low intensity sounds in the harbor area and along transit routes. The ecological role played by anthropomorphic sound in the marine environment has recently received heightened awareness. Evidence from declassified Department of Defense ocean recordings off of San Diego show that background sound levels off-shore of the harbor have increased approximately ten-fold in 30 years. Much of this increase in sound level has been ascribed to large ship traffic. While intense sound levels can adversely impact marine mammals and potentially other species, this level of sound pressure has not been shown to be produced by the small boats envisioned to occupy the new marina.~~

~~Adverse impacts of lower intensity noise, such as from small boat engines, have been very difficult to quantify. No definitive information is available to determine the level of impact produced by increase in small boat generated noise on fish, marine mammals and sea turtles. Given the sporting habit of spinners and other dolphins of bow-riding ships and small boat wakes, they are apparently not overtly impacted by vessel traffic noises.~~

~~However, boat-generated noises can be reduced by slowing boats to "slow-no-wake" in the main traffic lane of the entrance channel. The State could also consider extending the "slow-no-wake" lane out to the first green buoy. Appropriate signage to enforce these requirements is recommended.~~

~~3.9.6~~3.9.5 Ciguatera

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

(P)1012.7

JAN 2 2 2007

Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Vithanage:

Subject: Kona Kai Ola
Draft Environmental Impact Statement
North Kona, Island of Hawaii
TMK: 7-4-8:071-72, 3 (por), 99

Thank you for the opportunity to review the information regarding the subject project. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities and we have no comments to offer.

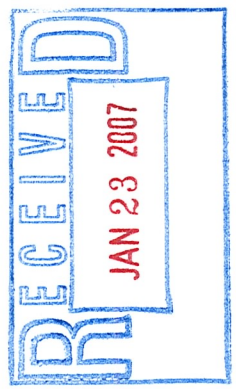
If you have any questions regarding the above, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

ERNEST Y.W. LAU
Public Works Administrator

DD:mo
c: Ms. Genevieve Salmonson, OEQC
Ms. Linda Chin, DHHL
Mr. Scott Condra, Jacoby Development

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P.O. BOX 119
HONOLULU, HAWAII 96810



Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

3681344321

oceanit
innovation through engineering & scientific excellence

January 29, 2007

Mr. Ernest Y. W. Lau
Public Works Administrator
Hawaii State Department of Accounting and General Services
POST OFFICE BOX 119
Honolulu, Hawaii 96810

Dear Mr. Lau:

Subject: **Kona Kai Ola Draft Environmental Impact Statement (DEIS)**
Response to Your Comments Dated January 22, 2007

Thank you for your letter responding to the Kona Kai Ola Draft Environmental Impact Statement. We understand that the project does not impact any of the Department of Accounting and General Services' projects or existing facilities and your agency has no comments about the Kona Kai Ola Draft Environmental Impact Statement at this time.

Your comment letter and this response are to be included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Homelands
Jacoby Development, Inc.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF BUSINESS SERVICES

February 5, 2007

Mr. Dayan Vithanage
Oceanit
828 Fort Street Mall, 6th Floor
Honolulu, Hawai`i 96813

Dear Mr. Vithanage:

Subject: Draft Environmental Impact Statement for Kona Kai Ola
Kealakehe, Hawaii TMK: 7-4-8: 071, 072, por 003, por 099

The Department of Education (DOE) has reviewed the Draft Environmental Impact Statement (DEIS) for the marina-focused development proposed for lands owned by the Department of Hawaiian Home Lands and the State of Hawaii, adjacent to Honokohau Harbor. The proposal is for an 800-slip boat marina and 1,803 vacation ownership or time-share ownership residential units.

The DEIS is confident that there will be no permanent residences permitted at the site and therefore the project has no direct impact on area schools. However, there is no reference to a prohibition on living aboard the boats in the 800-slip marina.

The DEIS is also adamant that there will be no permanent residential development allowed, but never refers to a prohibition on permanent residency. It appears that the prohibition language only refers to how units are marketed or intended.

If the project's developers are certain that they will have no impact on the area schools, they should consider formally prohibiting children under the age of 18 living anywhere in the project. There is no other way to insure the developers' intent and prevent any impact on the area's public schools.

The DOE is responsible for providing education to all students residing in the state, no matter how long their length of residency. We realize how marketing plans and intentions change with market forces and the demographics of communities can change with time. The DOE will be responsible for educating all of the children who temporarily or permanently call Kona Kai Ola their home.

Since the DOE is unlikely to see any indication of a prohibition on children residing in the project, we request a school fair-share contribution and suggest the following standard fair-share condition language:

> The Applicant shall contribute to the development, funding, and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the Department of Education. Terms of the contribution shall be agreed upon in writing by the Applicant and the Department of Education prior to obtaining building permits for any aspect of the project.

The DOE has no other comment at this time. We appreciate this opportunity to review the DEIS. If you have any questions, please call Heidi Meeker of the Facilities Development Branch at 733-4862.

Sincerely yours,

Duane Y. Kashiwai
Public Works Administrator

DYK:jmb

c: Art Souza, Kealakehe CAS
Linda Chinn, DHHL
Scott Condra, Jacoby Development, Inc.

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July 23, 2007

Duane Y. Kashiwai, Public Works Administrator
State of Hawai'i Dept. of Education
P.O. Box 2360
Honolulu, Hawai'i 96804

Dear Mr. Kashiwai:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 5, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement.

We assure that permanent residency is prohibited within the boundaries of the Kona Kai Ola project. Further, on-board living in the new proposed Kona Kai Ola marina will be restricted. The prohibition of residency of people of any age will be reinforced in the land use entitlement processes.

The EIS will add the standard fair-share language that you suggested in Section 4.10.4: "JDI will contribute to the development, funding and/or construction of school facilities, on a fair-share basis, as determined by and to the satisfaction of the DOE. Terms of contribution shall be agreed upon in writing by JDI and the DOE prior to obtaining building permits for any aspect of the project."

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File:

Date: 2/14/07

Number of pages including cover: 2

Transmit to: Mr. Dayan Vithanage

FAX: 531-3177 Telephone: 531-3017

From: Jiacai Liu / Environmental Planning Office

FAX: (808) ~~586-4370~~ 586-4346 Office Telephone: (808) 586-4337

Message:

Please include this Comments from DOH Wastewater Branch to our comments on 2/5/07. EPO-07-003.

NOTE: If this transmittal was illegible or incomplete, please call (808) 586-4337.

14 FEB

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME LEINAALA FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File:

H7 4 008 071 & 072

February 14, 2007

To: Jiacai Liu, Environmental Planning Office
Reference Number / Email Subject: **EPO 07- 003**

From: Harold Yee, Chief, Wastewater Branch

Subject: **Draft Environmental Impact Statement for Kona Kai Ola Project**
At North Kona, Island of Hawaii
TMK: (3) 7-4-008: 071 and 072
TMK: (3) 7-4-008: 099 (proposed parkway through project site)
TMK: (3) 7-4-008: 003 (portion) 530 acres

We have reviewed the subject document which includes a community focused marina and commercial village that features visitor lodging, a marine science center water features and a cultural center.

We have the following comments to offer. The subject project is located in the Non-Critical Wastewater Disposal Area (CWDA) as determined by the Hawaii County Wastewater Advisory Committee.

The developer proposes to treat wastewater generated from the development by connecting to the existing Kealakehe WWTP. The Kelakehe WWTP facility was built with the intent of using the effluent for irrigation as its primary means of disposal. The current effluent disposal method, a shallow seepage pond, deeply concerns us. The continued use of the seepage pond, new marina and lagoons filled with sea water may be detrimental to the water quality of the adjacent shoreline water.

Before we can concur with the draft EIS, the following items must be satisfactorily addressed:

1) No additional effluent should be sent to the existing "temporary" seepage pond. The County's wastewater treatment facility needs to be upgraded into an R-1 facility such that effluent can be used with minimal restrictions. Further details on this matter is needed; and

2) Language in the draft EIS needs to clearly state that the developer will work with the County to upgrade the wastewater facilities to produce R-1 recycle water, and state clearly that R-1 recycle water will be used to the maximum extent possible in the development.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at telephone 586-4294.

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July 23, 2007

Harold Yee, Chief
Wastewater Branch
State of Hawai'i Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

Dear Mr. Yee:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 14, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement.

We acknowledge the requirement that no additional effluent should be sent to the existing "temporary" seepage pond. Additional improvements will be discussed with the County regarding the wastewater treatment plant, and upon availability of R-1 recycle water from the County, the development will use it to the maximum extent possible.

As discussed in EIS Section 4.10.6, the Kona Kai Ola developer will work with Hawai'i County to upgrade the Kealakehe Waste Water Treatment Plant so that it operates efficiently and that it treats the effluent sufficiently to produce R-1 reclaimed water suitable for re-use. Further, it is anticipated that the Kona Kai Ola project's non-potable water facilities, including any R1 irrigation facilities, will ultimately connect to the County's proposed effluent reuse system.

The developer will conform with applicable provisions of the Department of Health Administrative Rules, Chapter 11-62 regarding wastewater systems.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

LINDA LINGLE
GOVERNOR

PATTI Y. MIYAMOTO
INTERIM EXECUTIVE DIRECTOR

PAMELA Y. DODSON
EXECUTIVE ASSISTANT

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
HAWAII PUBLIC HOUSING AUTHORITY
1002 NORTH SCHOOL STREET
POST OFFICE BOX 17907
Honolulu, Hawaii 96817
FAX: (808) 832-6030

IN REPLY PLEASE REFER TO:

07:CMS/006

January 16, 2007

Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Vithanage:

Re: Draft Environmental Impact Statement for Kona Kai Ola

We have no comments on the above Environmental Impact Statement.

Thank you for the opportunity to comment.

Sincerely,

PATTI Y. MIYAMOTO
Interim Executive Director

CONSTRUCTION MANAGEMENT
Hawaii Public Housing Authority
P. O. Box 17907
1002 N. School Street
Honolulu, Hawaii 96817

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JAN 18 2007

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January 29, 2007

Ms. Patti Y. Miyamoto
Interim Executive Director
Hawaii Public Housing Authority
Hawaii State Department of Human Services
POST OFFICE BOX 17907
Honolulu, Hawaii 96817

Dear Ms. Miyamoto:

Subject: **Kona Kai Ola Draft Environmental Impact Statement (DEIS)**
Response to Your Comments Dated January 16, 2007

Thank you for your letter responding to the Kona Kai Ola Draft Environmental Impact Statement. We understand that your agency has no comments about the Kona Kai Ola Draft Environmental Impact Statement at this time.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Homelands
Jacoby Development, Inc.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

Roy
1-31-07

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 23, 2007

RUSH

RECEIVED
JAN 24 A10:58
COMMISSION ON WATER RESOURCE MANAGEMENT

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
_x_ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
_x_ Office of Conservation & Coastal Lands
_x_ Land Division – HDLO

FROM: Russell Y. Tsuji, Administrator
SUBJECT: Kona Kai Ola Draft Environmental Impact Statement
LOCATION: Kealakehe, North Kona, Hawaii, (3) 7-4-008:07, 72; 099 (por) and 3 (por)
APPLICANT: Oceanit for Jacoby Development, Inc.

Transmitted for your review and comment. Due to the volume of the above referenced document, we have attached only the Executive Summary and Table of Contents. A hard copy of the document is available for your review in Land Division office, Room 220. You may also request as copy of the document on CD by contacting Keith Chun of this office at 587-0431.

We would appreciate your comments on this document. Please submit any comments by February 1, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Keith Chun at 587-0431. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: _____
Date: 1/30/07

cc: Central Files

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

February 2, 2007

REF:

TO: Russell Tsuji, Administrator
Land Division

FROM: W. Roy Hardy, Hydrologic Program Manager
Commission on Water Resource Management

SUBJECT: Kona Kai Ola Draft EIS

FILE NO.:

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at *http://www.hawaii.gov/dlnr/cwrm*.

Our comments related to water resources are checked off below.

☒ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM: Additional information and forms are available at *www.hawaii.gov/dlnr/cwrm/forms.htm*.

☐ 4. The proposed water supply source for the project is located in a designated ground-water management area, and a Water Use Permit is required prior to use of ground water.

☒ 5. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.

☒ 6. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 7. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 8. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 9. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.

☐ 10. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 11. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 12. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ 13. We recommend that the report identify feasible alternative non-potable water resources, including reclaimed wastewater.

☒ OTHER:

No water use permit will be required as the project is not located within a designated water management area.

If there are any questions, please contact Ryan Imata at 587-0255.

RI:ss

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July 23, 2007

W. Roy Hardy, Hydrologic Program Manager
Commission on Water Resource Management
State of Hawai'i Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Hardy:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 2, 2007

Thank you for your comments to Mr. Russell Y. Tsuji, Administrator of the Land Division of the State Department of Land and Natural Resources, regarding the Kona Kai Ola Draft Environmental Impact Statement.

We note your recommendation for coordination with Hawai'i County regarding the Water Use Development Plan.

The required CWRM permits that you list are included in EIS Section 5.3, Permits Required for Project. The following text has been added to EIS Section 5.3, Permits Required for Project:

Table 3 identifies permits required for project implementation, including the agency, permit triggers and time frame.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

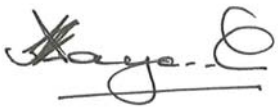
Table 3: Permits Required for the Project

Agency	Permit or Approval	Requirement	Time Frame
U.S. Army Corps of Engineers	Department of the Army (DOA) Individual Permit	Work in navigable waters; placing fill in waters of the U.S., placing navigation aids Will incorporate: ▪ Rivers and Harbors Act Section 10 ▪ Clean Water Act Sections 401 and 404 ▪ Coastal Zone Management Act Section 307 ▪ Endangered Species Act Section 7 ▪ National Historic Preservation Act Section 106	Prior to any in-water work or fill or placement of navigation aids or modification of terrestrial habitat that may impact species listed under Endangered Species Act
U.S. Coast Guard	Private Aids to Navigation approval	For approval for marking aids to navigation	Prior to placement. Note: placement requires DOA Permit.
State Board of Land and Natural Resources	Easement over Submerged Lands / Shared Harbor Channel Entrance	HRS Section 171-53 (6)	Prior to commencement of operations of new marina
State Department of Business, Economic Development & Tourism	Determination of Hotel Development	HRS Section 171-42	Prior to approval of Master Development Plan
State Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL)	Conservation District Use Permit (CDUP)	For any work in the conservation district ▪ Kuakini Highway extension and SWAC pipe; Shoreline Park ▪ Hawaiian Cultural Park, Ocean Front Trail	Prior to any work in the conservation district
DLNR Commission on Water Resource Management	Well Construction Permit, Pump Installation Permit	For well construction or ground water source development	Prior to construction or development
State Department of Health (DOH) Clean Water Branch	401 Water Quality Certification	Triggered by DOA permit	Start simultaneously with DOA permit
		NPDES	
	- Individual Permit	Discharge into state waters	Prior to construction
	- NOI Appendix C	Construction activities on one or more acres	Prior to construction
	- NOI Appendix G	Construction dewatering	Prior to construction

Agency	Permit or Approval	Requirement	Time Frame
	- NOI Appendix L	Discharge of circulation water from decorative ponds	Prior to construction
	All NPDES applications	Copy to DLNR/State Historic Preservation Division	Simultaneously with DOH NPDES submittals
	Zone of Mixing	Include with NPDES for discharge into state waters	Concurrent with NPDES application
DOH Safe Drinking Water Branch	Water Source Approval and capacity demonstration	For new drinking water sources	After source is identified
	Operator Certification	For operators of water systems	Before system use
	Construction Plan Review	For water system improvements and connections	Before construction
	Underground Injection Control (UIC) Permit	For injection well operations	Before operations
DOH Clean Air Branch	Dust control management plan	Recommended only, not required	During construction planning
DOH Noise, Radiation, & Indoor Air Quality Branch	No permit	Comply with Administrative Rules Chapter 11-46, Community Noise Control	During construction
County of Hawai‘i	Special Management Area (SMA) Major Permit	Work in the SMA	Prior to any construction or other work in the SMA (does not include DHHL land)
	Zoning	Must be consistent with the General Plan	After acceptance of EIS
	Building Permit	To erect a new structure including fences, swimming pools and retaining walls more than 3’-0" in height, and water catchments regardless of depth or capacity	Prior to construction
	Grading, Grubbing, and Stockpiling Permits	For volumes as specified by county	Prior to activity
	Development, subdivision, drainage and flood zone reviews	For development	Prior to construction

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 23, 2007

RUSH

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
_x_ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
_x_ Office of Conservation & Coastal Lands
_x_ Land Division – HDLO

FROM: Russell Y. Tsuji, Administrator
SUBJECT: Kona Kai Ola Draft Environmental Impact Statement
LOCATION: Kealakehe, North Kona, Hawaii, (3) 7-4-008:07, 72; 099 (por) and 3 (por)
APPLICANT: Oceanit for Jacoby Development, Inc.

Transmitted for your review and comment. Due to the volume of the above referenced document, we have attached only the Executive Summary and Table of Contents. A hard copy of the document is available for your review in Land Division office, Room 220. You may also request as copy of the document on CD by contacting Keith Chun of this office at 587-0431.

We would appreciate your comments on this document. Please submit any comments by February 1, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Keith Chun at 587-0431. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed:
Date: 2/1/07

cc: Central Files

Subject: **Kona Kai Ola Development, North Kona, Hawaii**

The Department of Land and Natural Resources, Division of Boating and Ocean Recreation (DOBOR) offer the following comments to the subject Draft Environmental Impact Statement (DEIS):

DOBOR is concerned about the negative impacts the development will have on the adjacent Honokohau Small Boat Harbor (Honokohau).

The DEIS should consider and further study the alternative(s) of widening the existing entrance channel and/or creating a new channel. Utilizing the existing channel for the additional traffic generated by the new marina will create impacts that are not addressed in the DEIS.

The BTS pg 47 states that "*The most direct measure to reduce traffic congestion associated with the proposed marina expansion is to widen the marina entrance channel to accommodate greater traffic flow.*" The BTS pg 47 then states "*If widening the entrance channel is determined to be infeasible, the most cost effective mitigation measure to minimize the impacts of increased entrance channel traffic is to educate new and existing boater on rules and entrance channel etiquette.*" There is insufficient evidence in the DEIS to support that widening the channel is infeasible.

The DEIS states that 800 (or a reduced amount of 600) additional boats will push the vessel traffic situation to the limit or beyond (LOS E or F). In other words, the existing channel will essentially be "maxed" out (or close to this condition) with the new marina traffic. The DEIS should address the impacts this would have on Honokohau and its users, and the ability of Honokohau to accommodate growth in the future. For example, the number of boaters that do not berth their boats in a wet slip or mooring is expected to increase as the population in West Hawaii continues to grow. This will increase the demand for launch ramps, trailer parking, and dry stack storage at Honokohau. The DEIS should address the impacts on the ability of Honokohau to expand its facilities to accommodate such growth, as well as the increased traffic of boaters using Honokohau, if the new marina will "max out" the capacity of the entrance channel. The DEIS should also discuss proposed mitigation measures, including widening of the existing channel and revising the mix/sizes of the proposed new boat slips.

The DEIS pg 94-95 states "*The new marina will result in an approximately three-fold increase in boat traffic...*" and that widening of the channel is considered possible, but further states that there may be a "*potential downside of increased wave penetration into the harbor*". The DEIS supports this further in the BTS pg 25 by stating that "*At times, the need to exclude as much wave energy as possible from the harbor may override the congestion consideration; then, an exceptionally narrow entrance must be provided and its use restricted in some manner during peak hours. Both these exceptions, have direct relevance to the Honokohau entrance channel.*" We note that there is no conclusive evidence in the DEIS to support these statements as it relates to Honokohau, nor is there information provided that quantify the wave penetration impacts to the existing harbor. Also, the DEIS does not provide any model test results that would determine

whether or not the installation of breakwaters and/or wave attenuators could possibly mitigate the "potential" wave penetration.

The DEIS also states that widening the channel by 50 feet will reduce traffic congestion in half by creating one additional lane of traffic. If this is true, this should have been considered as a viable alternative and studied further.

The BTS pg 27 Table 5-1 incorrectly states that the navigable channel width of Ala Wai SBH is 150 feet. This should be corrected to 180 feet, which is consistent with the width of both Kewalo Basin and Ko'Olina Marina. Note that the largest vessel berthed at Ala Wai SBH is 85 feet as compared to 120 feet for Kona Kai Ola.

There is nearly a 120 degree turn in the existing entrance channel. The DEIS does not address this constraint nor does it consider design guidelines to account for a turn in the entrance channel. The "*United Facilities Criteria, DOD 2005*" states that the *"minimum entrance channel width for small craft harbors is 150 feet. If there is a turn inside, minimum width increases to 250 feet."*

The BTS pg 24 statement that references American Society of Engineers (ASCE) guideline for entrance channel width of 125 feet (5 x 25' beam) is misleading. This is the guideline for "lane width", not "channel width". If this guideline is to be used, to maintain two-way traffic for a 120 foot design vessel would require an entrance channel of 250 feet. In other words, a 120 foot mega-yacht will limit traffic in the channel to single lane. This conflicts with the statement in the BTS pg 34 that states "*For the Honokohau entrance channel width of approximately 120 feet, this results in the equivalent of two traffic lanes; one outbound and one inbound."* The DEIS does not address this constraint nor does it address the impacts if a large vessel would break down in the channel. What would happen if this occurred during a tsunami or hurricane event? The BTS does make a note that "*the 120-foot long design vessel mega-yacht would most likely be piloted by a skilled professional, thereby reducing the minimum width requirement.*" This is purely speculative and does not account for the "less skilled" pilots who also have to share the channel.

The DEIS does not sufficiently address the additional congestion created by the new marina. The mitigative measures identified include education, signage, a traffic control tower, staggering fishing tournaments, and limiting vessel size. This certainly would help from a safety standpoint, however would not likely reduce congestion significantly.

We disagree with the statement in the DEIS pg 94 stating that *"Various individuals and stakeholders were interviewed regarding existing harbor conditions. The general consensus is that the harbor entrance does not become too congested."* We also disagree with the BTS Conclusion pg 49 that states "*Presently the Honokohau Small Boat Harbor entrance channel has no traffic congestion problems.*" On the contrary, all boaters that we interviewed mentioned they already consider the channel "marginal" and that there are existing channel problems and hazards.

The DEIS does not contain enough information to support the statement in the BTS pg 19 that "*The proposed marina project will not add to the launch ramp activity that already existing within the harbor.*" The DEIS does not identify how boats in the new marina will retrieve or launch their vessels for annual maintenance and/or repair. The DEIS also does not adequately address how this activity will impact existing launching capacity and/or operations at the Honokohau. The existing ramps at Honokohau already experience periods of congestion. Although the larger boats will have to be hauled out on Oahu, as stated in the Market Study, this still leaves a significant number of vessels needing haul-out capability from the new marina. The DEIS should address these impacts and proposed mitigation measures.

Honokohau has 5 acres of parking, sufficient for 200 cars/trailers, if re-striped to optimize use. There is no room for overflow parking at the existing harbor. The DEIS should describe the impacts to the Honokohau's existing parking as a result of the additional load of boat operators, crew, guests, tourist etc. that may use any of the facilities at the existing harbor and any proposed mitigation measures.

The sewage generated from Honokohau's facilities are serviced by Individual Wastewater Systems. The DEIS does not address how the potential overflow of users from the new marina may impact the capacity of these systems.

The DEIS pg 9 does not describe the details of the marina support facilities except that "*approximately eight acres are proposed for marina industrial uses such as boat repair, launching, storage, rental, sanding/paint station, and fueling.*" From this statement, we cannot determine whether or not these facilities are sufficient to service the new marina's additional load nor can we determine if a lack of proposed facilities will result in overtaxing of Honokohau's facilities.

Due to the lack details on the marina support facilities, the DEIS does not adequately address the impacts the new marina will have on Honokohau's existing boat repair services and storage as well as to the customers who utilize this service. Is another similar service facility being planned?

The Market Study (sect 4.2.4) identifies lack of amenities at Honokohau harbor by stating "*The volume of charter, sport, commercial, subsistence and recreational fishing that takes place out of Honokohau is often hampered by the lack of adequate ice supply.*" This section also mentions a need for other amenities such as fish cleaning stations. Due to the lack of details on the marina support facilities, the DEIS does not properly address how the additional boating activity will continue to tax Honokohau's amenities or if the new proposed amenities will be sufficient.

The DEIS does not address impacts the new marina will have on the existing fuel dock service and retail stores.

The DEIS does not contain sufficient information such as the referenced 3-D hydrodynamic model to confirm many of the statements that address water quality impacts.

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July 23, 2007

Edmund Underwood, Administrator
Division of Boating and Ocean Recreation
State of Hawai'i Dept. of Land and Natural Resources
333 Queen Street, Suite 300
Honolulu, Hawai'i 96813

Dear Mr. Underwood:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 1, 2007

Thank you for your comments to Mr. Russell Y. Tsuji, Administrator of the Land Division of the State Department of Land and Natural Resources, regarding the Kona Kai Ola Draft Environmental Impact Statement.

Prior to addressing your specific comments, we note that the EIS discusses three alternatives, one of which includes a marina that is smaller than that proposed in the project. As explained in the DEIS, the agreement between JDI and the State of Hawai'i established a required scope and scale of the project for which the impact analysis was provided. Several comments have addressed the fact that alternatives other than the No Project Alternative were not addressed in the DEIS Section 2, Alternatives Analysis.

While Kona Kai Ola is of the position that alternative actions other than a No Project alternative are not currently feasible absent an amendment to the agreement with the State, the agency and public comments and additional information generated as a result of inquiry into issues raised by the comments have been helpful in identifying alternative actions that will serve the State's goal of providing additional marina slips for the Kona area and that will serve to reduce or mitigate anticipated effects of the proposed development.

Thus, agencies such as the Land Division of the Department of Land and Natural Resources, the U.S. Department of the Interior Fish and Wildlife Service, and the Planning Department of the County of Hawai'i, and the Office of Environmental Quality Control (OEQC), as well as community organizations have commented that a reduced scale marina and related facilities should be considered. The OEQC has also asked that the alternative of a reduced scale project be evaluated under the assumption that DHHL may determine that a downsized project would be preferred.

In response to these comments on the DEIS and in consideration of measures to mitigate anticipated impacts, the EIS Section 2, Alternatives Analysis, has been revised to describe the following alternatives, which are discussed in more detail in the EIS:

- Alternative 1 is a project involving a 400-slip marina, 400 hotel units, 1,100 time-share units, and commercial and support facilities. This alternative would enhance water quality and avoid the need to widen the existing harbor entrance channel, as well as reduce traffic and socioeconomic impacts.

- Alternative 2 is an alternative that had been previously discussed, but not included in the proposed project that includes an 800-slip harbor and a golf course, and

- Alternative 3 is the no-action alternative.

A comparison between impacts related to the proposed project concept and impacts related to Alternative 1 indicates that a reduction in the acreage and number of slips in the marina, as well as the reduction in hotel and timeshare units, would generate less environmental, social and economic impacts.

The sensitivity of boat traffic to size of marina expansion was analyzed for Alternative 1, which features a 400-slip marina. The reduction of the marina from 800 to 400 slips results in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent during peak existing conditions. The LOS improves from E to D during average existing traffic condition, although remains at E during peak conditions.

Although positive economic impacts would be reduced, Alternative 1 can be considered as a preferable alternative because of reduced environmental impacts. However, while it can be concluded that the 25-acre marina in Alternative 1 would be the preferred size, the DLNR agreement establishes the size of the marina at 45 acres and 800 slips. An amendment to the DLNR agreement is required in order to allow Alternative 1 to proceed. Hence, selection of Alternative 1 is an unresolved issue at this time.

The additional EIS text that includes the added EIS Section 2, Alternative Analysis, is contained in Attachment 1 of this letter.

Responses are provided to specific comments, which are italicized, and identified by page number and comment number. It was assumed the first comment is paragraph 3 on page 1.

Page 1, Comment 1 – *The DEIS should consider and further study the alternative(s) of widening the existing entrance channel and/or creating a new channel. Utilizing the existing channel for the additional traffic generated by the new marina will create impacts that are not addressed in the DEIS.*

Response – Widening of the Honokōhau Small Boat Harbor entrance channel was cited in the Boat Traffic Study (BTS) as an effective measure to mitigate boat traffic impacts associated with the proposed project. However, the existing harbor and entrance channel was constructed by the US Army Corps of Engineers (USACOE) and the entrance channel falls under Federal jurisdiction. Paul Mizue of the Honolulu District, USACOE provided the following input (email dated 04 April 07) regarding the implications of widening a Federal channel:

- Under usual Corps processes, the modification must be authorized and funded for construction by the Congress or as delegated. To achieve authorization, a decision document (usually a feasibility report) must be prepared which provides justification from a technical and economic basis and showing compliance to environmental requirements and also evidence of financial support from the non-Federal sponsor.
- There is a process for non-Federal sponsors to undertake the feasibility on their own and obtain future reimbursement. However, prior Corps approval is required to undertake this course of action.
- The normal Corps process is arduous since it is highly dependent on the Federal and cost sharing capability of the non-Feds (in this case, State DLNR). Even under the best of circumstances for a small project, it will take 8 years for completion. We have had no information from the State DLNR that they want to undertake such an action.
- If the widening is accomplished by private interests, the Corps must be consulted and approval granted since the increase may affect authorized navigation features. We must be assured that the public interest is not adversely affected, such as increased surge action limiting navigation. Also, since the widening would be done by private interests, the maintenance for the additional width (and possibly depths) would be strictly a private responsibility. In addition, the private interests must obtain a Corps permit (probably Section 10) for initial widening and all subsequent maintenance.

  We note that reduction to 400 slips in Alternative 1 reduces the problems of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Page 1, Comment 2 – *There is insufficient evidence in the DEIS to support that widening the channel is infeasible.*

Response – The DEIS does not conclude that widening the channel is infeasible. Both the FEIS text and the BTS presented in Appendix Q-1 cite the significant boat traffic reduction benefit associated with widening the channel, but also cite the potential downside of additional wave penetration (also mentioned by the USACOE in the response to Page 1, paragraph 1; 4th bullet). However, the key consideration for why channel widening was not investigated further was the implications associated with

it being a Federal channel. These implications are summarized in the response to Comment 1.

We note that reduction to 400 slips in Alternative 1 reduces the problems of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Page 1, Comment 3a – *The DEIS states that 800 (or a reduced amount of 600) additional boats will push the vessel traffic situation to the limit or beyond (LOS E or F) In other words, the existing channel will be essentially "maxed" out (or close to this condition) with the new marina traffic. The DEIS should address the impacts (the addition of 800 or 600 boats) would have on Honokohau and its users, and the ability of Honokohau to accommodate growth in the future.*

Response – Opportunities for growth at the existing harbor appear to be limited. The marina slips are at full occupancy, and peak launch ramp usage, which coincides with times of identified peak boat traffic congestion, is limited due to parking capacity. Some parking capacity could be gained by more efficient layout and striping. If significant expansion capacity is considered for the existing harbor (e.g. greater land area for parking and/or increased dry storage capacity), then the State Department of Land and Natural Resources (DLNR) must decide how best to allocate size and therefore demand for the limited entrance channel width.

As previously discussed, the sensitivity of boat traffic to size of marina expansion was analyzed for Alternative 1. The reduction of the marina from 800 to 400 slips results in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent during peak existing conditions. The LOS improves from E to D during average existing traffic condition, although remains at E during peak conditions. Further, the reduction to 400 slips in Alternative 1 reduces the problems of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Page 1, Comment 3b – *The DEIS should also discuss proposed mitigation measures, including widening of the existing channel and revising the mix/sizes of the proposed new boat slips.*

Response – The issue of channel widening is addressed in the response to Comment 1. Regarding the mix/sizes of the proposed new boat slips, a number of points can be made. First, the Development Agreement specifies an 800 boat slip marina which would represent the second largest marina in the State. It is therefore important to implement a slip mix that reflects current and future market demand. The 42-foot average slip length is three feet shorter than the existing slip mix at Ko Olina on Oahu, and is considered at the lower end of an appropriate representative

market profile, both Statewide and nationally. Ko Olina is cited as an example of an effective private marina in Hawai‘i.

Second, less than half of the peak entrance channel congestion results from the new marina. For example, Table 6-5 of the BTS shows the peak volume capacity ratio for the existing marina during peak usage is 0.63, and increases to 1.00 with addition of the 800-slip marina. Thus the existing traffic constitutes 63 percent of the peak volume, with the new marina representing the remaining 37 percent. Therefore, any reasonable downshift in average slip size in the new marina will not result in a significant reduction in peak congestion. For example, consider a reduction in average new marina slip length of 5 feet, down to an average of 37 feet. If we assume the new marina traffic accounts for half the traffic congestion during peak hours, then the average length reduction of the entire "fleet" using the entrance channel would be around 2.5 feet. Table 6-2 in the Boat Traffic study shows that for an average speed of 4-5 knots, the channel capacity would increase by less than 10%.

The EIS does address potential mitigation of boat traffic impacts through reducing the number of new slips. Page 4-50 of the EIS states that "reducing the added recreational slip count to 600 may result in an average traffic flow reduction of 6 percent to 11 percent, and avoids the capacity exceedence during peak usage conditions."

The Alternative 1 reduction to 400 slips reduces the problems of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Page 1, Comment 4 – *The DEIS pg 94-95 states "The new marina will result in an approximately three-fold increase in boat traffic…" and that widening of the channel is considered possible, but further states that there may be a "potential downside of increased wave penetration into the harbor." The DEIS supports this further in the BTS pg 25 by stating that "'At times, the need to exclude as much wave energy as possible from the harbor may override the congestion consideration; then, an exceptionally narrow entrance must be provided and its use restricted in some manner during peak hours.' Both these exceptions have direct relevance to the Honokōhau entrance channel." We note that there is no conclusive evidence in the DEIS to support these statements (referring to potential for increase wave penetration into the existing marina if the entrance were widened) as it relates to Honokōhau Harbor, or is there information provided to quantify the wave penetration impacts to the existing harbor. Also, the DEIS does not provide any model test results that would determine whether or not the installation of breakwaters and/or wave attenuators could possibly mitigate the "potential" wave penetration.*

Response - It should first be clarified that the DEIS statement that the "new marina will result in an approximately three-fold increase in boat traffic" is inaccurate and the EIS has been revised accordingly. Though

the new 800 slips would increase the marina wet slips three-fold, over half of the entrance channel traffic volume during peak hours is generated from the existing marina launch ramp.

Regarding channel widening, the impacts of this action were not investigated in detail for reasons discussed in the response to Comment 1 and Comment 2. If the State DLNR chooses to pursue widening of the entrance channel, further study of the impacts on the existing harbor wave environment would be appropriate. At this point, based on available studies, literature and judgment, widening the entrance channel to the south would increase wave energy penetration into the existing harbor, which is a concern also raised by the USACOE as discussed in the response to Comment 1. Harbor user interviews indicate that the existing harbor is subject to occasionally severe wave penetration and associated surge action in the outer basin, and careful consideration of any alternative that may further exacerbate the situation would be warranted.

Construction of breakwaters and/or wave attenuators raise their own significant issues regarding environmental impacts associated with sensitive habitat, navigation, water circulation and others, and were not considered feasible mitigation measures. DLNR and JDI decided that utilizing the existing entrance channel would minimize project impacts to coastal processes and sensitive habitat. The required time and cost for permitting any modifications to the entrance channel were considered to be infeasible for the project.

As previously discussed, the sensitivity of boat traffic to size of marina expansion was analyzed for Alternative 1. The reduction of the marina from 800 to 400 slips results in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent during peak existing conditions. The LOS improves from E to D during average existing traffic condition, although remains at E during peak conditions. Further, the reduction to 400 slips in Alternative 1 reduces the problems of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Page 2, Comment 5 – *The DEIS also states that widening the channel by 50 feet will reduce traffic congestion in half by creating one additional lane of traffic. If this is true, this should have been considered as a viable alternative and studied further.*

Response – Please refer to responses to Comment 1 and Comment 2.

Page 2, Comment 6 – *The BTS pg 27 Table 5-1 incorrectly states that the navigable channel width of the Ala Wai SBH is 150 feet. This should be corrected to 180 feet…*

Response – Figure 5-1 of the BTS (page 28) shows a portion of the NOAA Navigation Chart 19369 and calls out the navigable channel dimensions of "22 ft by 150 ft." The Ala Wai SBH was cited an example of comparable marina size and entrance width. Even if the 150 foot width is in error on the referenced chart, it still serves as a good reference point.

Page 2, Comment 7 - *There is nearly a 120 degree turn in the existing entrance channel. The DEIS does not address this constraint nor does it consider design guidelines to account for a turn in the entrance channel. The "United Facilities Criteria, DOD 2005" states that the "minimum entrance width for small craft harbors is 150 feet. If there is a turn inside, minimum width increases to 250 feet.*

Response – The turn is an important navigation issue, particularly during peak two-way traffic hours and/or significant wave activity in the entrance. The existing harbor does not meet this guideline and doubling the entrance channel width could have significant jurisdictional and environmental impact constraints. It is further noted that the referenced document provides design guidance and not codified standards since there are many examples of effective marinas that do not meet all guidelines. As a result, harbor patrol personnel and long-time harbor users were interviewed specifically regarding navigation conditions in the marina entrance channel. According to interview notes, the issue of the entrance channel turn was mentioned by a number of interviewees, citing it both as a blind spot and as a challenging turn during high wave events. Addition of the harbor master office with an elevated view of the entrance channel is intended to help mitigate the view obstruction issue. Boater education and increased harbor patrol activity such as a patrol boat is intended to help address the concerns regarding challenging navigation during high wave activity in the entrance channel.

Page 2, Comment 8a – *The BTS pg 24 statement that references American Society of (Civil) Engineers (ASCE) guideline for entrance channel width of 125 feet (5 x 25' beam) is misleading. This is the guideline for "lane width," not "channel width." If this guideline is to be used, to maintain two-way traffic for a 120 foot design vessel would require an entrance channel of 250 feet. In other words, a 120 foot design vessel will limit traffic in the channel to a single lane. This conflicts with the statement in the BTS pg 34 that states, "For the Honokohau entrance channel width of approximately 120 feet, this results in the equivalent of two traffic lanes; one inbound and one outbound."*

Response – It should have been clarified in the BTS that there will be a limited number of this size vessels in the harbor, and it is common practice to allow the design vessel full channel access in the case of a small channel without buoyed lane markers. In addition, the narrow portion of the entrance channel is relatively short. The size of the vessel should provide boaters in the vicinity ample opportunity to keep clear. As an example, the Atlantis marina in the Caribbean has a 100 to 120 foot wide

entrance channel and accommodates vessels up to 200 feet long with beams of 30 to 40 feet. As stated in the BTS, operators of this size vessel are typically highly-skilled.

Page 2, Comment 8b – *The DEIS does not address…the impacts if a large vessel would break down in the channel. What would happen if this occurred during a tsunami or hurricane event?*

Response – The larger vessels will most likely be operated by skilled professionals and the risk of one of these vessels breaking down in the channel is remote, particularly during either a hurricane or tsunami for which there is ample warning. There are cases of locally-generated tsunamis which can arrive with little warning, but their frequency is extremely rare and the likelihood of one occurring with one of the limited number of large yachts in the entrance channel and causing that vessel to breakdown in the short reach of narrow channel is extremely remote.

Page 2, Comment 8c – *The BTS does make note that "the 120-foot long design vessel mega-yacht would most likely be piloted by a skilled professional, thereby reducing the minimum width requirement." This is purely speculative and does not account for the "less skilled" pilots who also have to share the channel.*

Response – Our comment that the design vessel will most likely be piloted by a skilled professional is based on our consultant's experience as marina designers and industry experience. The entrance width criterion is commonly accepted.

Page 2, Comment 9 – *The DEIS does not sufficiently address the additional congestion created by the new marina. The mitigative measures identified include education, signage, a traffic control tower, staggering fishing tournaments, and limiting vessel size. This certainly would help from a safety standpoint, however would not likely reduce congestion significantly.*

Response – The BTS demonstrates that hours of peak channel traffic occur over periods of only one to two hours during fishing tournament activity. The mitigation measures identified in the BTS can have a significant impact over these projected occurrences.

As previously discussed, the sensitivity of boat traffic to size of marina expansion was analyzed for Alternative 1. The reduction of the marina from 800 to 400 slips results in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent during peak existing conditions. The LOS improves from E to D during average existing traffic condition, although remains at E during peak conditions.

Page 2, Comment 10 – *We disagree with the statement in the DEIS pg 94 stating that "Various individuals and stakeholders were interviewed regarding existing harbor conditions. The general consensus is that the harbor entrance does not become too congested." We also disagree with the BTS Conclusion pg*

94 that states "Presently the Honokohau Small Boat Harbor entrance channel has no traffic congestion problems." On the contrary, all boats that we interviewed mentioned they already consider the channel "marginal" and that there are existing channel problems and hazards.

> **Response** – The focus of our interviews was on both administrative / enforcement personnel and representatives of various user groups. We agree that boat interviews are very useful, but our experience has shown that boater perceptions relating to traffic can vary widely. The statements in the BTS are consistent with the input we gathered from the referenced individuals.

Page 3, Comment 11 – *The DEIS does not identify how boats in the new marina will retrieve or launch their vessels for annually maintenance or repair. The DEIS also does not adequately address how this activity will impact existing launching capacity…The DEIS should address these impacts and proposed mitigation measures.*

> **Response** – First it should be noted that wet-berthed boats typically do not haul out of the water annual for maintenance and/or repair. It should also be clarified that the wet slip tenants of the new marina will not use the existing Honokōhau launch ramp to retrieve or launch their vessels for annual maintenance or repair due to their size. They may haul out and have maintenance performed at the existing Gentry boat yard in Honokōhau. Gentry's Kona Marina has a full-service boat repair and haul-out boat yard. The yard is capable of hauling vessels up to 50 tons with a maximum beam of 17.5 feet, and is currently expanding to allow vessels up to 18.5 feet wide. The largest vessels in the existing harbor are too large for the existing boat yard crane and typically haul out on O'ahu. Approximately 25 of the largest vessels in the new marina fleet are also anticipated to haul out on O'ahu. It is further pointed out that the majority of small boat harbors on the West Coast with fewer than 2,000 slips have only a single boat haulout and repair yard. This suggests that an additional boat yard in the harbor may not be economically viable. The existing boat yard should be allowed to expand their operations in response to the additional demand as market forces dictate and environmental constraints permit.

Page 3, Comment 12 – *The DEIS should describe the impacts to the Honokōhau's existing parking as a result of the additional load of boat operators, crew, guests, tourists, etc. that may use any of the facilities at the existing harbor and any proposed mitigation measures*.

> **Response** – The new marina will provide sufficient parking to accommodate the demand associated with the additional load of boat operators, crews, guests, tourists, etc. within the development.

Page 3, Comment 13 – *The DEIS does not address how the potential overflow of users from the new marina may impact the capacity of these (wastewater and sewage) systems*.

Response – Page 45 of the DEIS states that "Despite its proximity to the WWTP, sewers do not service the existing adjacent State Harbor or surrounding private structures. All sewage from existing facilities is treated in on-site septic systems with resulting effluent flowing to groundwater that almost certainly flows directly to the existing harbor. Under post-development conditions all of these flows would be connected to the Kona Kai Ola sewage system resulting in a positive impact by eliminating this existing pollutant load into the harbor. Sewage from facilities at the existing marina will be connected to the Kona Kai Ola sewage system. Sumps, connection lines and pumping facilities will be constructed to move the sewage from the present septic tank systems directly to the larger collection system. The work needed for this conversion will be included in the sewage infrastructure design and construction."

The new marina is anticipated to contribute 23,000 gallons of sewage a day. This volume is estimated for the cumulative effect of recreational boaters, commercial vessels and passengers on a peak day. This volume is accounted for in the overall project sewer demand. Page 101 and 102 of the DEIS further discuss the capacity of the adjacent Kealakehe Waste Water Treatment Plant and mitigation measures for the project.

Page 3, Comment 14 – *The DEIS pg 9 does not describe the details of the marina support facilities except that "approximately eight acres are proposed for marina industrial uses such as boat repair, launching, storage, rental, sanding/paint station, and fueling." From this statement, we cannot determine whether or not these facilities are sufficient to service the new marina's additional load nor can we determine if a lack of proposed facilities will result in overtaxing of Honokōhau's facilities*.

Response – The landside footprint of the existing marina industrial center at Honokōhau Harbor is approximately 12.5 acres, which includes 8 acres of dry boat storage and 4.5 acres for the boatyard, dry stack storage, retail frontage (ship's store, charter and tours, yacht sales, machine shop, canvas shop, engine repair, marine electronics), parking, restaurant, restrooms, and landscaping. Currently, there is retail frontage space vacant and available for lease at Gentry's Kona Marina. Additionally, there are approximately 2 acres available for expansion of the existing dry boat storage towards the existing entry road.

The 8 acres of new marina industrial usage are intended to augment the existing vessel support facilities within the harbor, as described, as the demand for these facilities grow. Additional support facilities for the new marina are not limited to just the 8 acre marina industrial area. The new marina will incorporate a fuel dock expansion into the new marina, vessel

sewage pumpout stations (currently there are none at Honokōhau Harbor and sewage from vessel holding tanks are typically emptied offshore), provision of ice to the fishing boats, dedicated marina restrooms, and the marina commercial village core providing retail space serving boaters. The new yacht club facility will also provide approximately 1 acre of sailboat dry storage yard and launching area with hoists as an alternative to launching from the inclined slope at the launch ramp, alleviating some of the congestion at the ramp. Marina industrial and dry storage facility capacity is discussed further in the response to Comment 15. Marine fueling capacity is discussed further in the response to Comment 17.

Page 3, Comment 15 – *Due to the lack of details on the marina support facilities, the DEIS does not adequately address the impacts the new marina will have on Honokōhau's existing boat repair services and storage as well as to the customers who utilize this service. Is another similar service facility being planned?*

Response – The landside footprint for the existing boatyard at Gentry's Kona Marina (including the boatyard, half of the available parking, shop space, ship's store, and administration buildings) is approximately 2.5 to 3 acres. A survey of the size of similar boatyard operations available at other small boat harbors in California, listed in Table A, includes an estimate of the approximate combined area for the boatyard, parking, shop space, ship's store, and administration buildings at those harbors. The example harbors were chosen based on their being a distance from other harbors in California and the inconvenience of having to travel to another harbor to obtain similar boatyard services outside of that harbor.

Relatively Isolated Small Craft Harbors	Estimated Number of Boat Slips	Acres of Available Boatyard Space (including parking)	Number of Slips per Acre Boatyard
Oceanside, CA	950	1.5 acres	633
Dana Point, CA	2,380	1.5 acres	1,587
Marina del Rey, CA	3,584	8.0 acres	448
King Harbor, CA	1,455	1.0 acre	1,455
Channel Islands, CA	2,046	8.2 acres	250
Ventura, CA	1,285	4.8 acres	268
Monterey, CA	493	3.0 acres	165
Santa Cruz, CA	1,200	1.7 acres	705
Honokohau Harbor	**273**	**2.5 to 3**	**109 to 91 (100)**

Table A – Isolated Harbor Slip to Boatyard Area Comparison

The current ratio of approximately 100 boat slips at Honokōhau per acre of boatyard is influenced by the efficiency and size of the boatyard. As the size of the boatyard increases, the efficiency and scale of number of slips per acre of boatyard also increases as demonstrated in Table A.

The Kona Kai Ola project is anticipated to add 800 slips to the existing 273 slips, for a total of 1,073 slips in Honokōhau Harbor. For a harbor with 1,000 to 2,000 boat slips, the number of slips per acre of boatyard ranges from 250 to 1,500. Using the conservative number of 250 slips per boatyard acre, total boatyard space (including parking) should increase to a total of approximately 4 or 5 acres in Honokōhau Harbor. Approximately 1.5 to 2 acres of the planned 8 additional acres of marina industrial use should allow for boatyard expansion. If 500 slips per boatyard acre is assumed (still less than the average for 1,000 to 2,000 slip harbors), then existing 2.5 to 3 acres are sufficient.

The existing dry stand area run by Gentry's is on approximately 8 acres of land adjacent and across the road from the boatyard, with room to expand and/or make the existing layout more efficient. There are approximately 2 acres available for expansion of the existing dry boat storage towards the existing entry road, which would allow Gentry's to expand their dry stand area from approximately 8 acres to 10 acres. The Kona Kai Ola project will have a yacht club facility that will also provide approximately 1 acre of sailboat dry storage yard and launching area with hoists as an alternative to launching from the inclined slope at the launch ramp, alleviating some of the congestion at the ramp. Approximately 1 to 2 acres of the planned 8 additional acres of marina industrial use should allow for dry boat storage expansion and/or boat display areas.

Page 3, Comment 16 – *The Market Study (sect 4.2.4) identifies a lack of amenities at Honokōhau Harbor by stating, "The volume of charter, sport, commercial, subsistence and recreational fishing that takes place out of Honokōhau is often hampered by the lack of adequate ice supply." This section also mentions a need for other amenities such as fish cleaning stations. Due to the lack of details on the marina support facilities, the DEIS does not properly address how the additional boating activity will continue to tax Honokōhau's amenities or if the new proposed amenities will be sufficient*.

Response – Please see response to Comment 14.

Page 3, Comment 17 - *The DEIS does not address impacts the new marina will have on the existing fuel dock service and retail stores.*

Response – The existing fuel dock at Honokōhau Harbor has 6 marine fuel dispensers. Four of the dispensers are for diesel fuel (one of which is high-speed) and two are for gasoline. The Kona Kai Ola project will allow for a 200-foot fuel dock and pumpout station dock expansion into the new marina basin, with the recommendation to add one additional high-speed (40-50 gpm) diesel dispenser and one additional bio-diesel dispenser for a total number of eight (8) dispensers at the fuel dock. The water area adjacent to the fuel dock will be reconfigured as part of the harbor expansion to allow for better access to the fuel dock and adjacent vessel sewage pumpout station. Increasing the number of dispensers, length of

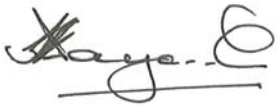
dock and efficiency of usage by allowing vessels to sidetie, and increasing the water area in front of the dock will allow for the capacity needed to serve the additional demand from the expanded harbor.

Page 3, Comment 18 – *The DEIS does not contain sufficient information such as the referenced 3-D hydrodynamic model to confirm many of the statements that address water quality impacts.*

Response – A detailed water quality model study has been performed and has been included as an appendix to the EIS.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

2 Alternatives Analysis

~~In typical land development projects, the initial planning process includes the exploration of alternatives to development objectives. In the EIS process, these alternatives are presented with a disclosure of reasons for the dismissal of non-preferred alternatives.~~

~~Kona Kai Ola does not follow this same pattern of alternatives evaluation.~~ As discussed in Section 1.4, the proposed Kona Kai Ola project is the result of agreements between JDI and the State DLNR and DHHL. The agreements and leases between the State and JDI stipulate the parameters of development for this site in terms of uses, quantities and size of many features, resulting in a limited range of land uses. Unlike a private property project, JDI is required to meet the criteria outlined in the agreements, thereby affording less flexibility in options and uses. From the developer's perspective, the agreements must also provide sufficient flexibility to allow for a development product that responds to market needs and provides a reasonable rate of return on the private investment.

The agreements between JDI and DLNR specify that the proposed harbor basin is to be 45 acres and accommodate 800 slips. This development proposal is the subject of this EIS. In response to DEIS comments, additional water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor. Comments on the DEIS from DLNR, from other government agencies, the neighbors and the general community also called for the consideration of alternatives in the EIS, including a project with a smaller harbor basin and less density of hotel and time-share units.

In response to these comments on the DEIS, three alternatives are evaluated in this Final EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin including a decrease in hotel and time-share units; Alternative 2, which is an alternative that had been previously discussed but not included in the proposed project, that includes an 800-slip harbor and a golf course; and Alternative 3, the no-project alternative. Each alternative is included in the EIS with an evaluation of their potential impacts. These project alternatives are presented to compare the levels of impacts and mitigation measures of the proposed project and alternative development schemes pursuant to requirements set forth in Chapter 343, HRS.

~~JDI is required to provide a new marina basin not less than 45 acres and a minimum of 800 new boat slips. Further, the agreements provide the following options for land uses at the project site:~~

- ~~Golf Course~~
- ~~Retail Commercial Facilities~~
- ~~Hotel Development Parcels~~
- ~~Marina Development Parcels~~
- ~~Community Benefit Development Parcels~~

~~JDI is not pursuing the golf course option and is proposing instead to create various water features throughout the project site. All other optional uses have been incorporated in Kona Kai Ola.~~

2.1 Project Alternatives

2.1.1 Alternative 1: 400-Slip Marina

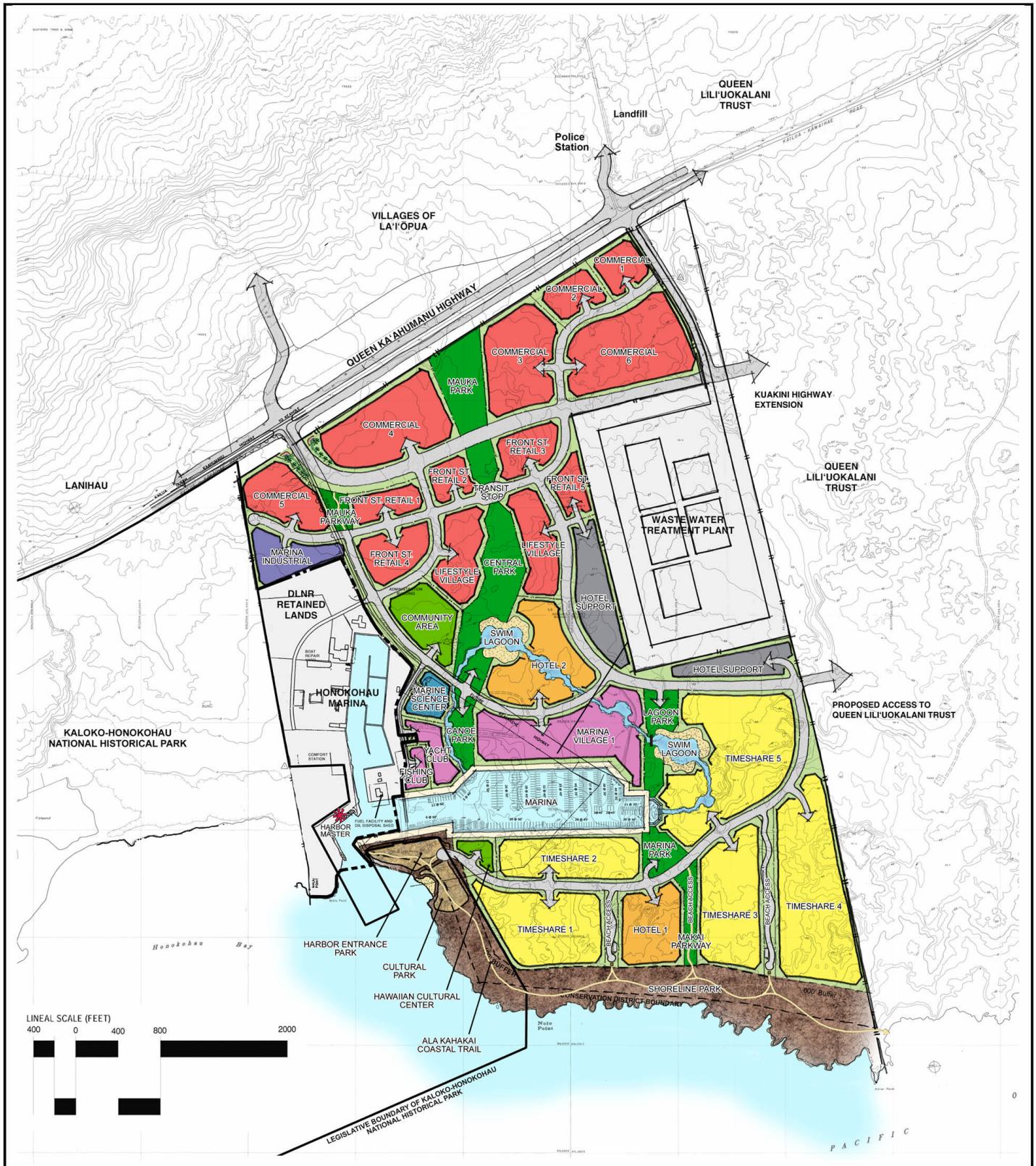
Studies conducted in response to DEIS comments found the construction and operation of an 800-slip marina may significantly impact the water quality within the marina and along the shoreline. Specifically, the Harbor Water Quality Modeling Study, as contained in Appendix U, found that the water circulation in a 45-acre 800-slip harbor was insufficient to maintain an acceptable level of water quality. Further, the existing harbor channel, which would serve both the existing and new harbors, could not adequately serve the increased boat traffic generated by an 800-slip marina during peak traffic. Mitigation measures to accommodate peak boat traffic included the widening of the existing channel, an action that would entail a complex process of Federal and State approvals and encounter significant environmental concern.

Concerns related to the proposed density of hotel and time-share units were also expressed in comments to the DEIS from members of the public, neighbors to the project site, especially the Kaniohale Community Association, and government agencies. Common themes in DEIS comments were related to impacts regarding traffic, project requirements of potable water and infrastructure systems, including sewer, drainage, utility and solid waste systems, and socioeconomic impacts.

In response to the water quality study results, and to the DEIS comments, an alternative plan was developed with a smaller marina with less boat slips, and a related decrease in hotel and time share units. Illustrated in Figure G, Alternative 1 reflects this lesser density project, and features a 400-slip marina encompassing 25 acres. For the purposes of the Alternative 1 analysis, JDI assumed 1,100 time-share units and 400 hotel rooms. Project components include:

- 400 hotel units on 34 acres
- 1,100 time-share units on 106 acres
- 143 acres of commercial uses
- 11 acres of marina support facilities
- 214 acres of parks, roads, open spaces, swim lagoons and community use areas

In addition, Alternative 1 would include the construction of a new intersection of Kealakehe Parkway with Queen Ka'ahumanu Highway, and the extension of Kealakehe Parkway to join Kuakini Highway to cross the lands of Queen Lili'uokalani Trust, and connecting with Kuakini Highway in Kailua-Kona. This is a significant off-site infrastructure improvement and is included in the agreements between the State and JDI.



Source: PBR HAWAII

Plan is conceptual only and subject to change

Figure G: Alternative 1: 400-Slip Marina

LEGEND

- TIME SHARE
- HOTEL
- RETAIL / COMMERCIAL
- MARINA RETAIL
- MARINA SUPPORT / COMMERCIAL
- MARINE SCIENCE CENTER
- COMMUNITY AREA / CULTURAL CENTER
- SWIM LAGOON
- MARINA
- UTILITIES
- PARKS & GREEN SPACE
- SHORELINE
- HARBOR ENTRANCE PARK / CULTURAL PARK

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Like the proposed project, Alternative 1 would have a strong ocean orientation, and project components that support this theme would include various water features including seawater lagoons and a marine science center. The new Alternative 1 harbor would include a yacht club, fishing club, a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. The coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and 'Alula for community use. Additional Alternative 1 community areas would include facilities and space for community use, including programs of the Kona Kai Ola Community Foundation, which supports community programs in health care, culture, education, and employment training for the local community, especially to native Hawaiians. Like the original proposed plan, Alternative 1 includes 40 percent of the land in parks, roads, open spaces, swim lagoons and community use areas.

2.1.2 Alternative 2: Golf Course Feature

Alternative 2 was among the alternatives discussed at a community charrette in September 2003. It includes a golf course, which is a permitted use in the DLNR agreement and DHHL lease. As Figure H illustrates, an 18-hole championship golf course would occupy 222 acres on the southern portion of the project site. As with the proposed project, Alternative 2 includes an 800-slip marina on a minimum of 45 acres.

To support the economic viability of the project, other Alternative 2 uses include:

- Golf course clubhouse on three acres
- 1,570 visitor units on 88 acres fronting the marina
- 118 acres of commercial uses
- 23 acres of community uses

Community uses in Alternative 2 include an amphitheater, a canoe facilities park, a community health center, a Hawaiian cultural center and fishing village, a marine science center and employment training center. The sea water lagoon features contained in the proposed project and Alternative 1 are not included in this alternative.

2.1.3 Alternative 3: No Action

In Alternative 3, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.

~~The economic viability and sustainability of the project is determined by the density and uses proposed. Because JDI is obligated to develop an 800-slip marina for the State, complete road improvements, and provide various public enhancement features at its own expense, the density proposed for the income generating features of the development must be sufficient to provide an acceptable level of economic return for JDI. The market study, which is discussed in Section 4.6, reviewed various development schemes and determined that the currently proposed density and mix is the optimum to meet the anticipated financing and development cost obligations for the public features associated with the development.~~

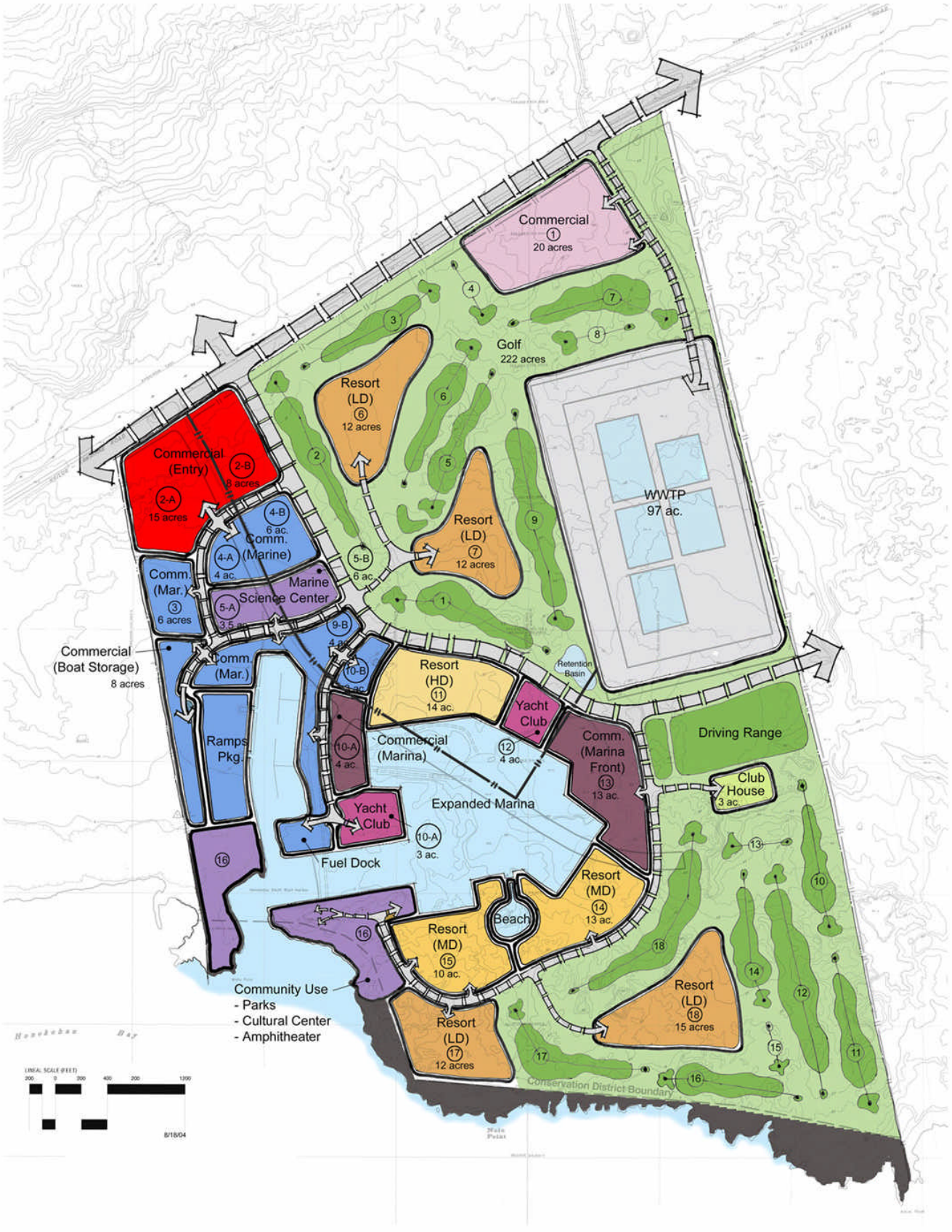

Figure H. Alternative 2: Golf Course Alternative

Legend

N E S W

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2.2 Alternatives Analysis

As discussed in Section 2.1, the proposed Kona Kai Ola project (also referred to as "proposed project") is defined by development requirements related for a marina and the related uses that would be needed to generate a reasonable rate of return that covers development costs.

Beginning with Section 2.2.1, the alternative development concepts are comparatively assessed for potential impacts that may reasonably be expected to result from each alternative. Following is an overview of the primary observations of such assessment.

Alternative 1 includes half of the State-required boat slips and 60 percent of the proposed hotel and time-share units and, due to the decreased density, this alternative would generate significantly less environmental and socio-economic impacts. A harbor water quality model found the reduction of the volume of the new marina basin by about half (approximately 25 acres) significantly improved the water circulation and quality. Further, the reduced number of boat slips would generate less boat traffic, thereby reducing congestion and the need to mitigate impacts further by the widening of the existing harbor channel.

A project with fewer hotel and time-share units and increased commercial space with a longer (14 years) absorption period would change the mix of employment offered by the project, and slightly increase the overall employment count. The public costs/benefits associated with Alternative 1 would change, compared to the proposed project, with a general increase in tax collections, and a general decrease in per capita costs. Detailed discussion of Alternative 1 potential economic impacts are provided in Section 4.6.6. Comparisons of levels of impact are presented throughout this FEIS.

While this analysis might indicate that the 25-acre marina in Alternative 1 would be the more prudent choice, the DLNR agreement establishes the minimum size and slip capacity of the marina at 45 acres and 800 slips, respectively. Amendments to the DLNR agreement would be required in order to allow Alternative 1 to proceed as the preferred alternative. Hence, selection of the preferred alternative is an unresolved issue at the writing of this FEIS.

Alternative 2, the golf course alternative, was not previously considered to be the preferred alternative primarily because market conditions at the time of project development might not likely support another golf course. Further, DHHL has a strategy goal to have more revenue-generating activities on the commercial lease lands within the project area. In addition, concerns have been expressed as to environmental impacts of coastal golf courses, including the potential adverse impact on Kona's water supply if potable water is used for golf course irrigation.

While Alternative 3, the no-project alternative, would not generate adverse impacts related to development of these lands associated with the construction and long-term operations, it would also not allow for an expanded public marina that would meet public need and generate income for the public sector. Further, the no-project alternative would foreclose the opportunity to create a master-planned State-initiated development that would result in increased tax revenue, recreation options and community facilities. Crucial privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities, and public access would not be contributed.

~~Hence, the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.~~

~~The no-project alternative would therefore not generate adverse impacts associated with the construction and long-term operations would not occur.~~

~~Likewise, the creation of a master-planned state-initiated development, resulting in increased employment, tax revenue, recreation options and community facilities, would not be created. Privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities and public access would not be contributed.~~

Further, the creation of revenue-producing businesses on the DHHL property to fund homestead programs would not occur, resulting in fewer potential benefits for Hawaiians.

Hence, the agreements and leases between the State and JDI indicate that the no-action alternative is not in the public interest~~has been rejected at this time~~.

2.2.1 Impact Comparison

Grading and Excavation

The proposed project requires grading and excavation. Both actions may impact groundwater due to rainfall runoff during construction. Alternative 1 would require a significantly smaller excavation for the marina basin and would therefore carry a lesser risk of potential adverse effects on water quality. Alternative 2 would require the same basin excavation as the proposed project, and would also include extensive grading and filling to build the golf course, the latter of which would generate additional impacts. Alternative 3 would result in no change to the geography, topography and geology.

Further discussion on grading and excavation is contained in Section 3.3.

Natural Drainage

Most precipitation infiltrates into the porous ground at the site, and no significant sheet flow is likely. Alternative 1 would generate similar levels of impacts on natural drainage as those of the proposed project and thus require similar mitigation measures. The golf course in Alternative 2 would not be as porous since the site would be graded, soil would be placed, and grass and other landscaping would be grown. Sheet flow and runoff can occur on a golf course, and drainage patterns might change. Alternative 3 would result in no change to the existing natural drainage pattern. Further discussion on natural drainage is contained in Section 3.4.

Air Quality

Air quality will be affected by construction activities, as well as pollutants from vehicular, industrial, natural, and agricultural sources. Alternative 1 would generate less construction air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin and fewer long-term impacts by reducing traffic 35 and 40 percent during, respectively, AM and PM peak traffic times. Construction of Alternative 2 would result in fugitive dust and exhaust from equipment and is expected to generate the same level of air quality impact as the proposed project. Alternative 3 would result in no change to existing air quality. Further discussion on air quality is contained in Section 3.5.

Terrestrial Environment

To provide additional habitat for shorebirds and some visiting seabirds, the project proposes to construct a brackishwater pond area suitable for avian fauna, including stilts, coots and ducks. While habitat expansion is beneficial, there is also a possibility that these species may be exposed to activity that may harm them. Alternative 1 would not include a brackish water pond, but will include 5 acres of seawater features, which is 74 percent less than the 19 acres of seawater features in the proposed project. While this would reduce beneficial impacts, it would also decrease exposure to potentially harmful activity. Alternative 2 does not include the brackish water pond features, but would include drainage retention basins that would attract avian fauna and expose them to chemicals used to maintain golf course landscaping. While Alternative 3 would result in no increase in potentially harmful activity, it would also not provide additional habitat for avian fauna. Further discussion on the terrestrial environment is contained in Section 3.7.

Groundwater

Groundwater at the project site occurs as a thin basal brackish water lens. It is influenced by tides and varies in flow direction and salt content. The existing Honokōhau Harbor acts as a drainage point for local groundwater. Any impact to groundwater flow from the proposed harbor is likely to be localized. The proposed marina basin will not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance.

There will be differences in the flow to the marina entrance between the proposed project and Alternative 1. Alternative 1, being smaller in size, will have less impact on groundwater flow than the proposed marina. Alternative 2 will have a similar impact to groundwater quality as the proposed project. Alternative 2 may also impact water quality by contributing nutrients and biocides to the groundwater from the golf course. Alternative 3 would result in no change in existing groundwater conditions. Further discussion on groundwater is contained in Section 3.8.1.

Surface Water

There are no significant natural freshwater streams or ponds at the site, but there are brackish anchialine pools. Surface water at the project site will be influenced by rainfall. Runoff typically percolates rapidly through the permeable ground. The proposed project will include some impermeable surfaces, which together with building roofs, will change runoff and seepage patterns.

Alternative 1 is a lower density project that is expected to have proportionally less impact on surface water and runoff patterns and less potential impact on water quality than the proposed project. Alternative 2 would have more impact on surface water quality than the proposed project due to fertilizers and biocides carried by runoff from the golf course. Alternative 3 would result in no change to surface water conditions. Further discussion on surface water is contained in Section 3.8.2.

Nearshore Environment and Coastal Waters

The potential adverse impacts to the marine environment from the proposed project are due to the construction of an 800-slip marina and the resulting inflow of higher salinity seawater and inadequate water circulation, both of which are anticipated to impair water quality to the extent of falling below applicable standards. One possible mitigation measure is to significantly reduce the size of the marina expansion.

The reduced marina size (from 45 to 25 acres) and reduced lagoon acreage in Alternative 1 are expected to result in a proportionate reduction in seawater discharging into the new harbor and increased water circulation. Alternative 2 includes the same marina basin size and is therefore subject to the same factors that are expected to adversely affect water quality.

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water quality in the proposed harbor depends on several components. These include salinity, nutrients, and sediments that come from the ocean, rainfall runoff, water features with marine animals, and dust. The smaller project offered as Alternative 1 is expected to produce a reduced amount of pollutants and reduce the risk of adverse impact upon water quality.

It is notable that the 45-acre marina basin planned in the proposed project and Alternative 2 only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd. The resulting flushing from such inflow would be expected to better maintain water quality. However, it is unclear whether 60 mgd of brackish groundwater would be available. As proposed in Alternative 1, reduction of the volume of the new marina basin by 45 percent will significantly improve the flushing and water quality because the lower volume can be flushed by the available groundwater flow.

In addition, there could be higher rainfall runoff from the Alternative 2 golf course into the harbor, because the grassed golf course will be less porous than the natural surface. The golf course will also require relatively high levels of fertilizer, biocides, and irrigation, all of which could contribute to adverse water quality impacts.

Further discussion on nearshore environment and coastal waters is contained in Section 3.9.1.

Anchialine Pools

Anchialine pools are located north of Honokōhau Harbor, and south of the harbor on the project site. The marine life in these pools is sensitive to groundwater quality, and changes due to construction and operation of the project could degrade the viability of the pool ecosystem. In the southern complex, 3 anchialine pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction in the proposed project and Alternatives 1 and 2.

Predicting the extent of change in groundwater flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is therefore extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Due to the uncertainty of changes in groundwater flow and quality due to marina construction, the variability in impacts between the proposed project and Alternatives 1 and 2 is unknown at this time. Alternative 3 would result in no change in groundwater flow. While this would eliminate the potential for adverse impacts, Alternative 3 would also continue the pattern of existing degradation related to human activity and the introduction of alien species. Further discussion on anchialine pools is contained in Section 3.9.2.

Marine Fishing Impacts

The proposed marina will increase the number of boats in the area and it is reasonable to assume that a portion of these new boats will engage in fishing activities. The increase in boats in the area would be primarily related to the marlin and tuna / pelagic fishery, coral reefs due to extractive fisheries, and SCUBA activities. The pressure on fish and invertebrate stocks is expected to increase with or without the marina. Harbor expansion provides the opportunity to address existing conditions to consolidate, focus, and fund management and enforcement activities at one location.

Compared to the proposed project, Alternative 1 would result in a 21 percent decrease in boat traffic, thereby lessening the potential for marine fishing impacts. The level of impacts in Alternative 2 would be similar to that of the proposed project. Alternative 3 would result in no change in existing marine fishing conditions, and no opportunity to address already existing pressure on fish and invertebrate stocks. Further discussion on marine fishing impacts is contained in Section 3.9.3.

Cultural and Archaeological Resources

The proposed project will integrate cultural and archaeological resources in the overall development. Archaeological sites recommended for preservation will be preserved, and cultural practices will be encouraged. Kona Kai Ola includes a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. Proposed is a 400-foot shoreline setback that would serve as a buffer between the ocean and developed areas. This coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and ʻAlula for community use.

Alternative 1 would contain all of the cultural archaeological features and the shoreline setback area would be 400 feet in the northern portion of the site and increase to 600 feet in the southern portion. Alternative 2 would preserve cultural and archaeological resources, but does not include a 400-foot shoreline setback. Alternative 3 would result in no change to existing cultural and archaeological resources and no addition of cultural and community facilities and activities. Further discussion on cultural and archaeological resources is contained in, respectively, Sections 4.1 and 4.2.

Noise

Project-generated noise is due to construction equipment and blasting, boats, marina activities, vehicle traffic, and the Kealakehe Wastewater Treatment Plant operations. Alternative 1 would generate less noise impacts due to reduced construction activities, fewer boats, less traffic and less on-site activity. Alternative 2 would also generate less noise due to reduced traffic and less on-site activity, but noise related to the excavation of the marina basin and an increase in the number of boats would be similar to that of the proposed project. Further discussion on noise impacts is presented in Section 4.4.

Socioeconomic Impacts

The proposed project will generate an increase in de facto population of an estimated 5,321 persons due to the increase in hotel and time-share units. The estimated de facto population increase in Alternative 1 is 37 percent less, at 3,363 persons, than the proposed project. The de facto population increase in Alternative 2 is similar to Alternative 1.

Employment in the commercial components will nearly double in Alternative 1, from a stabilized level of 1,429 full-time equivalent (FTE) positions in the proposed project to 2,740 in the Alternative 1.

Under Alternative 1, the total operating economic activity at Kona Kai Ola will increase due to the added commercial space more than off-setting the fewer visitor units, moving upward from $557.6 million per year to circa $814.3 million annually. The total base economic impact resulting from development and operation of Alternative 1 will similarly be higher by between 35 and 45 percent than that of the proposed project.

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County revenues. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The estimated absorption periods for marketable components of Alternative 1 are generally shorter than those for the same components in the proposed project. Marina slips under Alternative 1 are estimated to be absorbed within 2 years after groundbreaking, as compared with 9 years for absorption of slips in the proposed project. Hotel rooms under Alternative 1 are estimated to be absorbed within 4 years after groundbreaking, as compared with 7 years under the proposed project. Time-share units would be absorbed within 10 years under Alternative 1, while 15 years are projected under the proposed project. Due to the planned increase in commercial facilities under Alternative 1, the absorption period of commercial space is estimated at 14 years, as compared with 8 years for absorption of such facilities under the proposed project.

The State and County will still both receive a net benefit (tax receipts relative to public expenditures) annually on a stabilized basis under the Alternative 1. The County net benefits will be some $12.2 million per year under the Alternative 1 versus $14.9 million under the proposed project. The State net benefits will increase under the Alternative 1 to about $37.5 million annually, up substantially from the $11.4 million in the proposed project.

Due to the lower de facto population at build-out, the effective stabilized public costs for both the State and County will decline meaningfully under the Alternative 1, dropping from $7.7 million annually for the County and $36.5 million for the State, to $4.9 million and $23 million per year, respectively.

Alternative 3 would result in no increase in de facto population and improvement to economic conditions. Further discussion on social and economic impacts are contained in, respectively, Sections 4.5 and 4.6.

Vehicular Traffic

The proposed project will impact the nearby road network that currently is congested during peak traffic times. The proposed project includes roadway improvements that would reduce the impact and improve roadway conditions for the regional community.

Alternative 1 includes the same roadway system improvements as the proposed project, yet would reduce vehicular traffic by 35 percent when compared to the proposed project. Alternative 2 would have similar traffic conditions and roadway improvements as Alternative 1. Alternative 3 would result in no increase in traffic and no roadway improvements.

Marina Traffic Study

The increase in boat traffic due to the proposed 800-slip marina would cause entrance channel congestion during varying combinations of existing and new marina peak traffic flow. Worst case conditions of active sport fishing weekend and summer holiday recreational traffic result in traffic volumes exceeding capacity over a short afternoon period. Mitigation to address boat traffic in the proposed project include widening the entrance channel, traffic control, implementation of a permanent traffic control tower, or limiting vessel size.

Alternative 1 would result in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent reduction during peak existing conditions. The reduction to 400 slips also reduces the impacts of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Alternative 2 would have the same level of boat traffic as the proposed project. Alternative 3 would not meet the demand for additional boat slips and would not generate additional boat traffic. Further discussion on marina traffic is contained in Section 4.8.

Police, Fire and Medical Services

The proposed project will impact police, fire and medical services due to an increase in de facto population and increased on-site activity. Alternatives 1 and 2 would have similar levels of impact as the proposed project due to increased on-site activity. Further discussion on police, fire and medical services are contained, respectively, in Sections 4.10.1, 4.10.2 and 4.10.3.

Drainage and Storm Water Facilities

The proposed project will increase drainage flows, quantities, velocities, erosion, and sediment runoff.

Alternative 1 involves a reduction of the project density that would reduce storm runoff from the various land uses due to a reduction in impervious surfaces associated with hotel and time-share development and to the creation of more open space. However, roadway areas will increase by about 30 percent in Alternative 1. Storm runoff from proposed streets would therefore increase; thus requiring additional drainage facilities and possibly resulting in no net savings. The golf course in Alternative 2 may also change drainage characteristics from those of the proposed project and may not reduce impacts. Alternative 3 would result in no change in existing conditions and no improvements to drainage infrastructure. Further discussion on drainage and storm water facilities is contained in Section 4.10.5

Wastewater Facilities

The proposed development is located within the service area of the Kealakehe WWTP and a sewer system will be installed that connects to the WWTP. The sewer system will be comprised of a network of gravity sewers, force mains, and pumping stations which collect and convey wastewater to the existing Kealakehe WWTP. Project improvements will incorporate the usage of recycled / R1 water. Improvements implemented by the proposed project will also accommodate the needs of the regional service population.

Alternative 1 would generate approximately 10 percent less wastewater flow than the proposed project. Wastewater flow in Alternative 2 is undetermined. Alternative 3 would result in no additional flow, as well as no improvements that will benefit the regional community. Further discussion on wastewater facilities is contained in Section 4.10.6.

Potable Water Facilities

The proposed project average daily water demand is estimated at 1.76 million gallons per day. Existing County sources are not adequate to meet this demand and source development is required. The developer is working with DLNR and two wells have been identified that will produce a sustainable yield that will serve the project. These wells will also serve water needs beyond the project.

Alternative 1 would result in net decrease of about five percent of potable water demand. Alternative 2 may have a lower water demand than the proposed project as long as potable water is not used for irrigation. Alternative 3 would result in no additional flow, as well as no source development that will benefit the regional community. Further discussion on potable water facilities is contained in Section 4.10.8.

Energy and Communications

Regarding Alternative 1, preliminary estimates for electrical, telecommunications, and cable resulted in a net demand load that remains similar to the proposed project. Further discussion on energy and communications is contained in Section 4.10.9.1.

The proposed project will increase the demand for electrical energy and telecommunications. The demand would be reduced in Alternative 1 because the number of boat slips and units would decrease. Similarly, Alternative 2 would have fewer units than the proposed project and therefore reduce energy demands. Further reduction in energy demand for either alternative could be achieved by using seawater air conditioning (SWAC) and other energy reduction measures, as planned by the developer. Further discussion on energy and telecommunications is contained in Section 4.10.9.2.

Water Features and Lagoons

The proposed project includes a brackishwater pond, lagoons, and marine life exhibits supplied by clean seawater. The water features in Alternative 1 would significantly decrease by 74 percent from 19 acres in the proposed project to five acres in Alternative 1. This decrease in water features would result in a corresponding decrease in water source requirements and seawater discharge. Alternative 2 does not include the seawater features. Alternative 3 would result in no additional demand for water source requirements and seawater discharge.

2.2.2 Conformance with Public Plans and Policies

State of Hawai'i

Chapter 343, Hawai'i Revised Statutes

Compliance with this chapter is effected, as described in Section 5.1.1 in regard to the proposed project and the alternatives discussed.

- State Land Use Law, Chapter 205, Hawai'i Revised Statutes

  The discussion in Section 5.1.2 is directly applicable to Alternative 1, the proposed project. Alternative 1 will involve a setback of 400 feet that increases to 600 feet along the southern portion of the project site's shoreline area. Alternative 2 does not provide for such a setback, but may still require approvals from DLNR for cultural, recreational, and community uses and structures within the Conservation district.

- Coastal Zone Management Program, Chapter 205A, Hawai'i Revised Statutes

  Recreational Resources:

  In addition to the discussion of consistency with the associated objective and policies, as described in Section 5.1.3, the reduction from the proposed project's 800-slip marina to a 400-slip marina under Alternative 1 will still expand the region's boating opportunities and support facilities. The existing harbor entrance will still be utilized under this alternative; however, potential risks relating to boat traffic and congestion in the marina entrance area will be reduced significantly. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities, and marine science center remain important recreational components under Alternative 1.

Alternative 2 includes a golf course component, which would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Alternative 2, like the proposed project, will expand the region's boating opportunities and support facilities through its 800-slip marina. However, the potential adverse impacts of increased boat traffic from the size of the marina are significant enough to offset the benefits of increased boating opportunities.

Coastal Ecosystems:

The discussion in Section 5.1.3 is directly applicable to Alternative 1.

Alternative 1 not only reduces the number of slips proposed by 50 percent, but it also reduces the size of the marina from 45 acres to 25 acres. The 25-acre marina will increase the body of water within the existing harbor, but to a significantly lesser extent than the proposed project's estimated increase, which is also applicable to the 45-acre size that is proposed for the marina under Alternative 2.

The findings of the Harbor Water Quality Modeling Study conclude that a reduction in the size of the harbor expansion is an alternative that will mitigate the risk of significant impacts upon water quality within the marina and existing harbor. Accordingly, the reduction in both the number of slips and the size of the marina basin under Alternative 1, in combination with proper facilities design, public education, and enforcement of harbor rules and regulations, would result in fewer long-term impacts to water quality and coastal ecosystems. Short-term (construction-related) impacts would likely remain the same although the reduction in the total acreage of excavation is expected to result in a shorter duration of such impacts.

In addition to its 800-slip marina and potential adverse impacts upon water quality and the marine environment, Alternative 2 includes a golf course component, which has the potential to impact coastal ecosystems by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Economic Uses

Although reduced in the number of slips, the smaller marina under Alternative 1 will nevertheless serve public demand for more boating facilities in West Hawai'i and is consistent with the objective and policies and discussion set forth in Section 5.1.3. The economic impacts of Alternative 2, while comparable to those of the proposed project's marina development, are notably marginal as to the golf course component, based on the marketability analysis that indicates a condition of saturation within the region.

Coastal Hazards

The discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Tsunami risks mainly affect the large shoreline setback area that is proposed for the project and Alternative 1. Alternative 2 projects a transient accommodation site that is partially within the tsunami hazard zone and thus carries a higher hazard risk. However, the essential requirement for these alternatives, as well as the proposed project, is a well-prepared and properly implemented evacuation plan.

Beach Protection

Discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Alternative 1 and, to a lesser extent, Alternative 2, will retain the shoreline area in its natural condition.

Similar to the proposed project, Alternative 1 provides for a shoreline setback of considerable width within which no structure, except for possible culturally-related structures, would be allowed. Alternatives 1 and 2 will thus be designed to avoid erosion of structures and minimize interference with natural shoreline processes.

Marine Resources

The discussion in Section 5.1.3 is also applicable to Alternative 1 which is described to be an alternative that is specifically projected to mitigate anticipated adverse impacts on water quality and the marine environment that might otherwise result from the original harbor design and scale, which is also incorporated in Alternative 2 . The reduced marina size under Alternative 1 is projected to meet water quality standards and enable greater compliance with the objective and policies addressed in this section.

Alternative 2 includes a golf course component and thus the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Hawai'i State Plans, Chapter 226, Hawai'i Revised Statutes

Section 226-4 (State goals), 5 (Objectives and policies for population, and 6 (Objective and policies for economy in general):

The discussion in Section 5.1.4 is applicable to Alternatives 1 and 2, in addition to the proposed project. These development concepts generally conform to the goals, objectives, and policies set forth in these sections because they will provide some degree of economic viability, stability, and sustainability for future generations. Kona Kai Ola will convert essentially vacant land into a mixed-use development with a distinctive marina and boating element, providing a wide range of recreational, business, and employment opportunities to the community.

Section 226-8 Objective and policies for the economy – the visitor industry:

Alternatives 1 and 2 will be consistent with the State's economic objective and policies relating to the tourism industry for the same reasons that are discussed in regard to the proposed project in Section 5.1.4. They will incorporate JDI's commitment to sustainability principles in the planning and design of the development concepts in Alternatives 1 and 2. Although the total hotel and time-share unit count is reduced to approximately 1,500 in Alternatives 1 and 2, the transient accommodations component of these alternatives will still further the State's objective and policies for increased visitor industry employment opportunities and training, foster better visitor understanding of Hawai'i's cultural values, and contribute to the synergism of this mixed-use project concept that addresses the needs of the neighboring community, as well as the visitor industry.

Section 226-11 Objectives and policies for the physical environment: land-based, shoreline and marine resources:

Alternative 1 is expected to involve less potential adverse impacts upon these environmental resources than the proposed project. Likewise, and Alternative 2 would have less adverse impact because of its reduction in the size of the marina and in the total hotel and time-share unit count. Alternative 1 carries less potential risk to water quality and related impacts upon the marine environment and anchialine pool ecosystems. Although approximately three anchialine pools are expected to be destroyed, the great majority of pools will be preserved within and outside of the proposed 400-foot shoreline setback.

The golf course component in Alternative 2 has the potential to impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the marina basin and nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools by introducing the chemicals into the pond systems.

Section 226-12 Objective and policies for the physical environment: scenic, natural beauty, and historic resources:

The discussion in Section 5.1.4 is directly applicable to Alternative 1 and describes the compliance with the objective and policies addressed.

The golf course component of Alternative 2 would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area.

Just as with the proposed project, Alternatives 1 and 2 would also be designed to blend with the natural terrain and to honor and protect the cultural history, resources, and practices of these lands.

Section 226-13 Objectives and policies for the physical environment: land, air and water quality:

As stated above, because of the reduction in both the number of slips and the size of the marina basin, with proper facilities design, public education and enforcement of harbor rules and regulations, Alternative 1 is anticipated to cause fewer long-term impacts to water quality than either the proposed project or Alternative 2. Based on the findings of the Harbor Water Quality Modeling Study, water quality resulting from a reduced marina basin size as proposed under Alternative 1 is expected to be similar to existing conditions.

As previously noted, Alternative 2 has the potential to adversely impact water quality by increasing the nutrient loading in surface runoff and groundwater by introducing pesticides, herbicides and other chemicals common in golf course development and maintenance into the marina basin and nearshore waters surrounding the project site.

Section 226-14 Objectives and policies for facility systems - general:

Alternatives 1 and 2 will conform to the objective and policies of this section on the grounds that are discussed in regard to the proposed project in Section 5.1.4. The master-planning and phasing of the project concepts under these alternatives will be coordinated with associated public and private infrastructural planning and related private and public infrastructural financing. The cost of the marina construction and project-related infrastructure is to be borne by the developer, resulting in considerable savings for the public. In addition, the projected lease revenue from these public lands will provide additional public benefits by establishing a revenue stream for capital improvements and maintenance of a range of State facilities.

Section 226-15 Objectives and policies for facility systems - solid and liquid wastes:

In addition to the developer's commitment to sustainable development design, the project will involve upgrades to the County of Hawai'i's Kealakehe Wastewater Treatment Plant to meet current needs, as well as the project's future needs. This commitment is applicable to Alternatives 1 and 2, as well as the proposed project that is discussed in Section 5.1.4.

Section 226-16 Objectives and policies for facility systems – water:

The discussion of water conservation methods and the need to secure additional potable water sources in Section 5.1.4 is also applicable to Alternative 1 and demonstrates conformity to the objective and policies for water facilities. Alternative 2 involves greater irrigation demands in regard to its golf course component and greater potable water demands for human consumption than those for Alternative 1. Alternative 2 is expected to face more serious challenges in securing adequate and reliable sources of water.

Section 229-17 Objectives and policies for facility systems – transportation:

Alternatives 1 and 2 will conform to this objective and policies because they will present water transportation opportunities, including the possible use of transit water shuttles to Kailua-Kona, as described in regard to the proposed project in Section 5.1.4.

Section 226-18 Objectives and policies for facility systems – energy:

Alternatives 1 and 2 conform to these objective and policies through the use of energy efficient design and technology and commitment to the use and production of renewable energy to serve the project's needs. Solar energy production, solar hot water heating, and the use of deep cold seawater for cooling systems are currently identified as means of saving substantial electrical energy costs for the community and the developer.

Section 226-23 Objectives and policies for socio-cultural advancement – leisure:

Alternative 1 conforms to this objective and related policies for the reasons offered in Section 5.1.4 in regard to the proposed project. Alternative 1 will be of greater conformity with the policy regarding access to significant natural and cultural resources in light of the 400-600 foot shoreline setback that has been designed for this alternative.

Although it does not propose the considerable shoreline setback that is planned for Alternative 1, Alternative 2 is consistent with this objective and related policies in incorporating opportunities for shoreline-oriented activities, such as the walking trails. In addition, the golf course component adds a more passive recreation alternative to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Section 226-25 Objectives and policies for socio-cultural advancement-culture:

The discussion in Section 5.1.4 is relevant to Alternatives 1 and 2 and demonstrate their conformity the objective and policies of this section.

Both alternatives involve the preservation and protection of cultural features that have been identified by the Cultural Impact Assessment and archaeological studies for the project area. Both provide for public shoreline access, and both will continue the policy of close consultation with the local Hawaiian community and cultural and lineal descendants in the planning of cultural resource preservation and protection.

Section 226-103 Economic priority guidelines:

Alternatives 1 and 2 conform to these guidelines for the same reasons that are set forth in Section 5.1.4. They involve private investment in a public project that will create economic diversification through a mix of marina, industrial, commercial, visitor, and cultural facilities. This presents a wide range of entrepreneurial opportunities, long-term employment opportunities, and job training opportunities.

Section 226-104 Population growth and land resources priority guidelines:

As described in Section 5.1.4, the policy support for the proposed project also extends to the similar development concepts considered in Alternatives 1 and 2. Those alternatives conform to the guidelines of this section because they involve an urban development under parameters and within geographical bounds that are supported by the County's General Plan, a preliminary form of the Kona Community Development Plan, the County's Keahole to Kailua Regional Development Plan, and the reality of being located along the primary commercial/industrial corridor between Keahole Airport and Kailua-Kona. As with the proposed project, the development concepts of Alternatives 1 and 2 are essentially alternatives for the implementation and "in-filling" of the urban expansion area in North Kona.

DHHL Hawai'i Island Plan

This 2002 plan projects DHHL's Honokōhau makai lands for commercial use. As compared to the proposed project and Alternative 2, Alternative 1 presents an expanded commercial component that provides greater compliance with the plan, while addressing certain beneficiaries' concerns about the scale of the marina originally required in the Project. Alternative 2 also conforms to the recommended commercial uses in the makai lands but to a lesser degree than Alternative 1 because of its more limited commercial component. Like the proposed project, its marina size and number of slips raise environmental issues, as more specifically discussed in Part 3, and community concerns.

County of Hawai'i General Plan

HCGP Section 4 – Environmental Quality Goals, Policies and Courses of Action:

Alternative 1 is consistent with this section. It presents a reduction in both the number of slips and the size of the marina basin that, in combination with proper facilities design, public education and enforcement of harbor rules and regulations, would result in very few long term impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions.

Alternative 2 is the least consistent with this section. In addition to the potential significant impacts of its 800 slip marina basin, its golf course component has the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides and other chemicals common in golf course use and management into the nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools beyond their current conditions by introducing such substances into the pool systems.

HCGP Section 7 – Natural Beauty Goals and Policies:

Alternative 2 conforms to some degree with this section. Its golf course component would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area, as demonstrated in other makai golf courses within the region.

HCGP Section 8 – Natural Resources and Shoreline:

Alternative 1 is most consistent with the goals and policies of this section. It would require considerably less marina excavation than the proposed project and Alternative 2 and would reduce the potential risk of long-term adverse impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions with the degree of reduction in marina basin size that is proposed under Alternative 1. This reduction is also expected to reduce potential impacts upon anchialine pools and their ecosytems, as well as shoreline and marine resources that are affected by water quality. Alternative 1 also retains the shoreline preservation and protection concepts that are proposed in and described for the Project.

HCGP Section 10 – Public Facilities Goals and Policies:

The discussion in Section 5.2.1. in relation to the proposed project is applicable to Alternatives 1 and 2. Improvements to public facilities are are integral to the Kona Kai Ola development. The provision of additional boat slips and numerous road improvements, including a makai extension of Kuakini Highway south to Kailua-Kona are incorporated into plans for the project's development. In light of these elements, Alternatives 1 and 2 are consistent with the goals and policies of this section.

HCGP Section 11 – Public Utility Goals, Policies:

As with the proposed project, Alternatives 1 and 2 are consistent with the goals and policies of this section, based on the relevant grounds set forth in Section 5.2.1. The developer is committed to design, fund, and develop environmentally sensitive and energy efficient utility systems to the extent possible, as described previously in Part 5. Its master planning provides for the coordinated development of such systems with the objective of achieving significant savings for the public. As previously-mentioned example, the project development involves the upgrading of the Kealakehe Wastewater Treatment Plant.

HCGP Section 12 – Recreation:

Alternative 1 is consistent with the goals, policies, and courses of action for North Kona in this section.

Although the number of slips is reduced under Alternative 1, the region's boating opportunities and support facilities will still be expanded. The existing marina entrance would still be utilized under this alternative. However, concerns relating to increased activity leading to increased congestion in the marina entrance area would be mitigated to a certain extent. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities and marine science center remain important components of Alternative 1.

The golf course component of Alternative 2 would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola. Alternative 2 is also considered to be consistent with this section.

HCGP Section 13 and 13.2 – Transportation:

The reduced marina component under Alternative 1 will still provide transportation opportunities and provide for possible use of transit water shuttles to Kailua-Kona, although to a lesser degree than under the proposed project and Alternative 2 . However, in each scenario, internal people-movers are planned, and numerous roadway improvements are planned for coordination with public agencies, including but not limited to the construction of the Kuakini Highway extension between Honokōhau and Kailua-Kona. Accordingly, both Alternatives 1 and 2 are consistent with the goals, policies, and courses of action for North Kona under these sections of the General Plan.

HCGP Section 14.3 – Commercial Development:

For the reasons presented in the discussion under Section 226-104 of the State Plan, the planned commercial component under Alternatives 1 and 2 are consistent with this section.

HCGP Section 14.8 – Open Space:

Alternatives 1 and 2 are consistent with the goals and policies of this section. Alternative 1 provides a considerable (400-600 foot) shoreline setback along the entire ocean frontage of the project site as a means of protecting the area's scenic and open space resources, as well as natural and cultural resources. Although it does not incorporate the shoreline setback planned in Alternative 1, Alternative 2 provides a golf course component would contribute to the amount of open space that is currently proposed and allow additional view corridors to be created.

Community Development Plans

Community development plans are being formulated for different regions in the County in order to supplement the County's General Plan. The Kona Kai Ola project is located in the Kona Community Development Plan (CDP) area. Maps associated with the preliminary work phases

of the Kona CDP include the Kona Kai Ola project site within the "Preferred Urban Growth" boundary of the North Kona district. The Kona CDP process is guided by a Steering Committee composed of a broad cross-section of the community. The Steering Committee will eventually complete its work and recommend the CDP's adoption.

After the DEIS was published, the Kona CDP has progressed to the development of plans for the major urban growth corridor north of Kailua-Kona. The Kona CDP has produced a draft plan showing a transit oriented development that includes a midlevel public transit corridor along the mauka residential elevation, and a makai transit corridor that runs along a proposed new frontage road just makai and parallel to Queen Kaahumanu Highway. The development plan for Alternative 1 includes the Kuakini Highway as part of this proposed frontage road and transit line from Kailua Kona to the Kealakehe area, along with a transit stop at Kona Kai Ola. The Alternative 1 plan also includes a road that could be extended to be part of the proposed frontage road should it be approved and implemented. In addition, the Kona CDP has continued to emphasize the principles of smart growth planning with mixed use urban areas where people can live, work, play and learn in the same region. Kona Kai Ola has been specifically designed to be consistent with this policy in order to provide a stable employment base close to where people live in the mauka residential areas already planned for DHHL and HHFDC lands.

It should be noted that currently and over the years, the 1990 Keāhole to Kailua Development Plan (K-to-K Plan) guides land use actions by the public and private sectors. It is intended to carry out the General Plan goals and policies related to the development of the portion of North Kona area, including the Kona Kai Ola site. The "Preferred Growth Plan" of the Keāhole to Kailua Development Plan identifies the project site as a new regional urban center to include commercial, civic, and financial business related uses, an expanded "Harbor Complex," a shoreline road, and a shoreline park. The proposed project and the development concepts in Alternatives 1 and 2 are therefore consistent with the recommendations in the Keāhole to Kailua Development Plan.

Hawai'i County Zoning

As shown on Figure AA, the project site is zoned "Open". Under Section 25-5-160 of the Hawai'i County Code, "The O (Open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands)".

Some of the proposed uses at Kona Kai Ola are permitted uses in the Open zone such as:

- Heiau, historical areas, structures, and monuments;
- Natural features, phenomena, and vistas as tourist attractions;
- Private recreational uses involving no aboveground structure except dressing rooms and comfort stations;

- Public parks;
- Public uses and structures, as permitted under Section 25-4-11.

In addition to those uses permitted outright, the following uses are permitted after issuance of a use permit:

- Yacht harbors and boating facilities; provided that the use, in its entirety, is compatible with the stated purpose of the O district.
- Uses considered directly accessory to the uses permitted in this section shall also be permitted in the O district.

The proposed time-share and hotel units and commercial uses would not be consistent with the zoning designation of "Open". Project implementation therefore requires rezoning of portions of the project to the appropriate zoning category or use permits for certain uses.

Special Management Area

As shown in Figure AB, the entire project area up to the highway is within the coastal zone management zone known as the Special Management Area ("SMA"). At the County level, implementation of the CZM Program is through the review and administering of the SMA permit regulations. Kona Kai Ola complies with and implements the objectives and policies of the Coastal Zone Management (CZM) Program, and a full discussion is provided in Section 5.1.3. The development concepts in the proposed project and Alternatives 1 and 2 will be subject to applicable SMA rules and regulations.

Division of Forestry & Wildlife

1151 Punchbowl Street, Rm. 325 □ Honolulu, HI 96813 □ (808) 587-0166 □ Fax: (808) 587-0160

February 6, 2007

MEMORANDUM

TO: Keith K.B. Chun, Planning and Development Manager
Land Division

FROM: Paul J. Conry, Administrator
Division of Forestry and Wildlife

SUBJECT: Kona Kai Ola Development Draft Environmental Impact Statement.

We have reviewed the subject draft EIS and provide the following comments for your consideration. DOFAW is concerned that the draft EIS does not adequately cover the environmental impacts the project development will have on the stilts, coots, waterfowls, and migratory shorebirds that reside in the area. Since the County will take over management of the wastewater treatment facility, the conversion of an aerobic to anaerobic facility will directly impact water birds by removing their habitat from the area. Additionally, indirect impacts to water birds are loud noise and potential attraction of predators during construction will need to be mitigated. The development of lagoons will not be sufficient for nesting of native or endangered wildlife species in the area. Please call Megan Laut, Wildlife Biologist at (808) 587-4148 if you have questions to our review. Thank you for the opportunity to comment on this project.

C: Megan Laut, DOFAW Administration
DOFAW Wildlife Kamuela

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July 23, 2007

Paul J. Conry, Administrator
Division of Forestry and Wildlife
State of Hawaii Dept. of Land and Natural Resources
1151 Punchbowl Street, Rm. 325
Honolulu, HI 96813

Dear Mr. Conry:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 6, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement.

The EIS has been revised to address your comments, and the following text has been added to Section 3.7.2, Fauna:

> The habitat currently found within the project site does not provide the resources necessary for the sustenance or nesting of endemic listed avian species. This is not so of the Kealakehe WWTP located along the southern boundary of the property. Since the facility opening in March of 1994, the ponds within this facility have concentrated the majority of waterbirds along the Kona coast. Currently the bulk of the island's populations of two endemic endangered waterbirds, Black-necked Stilt (*Himatopus mexicanus knudseni*), and Hawaiian Coot (*Fulica alai*) utilize resources within this facility. The Kealakehe WWTP also hosts many of the more than 80 species of migratory and extralimital avian species which have been recorded from Hawai'i and which have been recorded from coastal areas in North Kona.
>
> The proposed brackish water pond area will provide additional habitat for shorebirds and some visiting seabirds. The creation of 19 acres of lagoons may result in impacts to two listed endemic waterbird species, including Black-necked Stilt (*Himantopus mexicanus knudseni*), and Hawaiian Coot (*Fulica alai*). It may also result in impacts to some migratory shorebird and waterfowl species protected under the Migratory Bird Treaty Act (MBTA). The US Fish and Wildlife Service (USFWS) will be consulted under the Endangered Species Act, as well as the DLNR under HRS Section 195D.
>
> The developer will consult with Kaloko-Honokohau National Historical Park, DOFAW and USFWS to develop a plan to establish a managed ecosystem and mitigate any potential impacts to listed species resulting from development of this property. A Natural Resources Management Plan that covers all listed species likely to be impacted will be prepared in consultation with the wildlife regulatory agencies following the development of a more detailed development plan.

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www.oceanit.com

In addition, we have added Endangered Species Act Section 7 as part of the Army Corps of Engineers Department of the Army Individual Permit. Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 23, 2007

RUSH

RECEIVED
2007 JAN 26 A 10: 21
LAND DIVISION
STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
_x_ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
_x_ Office of Conservation & Coastal Lands
_x_ Land Division – HDLO

FROM: Russell Y. Tsuji, Administrator
SUBJECT: Kona Kai Ola Draft Environmental Impact Statement
LOCATION: Kealakehe, North Kona, Hawaii, (3) 7-4-008:07, 72; 099 (por) and 3 (por)
APPLICANT: Oceanit for Jacoby Development, Inc.

Transmitted for your review and comment. Due to the volume of the above referenced document, we have attached only the Executive Summary and Table of Contents. A hard copy of the document is available for your review in Land Division office, Room 220. You may also request as copy of the document on CD by contacting Keith Chun of this office at 587-0431.

We would appreciate your comments on this document. Please submit any comments by February 1, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Keith Chun at 587-0431. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: Eric T. Hirano
Date: 1/26/07

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/KChun
Ref.: DEISKonaKaiOla
Hawaii.346

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zones X, AE, and VE. The National Flood Insurance Program does not have any regulations for developments within Zone X, however, it does regulate developments within Zones AE, and AE, as indicated in bold letters below.**

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is also located in Zone ____.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

(X) **Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.**

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.

(X) **Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.**

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

(X) **The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.**

( ) Additional Comments: _____

_____

( ) Other: _____

Should you have any questions, please call Ms. Alyson Yim of the Planning Branch at 587-0259.

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER

Date: 1/26/07

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July 23, 2007

Eric T. Hirano, Chief Engineer
Engineering Division
State of Hawai'i Dept. of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Hirano:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated January 26, 2007

Thank you for your comments to Mr. Russell Y. Tsuji, Administrator of the Land Division of the State Department of Land and Natural Resources, regarding the Kona Kai Ola Draft Environmental Impact Statement.

We note your concurrence that the project site is located in Zones X, AE, and VE, as designated on the Flood Insurance Rate Map, and that the National Flood Insurance Program regulates development within Zones AE. Kona Kai Ola will comply with the rules and regulations of the National Flood Insurance Program, as contained in Title 44 of the Code of Federal Regulations (44CFR). We understand that 44CFR indicates minimum standards, and Kona Kai Ola will comply with local flood ordinance if it proves to be more restrictive.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

MEMORANDUM

To: Russell Y. Tsuji, Administrator

From: Keith Chun, Planning and Development Manager

Date: February 5, 2007

Re: Request for Comments – Kona Kai Ola Draft EIS
Kealekehe, North Kona, Hawaii; TMK (3) 7-4-008:71, 72, 003 (por), 099 (por)

The following review comments are offered to the above referenced draft EIS (the DEIS):

1. Hawaii Administrative Rules (HAR) §11-200-17(f) requires that a draft EIS describe alternatives that could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The only alternative described in the DEIS is the "no-action" alternative. The DEIS should describe a full range of alternatives (e.g., a reduced or reconfigured marina, a reduction in the sizes or number of the new boat slips, and an enhanced, wider, or new entrance channel).

2. HAR §11-200-17(m) provides that a draft EIS shall consider mitigation measures proposed to avoid, minimize, rectify, or reduce impacts, and shall describe any mitigation measures included in the action plan to reduce significant, unavoidable, adverse impacts to insignificant levels The basis for considering these levels acceptable shall also be included. In addition, where alternative mitigation measures were considered, the draft EIS should discuss why one was chosen as opposed to the others. The DEIS only briefly discusses the proposed mitigation measures in the Executive Summary. The DEIS should include a separate section that discusses the proposed mitigation measures in greater detail as required by HAR subjection (m).

3. HAR §11-200-17(n) provides that a draft EIS shall summarize unresolved issues and discuss how such issues will be resolved prior to commencement of the action, or what overriding reasons there are for proceeding with the project without resolving these problems. The DEIS identifies several unresolved issues, but does not discuss how these issues will be resolved before the action commenced. For example, the DEIS should discuss when and how JDI will determine whether or not a sea water air-conditioning system will be used, what will be done about the affordable housing needs generated by the project, when and how JDI will resolve the lack of water issue, and whether the harbor congestion problem is unresolvable.

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July 23, 2007

Keith Chun, Planning and Development Manager
State of Hawai'i Dept. of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Chun:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 5, 2007

Thank you for your comments to Mr. Russell Y. Tsuji, Administrator of the Land Division of the State Department of Land and Natural Resources, regarding the Kona Kai Ola Draft Environmental Impact Statement. This letter responds to comments and our responses are numbered according to the order of your comments.

1. As explained in the DEIS, the agreement between JDI and the State of Hawaii established a required scope and scale of the project for which the impact analysis was provided. Several comments have addressed the fact that alternatives other than the No Project Alternative were not addressed in the DEIS Section 2, Alternatives Analysis.

Kona Kai Ola is of the position that alternative actions other than a No Project alternative are not currently feasible without an amendment to the agreement with the State. Agency and public comments in response to the DEIS, as well as additional information generated as a result of inquiry into issues raised by the comments, have been helpful in identifying alternative actions that will serve the State's goal of providing additional marina slips for the Kona area. These alternative actions also serve to reduce or mitigate anticipated effects of the proposed development.

Thus, agencies such as the Land Division of the Department of Land and Natural Resources, the U.S. Department of the Interior Fish and Wildlife Service, the Planning Department of the County of Hawai'i, and the Office of Environmental Quality Control (OEQC), as well as community organizations have commented that a reduced scale marina and related facilities should be considered. The OEQC has also asked that the alternative of a reduced scale project be

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evaluated under the assumption that DHHL may determine that a downsized project would be preferred.

In response to these comments on the DEIS and in consideration of measures to mitigate anticipated impacts, the EIS Section 2, Alternatives Analysis, has been revised to describe the following alternatives, which are discussed in more detail in the EIS:

- Alternative 1 is a project involving a 400-slip marina, 400 hotel units, 1,100 time-share units, and commercial and support facilities. This alternative would enhance water quality and avoid the need to widen the existing harbor entrance channel, as well as reduce traffic and socioeconomic impacts.
- Alternative 2 is an alternative that had been previously discussed, but not included in the proposed project that includes an 800-slip harbor and a golf course.
- Alternative 3 is the no-action alternative.

A comparison between impacts related to the proposed project concept and impacts related to Alternative 1 indicates that a reduction in the acreage and number of slips in the marina, as well as the reduction in hotel and time-share units, would generate less environmental, traffic, social and economic impacts. Although positive economic impacts would be reduced, Alternative 1 can be considered as a preferable alternative because of reduced environmental impacts. However, while it can be concluded that the 25-acre marina in Alternative 1 would be the preferred size, the DLNR agreement establishes the size of the marina at 45 acres and 800 slips. An amendment to the DLNR agreement is required in order to allow Alternative 1 to proceed. Hence, selection of Alternative 1 is an unresolved issue at this time.

The additional EIS text that includes the added EIS Section 2, Alternative Analysis, is contained in Attachment 1 of this letter.

2. We appreciate your comments regarding the EIS content requirements as contained in HAR Section 11-200-17 (m) as related to mitigation measures. The EIS has clarified discussion of mitigation measures so that the basis for considering the various levels of mitigation measures is clear, and includes information regarding the consideration of alternative measures. Further, the discussion of mitigation measures in the Executive Summary has been expanded.

Regarding your suggestion that the EIS contain a “separate section that discusses the proposed mitigation measures in greater detail as required by HAR subjection (m),” we note that HAR subjection (m) does not require a separate and distinct section on mitigation measures. While that requirement exists for other topics, such as unresolved issues (HAR subjection (n)) and irreversible and

irretrievable commitments of resources (HAR subjection (k)), it is not specified for mitigation measures.

3. The EIS Section 10 already includes information regarding the timing of affordable housing requirements. The EIS has been revised to include information on the process for timing of resolution of unresolved issues, as follows:

> "Air conditioning for the Kona Kai Ola development may be provided by a system utilizing deep, cold ocean water for cooling or Seawater Air Conditioning (SWAC). SWAC would significantly reduce energy consumption requirements, and is being considered in keeping with the sustainability goals of the overall Kona Kai Ola project. The specific design for the proposed SWAC facility has not been finalized. SWAC is a relatively new type of technology and its use at Kona Kai Ola requires a coordinated design concurrent with the buildings, infrastructure, open spaces and lagoons. If injection wells are chosen for circulated-water disposal, the location of these will be dictated by the underlying aquifer and groundwater system. The design of the SWAC will be established as the project progresses. If SWAC is not implemented, then conventional air conditioning systems will be used. This determination will be made based on further detailed study of SWAC requirements and specific applications in project components.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

2 Alternatives Analysis

~~In typical land development projects, the initial planning process includes the exploration of alternatives to development objectives. In the EIS process, these alternatives are presented with a disclosure of reasons for the dismissal of non-preferred alternatives.~~

~~Kona Kai Ola does not follow this same pattern of alternatives evaluation.~~ As discussed in Section 1.4, the proposed Kona Kai Ola project is the result of agreements between JDI and the State DLNR and DHHL. The agreements and leases between the State and JDI stipulate the parameters of development for this site in terms of uses, quantities and size of many features, resulting in a limited range of land uses. Unlike a private property project, JDI is required to meet the criteria outlined in the agreements, thereby affording less flexibility in options and uses. From the developer's perspective, the agreements must also provide sufficient flexibility to allow for a development product that responds to market needs and provides a reasonable rate of return on the private investment.

The agreements between JDI and DLNR specify that the proposed harbor basin is to be 45 acres and accommodate 800 slips. This development proposal is the subject of this EIS. In response to DEIS comments, additional water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor. Comments on the DEIS from DLNR, from other government agencies, the neighbors and the general community also called for the consideration of alternatives in the EIS, including a project with a smaller harbor basin and less density of hotel and time-share units.

In response to these comments on the DEIS, three alternatives are evaluated in this Final EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin including a decrease in hotel and time-share units; Alternative 2, which is an alternative that had been previously discussed but not included in the proposed project, that includes an 800-slip harbor and a golf course; and Alternative 3, the no-project alternative. Each alternative is included in the EIS with an evaluation of their potential impacts. These project alternatives are presented to compare the levels of impacts and mitigation measures of the proposed project and alternative development schemes pursuant to requirements set forth in Chapter 343, HRS.

~~JDI is required to provide a new marina basin not less than 45 acres and a minimum of 800 new boat slips. Further, the agreements provide the following options for land uses at the project site:~~

- ~~Golf Course~~
- ~~Retail Commercial Facilities~~
- ~~Hotel Development Parcels~~
- ~~Marina Development Parcels~~
- ~~Community Benefit Development Parcels~~

~~JDI is not pursuing the golf course option and is proposing instead to create various water features throughout the project site. All other optional uses have been incorporated in Kona Kai Ola.~~

2.1 Project Alternatives

2.1.1 Alternative 1: 400-Slip Marina

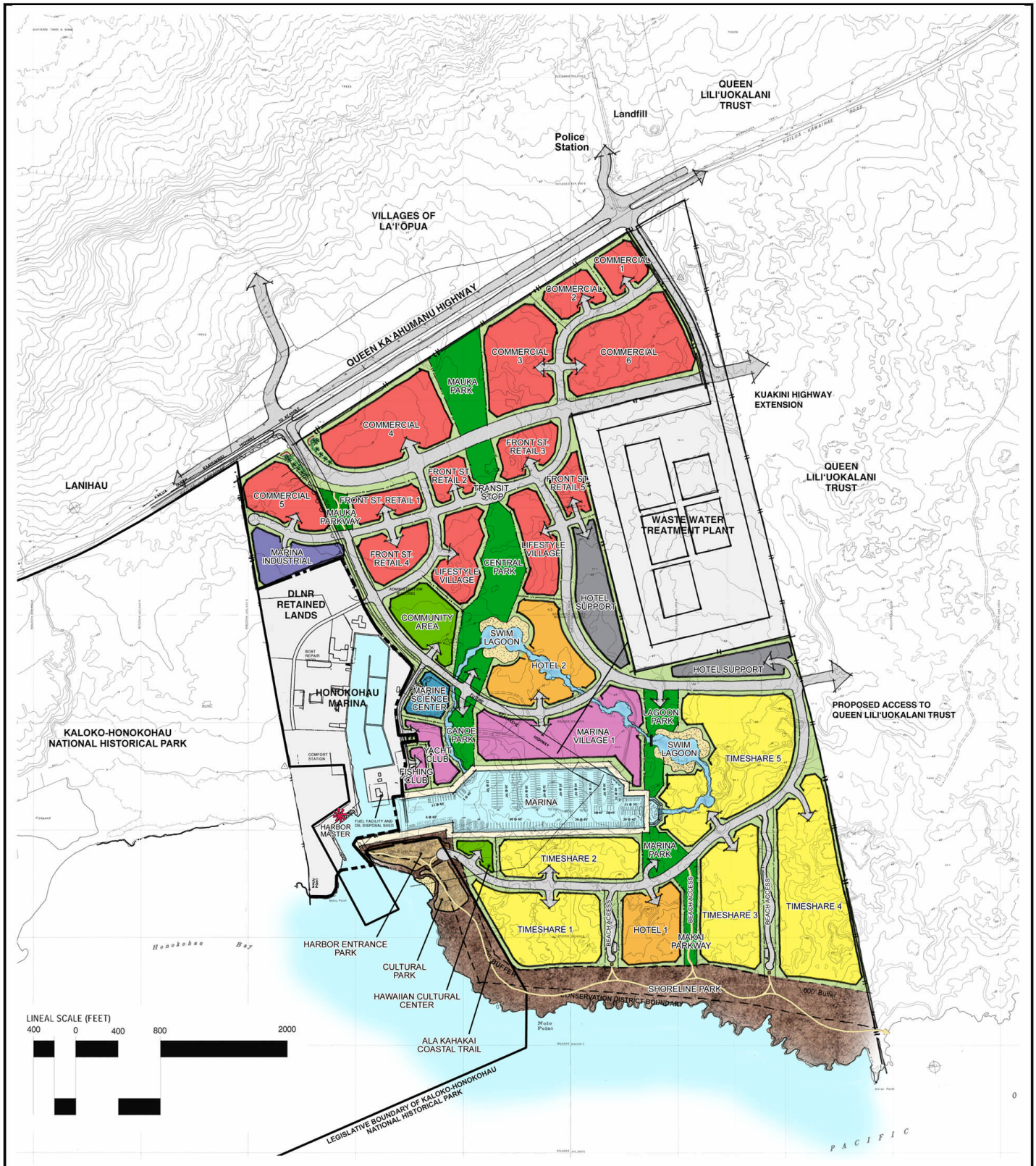
Studies conducted in response to DEIS comments found the construction and operation of an 800-slip marina may significantly impact the water quality within the marina and along the shoreline. Specifically, the Harbor Water Quality Modeling Study, as contained in Appendix U, found that the water circulation in a 45-acre 800-slip harbor was insufficient to maintain an acceptable level of water quality. Further, the existing harbor channel, which would serve both the existing and new harbors, could not adequately serve the increased boat traffic generated by an 800-slip marina during peak traffic. Mitigation measures to accommodate peak boat traffic included the widening of the existing channel, an action that would entail a complex process of Federal and State approvals and encounter significant environmental concern.

Concerns related to the proposed density of hotel and time-share units were also expressed in comments to the DEIS from members of the public, neighbors to the project site, especially the Kaniohale Community Association, and government agencies. Common themes in DEIS comments were related to impacts regarding traffic, project requirements of potable water and infrastructure systems, including sewer, drainage, utility and solid waste systems, and socioeconomic impacts.

In response to the water quality study results, and to the DEIS comments, an alternative plan was developed with a smaller marina with less boat slips, and a related decrease in hotel and time share units. Illustrated in Figure G, Alternative 1 reflects this lesser density project, and features a 400-slip marina encompassing 25 acres. For the purposes of the Alternative 1 analysis, JDI assumed 1,100 time-share units and 400 hotel rooms. Project components include:

- 400 hotel units on 34 acres
- 1,100 time-share units on 106 acres
- 143 acres of commercial uses
- 11 acres of marina support facilities
- 214 acres of parks, roads, open spaces, swim lagoons and community use areas

In addition, Alternative 1 would include the construction of a new intersection of Kealakehe Parkway with Queen Ka'ahumanu Highway, and the extension of Kealakehe Parkway to join Kuakini Highway to cross the lands of Queen Lili'uokalani Trust, and connecting with Kuakini Highway in Kailua-Kona. This is a significant off-site infrastructure improvement and is included in the agreements between the State and JDI.



Source: PBR HAWAII

Plan is conceptual only and subject to change

Figure G: Alternative 1: 400-Slip Marina

LEGEND

- TIME SHARE
- HOTEL
- RETAIL / COMMERCIAL
- MARINA RETAIL
- MARINA SUPPORT / COMMERCIAL
- MARINE SCIENCE CENTER
- COMMUNITY AREA / CULTURAL CENTER
- SWIM LAGOON
- MARINA
- UTILITIES
- PARKS & GREEN SPACE
- SHORELINE
- HARBOR ENTRANCE PARK / CULTURAL PARK

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JDI
JACOBY DEVELOPMENT, INC.

Like the proposed project, Alternative 1 would have a strong ocean orientation, and project components that support this theme would include various water features including seawater lagoons and a marine science center. The new Alternative 1 harbor would include a yacht club, fishing club, a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. The coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and 'Alula for community use. Additional Alternative 1 community areas would include facilities and space for community use, including programs of the Kona Kai Ola Community Foundation, which supports community programs in health care, culture, education, and employment training for the local community, especially to native Hawaiians. Like the original proposed plan, Alternative 1 includes 40 percent of the land in parks, roads, open spaces, swim lagoons and community use areas.

2.1.2 Alternative 2: Golf Course Feature

Alternative 2 was among the alternatives discussed at a community charrette in September 2003. It includes a golf course, which is a permitted use in the DLNR agreement and DHHL lease. As Figure H illustrates, an 18-hole championship golf course would occupy 222 acres on the southern portion of the project site. As with the proposed project, Alternative 2 includes an 800-slip marina on a minimum of 45 acres.

To support the economic viability of the project, other Alternative 2 uses include:

- Golf course clubhouse on three acres
- 1,570 visitor units on 88 acres fronting the marina
- 118 acres of commercial uses
- 23 acres of community uses

Community uses in Alternative 2 include an amphitheater, a canoe facilities park, a community health center, a Hawaiian cultural center and fishing village, a marine science center and employment training center. The sea water lagoon features contained in the proposed project and Alternative 1 are not included in this alternative.

2.1.3 Alternative 3: No Action

In Alternative 3, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.

~~The economic viability and sustainability of the project is determined by the density and uses proposed. Because JDI is obligated to develop an 800-slip marina for the State, complete road improvements, and provide various public enhancement features at its own expense, the density proposed for the income generating features of the development must be sufficient to provide an acceptable level of economic return for JDI. The market study, which is discussed in Section 4.6, reviewed various development schemes and determined that the currently proposed density and mix is the optimum to meet the anticipated financing and development cost obligations for the public features associated with the development.~~

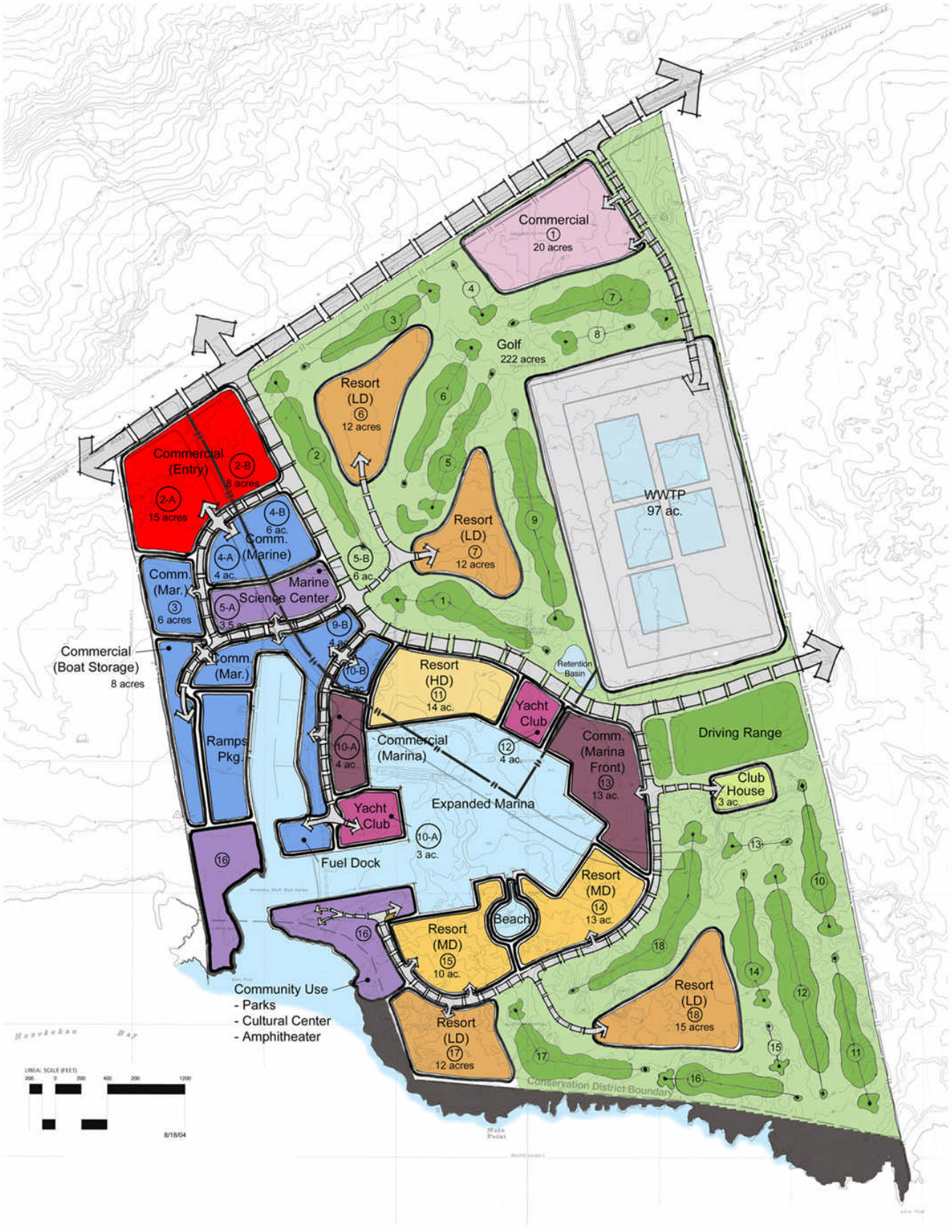

Figure H. Alternative 2: Golf Course Alternative

Legend

N E S W

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2.2 Alternatives Analysis

As discussed in Section 2.1, the proposed Kona Kai Ola project (also referred to as "proposed project") is defined by development requirements related for a marina and the related uses that would be needed to generate a reasonable rate of return that covers development costs.

Beginning with Section 2.2.1, the alternative development concepts are comparatively assessed for potential impacts that may reasonably be expected to result from each alternative. Following is an overview of the primary observations of such assessment.

Alternative 1 includes half of the State-required boat slips and 60 percent of the proposed hotel and time-share units and, due to the decreased density, this alternative would generate significantly less environmental and socio-economic impacts. A harbor water quality model found the reduction of the volume of the new marina basin by about half (approximately 25 acres) significantly improved the water circulation and quality. Further, the reduced number of boat slips would generate less boat traffic, thereby reducing congestion and the need to mitigate impacts further by the widening of the existing harbor channel.

A project with fewer hotel and time-share units and increased commercial space with a longer (14 years) absorption period would change the mix of employment offered by the project, and slightly increase the overall employment count. The public costs/benefits associated with Alternative 1 would change, compared to the proposed project, with a general increase in tax collections, and a general decrease in per capita costs. Detailed discussion of Alternative 1 potential economic impacts are provided in Section 4.6.6. Comparisons of levels of impact are presented throughout this FEIS.

While this analysis might indicate that the 25-acre marina in Alternative 1 would be the more prudent choice, the DLNR agreement establishes the minimum size and slip capacity of the marina at 45 acres and 800 slips, respectively. Amendments to the DLNR agreement would be required in order to allow Alternative 1 to proceed as the preferred alternative. Hence, selection of the preferred alternative is an unresolved issue at the writing of this FEIS.

Alternative 2, the golf course alternative, was not previously considered to be the preferred alternative primarily because market conditions at the time of project development might not likely support another golf course. Further, DHHL has a strategy goal to have more revenue-generating activities on the commercial lease lands within the project area. In addition, concerns have been expressed as to environmental impacts of coastal golf courses, including the potential adverse impact on Kona's water supply if potable water is used for golf course irrigation.

While Alternative 3, the no-project alternative, would not generate adverse impacts related to development of these lands associated with the construction and long-term operations, it would also not allow for an expanded public marina that would meet public need and generate income for the public sector. Further, the no-project alternative would foreclose the opportunity to create a master-planned State-initiated development that would result in increased tax revenue, recreation options and community facilities. Crucial privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities, and public access would not be contributed.

~~Hence, the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.~~

~~The no-project alternative would therefore not generate adverse impacts associated with the construction and long-term operations would not occur.~~

~~Likewise, the creation of a master-planned state-initiated development, resulting in increased employment, tax revenue, recreation options and community facilities, would not be created. Privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities and public access would not be contributed.~~

Further, the creation of revenue-producing businesses on the DHHL property to fund homestead programs would not occur, resulting in fewer potential benefits for Hawaiians.

Hence, the agreements and leases between the State and JDI indicate that the no-action alternative is not in the public interest~~has been rejected at this time~~.

2.2.1 Impact Comparison

Grading and Excavation

The proposed project requires grading and excavation. Both actions may impact groundwater due to rainfall runoff during construction. Alternative 1 would require a significantly smaller excavation for the marina basin and would therefore carry a lesser risk of potential adverse effects on water quality. Alternative 2 would require the same basin excavation as the proposed project, and would also include extensive grading and filling to build the golf course, the latter of which would generate additional impacts. Alternative 3 would result in no change to the geography, topography and geology.

Further discussion on grading and excavation is contained in Section 3.3.

Natural Drainage

Most precipitation infiltrates into the porous ground at the site, and no significant sheet flow is likely. Alternative 1 would generate similar levels of impacts on natural drainage as those of the proposed project and thus require similar mitigation measures. The golf course in Alternative 2 would not be as porous since the site would be graded, soil would be placed, and grass and other landscaping would be grown. Sheet flow and runoff can occur on a golf course, and drainage patterns might change. Alternative 3 would result in no change to the existing natural drainage pattern. Further discussion on natural drainage is contained in Section 3.4.

Air Quality

Air quality will be affected by construction activities, as well as pollutants from vehicular, industrial, natural, and agricultural sources. Alternative 1 would generate less construction air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin and fewer long-term impacts by reducing traffic 35 and 40 percent during, respectively, AM and PM peak traffic times. Construction of Alternative 2 would result in fugitive dust and exhaust from equipment and is expected to generate the same level of air quality impact as the proposed project. Alternative 3 would result in no change to existing air quality. Further discussion on air quality is contained in Section 3.5.

Terrestrial Environment

To provide additional habitat for shorebirds and some visiting seabirds, the project proposes to construct a brackishwater pond area suitable for avian fauna, including stilts, coots and ducks. While habitat expansion is beneficial, there is also a possibility that these species may be exposed to activity that may harm them. Alternative 1 would not include a brackish water pond, but will include 5 acres of seawater features, which is 74 percent less than the 19 acres of seawater features in the proposed project. While this would reduce beneficial impacts, it would also decrease exposure to potentially harmful activity. Alternative 2 does not include the brackish water pond features, but would include drainage retention basins that would attract avian fauna and expose them to chemicals used to maintain golf course landscaping. While Alternative 3 would result in no increase in potentially harmful activity, it would also not provide additional habitat for avian fauna. Further discussion on the terrestrial environment is contained in Section 3.7.

Groundwater

Groundwater at the project site occurs as a thin basal brackish water lens. It is influenced by tides and varies in flow direction and salt content. The existing Honokōhau Harbor acts as a drainage point for local groundwater. Any impact to groundwater flow from the proposed harbor is likely to be localized. The proposed marina basin will not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance.

There will be differences in the flow to the marina entrance between the proposed project and Alternative 1. Alternative 1, being smaller in size, will have less impact on groundwater flow than the proposed marina. Alternative 2 will have a similar impact to groundwater quality as the proposed project. Alternative 2 may also impact water quality by contributing nutrients and biocides to the groundwater from the golf course. Alternative 3 would result in no change in existing groundwater conditions. Further discussion on groundwater is contained in Section 3.8.1.

Surface Water

There are no significant natural freshwater streams or ponds at the site, but there are brackish anchialine pools. Surface water at the project site will be influenced by rainfall. Runoff typically percolates rapidly through the permeable ground. The proposed project will include some impermeable surfaces, which together with building roofs, will change runoff and seepage patterns.

Alternative 1 is a lower density project that is expected to have proportionally less impact on surface water and runoff patterns and less potential impact on water quality than the proposed project. Alternative 2 would have more impact on surface water quality than the proposed project due to fertilizers and biocides carried by runoff from the golf course. Alternative 3 would result in no change to surface water conditions. Further discussion on surface water is contained in Section 3.8.2.

Nearshore Environment and Coastal Waters

The potential adverse impacts to the marine environment from the proposed project are due to the construction of an 800-slip marina and the resulting inflow of higher salinity seawater and inadequate water circulation, both of which are anticipated to impair water quality to the extent of falling below applicable standards. One possible mitigation measure is to significantly reduce the size of the marina expansion.

The reduced marina size (from 45 to 25 acres) and reduced lagoon acreage in Alternative 1 are expected to result in a proportionate reduction in seawater discharging into the new harbor and increased water circulation. Alternative 2 includes the same marina basin size and is therefore subject to the same factors that are expected to adversely affect water quality.

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water quality in the proposed harbor depends on several components. These include salinity, nutrients, and sediments that come from the ocean, rainfall runoff, water features with marine animals, and dust. The smaller project offered as Alternative 1 is expected to produce a reduced amount of pollutants and reduce the risk of adverse impact upon water quality.

It is notable that the 45-acre marina basin planned in the proposed project and Alternative 2 only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd. The resulting flushing from such inflow would be expected to better maintain water quality. However, it is unclear whether 60 mgd of brackish groundwater would be available. As proposed in Alternative 1, reduction of the volume of the new marina basin by 45 percent will significantly improve the flushing and water quality because the lower volume can be flushed by the available groundwater flow.

In addition, there could be higher rainfall runoff from the Alternative 2 golf course into the harbor, because the grassed golf course will be less porous than the natural surface. The golf course will also require relatively high levels of fertilizer, biocides, and irrigation, all of which could contribute to adverse water quality impacts.

Further discussion on nearshore environment and coastal waters is contained in Section 3.9.1.

Anchialine Pools

Anchialine pools are located north of Honokōhau Harbor, and south of the harbor on the project site. The marine life in these pools is sensitive to groundwater quality, and changes due to construction and operation of the project could degrade the viability of the pool ecosystem. In the southern complex, 3 anchialine pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction in the proposed project and Alternatives 1 and 2.

Predicting the extent of change in groundwater flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is therefore extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Due to the uncertainty of changes in groundwater flow and quality due to marina construction, the variability in impacts between the proposed project and Alternatives 1 and 2 is unknown at this time. Alternative 3 would result in no change in groundwater flow. While this would eliminate the potential for adverse impacts, Alternative 3 would also continue the pattern of existing degradation related to human activity and the introduction of alien species. Further discussion on anchialine pools is contained in Section 3.9.2.

Marine Fishing Impacts

The proposed marina will increase the number of boats in the area and it is reasonable to assume that a portion of these new boats will engage in fishing activities. The increase in boats in the area would be primarily related to the marlin and tuna / pelagic fishery, coral reefs due to extractive fisheries, and SCUBA activities. The pressure on fish and invertebrate stocks is expected to increase with or without the marina. Harbor expansion provides the opportunity to address existing conditions to consolidate, focus, and fund management and enforcement activities at one location.

Compared to the proposed project, Alternative 1 would result in a 21 percent decrease in boat traffic, thereby lessening the potential for marine fishing impacts. The level of impacts in Alternative 2 would be similar to that of the proposed project. Alternative 3 would result in no change in existing marine fishing conditions, and no opportunity to address already existing pressure on fish and invertebrate stocks. Further discussion on marine fishing impacts is contained in Section 3.9.3.

Cultural and Archaeological Resources

The proposed project will integrate cultural and archaeological resources in the overall development. Archaeological sites recommended for preservation will be preserved, and cultural practices will be encouraged. Kona Kai Ola includes a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. Proposed is a 400-foot shoreline setback that would serve as a buffer between the ocean and developed areas. This coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and ʻAlula for community use.

Alternative 1 would contain all of the cultural archaeological features and the shoreline setback area would be 400 feet in the northern portion of the site and increase to 600 feet in the southern portion. Alternative 2 would preserve cultural and archaeological resources, but does not include a 400-foot shoreline setback. Alternative 3 would result in no change to existing cultural and archaeological resources and no addition of cultural and community facilities and activities. Further discussion on cultural and archaeological resources is contained in, respectively, Sections 4.1 and 4.2.

Noise

Project-generated noise is due to construction equipment and blasting, boats, marina activities, vehicle traffic, and the Kealakehe Wastewater Treatment Plant operations. Alternative 1 would generate less noise impacts due to reduced construction activities, fewer boats, less traffic and less on-site activity. Alternative 2 would also generate less noise due to reduced traffic and less on-site activity, but noise related to the excavation of the marina basin and an increase in the number of boats would be similar to that of the proposed project. Further discussion on noise impacts is presented in Section 4.4.

Socioeconomic Impacts

The proposed project will generate an increase in de facto population of an estimated 5,321 persons due to the increase in hotel and time-share units. The estimated de facto population increase in Alternative 1 is 37 percent less, at 3,363 persons, than the proposed project. The de facto population increase in Alternative 2 is similar to Alternative 1.

Employment in the commercial components will nearly double in Alternative 1, from a stabilized level of 1,429 full-time equivalent (FTE) positions in the proposed project to 2,740 in the Alternative 1.

Under Alternative 1, the total operating economic activity at Kona Kai Ola will increase due to the added commercial space more than off-setting the fewer visitor units, moving upward from $557.6 million per year to circa $814.3 million annually. The total base economic impact resulting from development and operation of Alternative 1 will similarly be higher by between 35 and 45 percent than that of the proposed project.

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County revenues. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The estimated absorption periods for marketable components of Alternative 1 are generally shorter than those for the same components in the proposed project. Marina slips under Alternative 1 are estimated to be absorbed within 2 years after groundbreaking, as compared with 9 years for absorption of slips in the proposed project. Hotel rooms under Alternative 1 are estimated to be absorbed within 4 years after groundbreaking, as compared with 7 years under the proposed project. Time-share units would be absorbed within 10 years under Alternative 1, while 15 years are projected under the proposed project. Due to the planned increase in commercial facilities under Alternative 1, the absorption period of commercial space is estimated at 14 years, as compared with 8 years for absorption of such facilities under the proposed project.

The State and County will still both receive a net benefit (tax receipts relative to public expenditures) annually on a stabilized basis under the Alternative 1. The County net benefits will be some $12.2 million per year under the Alternative 1 versus $14.9 million under the proposed project. The State net benefits will increase under the Alternative 1 to about $37.5 million annually, up substantially from the $11.4 million in the proposed project.

Due to the lower de facto population at build-out, the effective stabilized public costs for both the State and County will decline meaningfully under the Alternative 1, dropping from $7.7 million annually for the County and $36.5 million for the State, to $4.9 million and $23 million per year, respectively.

Alternative 3 would result in no increase in de facto population and improvement to economic conditions. Further discussion on social and economic impacts are contained in, respectively, Sections 4.5 and 4.6.

Vehicular Traffic

The proposed project will impact the nearby road network that currently is congested during peak traffic times. The proposed project includes roadway improvements that would reduce the impact and improve roadway conditions for the regional community.

Alternative 1 includes the same roadway system improvements as the proposed project, yet would reduce vehicular traffic by 35 percent when compared to the proposed project. Alternative 2 would have similar traffic conditions and roadway improvements as Alternative 1. Alternative 3 would result in no increase in traffic and no roadway improvements.

Marina Traffic Study

The increase in boat traffic due to the proposed 800-slip marina would cause entrance channel congestion during varying combinations of existing and new marina peak traffic flow. Worst case conditions of active sport fishing weekend and summer holiday recreational traffic result in traffic volumes exceeding capacity over a short afternoon period. Mitigation to address boat traffic in the proposed project include widening the entrance channel, traffic control, implementation of a permanent traffic control tower, or limiting vessel size.

Alternative 1 would result in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent reduction during peak existing conditions. The reduction to 400 slips also reduces the impacts of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Alternative 2 would have the same level of boat traffic as the proposed project. Alternative 3 would not meet the demand for additional boat slips and would not generate additional boat traffic. Further discussion on marina traffic is contained in Section 4.8.

Police, Fire and Medical Services

The proposed project will impact police, fire and medical services due to an increase in de facto population and increased on-site activity. Alternatives 1 and 2 would have similar levels of impact as the proposed project due to increased on-site activity. Further discussion on police, fire and medical services are contained, respectively, in Sections 4.10.1, 4.10.2 and 4.10.3.

Drainage and Storm Water Facilities

The proposed project will increase drainage flows, quantities, velocities, erosion, and sediment runoff.

Alternative 1 involves a reduction of the project density that would reduce storm runoff from the various land uses due to a reduction in impervious surfaces associated with hotel and time-share development and to the creation of more open space. However, roadway areas will increase by about 30 percent in Alternative 1. Storm runoff from proposed streets would therefore increase; thus requiring additional drainage facilities and possibly resulting in no net savings. The golf course in Alternative 2 may also change drainage characteristics from those of the proposed project and may not reduce impacts. Alternative 3 would result in no change in existing conditions and no improvements to drainage infrastructure. Further discussion on drainage and storm water facilities is contained in Section 4.10.5

Wastewater Facilities

The proposed development is located within the service area of the Kealakehe WWTP and a sewer system will be installed that connects to the WWTP. The sewer system will be comprised of a network of gravity sewers, force mains, and pumping stations which collect and convey wastewater to the existing Kealakehe WWTP. Project improvements will incorporate the usage of recycled / R1 water. Improvements implemented by the proposed project will also accommodate the needs of the regional service population.

Alternative 1 would generate approximately 10 percent less wastewater flow than the proposed project. Wastewater flow in Alternative 2 is undetermined. Alternative 3 would result in no additional flow, as well as no improvements that will benefit the regional community. Further discussion on wastewater facilities is contained in Section 4.10.6.

Potable Water Facilities

The proposed project average daily water demand is estimated at 1.76 million gallons per day. Existing County sources are not adequate to meet this demand and source development is required. The developer is working with DLNR and two wells have been identified that will produce a sustainable yield that will serve the project. These wells will also serve water needs beyond the project.

Alternative 1 would result in net decrease of about five percent of potable water demand. Alternative 2 may have a lower water demand than the proposed project as long as potable water is not used for irrigation. Alternative 3 would result in no additional flow, as well as no source development that will benefit the regional community. Further discussion on potable water facilities is contained in Section 4.10.8.

Energy and Communications

Regarding Alternative 1, preliminary estimates for electrical, telecommunications, and cable resulted in a net demand load that remains similar to the proposed project. Further discussion on energy and communications is contained in Section 4.10.9.1.

The proposed project will increase the demand for electrical energy and telecommunications. The demand would be reduced in Alternative 1 because the number of boat slips and units would decrease. Similarly, Alternative 2 would have fewer units than the proposed project and therefore reduce energy demands. Further reduction in energy demand for either alternative could be achieved by using seawater air conditioning (SWAC) and other energy reduction measures, as planned by the developer. Further discussion on energy and telecommunications is contained in Section 4.10.9.2.

Water Features and Lagoons

The proposed project includes a brackishwater pond, lagoons, and marine life exhibits supplied by clean seawater. The water features in Alternative 1 would significantly decrease by 74 percent from 19 acres in the proposed project to five acres in Alternative 1. This decrease in water features would result in a corresponding decrease in water source requirements and seawater discharge. Alternative 2 does not include the seawater features. Alternative 3 would result in no additional demand for water source requirements and seawater discharge.

2.2.2 Conformance with Public Plans and Policies

State of Hawai'i

Chapter 343, Hawai'i Revised Statutes

Compliance with this chapter is effected, as described in Section 5.1.1 in regard to the proposed project and the alternatives discussed.

- State Land Use Law, Chapter 205, Hawai'i Revised Statutes

  The discussion in Section 5.1.2 is directly applicable to Alternative 1, the proposed project. Alternative 1 will involve a setback of 400 feet that increases to 600 feet along the southern portion of the project site's shoreline area. Alternative 2 does not provide for such a setback, but may still require approvals from DLNR for cultural, recreational, and community uses and structures within the Conservation district.

- Coastal Zone Management Program, Chapter 205A, Hawai'i Revised Statutes

  Recreational Resources:

  In addition to the discussion of consistency with the associated objective and policies, as described in Section 5.1.3, the reduction from the proposed project's 800-slip marina to a 400-slip marina under Alternative 1 will still expand the region's boating opportunities and support facilities. The existing harbor entrance will still be utilized under this alternative; however, potential risks relating to boat traffic and congestion in the marina entrance area will be reduced significantly. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities, and marine science center remain important recreational components under Alternative 1.

Alternative 2 includes a golf course component, which would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Alternative 2, like the proposed project, will expand the region's boating opportunities and support facilities through its 800-slip marina. However, the potential adverse impacts of increased boat traffic from the size of the marina are significant enough to offset the benefits of increased boating opportunities.

Coastal Ecosystems:

The discussion in Section 5.1.3 is directly applicable to Alternative 1.

Alternative 1 not only reduces the number of slips proposed by 50 percent, but it also reduces the size of the marina from 45 acres to 25 acres. The 25-acre marina will increase the body of water within the existing harbor, but to a significantly lesser extent than the proposed project's estimated increase, which is also applicable to the 45-acre size that is proposed for the marina under Alternative 2.

The findings of the Harbor Water Quality Modeling Study conclude that a reduction in the size of the harbor expansion is an alternative that will mitigate the risk of significant impacts upon water quality within the marina and existing harbor. Accordingly, the reduction in both the number of slips and the size of the marina basin under Alternative 1, in combination with proper facilities design, public education, and enforcement of harbor rules and regulations, would result in fewer long-term impacts to water quality and coastal ecosystems. Short-term (construction-related) impacts would likely remain the same although the reduction in the total acreage of excavation is expected to result in a shorter duration of such impacts.

In addition to its 800-slip marina and potential adverse impacts upon water quality and the marine environment, Alternative 2 includes a golf course component, which has the potential to impact coastal ecosystems by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Economic Uses

Although reduced in the number of slips, the smaller marina under Alternative 1 will nevertheless serve public demand for more boating facilities in West Hawai'i and is consistent with the objective and policies and discussion set forth in Section 5.1.3. The economic impacts of Alternative 2, while comparable to those of the proposed project's marina development, are notably marginal as to the golf course component, based on the marketability analysis that indicates a condition of saturation within the region.

Coastal Hazards

The discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Tsunami risks mainly affect the large shoreline setback area that is proposed for the project and Alternative 1. Alternative 2 projects a transient accommodation site that is partially within the tsunami hazard zone and thus carries a higher hazard risk. However, the essential requirement for these alternatives, as well as the proposed project, is a well-prepared and properly implemented evacuation plan.

Beach Protection

Discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Alternative 1 and, to a lesser extent, Alternative 2, will retain the shoreline area in its natural condition.

Similar to the proposed project, Alternative 1 provides for a shoreline setback of considerable width within which no structure, except for possible culturally-related structures, would be allowed. Alternatives 1 and 2 will thus be designed to avoid erosion of structures and minimize interference with natural shoreline processes.

Marine Resources

The discussion in Section 5.1.3 is also applicable to Alternative 1 which is described to be an alternative that is specifically projected to mitigate anticipated adverse impacts on water quality and the marine environment that might otherwise result from the original harbor design and scale, which is also incorporated in Alternative 2 . The reduced marina size under Alternative 1 is projected to meet water quality standards and enable greater compliance with the objective and policies addressed in this section.

Alternative 2 includes a golf course component and thus the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Hawai'i State Plans, Chapter 226, Hawai'i Revised Statutes

Section 226-4 (State goals), 5 (Objectives and policies for population, and 6 (Objective and policies for economy in general):

The discussion in Section 5.1.4 is applicable to Alternatives 1 and 2, in addition to the proposed project. These development concepts generally conform to the goals, objectives, and policies set forth in these sections because they will provide some degree of economic viability, stability, and sustainability for future generations. Kona Kai Ola will convert essentially vacant land into a mixed-use development with a distinctive marina and boating element, providing a wide range of recreational, business, and employment opportunities to the community.

Section 226-8 Objective and policies for the economy – the visitor industry:

Alternatives 1 and 2 will be consistent with the State's economic objective and policies relating to the tourism industry for the same reasons that are discussed in regard to the proposed project in Section 5.1.4. They will incorporate JDI's commitment to sustainability principles in the planning and design of the development concepts in Alternatives 1 and 2. Although the total hotel and time-share unit count is reduced to approximately 1,500 in Alternatives 1 and 2, the transient accommodations component of these alternatives will still further the State's objective and policies for increased visitor industry employment opportunities and training, foster better visitor understanding of Hawai'i's cultural values, and contribute to the synergism of this mixed-use project concept that addresses the needs of the neighboring community, as well as the visitor industry.

Section 226-11 Objectives and policies for the physical environment: land-based, shoreline and marine resources:

Alternative 1 is expected to involve less potential adverse impacts upon these environmental resources than the proposed project. Likewise, and Alternative 2 would have less adverse impact because of its reduction in the size of the marina and in the total hotel and time-share unit count. Alternative 1 carries less potential risk to water quality and related impacts upon the marine environment and anchialine pool ecosystems. Although approximately three anchialine pools are expected to be destroyed, the great majority of pools will be preserved within and outside of the proposed 400-foot shoreline setback.

The golf course component in Alternative 2 has the potential to impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the marina basin and nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools by introducing the chemicals into the pond systems.

Section 226-12 Objective and policies for the physical environment: scenic, natural beauty, and historic resources:

The discussion in Section 5.1.4 is directly applicable to Alternative 1 and describes the compliance with the objective and policies addressed.

The golf course component of Alternative 2 would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area.

Just as with the proposed project, Alternatives 1 and 2 would also be designed to blend with the natural terrain and to honor and protect the cultural history, resources, and practices of these lands.

Section 226-13 Objectives and policies for the physical environment: land, air and water quality:

As stated above, because of the reduction in both the number of slips and the size of the marina basin, with proper facilities design, public education and enforcement of harbor rules and regulations, Alternative 1 is anticipated to cause fewer long-term impacts to water quality than either the proposed project or Alternative 2. Based on the findings of the Harbor Water Quality Modeling Study, water quality resulting from a reduced marina basin size as proposed under Alternative 1 is expected to be similar to existing conditions.

As previously noted, Alternative 2 has the potential to adversely impact water quality by increasing the nutrient loading in surface runoff and groundwater by introducing pesticides, herbicides and other chemicals common in golf course development and maintenance into the marina basin and nearshore waters surrounding the project site.

Section 226-14 Objectives and policies for facility systems - general:

Alternatives 1 and 2 will conform to the objective and policies of this section on the grounds that are discussed in regard to the proposed project in Section 5.1.4. The master-planning and phasing of the project concepts under these alternatives will be coordinated with associated public and private infrastructural planning and related private and public infrastructural financing. The cost of the marina construction and project-related infrastructure is to be borne by the developer, resulting in considerable savings for the public. In addition, the projected lease revenue from these public lands will provide additional public benefits by establishing a revenue stream for capital improvements and maintenance of a range of State facilities.

Section 226-15 Objectives and policies for facility systems - solid and liquid wastes:

In addition to the developer's commitment to sustainable development design, the project will involve upgrades to the County of Hawai'i's Kealakehe Wastewater Treatment Plant to meet current needs, as well as the project's future needs. This commitment is applicable to Alternatives 1 and 2, as well as the proposed project that is discussed in Section 5.1.4.

Section 226-16 Objectives and policies for facility systems – water:

The discussion of water conservation methods and the need to secure additional potable water sources in Section 5.1.4 is also applicable to Alternative 1 and demonstrates conformity to the objective and policies for water facilities. Alternative 2 involves greater irrigation demands in regard to its golf course component and greater potable water demands for human consumption than those for Alternative 1. Alternative 2 is expected to face more serious challenges in securing adequate and reliable sources of water.

Section 229-17 Objectives and policies for facility systems – transportation:

Alternatives 1 and 2 will conform to this objective and policies because they will present water transportation opportunities, including the possible use of transit water shuttles to Kailua-Kona, as described in regard to the proposed project in Section 5.1.4.

Section 226-18 Objectives and policies for facility systems – energy:

Alternatives 1 and 2 conform to these objective and policies through the use of energy efficient design and technology and commitment to the use and production of renewable energy to serve the project's needs. Solar energy production, solar hot water heating, and the use of deep cold seawater for cooling systems are currently identified as means of saving substantial electrical energy costs for the community and the developer.

Section 226-23 Objectives and policies for socio-cultural advancement – leisure:

Alternative 1 conforms to this objective and related policies for the reasons offered in Section 5.1.4 in regard to the proposed project. Alternative 1 will be of greater conformity with the policy regarding access to significant natural and cultural resources in light of the 400-600 foot shoreline setback that has been designed for this alternative.

Although it does not propose the considerable shoreline setback that is planned for Alternative 1, Alternative 2 is consistent with this objective and related policies in incorporating opportunities for shoreline-oriented activities, such as the walking trails. In addition, the golf course component adds a more passive recreation alternative to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Section 226-25 Objectives and policies for socio-cultural advancement-culture:

The discussion in Section 5.1.4 is relevant to Alternatives 1 and 2 and demonstrate their conformity the objective and policies of this section.

Both alternatives involve the preservation and protection of cultural features that have been identified by the Cultural Impact Assessment and archaeological studies for the project area. Both provide for public shoreline access, and both will continue the policy of close consultation with the local Hawaiian community and cultural and lineal descendants in the planning of cultural resource preservation and protection.

Section 226-103 Economic priority guidelines:

Alternatives 1 and 2 conform to these guidelines for the same reasons that are set forth in Section 5.1.4. They involve private investment in a public project that will create economic diversification through a mix of marina, industrial, commercial, visitor, and cultural facilities. This presents a wide range of entrepreneurial opportunities, long-term employment opportunities, and job training opportunities.

Section 226-104 Population growth and land resources priority guidelines:

As described in Section 5.1.4, the policy support for the proposed project also extends to the similar development concepts considered in Alternatives 1 and 2. Those alternatives conform to the guidelines of this section because they involve an urban development under parameters and within geographical bounds that are supported by the County's General Plan, a preliminary form of the Kona Community Development Plan, the County's Keahole to Kailua Regional Development Plan, and the reality of being located along the primary commercial/industrial corridor between Keahole Airport and Kailua-Kona. As with the proposed project, the development concepts of Alternatives 1 and 2 are essentially alternatives for the implementation and "in-filling" of the urban expansion area in North Kona.

DHHL Hawai'i Island Plan

This 2002 plan projects DHHL's Honokōhau makai lands for commercial use. As compared to the proposed project and Alternative 2, Alternative 1 presents an expanded commercial component that provides greater compliance with the plan, while addressing certain beneficiaries' concerns about the scale of the marina originally required in the Project. Alternative 2 also conforms to the recommended commercial uses in the makai lands but to a lesser degree than Alternative 1 because of its more limited commercial component. Like the proposed project, its marina size and number of slips raise environmental issues, as more specifically discussed in Part 3, and community concerns.

County of Hawai'i General Plan

HCGP Section 4 – Environmental Quality Goals, Policies and Courses of Action:

Alternative 1 is consistent with this section. It presents a reduction in both the number of slips and the size of the marina basin that, in combination with proper facilities design, public education and enforcement of harbor rules and regulations, would result in very few long term impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions.

Alternative 2 is the least consistent with this section. In addition to the potential significant impacts of its 800 slip marina basin, its golf course component has the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides and other chemicals common in golf course use and management into the nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools beyond their current conditions by introducing such substances into the pool systems.

HCGP Section 7 – Natural Beauty Goals and Policies:

Alternative 2 conforms to some degree with this section. Its golf course component would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area, as demonstrated in other makai golf courses within the region.

HCGP Section 8 – Natural Resources and Shoreline:

Alternative 1 is most consistent with the goals and policies of this section. It would require considerably less marina excavation than the proposed project and Alternative 2 and would reduce the potential risk of long-term adverse impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions with the degree of reduction in marina basin size that is proposed under Alternative 1. This reduction is also expected to reduce potential impacts upon anchialine pools and their ecosytems, as well as shoreline and marine resources that are affected by water quality. Alternative 1 also retains the shoreline preservation and protection concepts that are proposed in and described for the Project.

HCGP Section 10 – Public Facilities Goals and Policies:

The discussion in Section 5.2.1. in relation to the proposed project is applicable to Alternatives 1 and 2. Improvements to public facilities are are integral to the Kona Kai Ola development. The provision of additional boat slips and numerous road improvements, including a makai extension of Kuakini Highway south to Kailua-Kona are incorporated into plans for the project's development. In light of these elements, Alternatives 1 and 2 are consistent with the goals and policies of this section.

HCGP Section 11 – Public Utility Goals, Policies:

As with the proposed project, Alternatives 1 and 2 are consistent with the goals and policies of this section, based on the relevant grounds set forth in Section 5.2.1. The developer is committed to design, fund, and develop environmentally sensitive and energy efficient utility systems to the extent possible, as described previously in Part 5. Its master planning provides for the coordinated development of such systems with the objective of achieving significant savings for the public. As previously-mentioned example, the project development involves the upgrading of the Kealakehe Wastewater Treatment Plant.

HCGP Section 12 – Recreation:

Alternative 1 is consistent with the goals, policies, and courses of action for North Kona in this section.

Although the number of slips is reduced under Alternative 1, the region's boating opportunities and support facilities will still be expanded. The existing marina entrance would still be utilized under this alternative. However, concerns relating to increased activity leading to increased congestion in the marina entrance area would be mitigated to a certain extent. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities and marine science center remain important components of Alternative 1.

The golf course component of Alternative 2 would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola. Alternative 2 is also considered to be consistent with this section.

HCGP Section 13 and 13.2 – Transportation:

The reduced marina component under Alternative 1 will still provide transportation opportunities and provide for possible use of transit water shuttles to Kailua-Kona, although to a lesser degree than under the proposed project and Alternative 2 . However, in each scenario, internal people-movers are planned, and numerous roadway improvements are planned for coordination with public agencies, including but not limited to the construction of the Kuakini Highway extension between Honokōhau and Kailua-Kona. Accordingly, both Alternatives 1 and 2 are consistent with the goals, policies, and courses of action for North Kona under these sections of the General Plan.

HCGP Section 14.3 – Commercial Development:

For the reasons presented in the discussion under Section 226-104 of the State Plan, the planned commercial component under Alternatives 1 and 2 are consistent with this section.

HCGP Section 14.8 – Open Space:

Alternatives 1 and 2 are consistent with the goals and policies of this section. Alternative 1 provides a considerable (400-600 foot) shoreline setback along the entire ocean frontage of the project site as a means of protecting the area's scenic and open space resources, as well as natural and cultural resources. Although it does not incorporate the shoreline setback planned in Alternative 1, Alternative 2 provides a golf course component would contribute to the amount of open space that is currently proposed and allow additional view corridors to be created.

Community Development Plans

Community development plans are being formulated for different regions in the County in order to supplement the County's General Plan. The Kona Kai Ola project is located in the Kona Community Development Plan (CDP) area. Maps associated with the preliminary work phases

of the Kona CDP include the Kona Kai Ola project site within the "Preferred Urban Growth" boundary of the North Kona district. The Kona CDP process is guided by a Steering Committee composed of a broad cross-section of the community. The Steering Committee will eventually complete its work and recommend the CDP's adoption.

After the DEIS was published, the Kona CDP has progressed to the development of plans for the major urban growth corridor north of Kailua-Kona. The Kona CDP has produced a draft plan showing a transit oriented development that includes a midlevel public transit corridor along the mauka residential elevation, and a makai transit corridor that runs along a proposed new frontage road just makai and parallel to Queen Kaahumanu Highway. The development plan for Alternative 1 includes the Kuakini Highway as part of this proposed frontage road and transit line from Kailua Kona to the Kealakehe area, along with a transit stop at Kona Kai Ola. The Alternative 1 plan also includes a road that could be extended to be part of the proposed frontage road should it be approved and implemented. In addition, the Kona CDP has continued to emphasize the principles of smart growth planning with mixed use urban areas where people can live, work, play and learn in the same region. Kona Kai Ola has been specifically designed to be consistent with this policy in order to provide a stable employment base close to where people live in the mauka residential areas already planned for DHHL and HHFDC lands.

It should be noted that currently and over the years, the 1990 Keāhole to Kailua Development Plan (K-to-K Plan) guides land use actions by the public and private sectors. It is intended to carry out the General Plan goals and policies related to the development of the portion of North Kona area, including the Kona Kai Ola site. The "Preferred Growth Plan" of the Keāhole to Kailua Development Plan identifies the project site as a new regional urban center to include commercial, civic, and financial business related uses, an expanded "Harbor Complex," a shoreline road, and a shoreline park. The proposed project and the development concepts in Alternatives 1 and 2 are therefore consistent with the recommendations in the Keāhole to Kailua Development Plan.

Hawai'i County Zoning

As shown on Figure AA, the project site is zoned "Open". Under Section 25-5-160 of the Hawai'i County Code, "The O (Open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands)".

Some of the proposed uses at Kona Kai Ola are permitted uses in the Open zone such as:

- Heiau, historical areas, structures, and monuments;
- Natural features, phenomena, and vistas as tourist attractions;
- Private recreational uses involving no aboveground structure except dressing rooms and comfort stations;

- Public parks;
- Public uses and structures, as permitted under Section 25-4-11.

In addition to those uses permitted outright, the following uses are permitted after issuance of a use permit:

- Yacht harbors and boating facilities; provided that the use, in its entirety, is compatible with the stated purpose of the O district.
- Uses considered directly accessory to the uses permitted in this section shall also be permitted in the O district.

The proposed time-share and hotel units and commercial uses would not be consistent with the zoning designation of "Open". Project implementation therefore requires rezoning of portions of the project to the appropriate zoning category or use permits for certain uses.

Special Management Area

As shown in Figure AB, the entire project area up to the highway is within the coastal zone management zone known as the Special Management Area ("SMA"). At the County level, implementation of the CZM Program is through the review and administering of the SMA permit regulations. Kona Kai Ola complies with and implements the objectives and policies of the Coastal Zone Management (CZM) Program, and a full discussion is provided in Section 5.1.3. The development concepts in the proposed project and Alternatives 1 and 2 will be subject to applicable SMA rules and regulations.

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 6, 2007

Hand Delivered

Mr. Dayan Vithanage
Oceanit
828 Fort Street Mall, Suite 600
Honolulu, Hawaii 96813

Dear Mr. Vithanage:

Subject: Draft Environmental Impact Statement for the Proposed Kona Kai Ola Development at Kealakehe, North Kona, Hawaii

Thank you for the opportunity to review and comment on the above subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to other DLNR Divisions for their review and comment.

Comments received by Land Division are attached for your review. Other DLNR Divisions may submit additional comments to you directly. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Russell Y. Tsuji
Administrator

Cc: Central Files
District Files
DHHL
OEQC

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

MEMORANDUM

To: Russell Y. Tsuji, Administrator

From: Keith Chun, Planning and Development Manager

Date: February 5, 2007

Re: Request for Comments – Kona Kai Ola Draft EIS
Kealekehe, North Kona, Hawaii; TMK (3) 7-4-008:71, 72, 003 (por), 099 (por)

The following review comments are offered to the above referenced draft EIS (the DEIS):

1. Hawaii Administrative Rules (HAR) §11-200-17(f) requires that a draft EIS describe alternatives that could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected. The only alternative described in the DEIS is the "no-action" alternative. The DEIS should describe a full range of alternatives (e.g., a reduced or reconfigured marina, a reduction in the sizes or number of the new boat slips, and an enhanced, wider, or new entrance channel).

2. HAR §11-200-17(m) provides that a draft EIS shall consider mitigation measures proposed to avoid, minimize, rectify, or reduce impacts, and shall describe any mitigation measures included in the action plan to reduce significant, unavoidable, adverse impacts to insignificant levels The basis for considering these levels acceptable shall also be included. In addition, where alternative mitigation measures were considered, the draft EIS should discuss why one was chosen as opposed to the others. The DEIS only briefly discusses the proposed mitigation measures in the Executive Summary. The DEIS should include a separate section that discusses the proposed mitigation measures in greater detail as required by HAR subjection (m).

3. HAR §11-200-17(n) provides that a draft EIS shall summarize unresolved issues and discuss how such issues will be resolved prior to commencement of the action, or what overriding reasons there are for proceeding with the project without resolving these problems. The DEIS identifies several unresolved issues, but does not discuss how these issues will be resolved before the action commenced. For example, the DEIS should discuss when and how JDI will determine whether or not a sea water air-conditioning system will be used, what will be done about the affordable housing needs generated by the project, when and how JDI will resolve the lack of water issue, and whether the harbor congestion problem is unresolvable.

Division of Forestry & Wildlife

1151 Punchbowl Street, Rm. 325 □ Honolulu, HI 96813 □ (808) 587-0166 □ Fax: (808) 587-0160

February 6, 2007

MEMORANDUM

TO: Keith K.B. Chun, Planning and Development Manager
Land Division

FROM: Paul J. Conry, Administrator
Division of Forestry and Wildlife

SUBJECT: Kona Kai Ola Development Draft Environmental Impact Statement.

We have reviewed the subject draft EIS and provide the following comments for your consideration. DOFAW is concerned that the draft EIS does not adequately cover the environmental impacts the project development will have on the stilts, coots, waterfowls, and migratory shorebirds that reside in the area. Since the County will take over management of the wastewater treatment facility, the conversion of an aerobic to anaerobic facility will directly impact water birds by removing their habitat from the area. Additionally, indirect impacts to water birds are loud noise and potential attraction of predators during construction will need to be mitigated. The development of lagoons will not be sufficient for nesting of native or endangered wildlife species in the area. Please call Megan Laut, Wildlife Biologist at (808) 587-4148 if you have questions to our review. Thank you for the opportunity to comment on this project.

C: Megan Laut, DOFAW Administration
DOFAW Wildlife Kamuela

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:MC

Correspondence HA-07-163

FEB - 2 2007

MEMORANDUM:

TO: Keith Chun
Land Division

FROM: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

SUBJECT: Response to Request for Comments
Kona Kai Ola DEIS

TMKS: (3) 7-4-08:3, 71, 72; part of 7-4-08:99 (or 08:2?)

LOCATION: Kealakehe, North Kona, Hawai`i

The Office of Conservation and Coastal Lands has reviewed the Draft Environmental Impact Statement (DEIS) for the Kona Kai Ola Development on the above subject parcels, and offers the following comments:

- OCCL concurs that a Conservation District Use Permit (CDUP) will be needed for the proposed Parkway and SWAC pipe in the Queen Lili`uokalani Trust property. Mauka portions of this parcel are in the General Subzone of the State Land Use Conservation District, while makai portions are in the Resource Subzone. However, the State GIS database indicates that the proper TMK for this parcel is (3) 7-4-08:2, and not 08:99 as stated in your memo. Please clarify this for us in the Conservation District Use Application (CDUA) for the project.

- Makai portions of parcels 3 and 71 are also in the Resource Subzone. OCCL appreciates that development has been kept out of this area. However, we note that the Master Plan does call for a Shoreline Park, Hawaiian Cultural Park, and Ocean Front Trail in this area. Please consult with us as to whether a CDUP will be needed for these uses.

We have no other comments on the DEIS.

Please contact staff planner Michael Cain at 587-0048, should you have any questions on this matter.

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 23, 2007

RUSH

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2007 JAN 26 A 10: 21
LAND DIVISION
STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
_x_ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
_x_ Office of Conservation & Coastal Lands
_x_ Land Division – HDLO

FROM: Russell Y. Tsuji, Administrator
SUBJECT: Kona Kai Ola Draft Environmental Impact Statement
LOCATION: Kealakehe, North Kona, Hawaii, (3) 7-4-008:07, 72; 099 (por) and 3 (por)
APPLICANT: Oceanit for Jacoby Development, Inc.

Transmitted for your review and comment. Due to the volume of the above referenced document, we have attached only the Executive Summary and Table of Contents. A hard copy of the document is available for your review in Land Division office, Room 220. You may also request as copy of the document on CD by contacting Keith Chun of this office at 587-0431.

We would appreciate your comments on this document. Please submit any comments by February 1, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Keith Chun at 587-0431. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: Eric T. Hirano
Date: 1/26/07

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/KChun
Ref.: DEISKonaKaiOla
Hawaii.346

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zones X, AE, and VE. The National Flood Insurance Program does not have any regulations for developments within Zone X, however, it does regulate developments within Zones AE, and AE, as indicated in bold letters below.**

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is also located in Zone ____.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

(X) **Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.**

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.

(X) **Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.**

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

(X) **The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.**

( ) Additional Comments: _____

_____

( ) Other: _____

Should you have any questions, please call Ms. Alyson Yim of the Planning Branch at 587-0259.

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER

Date: 1/26/07

Roy
1-31-07

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 23, 2007

RUSH

RECEIVED
JAN 24 A10:58
COMMISSION ON WATER RESOURCE MANAGEMENT

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
_x_ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
_x_ Office of Conservation & Coastal Lands
_x_ Land Division – HDLO

FROM: Russell Y. Tsuji, Administrator
SUBJECT: Kona Kai Ola Draft Environmental Impact Statement
LOCATION: Kealakehe, North Kona, Hawaii, (3) 7-4-008:07, 72; 099 (por) and 3 (por)
APPLICANT: Oceanit for Jacoby Development, Inc.

Transmitted for your review and comment. Due to the volume of the above referenced document, we have attached only the Executive Summary and Table of Contents. A hard copy of the document is available for your review in Land Division office, Room 220. You may also request as copy of the document on CD by contacting Keith Chun of this office at 587-0431.

We would appreciate your comments on this document. Please submit any comments by February 1, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Keith Chun at 587-0431. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: _____
Date: 1/30/07

cc: Central Files

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

February 2, 2007

REF:

TO: Russell Tsuji, Administrator
Land Division

FROM: W. Roy Hardy, Hydrologic Program Manager
Commission on Water Resource Management

SUBJECT: Kona Kai Ola Draft EIS

FILE NO.:

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at *http://www.hawaii.gov/dlnr/cwrm*.

Our comments related to water resources are checked off below.

☒ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM: Additional information and forms are available at *www.hawaii.gov/dlnr/cwrm/forms.htm*.

☐ 4. The proposed water supply source for the project is located in a designated ground-water management area, and a Water Use Permit is required prior to use of ground water.

☒ 5. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.

☒ 6. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 7. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 8. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 9. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.

☐ 10. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 11. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 12. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ 13. We recommend that the report identify feasible alternative non-potable water resources, including reclaimed wastewater.

☒ OTHER:

No water use permit will be required as the project is not located within a designated water management area.

If there are any questions, please contact Ryan Imata at 587-0255.

RI:ss

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 23, 2007

RUSH

MEMORANDUM

TO: **DLNR Agencies:**
_x_ Div. of Aquatic Resources
_x_ Div. of Boating & Ocean Recreation
_x_ Engineering Division
_x_ Div. of Forestry & Wildlife
___ Div. of State Parks
_x_ Div. of Water Resource Management
_x_ Office of Conservation & Coastal Lands
_x_ Land Division – HDLO

FROM: Russell Y. Tsuji, Administrator
SUBJECT: Kona Kai Ola Draft Environmental Impact Statement
LOCATION: Kealakehe, North Kona, Hawaii, (3) 7-4-008:07, 72; 099 (por) and 3 (por)
APPLICANT: Oceanit for Jacoby Development, Inc.

Transmitted for your review and comment. Due to the volume of the above referenced document, we have attached only the Executive Summary and Table of Contents. A hard copy of the document is available for your review in Land Division office, Room 220. You may also request as copy of the document on CD by contacting Keith Chun of this office at 587-0431.

We would appreciate your comments on this document. Please submit any comments by February 1, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Keith Chun at 587-0431. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed:
Date: 2/1/07

cc: Central Files

Subject: **Kona Kai Ola Development, North Kona, Hawaii**

The Department of Land and Natural Resources, Division of Boating and Ocean Recreation (DOBOR) offer the following comments to the subject Draft Environmental Impact Statement (DEIS):

DOBOR is concerned about the negative impacts the development will have on the adjacent Honokohau Small Boat Harbor (Honokohau).

The DEIS should consider and further study the alternative(s) of widening the existing entrance channel and/or creating a new channel. Utilizing the existing channel for the additional traffic generated by the new marina will create impacts that are not addressed in the DEIS.

The BTS pg 47 states that "*The most direct measure to reduce traffic congestion associated with the proposed marina expansion is to widen the marina entrance channel to accommodate greater traffic flow.*" The BTS pg 47 then states "*If widening the entrance channel is determined to be infeasible, the most cost effective mitigation measure to minimize the impacts of increased entrance channel traffic is to educate new and existing boater on rules and entrance channel etiquette.*" There is insufficient evidence in the DEIS to support that widening the channel is infeasible.

The DEIS states that 800 (or a reduced amount of 600) additional boats will push the vessel traffic situation to the limit or beyond (LOS E or F). In other words, the existing channel will essentially be "maxed" out (or close to this condition) with the new marina traffic. The DEIS should address the impacts this would have on Honokohau and its users, and the ability of Honokohau to accommodate growth in the future. For example, the number of boaters that do not berth their boats in a wet slip or mooring is expected to increase as the population in West Hawaii continues to grow. This will increase the demand for launch ramps, trailer parking, and dry stack storage at Honokohau. The DEIS should address the impacts on the ability of Honokohau to expand its facilities to accommodate such growth, as well as the increased traffic of boaters using Honokohau, if the new marina will "max out" the capacity of the entrance channel. The DEIS should also discuss proposed mitigation measures, including widening of the existing channel and revising the mix/sizes of the proposed new boat slips.

The DEIS pg 94-95 states "*The new marina will result in an approximately three-fold increase in boat traffic...*" and that widening of the channel is considered possible, but further states that there may be a "*potential downside of increased wave penetration into the harbor*". The DEIS supports this further in the BTS pg 25 by stating that "*At times, the need to exclude as much wave energy as possible from the harbor may override the congestion consideration; then, an exceptionally narrow entrance must be provided and its use restricted in some manner during peak hours. Both these exceptions, have direct relevance to the Honokohau entrance channel.*" We note that there is no conclusive evidence in the DEIS to support these statements as it relates to Honokohau, nor is there information provided that quantify the wave penetration impacts to the existing harbor. Also, the DEIS does not provide any model test results that would determine

whether or not the installation of breakwaters and/or wave attenuators could possibly mitigate the "potential" wave penetration.

The DEIS also states that widening the channel by 50 feet will reduce traffic congestion in half by creating one additional lane of traffic. If this is true, this should have been considered as a viable alternative and studied further.

The BTS pg 27 Table 5-1 incorrectly states that the navigable channel width of Ala Wai SBH is 150 feet. This should be corrected to 180 feet, which is consistent with the width of both Kewalo Basin and Ko'Olina Marina. Note that the largest vessel berthed at Ala Wai SBH is 85 feet as compared to 120 feet for Kona Kai Ola.

There is nearly a 120 degree turn in the existing entrance channel. The DEIS does not address this constraint nor does it consider design guidelines to account for a turn in the entrance channel. The "*United Facilities Criteria, DOD 2005*" states that the *"minimum entrance channel width for small craft harbors is 150 feet. If there is a turn inside, minimum width increases to 250 feet."*

The BTS pg 24 statement that references American Society of Engineers (ASCE) guideline for entrance channel width of 125 feet (5 x 25' beam) is misleading. This is the guideline for "lane width", not "channel width". If this guideline is to be used, to maintain two-way traffic for a 120 foot design vessel would require an entrance channel of 250 feet. In other words, a 120 foot mega-yacht will limit traffic in the channel to single lane. This conflicts with the statement in the BTS pg 34 that states "*For the Honokohau entrance channel width of approximately 120 feet, this results in the equivalent of two traffic lanes; one outbound and one inbound."* The DEIS does not address this constraint nor does it address the impacts if a large vessel would break down in the channel. What would happen if this occurred during a tsunami or hurricane event? The BTS does make a note that "*the 120-foot long design vessel mega-yacht would most likely be piloted by a skilled professional, thereby reducing the minimum width requirement.*" This is purely speculative and does not account for the "less skilled" pilots who also have to share the channel.

The DEIS does not sufficiently address the additional congestion created by the new marina. The mitigative measures identified include education, signage, a traffic control tower, staggering fishing tournaments, and limiting vessel size. This certainly would help from a safety standpoint, however would not likely reduce congestion significantly.

We disagree with the statement in the DEIS pg 94 stating that *"Various individuals and stakeholders were interviewed regarding existing harbor conditions. The general consensus is that the harbor entrance does not become too congested."* We also disagree with the BTS Conclusion pg 49 that states "*Presently the Honokohau Small Boat Harbor entrance channel has no traffic congestion problems.*" On the contrary, all boaters that we interviewed mentioned they already consider the channel "marginal" and that there are existing channel problems and hazards.

The DEIS does not contain enough information to support the statement in the BTS pg 19 that "*The proposed marina project will not add to the launch ramp activity that already existing within the harbor.*" The DEIS does not identify how boats in the new marina will retrieve or launch their vessels for annual maintenance and/or repair. The DEIS also does not adequately address how this activity will impact existing launching capacity and/or operations at the Honokohau. The existing ramps at Honokohau already experience periods of congestion. Although the larger boats will have to be hauled out on Oahu, as stated in the Market Study, this still leaves a significant number of vessels needing haul-out capability from the new marina. The DEIS should address these impacts and proposed mitigation measures.

Honokohau has 5 acres of parking, sufficient for 200 cars/trailers, if re-striped to optimize use. There is no room for overflow parking at the existing harbor. The DEIS should describe the impacts to the Honokohau's existing parking as a result of the additional load of boat operators, crew, guests, tourist etc. that may use any of the facilities at the existing harbor and any proposed mitigation measures.

The sewage generated from Honokohau's facilities are serviced by Individual Wastewater Systems. The DEIS does not address how the potential overflow of users from the new marina may impact the capacity of these systems.

The DEIS pg 9 does not describe the details of the marina support facilities except that "*approximately eight acres are proposed for marina industrial uses such as boat repair, launching, storage, rental, sanding/paint station, and fueling.*" From this statement, we cannot determine whether or not these facilities are sufficient to service the new marina's additional load nor can we determine if a lack of proposed facilities will result in overtaxing of Honokohau's facilities.

Due to the lack details on the marina support facilities, the DEIS does not adequately address the impacts the new marina will have on Honokohau's existing boat repair services and storage as well as to the customers who utilize this service. Is another similar service facility being planned?

The Market Study (sect 4.2.4) identifies lack of amenities at Honokohau harbor by stating "*The volume of charter, sport, commercial, subsistence and recreational fishing that takes place out of Honokohau is often hampered by the lack of adequate ice supply.*" This section also mentions a need for other amenities such as fish cleaning stations. Due to the lack of details on the marina support facilities, the DEIS does not properly address how the additional boating activity will continue to tax Honokohau's amenities or if the new proposed amenities will be sufficient.

The DEIS does not address impacts the new marina will have on the existing fuel dock service and retail stores.

The DEIS does not contain sufficient information such as the referenced 3-D hydrodynamic model to confirm many of the statements that address water quality impacts.

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innovation through engineering & scientific excellence

July 23, 2007

Russell Y. Tsuji, Administrator
State of Hawai'i Dept. of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Tsuji:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 6, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement. Your transmittal included comments from the following people:

- Keith Chun, Land Division;
- Paul Conry, Division of Forestry and Wildlife;
- Samuel J. Lemmo, Office of Conservation and Coastal Lands;
- Eric Hirano, Engineering Division;
- W. Roy Hardy; Commission on Water Resource Management; and
- Division of Boating and Ocean Recreation

We are responding to these individuals under separate communications.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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AQUATIC RESOURCES
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:MC

Correspondence HA-07-163

FEB - 2 2007

MEMORANDUM:

TO: Keith Chun
Land Division

FROM: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

SUBJECT: Response to Request for Comments
Kona Kai Ola DEIS

TMKS: (3) 7-4-08:3, 71, 72; part of 7-4-08:99 (or 08:2?)

LOCATION: Kealakehe, North Kona, Hawai`i

The Office of Conservation and Coastal Lands has reviewed the Draft Environmental Impact Statement (DEIS) for the Kona Kai Ola Development on the above subject parcels, and offers the following comments:

- OCCL concurs that a Conservation District Use Permit (CDUP) will be needed for the proposed Parkway and SWAC pipe in the Queen Lili`uokalani Trust property. Mauka portions of this parcel are in the General Subzone of the State Land Use Conservation District, while makai portions are in the Resource Subzone. However, the State GIS database indicates that the proper TMK for this parcel is (3) 7-4-08:2, and not 08:99 as stated in your memo. Please clarify this for us in the Conservation District Use Application (CDUA) for the project.

- Makai portions of parcels 3 and 71 are also in the Resource Subzone. OCCL appreciates that development has been kept out of this area. However, we note that the Master Plan does call for a Shoreline Park, Hawaiian Cultural Park, and Ocean Front Trail in this area. Please consult with us as to whether a CDUP will be needed for these uses.

We have no other comments on the DEIS.

Please contact staff planner Michael Cain at 587-0048, should you have any questions on this matter.

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innovation through engineering & scientific excellence

July 23, 2007

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
State of Hawai'i Dept. of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Lemmo:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 2, 2007

Thank you for your comments to Mr. Keith K. B. Chun, Planning and Development Manager of the Land Division of the State Department of Land and Natural Resources, regarding the Kona Kai Ola Draft Environmental Impact Statement.

We note your concurrence for the need for a Conservation District Use Permit (CDUP) for the Kuakini Highway extension across the Queen Lili'uokalani Trust property, as well as the sea water air conditioning pipe.

The TMK for the parcel you reference has been updated based on the most recent GIS database to 7-4-008: 999. Please note that this designation differs from the 08:2 cited in your comments.

Oceanit contacted staff planner, Michael Cain, regarding the need for a CDUP for the makai Shoreline Park, the Hawaiian Cultural Park and the Ocean Front Trail. Based on his information, we added this permit to EIS Section 5.3, Permits Required for the Project.

The following listing table is included in the EIS Section 5.3:

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

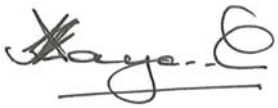
Table 3: Permits Required for the Project

Agency	Permit or Approval	Requirement	Time Frame
U.S. Army Corps of Engineers	Department of the Army (DOA) Individual Permit	Work in navigable waters; placing fill in waters of the U.S., placing navigation aids Will incorporate: ▪ Rivers and Harbors Act Section 10 ▪ Clean Water Act Sections 401 and 404 ▪ Coastal Zone Management Act Section 307 ▪ Endangered Species Act Section 7 ▪ National Historic Preservation Act Section 106	Prior to any in-water work or fill or placement of navigation aids or modification of terrestrial habitat that may impact species listed under Endangered Species Act
U.S. Coast Guard	Private Aids to Navigation approval	For approval for marking aids to navigation	Prior to placement. Note: placement requires DOA Permit.
State Board of Land and Natural Resources	Easement over Submerged Lands / Shared Harbor Channel Entrance	HRS Section 171-53 (6)	Prior to commencement of operations of new marina
State Department of Business, Economic Development & Tourism	Determination of Hotel Development	HRS Section 171-42	Prior to approval of Master Development Plan
State Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL)	Conservation District Use Permit (CDUP)	For any work in the conservation district ▪ Kuakini Highway extension and SWAC pipe; Shoreline Park ▪ Hawaiian Cultural Park, Ocean Front Trail	Prior to any work in the conservation district
DLNR Commission on Water Resource Management	Well Construction Permit, Pump Installation Permit	For well construction or ground water source development	Prior to construction or development
State Department of Health (DOH) Clean Water Branch	401 Water Quality Certification	Triggered by DOA permit	Start simultaneously with DOA permit
		NPDES	
	- Individual Permit	Discharge into state waters	Prior to construction
	- NOI Appendix C	Construction activities on one or more acres	Prior to construction
	- NOI Appendix G	Construction dewatering	Prior to construction

Agency	Permit or Approval	Requirement	Time Frame
	- NOI Appendix L	Discharge of circulation water from decorative ponds	Prior to construction
	All NPDES applications	Copy to DLNR/State Historic Preservation Division	Simultaneously with DOH NPDES submittals
	Zone of Mixing	Include with NPDES for discharge into state waters	Concurrent with NPDES application
DOH Safe Drinking Water Branch	Water Source Approval and capacity demonstration	For new drinking water sources	After source is identified
	Operator Certification	For operators of water systems	Before system use
	Construction Plan Review	For water system improvements and connections	Before construction
	Underground Injection Control (UIC) Permit	For injection well operations	Before operations
DOH Clean Air Branch	Dust control management plan	Recommended only, not required	During construction planning
DOH Noise, Radiation, & Indoor Air Quality Branch	No permit	Comply with Administrative Rules Chapter 11-46, Community Noise Control	During construction
County of Hawai‘i	Special Management Area (SMA) Major Permit	Work in the SMA	Prior to any construction or other work in the SMA (does not include DHHL land)
	Zoning	Must be consistent with the General Plan	After acceptance of EIS
	Building Permit	To erect a new structure including fences, swimming pools and retaining walls more than 3’-0" in height, and water catchments regardless of depth or capacity	Prior to construction
	Grading, Grubbing, and Stockpiling Permits	For volumes as specified by county	Prior to activity
	Development, subdivision, drainage and flood zone reviews	For development	Prior to construction

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

LINDA LINGLE
GOVERNOR

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
STATEWIDE TRANSPORTATION PLANNING OFFICE
869 PUNCHBOWL STREET, ROOM 404
HONOLULU, HAWAII 96813-5097
TELEPHONE (808)587-1845; FAX (808)587-2362

FACSIMILE TRANSMITTAL

DATE: 2/6/07

NO. OF PAGES (Including Cover Sheet): 5

TO: Mr. Dayan Vithanage
Oceanit
FAX No.: 531-3177

FROM: Statewide Transportation Planning Office
Phone No.: 587-1845

SUBJECT: KONA KAI OLA

COMMENTS: Hard copy to follow

LINDA LINGLE
GOVERNOR

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

STP 8.2407

February 6, 2007

Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Vithanage:

Subject: Kona Kai Ola
Draft Environmental Impact Statement (DEIS)

We have the following comments on the subject project as represented in the DEIS:

1. The project will have a significant impact on our highway facilities in West Hawaii, especially Queen Kaahumanu Highway and Kealakehe Parkway. Additional planning and preparation by the project developer related to addressing and accommodating future highway facilities and the effects of project traffic will be necessary as further explained below.

2. The proposed Kealakehe Parkway/Queen Kaahumanu intersection serving the project as a main entrance/access does not consider the future conceptual master plan for Queen Kaahumanu Highway to be a high-speed, limited access freeway (with grade-separated intersection/interchanges). Establishing the entrance intersection at the proposed location would hinder and impair the future plans for Queen Kaahumanu Highway at the site. This matter was discussed in a meeting on January 16, 2007 held with the developer of the project. It is our understanding the developer will bring back alternative plans for further consideration by our Department.

3. The preliminary conceptual plan for the project should correlate to the Hawaii County K to K/K to H Plans. It appears the location and alignment of the "Shore Drive" road will need to be confirmed. Also, alternative roadway configurations and justification for the selection of the layouts of the roads in the project plan should be provided.

4. Proposed plans for pedestrian walk paths, bikeways and trails will need to be defined and validated and incorporated with the project roadway network as part of an integrated plan for further review and approval.

5. Connectivity with adjoining lands and development projects should be discussed. Besides roadways, connectivity for walkways, bikeways and trails should be included. If connectivity is not immediately possible, accommodations for future connectivity should be planned.

6. Utility and other infrastructure crossings of State highway right-of-ways should be identified.

7. Statements in the DEIS that imply a lesser impact from the project should be explained and justified, or corrected. For example, on Page 154 a statement reads, "The extension of Kealakehe Parkway to Kuakini Highway will reduce traffic delays resulting in improved air quality and traffic noise."

8. No landscape plan was included in the DEIS. A master landscape plan should be submitted as part of the project's plan review and approval process.

9. The Traffic Impact Analysis Study (TIAR) will have to be supplemented and/or discussed and justified further with our Highways Division. Additional technical documentation, cross-references and justifications will be needed along with a review of the recommended mitigation measures. The assumption that the construction of Keohokalole Highway (located mauka and lateral to Queen Kaahumanu Highway) will be completed by the time the subject project is underway is presumptive. We are not aware of a definite timetable for plans for the highway. The developer should provide his source and/or explain the basis for this assumption.

   Inclusion of adjacent and surrounding development projects in the analysis should reflect current and future traffic and roadway plans and the associated volumes from the projects. For example, the Kona Commons project by the Liliuokalani Trust is required to put in double left-turn lanes at the Makala Boulevard/Queen Kaahumanu Highway intersection. This should be identified and validated in the TIAR.

   We recommend that the project developer perform and provide a traffic monitoring report either on an annual basis or prior to each phase (4 Phases) of the project for review and approval by our Highways Division. The report should cover an assessment of the traffic generated by the project, validation of or necessary changes to original TIAR assumptions and recommendations, and new or additional required and recommended mitigation measures due to the project. Mitigation measures and improvements required or recommended in each traffic report should be provided at no cost to the State. The report should also include a status update on any connecting roadways with adjoining property owners.

Also, as discussed in the meeting of January 16, 2007, the analysis of the regional traffic impact from the project should extend at least to Henry Street and the access road to Kona International Airport at Keahole (KOA Airport).

10. Project impact to and acquisition needs for any highway right-of-way will need further discussion and coordination with the developer and may include the Department of Land and Natural Resources and Department of Hawaiian Homes. Besides our Highway Planning and Hawaii District Office, the Highways Right-of-Way Branch will provide other considerations and requirements, especially if the subject project intends to use a new access or acquire a portion of a highway right-of-way. For your project reference, the developer should refer to our right-of-way map, Kailua-Kawaihae Road, Project No. B-3267-01-63, at Keahuolu and Kealakehe, North Kona, dated March 1, 1963 P.H. 508-2, involving Kealakehe Parkway.

11. The proposal for shuttle or bus service for workers, employees and residents of the project will need further explanation and confirmation. Provision for and implementation of such transit/transportation services by the project will need to be incorporated into the TIAR, traffic plans and traffic monitoring report of the project.

12. The developer should participate in and contribute to its fair share of providing and implementing regional transportation improvements.

13. No additional storm water discharge shall be allowed onto any State highway right-of-way.

14. Construction plans for any work within, adjoining or affecting a State highway right-of-way must be in accordance with Hawaii State highway and AASHTO standards, including ADA requirements, and be submitted to our Highways Division, through the Highways Hawaii District Office, for review and approval. This shall include appropriate construction and environmental permits, e.g. NPDES, and any applicable permits from our Highways Division.

15. We anticipate no significant impact from KOA Airport aircraft operations. However, if necessary, the developer should provide a means for disclosure as the document does state in the Noise Report of the DEIS that noise may be audible from the airport and infrequent aircraft overflights occur over the project.

We look forward with working with the developer and our sister State agencies involved with the project.

We appreciate the opportunity to provide our comments.

Very truly yours,

BARRY FUKUNAGA
Interim Director of Transportation

c: Department of Hawaiian Home Land (Linda Chinn)
Jacoby Development, Inc. (Scott Condra)
OEQC (Genevieve Salmonson)

Envelope Post Marked Feb 07 2007

LINDA LINGLE
GOVERNOR

BARRY FUKUNAGA
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.2407

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

February 6, 2007

Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Dear Mr. Vithanage:

Subject: Kona Kai Ola
Draft Environmental Impact Statement (DEIS)

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1. The project will have a significant impact on our highway facilities in West Hawaii, especially Queen Kaahumanu Highway and Kealakehe Parkway. Additional planning and preparation by the project developer related to addressing and accommodating future highway facilities and the effects of project traffic will be necessary as further explained below.

2. The proposed Kealakehe Parkway/Queen Kaahumanu intersection serving the project as a main entrance/access does not consider the future conceptual master plan for Queen Kaahumanu Highway to be a high-speed, limited access freeway (with grade-separated intersection/interchanges). Establishing the entrance intersection at the proposed location would hinder and impair the future plans for Queen Kaahumanu Highway at the site. This matter was discussed in a meeting on January 16, 2007 held with the developer of the project. It is our understanding the developer will bring back alternative plans for further consideration by our Department.

3. The preliminary conceptual plan for the project should correlate to the Hawaii County K to K/K to H Plans. It appears the location and alignment of the "Shore Drive" road will need to be confirmed. Also, alternative roadway configurations and justification for the selection of the layouts of the roads in the project plan should be provided.

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5. Connectivity with adjoining lands and development projects should be discussed. Besides roadways, connectivity for walkways, bikeways and trails should be included. If connectivity is not immediately possible, accommodations for future connectivity should be planned.

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   Inclusion of adjacent and surrounding development projects in the analysis should reflect current and future traffic and roadway plans and the associated volumes from the projects. For example, the Kona Commons project by the Liliuokalani Trust is required to put in double left-turn lanes at the Makala Boulevard/Queen Kaahumanu Highway intersection. This should be identified and validated in the TIAR.

   We recommend that the project developer perform and provide a traffic monitoring report either on an annual basis or prior to each phase (4 Phases) of the project for review and approval by our Highways Division. The report should cover an assessment of the traffic generated by the project, validation of or necessary changes to original TIAR assumptions and recommendations, and new or additional required and recommended mitigation measures due to the project. Mitigation measures and improvements required or recommended in each traffic report should be provided at no cost to the State. The report should also include a status update on any connecting roadways with adjoining property owners.

Also, as discussed in the meeting of January 16, 2007, the analysis of the regional traffic impact from the project should extend at least to Henry Street and the access road to Kona International Airport at Keahole (KOA Airport).

10. Project impact to and acquisition needs for any highway right-of-way will need further discussion and coordination with the developer and may include the Department of Land and Natural Resources and Department of Hawaiian Homes. Besides our Highway Planning and Hawaii District Office, the Highways Right-of-Way Branch will provide other considerations and requirements, especially if the subject project intends to use a new access or acquire a portion of a highway right-of-way. For your project reference, the developer should refer to our right-of-way map, Kailua-Kawaihae Road, Project No. B-3267-01-63, at Keahuolu and Kealakehe, North Kona, dated March 1, 1963 P.H. 508-2, involving Kealakehe Parkway.

11. The proposal for shuttle or bus service for workers, employees and residents of the project will need further explanation and confirmation. Provision for and implementation of such transit/transportation services by the project will need to be incorporated into the TIAR, traffic plans and traffic monitoring report of the project.

12. The developer should participate in and contribute to its fair share of providing and implementing regional transportation improvements.

13. No additional storm water discharge shall be allowed onto any State highway right-of-way.

14. Construction plans for any work within, adjoining or affecting a State highway right-of-way must be in accordance with Hawaii State highway and AASHTO standards, including ADA requirements, and be submitted to our Highways Division, through the Highways Hawaii District Office, for review and approval. This shall include appropriate construction and environmental permits, e.g. NPDES, and any applicable permits from our Highways Division.

15. We anticipate no significant impact from KOA Airport aircraft operations. However, if necessary, the developer should provide a means for disclosure as the document does state in the Noise Report of the DEIS that noise may be audible from the airport and infrequent aircraft overflights occur over the project.

We look forward with working with the developer and our sister State agencies involved with the project.

We appreciate the opportunity to provide our comments.

Very truly yours,

BARRY FUKUNAGA
Interim Director of Transportation

c: Department of Hawaiian Home Land (Linda Chinn)
Jacoby Development, Inc. (Scott Condra)
OEQC (Genevieve Salmonson)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

RETURN SERVICE REQUESTED

Mr. Dayan Vithanage
Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

96813S4321 C025

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innovation through engineering & scientific excellence

July 23, 2007

Barry Fukunaga, Interim Director of Transportation
State of Hawai'i Department of Transportation
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Mr. Fukunaga:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 6, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement. While we provide specific responses to your specific comments, we open this response letter with information regarding the addition of alternatives to the proposed project.

As explained in the DEIS, the agreement between JDI and the State of Hawai'i established a required scope and scale of the project for which the impact analysis was provided. Several comments have addressed the fact that alternatives other than the No Project Alternative were not addressed in the DEIS Section 2, Alternatives Analysis.

Kona Kai Ola is of the position that alternative actions other than a No Project alternative are not currently feasible without an amendment to the agreement with the State. Agency and public comments in response to the DEIS, as well as additional information generated as a result of inquiry into issues raised by the comments, have been helpful in identifying alternative actions that will serve the State's goal of providing additional marina slips for the Kona area. These alternative actions also serve to reduce or mitigate anticipated effects of the proposed development.

Thus, agencies such as the Land Division of the Department of Land and Natural Resources, the U.S. Department of the Interior Fish and Wildlife Service, the Planning Department of the County of Hawai'i, and the Office of Environmental Quality Control (OEQC), as well as community organizations have commented that a reduced scale marina and related facilities should be considered. The OEQC has also asked that the alternative of a reduced scale project be evaluated under the assumption that DHHL may determine that a downsized project would be preferred.

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www.oceanit.com

In response to these comments on the DEIS and in consideration of measures to mitigate anticipated impacts, the EIS Section 2, Alternatives Analysis, has been revised to describe the following alternatives, which are discussed in more detail in the EIS:

- Alternative 1 is a project involving a 400 slip marina, 400 hotel units, 1,100 time share units, and commercial and support facilities. This alternative would enhance water quality and avoid the need to widen the existing harbor entrance channel, as well as reduce traffic and socioeconomic impacts.
- Alternative 2 is an alternative that had been previously discussed, but not included in the proposed project that includes an 800-slip harbor and a golf course.
- Alternative 3 is the no-action alternative.

A comparison between impacts related to the proposed project concept and impacts related to Alternative 1 indicates that a reduction in the acreage and number of slips in the marina, as well as the reduction in hotel and timeshare units, would generate less environmental, traffic, social and economic impacts. Although positive economic impacts would be reduced, Alternative 1 can be considered as a preferable alternative because of reduced environmental impacts. However, while it can be concluded that the 25-acre marina in Alternative 1 would be the preferred size, the DLNR agreement establishes the size of the marina at 45 acres and 800 slips. An amendment to the DLNR agreement is required in order to allow Alternative 1 to proceed. Hence, selection of Alternative 1 is an unresolved issue at this time. The additional EIS text that includes the added EIS Section 2, Alternative Analysis, is contained in Attachment 1 of this letter.

Your comments are italicized and our responses follow each comment.

1. *The project will have significant impact on our highway facilities in West Hawai'i, especially Queen Ka'ahumanu Highway and Kealakehe Parkway. Additional planning and preparation by the project developer related to addressing and accommodating future highway facilities and the effects of project traffic will be necessary as further explained below.*

   JDI recognizes the traffic impact of the development and have proposed roadway and operational improvements to help mitigate these impacts. One significant action proposed by the Kona Kai Ola development involves constructing an extension of Kuakini Highway from its current terminus in north Kailua at Makala Boulevard to Kealakehe Parkway at the entrance to the existing Honokohau Small Boat Harbor. This new roadway segment will cross lands that are not part of the Kona Kai Ola development and provide additional system connectivity and redundancy for Queen Kaahumanu Highway.

2. *The proposed Kealakehe Parkway/Queen Kaʻahumanu intersection serving the project as a main entrance/access does not consider the future conceptual master plan for Queen Kaʻahumanu Highway to be a high-speed, limited access freeway (with grade-separated intersection/interchanges). Establishing the entrance intersection at the proposed location would hinder and impair the future plans for Queen Kaʻahumanu Highway at the site. This matter was discussed in a meeting on January 16, 2007 held with the developer of the project. It is our understanding the developer will bring back alternative plans for further consideration by our Department.*

   Your understanding is correct. As a result of a January 16, 2007 meeting with your staff and our consultants, Kona Kai Ola has modified its plans to have the initial access located at the existing Queen Kaʻahumanu Highway/Kealakehe Parkway intersection. Additionally, provisions in the site layout have been made to accommodate the potential future interchange.

3. *The preliminary conceptual plan for the project should correlate to the Hawaiʻi County K to K/K to H Plans. It appears the location and alignment of the "Shore Drive" road will need to be confirmed. Also, alternative roadway configurations and justification for the selection of the layouts of the roads in the project plan should be provided.*

   The location of the "Shore Drive" road was coordinated with Hawaiʻi County and determined to be acceptable. Roadway configurations for project plan roads have also been discussed with Hawaiʻi County and have been deemed acceptable.

4. *Proposed plans for pedestrian walk paths, bikeways and trails will need to be defined and validated and incorporated with the project roadway network as part of an integrated plan for further review and approval.*

   Pedestrian walk paths, bikeways and trails will be defined as part of the development agreement and master plan submitted to the State of Hawaiʻi Department of Land and Natural Resources (DLNR). Additionally, these will be submitted to and reviewed by the County of Hawaiʻi at time of zoning.

5. *Connectivity with adjoining lands and development projects should be discussed. Besides roadways, connectivity for walkways, bikeways, and trails should be included. If connectivity is not immediately possible, accommodations for future connectivity should be planned.*

   Plans for Kona Kai Ola include the extension of Kuakini Highway north of Makala Boulevard to connect with the existing Kealakehe Parkway. This extension of Kuakini Highway provides connectivity with the adjacent Queen Liliʻuokalani Trust lands to the south of Kona Kai Ola and provides

regional connectivity into Kailua town. A separate bike path will be built parallel with the Kuakini Highway extension.

Discussions have occurred with the County of Hawai'i regarding connectivity to the north. The Kona Kai Ola project has been revised in Alternative 1 to allow traffic using the Kuakini Highway extension to continue north onto the National Park if a regional frontage road system that could extend north to the Kona International Airport access road is allowed.

6. *Utility and other infrastructure crossings of State highway right-of-ways should be identified.*

   The infrastructure will be part of the core infrastructure plan. At this time, known utility crossings of Queen Ka'ahumanu Highway would be power and water lines in the vicinity of the Queen Ka'ahumanu Highway/Police Station Road intersection.

7. *Statements in the DEIS that imply a lesser impact from the project should be explained and justified, or corrected. For example, on Page 154 a statement reads, "The extension of Kealakehe Parkway to Kuakini Highway will reduce traffic delays resulting in improved air quality and traffic noise."*

   It is believed that the extension of Kealakehe Parkway to Kuakini Highway is consistent with the County of Hawaii transportation master plan and will provide benefits to Queen Ka'ahumanu Highway.

   As part of the regional transportation evaluation of the surrounding area, a more specific quantification of this benefit will be developed.

8. *No landscape plan was included in the DEIS. A master landscape plan should be submitted as part of the project's plan review and approval process.*

   A master landscape plan will be submitted to the County of Hawai'i at time of zoning.

9. *The Traffic Impact Analysis Study (TIAR) will have to be supplemented and/or discussed and justified further with our Highways Division. Additional technical documentation, cross-references, and justifications will be needed along with a review of the recommended mitigation measures. The assumption that the construction of Keohokalole Highway (located mauka and lateral to Queen Ka'ahumanu Highway) will be completed by the time the subject project is underway is presumptive. We are not aware of a definite timetable for plans for the highway. The developer project by the Lili'uokalani Trust is required to put in double left-turn lanes at Makala Boulevard/Queen Ka'ahumanu Highway intersection. This should be identified and validated in the TIAR.*

We recommend that the project developer perform and provide a traffic monitoring report and should provide his source and /or explain the basis for this assumption.

Inclusion of adjacent and surrounding development projects in the analysis should reflect current and future traffic and roadway plans and the associated volumes from the projects. For example, the Kona Commons either on an annual basis or prior to each phase (4 Phases) of the project for review and approval by our Highways Division. The report should cover an assessment of the traffic generated by the project, validation of or necessary changes to original TIAR assumptions and recommendations, and new or additional required and recommended mitigation measures due to the project. Mitigation measures and improvements required or recommended in each traffic report should be provided at no cost to the State. The report should also include a status update on any connecting roadways with adjoining property owners.

Also, as discussed in the meeting of January 16, 2007, the analysis of the regional traffic impact from the project should extend at least to Henry Street and the access road to Kona International Airport at Keahole (KOA Airport).

The developer is working with the State of Hawai‘i Department of Transportation (HDOT) and the County of Hawai‘i to address the regional traffic issues as part of a comprehensive exercise involving adjacent development as well as Kona Kai Ola.

The developer will develop and implement a traffic monitoring program that will provide a report to HDOT prior to each phase of the project.

10. *Project impact to and acquisition needs for any highway right-of-way will need further discussion and coordination with the developer and may include the Department of Land and Natural Resources and the Department of Hawaiian Homes. Besides our Highway Planning and Hawai‘i District Office, the Highways Right-of-Way Branch will provide other considerations and requirements, especially if the subject project intends to use a new access or acquire a portion of a highway right-of-way. For your project reference, the developer should refer to our right-of-way map, Kailua-Kawaihae Road, Project No. B-3267-01-63, at Keahuolū and Kealakehe, North Kona, dated March 1, 1963 P.H. 508-2, involving Kealakehe Parkway.*

The Kona Kai Ola project has been revised to utilize the existing Honokōhau Small Boat Harbor Access Road located opposite the existing Kealakehe Parkway as it intersects Queen Ka‘ahumanu Highway. The other project access on Queen Ka‘ahumanu Highway utilizes the existing Hawai‘i County Police Station Road intersection. Therefore, no HDOT right-of-way needs are anticipated.

11. *The proposal for shuttle or bus service for workers, employees and residents of the project will need further explanation and confirmation. Provision for and implementation of such transit/transportation services by the project will need to be incorporated into the TIAR, traffic plans and traffic monitoring report of the project.*

    The proposed shuttle service for workers, employees, and residents of the Kona Kai Ola project will be incorporated as a condition of zoning.

12. *The developer should participate in and contribute to its fair share of providing and implementing regional transportation improvements.*

    The developer will participate in and contribute to its fair share of regional transportation improvements.

13. *No additional storm water discharge shall be allowed onto any State highway right-of-way.*

    Project drainage will be designed so that no additional storm water will be discharged onto any State highway right-of-way.

14. *Construction plans for any work within, adjoining or affecting a State highway right-of-way must be in accordance with Hawai'i State highway and AASHTO standards, including ADA requirements, and be submitted to our Highways Division, through the Highways Hawai'i District Office, for review and approval. This shall include appropriate construction and environmental permits, e.g. NPDES, and any applicable permits from our Highways Division.*

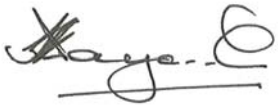
    All construction plans for any work within, adjoining or affecting a State highway right-of-way will be submitted to the State of Hawai'i Department of Transportation Highways Division through its Hawai'i District Office for review and approval.

15. *We anticipate no significant impact from KOA Airport aircraft operations. However, if necessary, the developer should provide a means for disclosure as the document does state in the Noise Report of the DEIS that noise may be audible from the airport and infrequent aircraft overflights occur over the project.*

    The developer concurs and will include appropriate disclosure language in the appropriate documents.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

2 Alternatives Analysis

~~In typical land development projects, the initial planning process includes the exploration of alternatives to development objectives. In the EIS process, these alternatives are presented with a disclosure of reasons for the dismissal of non-preferred alternatives.~~

~~Kona Kai Ola does not follow this same pattern of alternatives evaluation.~~ As discussed in Section 1.4, the proposed Kona Kai Ola project is the result of agreements between JDI and the State DLNR and DHHL. The agreements and leases between the State and JDI stipulate the parameters of development for this site in terms of uses, quantities and size of many features, resulting in a limited range of land uses. Unlike a private property project, JDI is required to meet the criteria outlined in the agreements, thereby affording less flexibility in options and uses. From the developer's perspective, the agreements must also provide sufficient flexibility to allow for a development product that responds to market needs and provides a reasonable rate of return on the private investment.

The agreements between JDI and DLNR specify that the proposed harbor basin is to be 45 acres and accommodate 800 slips. This development proposal is the subject of this EIS. In response to DEIS comments, additional water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor. Comments on the DEIS from DLNR, from other government agencies, the neighbors and the general community also called for the consideration of alternatives in the EIS, including a project with a smaller harbor basin and less density of hotel and time-share units.

In response to these comments on the DEIS, three alternatives are evaluated in this Final EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin including a decrease in hotel and time-share units; Alternative 2, which is an alternative that had been previously discussed but not included in the proposed project, that includes an 800-slip harbor and a golf course; and Alternative 3, the no-project alternative. Each alternative is included in the EIS with an evaluation of their potential impacts. These project alternatives are presented to compare the levels of impacts and mitigation measures of the proposed project and alternative development schemes pursuant to requirements set forth in Chapter 343, HRS.

~~JDI is required to provide a new marina basin not less than 45 acres and a minimum of 800 new boat slips. Further, the agreements provide the following options for land uses at the project site:~~

- ~~Golf Course~~
- ~~Retail Commercial Facilities~~
- ~~Hotel Development Parcels~~
- ~~Marina Development Parcels~~
- ~~Community Benefit Development Parcels~~

~~JDI is not pursuing the golf course option and is proposing instead to create various water features throughout the project site. All other optional uses have been incorporated in Kona Kai Ola.~~

2.1 Project Alternatives

2.1.1 Alternative 1: 400-Slip Marina

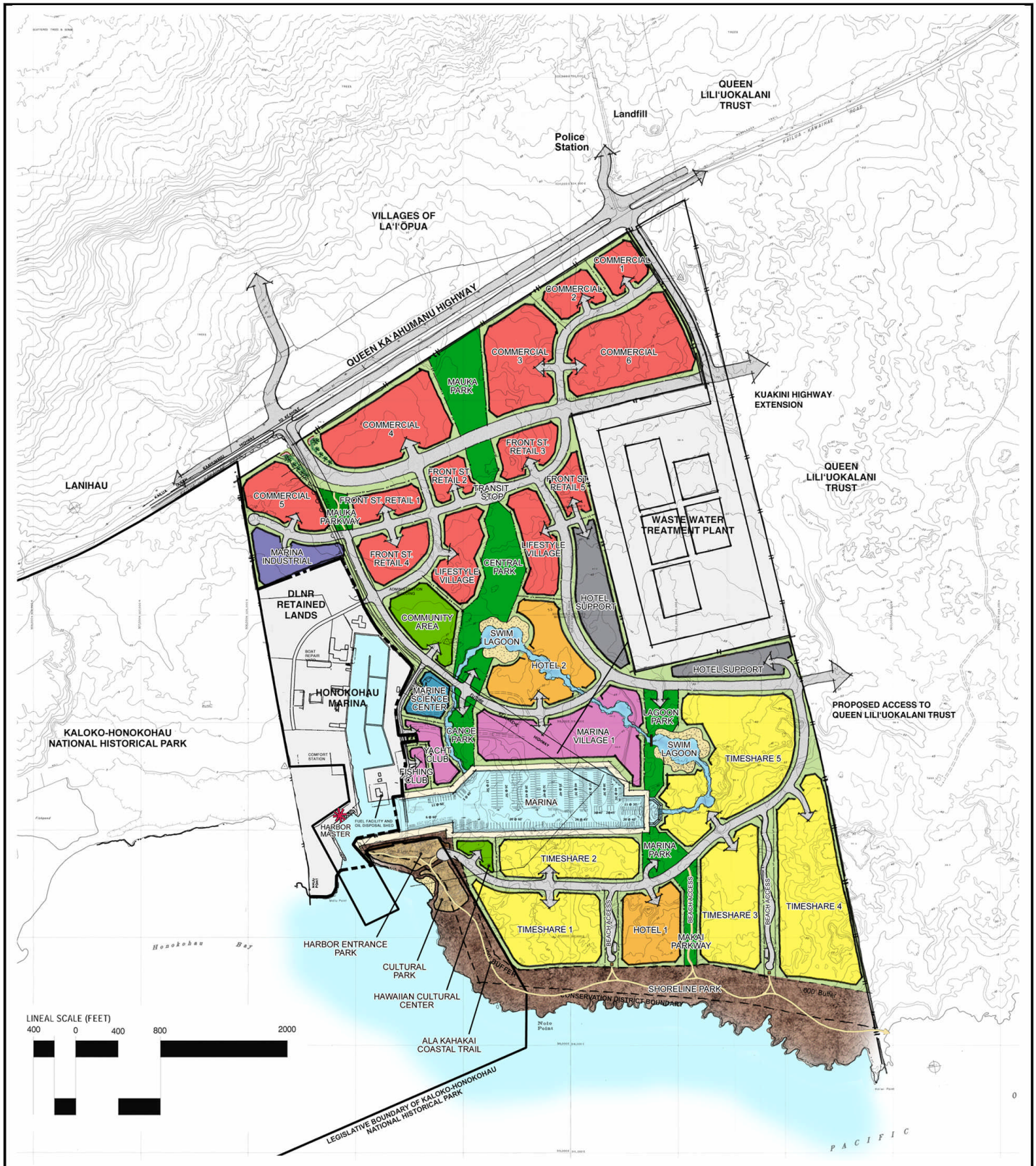
Studies conducted in response to DEIS comments found the construction and operation of an 800-slip marina may significantly impact the water quality within the marina and along the shoreline. Specifically, the Harbor Water Quality Modeling Study, as contained in Appendix U, found that the water circulation in a 45-acre 800-slip harbor was insufficient to maintain an acceptable level of water quality. Further, the existing harbor channel, which would serve both the existing and new harbors, could not adequately serve the increased boat traffic generated by an 800-slip marina during peak traffic. Mitigation measures to accommodate peak boat traffic included the widening of the existing channel, an action that would entail a complex process of Federal and State approvals and encounter significant environmental concern.

Concerns related to the proposed density of hotel and time-share units were also expressed in comments to the DEIS from members of the public, neighbors to the project site, especially the Kaniohale Community Association, and government agencies. Common themes in DEIS comments were related to impacts regarding traffic, project requirements of potable water and infrastructure systems, including sewer, drainage, utility and solid waste systems, and socioeconomic impacts.

In response to the water quality study results, and to the DEIS comments, an alternative plan was developed with a smaller marina with less boat slips, and a related decrease in hotel and time share units. Illustrated in Figure G, Alternative 1 reflects this lesser density project, and features a 400-slip marina encompassing 25 acres. For the purposes of the Alternative 1 analysis, JDI assumed 1,100 time-share units and 400 hotel rooms. Project components include:

- 400 hotel units on 34 acres
- 1,100 time-share units on 106 acres
- 143 acres of commercial uses
- 11 acres of marina support facilities
- 214 acres of parks, roads, open spaces, swim lagoons and community use areas

In addition, Alternative 1 would include the construction of a new intersection of Kealakehe Parkway with Queen Ka'ahumanu Highway, and the extension of Kealakehe Parkway to join Kuakini Highway to cross the lands of Queen Lili'uokalani Trust, and connecting with Kuakini Highway in Kailua-Kona. This is a significant off-site infrastructure improvement and is included in the agreements between the State and JDI.



Source: PBR HAWAII

Plan is conceptual only and subject to change

Figure G: Alternative 1: 400-Slip Marina

LEGEND

- TIME SHARE
- HOTEL
- RETAIL / COMMERCIAL
- MARINA RETAIL
- MARINA SUPPORT / COMMERCIAL
- MARINE SCIENCE CENTER
- COMMUNITY AREA / CULTURAL CENTER
- SWIM LAGOON
- MARINA
- UTILITIES
- PARKS & GREEN SPACE
- SHORELINE
- HARBOR ENTRANCE PARK / CULTURAL PARK

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Like the proposed project, Alternative 1 would have a strong ocean orientation, and project components that support this theme would include various water features including seawater lagoons and a marine science center. The new Alternative 1 harbor would include a yacht club, fishing club, a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. The coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and 'Alula for community use. Additional Alternative 1 community areas would include facilities and space for community use, including programs of the Kona Kai Ola Community Foundation, which supports community programs in health care, culture, education, and employment training for the local community, especially to native Hawaiians. Like the original proposed plan, Alternative 1 includes 40 percent of the land in parks, roads, open spaces, swim lagoons and community use areas.

2.1.2 Alternative 2: Golf Course Feature

Alternative 2 was among the alternatives discussed at a community charrette in September 2003. It includes a golf course, which is a permitted use in the DLNR agreement and DHHL lease. As Figure H illustrates, an 18-hole championship golf course would occupy 222 acres on the southern portion of the project site. As with the proposed project, Alternative 2 includes an 800-slip marina on a minimum of 45 acres.

To support the economic viability of the project, other Alternative 2 uses include:

- Golf course clubhouse on three acres
- 1,570 visitor units on 88 acres fronting the marina
- 118 acres of commercial uses
- 23 acres of community uses

Community uses in Alternative 2 include an amphitheater, a canoe facilities park, a community health center, a Hawaiian cultural center and fishing village, a marine science center and employment training center. The sea water lagoon features contained in the proposed project and Alternative 1 are not included in this alternative.

2.1.3 Alternative 3: No Action

In Alternative 3, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.

~~The economic viability and sustainability of the project is determined by the density and uses proposed. Because JDI is obligated to develop an 800-slip marina for the State, complete road improvements, and provide various public enhancement features at its own expense, the density proposed for the income generating features of the development must be sufficient to provide an acceptable level of economic return for JDI. The market study, which is discussed in Section 4.6, reviewed various development schemes and determined that the currently proposed density and mix is the optimum to meet the anticipated financing and development cost obligations for the public features associated with the development.~~

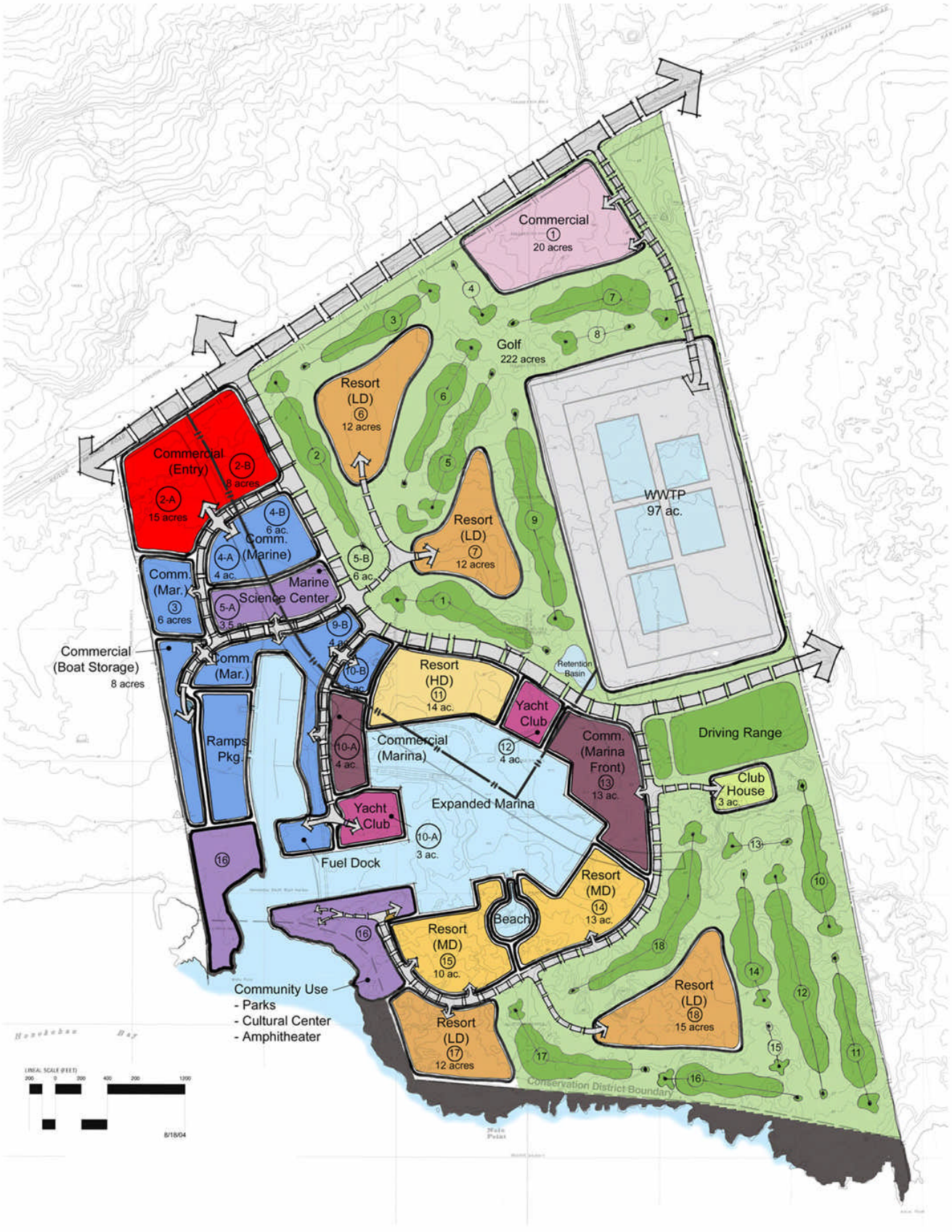

Figure H. Alternative 2: Golf Course Alternative

Legend

N E S W

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2.2 Alternatives Analysis

As discussed in Section 2.1, the proposed Kona Kai Ola project (also referred to as "proposed project") is defined by development requirements related for a marina and the related uses that would be needed to generate a reasonable rate of return that covers development costs.

Beginning with Section 2.2.1, the alternative development concepts are comparatively assessed for potential impacts that may reasonably be expected to result from each alternative. Following is an overview of the primary observations of such assessment.

Alternative 1 includes half of the State-required boat slips and 60 percent of the proposed hotel and time-share units and, due to the decreased density, this alternative would generate significantly less environmental and socio-economic impacts. A harbor water quality model found the reduction of the volume of the new marina basin by about half (approximately 25 acres) significantly improved the water circulation and quality. Further, the reduced number of boat slips would generate less boat traffic, thereby reducing congestion and the need to mitigate impacts further by the widening of the existing harbor channel.

A project with fewer hotel and time-share units and increased commercial space with a longer (14 years) absorption period would change the mix of employment offered by the project, and slightly increase the overall employment count. The public costs/benefits associated with Alternative 1 would change, compared to the proposed project, with a general increase in tax collections, and a general decrease in per capita costs. Detailed discussion of Alternative 1 potential economic impacts are provided in Section 4.6.6. Comparisons of levels of impact are presented throughout this FEIS.

While this analysis might indicate that the 25-acre marina in Alternative 1 would be the more prudent choice, the DLNR agreement establishes the minimum size and slip capacity of the marina at 45 acres and 800 slips, respectively. Amendments to the DLNR agreement would be required in order to allow Alternative 1 to proceed as the preferred alternative. Hence, selection of the preferred alternative is an unresolved issue at the writing of this FEIS.

Alternative 2, the golf course alternative, was not previously considered to be the preferred alternative primarily because market conditions at the time of project development might not likely support another golf course. Further, DHHL has a strategy goal to have more revenue-generating activities on the commercial lease lands within the project area. In addition, concerns have been expressed as to environmental impacts of coastal golf courses, including the potential adverse impact on Kona's water supply if potable water is used for golf course irrigation.

While Alternative 3, the no-project alternative, would not generate adverse impacts related to development of these lands associated with the construction and long-term operations, it would also not allow for an expanded public marina that would meet public need and generate income for the public sector. Further, the no-project alternative would foreclose the opportunity to create a master-planned State-initiated development that would result in increased tax revenue, recreation options and community facilities. Crucial privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities, and public access would not be contributed.

~~Hence, the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.~~

~~The no-project alternative would therefore not generate adverse impacts associated with the construction and long-term operations would not occur.~~

~~Likewise, the creation of a master-planned state-initiated development, resulting in increased employment, tax revenue, recreation options and community facilities, would not be created. Privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities and public access would not be contributed.~~

Further, the creation of revenue-producing businesses on the DHHL property to fund homestead programs would not occur, resulting in fewer potential benefits for Hawaiians.

Hence, the agreements and leases between the State and JDI indicate that the no-action alternative is not in the public interest~~has been rejected at this time~~.

2.2.1 Impact Comparison

Grading and Excavation

The proposed project requires grading and excavation. Both actions may impact groundwater due to rainfall runoff during construction. Alternative 1 would require a significantly smaller excavation for the marina basin and would therefore carry a lesser risk of potential adverse effects on water quality. Alternative 2 would require the same basin excavation as the proposed project, and would also include extensive grading and filling to build the golf course, the latter of which would generate additional impacts. Alternative 3 would result in no change to the geography, topography and geology.

Further discussion on grading and excavation is contained in Section 3.3.

Natural Drainage

Most precipitation infiltrates into the porous ground at the site, and no significant sheet flow is likely. Alternative 1 would generate similar levels of impacts on natural drainage as those of the proposed project and thus require similar mitigation measures. The golf course in Alternative 2 would not be as porous since the site would be graded, soil would be placed, and grass and other landscaping would be grown. Sheet flow and runoff can occur on a golf course, and drainage patterns might change. Alternative 3 would result in no change to the existing natural drainage pattern. Further discussion on natural drainage is contained in Section 3.4.

Air Quality

Air quality will be affected by construction activities, as well as pollutants from vehicular, industrial, natural, and agricultural sources. Alternative 1 would generate less construction air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin and fewer long-term impacts by reducing traffic 35 and 40 percent during, respectively, AM and PM peak traffic times. Construction of Alternative 2 would result in fugitive dust and exhaust from equipment and is expected to generate the same level of air quality impact as the proposed project. Alternative 3 would result in no change to existing air quality. Further discussion on air quality is contained in Section 3.5.

Terrestrial Environment

To provide additional habitat for shorebirds and some visiting seabirds, the project proposes to construct a brackishwater pond area suitable for avian fauna, including stilts, coots and ducks. While habitat expansion is beneficial, there is also a possibility that these species may be exposed to activity that may harm them. Alternative 1 would not include a brackish water pond, but will include 5 acres of seawater features, which is 74 percent less than the 19 acres of seawater features in the proposed project. While this would reduce beneficial impacts, it would also decrease exposure to potentially harmful activity. Alternative 2 does not include the brackish water pond features, but would include drainage retention basins that would attract avian fauna and expose them to chemicals used to maintain golf course landscaping. While Alternative 3 would result in no increase in potentially harmful activity, it would also not provide additional habitat for avian fauna. Further discussion on the terrestrial environment is contained in Section 3.7.

Groundwater

Groundwater at the project site occurs as a thin basal brackish water lens. It is influenced by tides and varies in flow direction and salt content. The existing Honokōhau Harbor acts as a drainage point for local groundwater. Any impact to groundwater flow from the proposed harbor is likely to be localized. The proposed marina basin will not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance.

There will be differences in the flow to the marina entrance between the proposed project and Alternative 1. Alternative 1, being smaller in size, will have less impact on groundwater flow than the proposed marina. Alternative 2 will have a similar impact to groundwater quality as the proposed project. Alternative 2 may also impact water quality by contributing nutrients and biocides to the groundwater from the golf course. Alternative 3 would result in no change in existing groundwater conditions. Further discussion on groundwater is contained in Section 3.8.1.

Surface Water

There are no significant natural freshwater streams or ponds at the site, but there are brackish anchialine pools. Surface water at the project site will be influenced by rainfall. Runoff typically percolates rapidly through the permeable ground. The proposed project will include some impermeable surfaces, which together with building roofs, will change runoff and seepage patterns.

Alternative 1 is a lower density project that is expected to have proportionally less impact on surface water and runoff patterns and less potential impact on water quality than the proposed project. Alternative 2 would have more impact on surface water quality than the proposed project due to fertilizers and biocides carried by runoff from the golf course. Alternative 3 would result in no change to surface water conditions. Further discussion on surface water is contained in Section 3.8.2.

Nearshore Environment and Coastal Waters

The potential adverse impacts to the marine environment from the proposed project are due to the construction of an 800-slip marina and the resulting inflow of higher salinity seawater and inadequate water circulation, both of which are anticipated to impair water quality to the extent of falling below applicable standards. One possible mitigation measure is to significantly reduce the size of the marina expansion.

The reduced marina size (from 45 to 25 acres) and reduced lagoon acreage in Alternative 1 are expected to result in a proportionate reduction in seawater discharging into the new harbor and increased water circulation. Alternative 2 includes the same marina basin size and is therefore subject to the same factors that are expected to adversely affect water quality.

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water quality in the proposed harbor depends on several components. These include salinity, nutrients, and sediments that come from the ocean, rainfall runoff, water features with marine animals, and dust. The smaller project offered as Alternative 1 is expected to produce a reduced amount of pollutants and reduce the risk of adverse impact upon water quality.

It is notable that the 45-acre marina basin planned in the proposed project and Alternative 2 only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd. The resulting flushing from such inflow would be expected to better maintain water quality. However, it is unclear whether 60 mgd of brackish groundwater would be available. As proposed in Alternative 1, reduction of the volume of the new marina basin by 45 percent will significantly improve the flushing and water quality because the lower volume can be flushed by the available groundwater flow.

In addition, there could be higher rainfall runoff from the Alternative 2 golf course into the harbor, because the grassed golf course will be less porous than the natural surface. The golf course will also require relatively high levels of fertilizer, biocides, and irrigation, all of which could contribute to adverse water quality impacts.

Further discussion on nearshore environment and coastal waters is contained in Section 3.9.1.

Anchialine Pools

Anchialine pools are located north of Honokōhau Harbor, and south of the harbor on the project site. The marine life in these pools is sensitive to groundwater quality, and changes due to construction and operation of the project could degrade the viability of the pool ecosystem. In the southern complex, 3 anchialine pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction in the proposed project and Alternatives 1 and 2.

Predicting the extent of change in groundwater flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is therefore extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Due to the uncertainty of changes in groundwater flow and quality due to marina construction, the variability in impacts between the proposed project and Alternatives 1 and 2 is unknown at this time. Alternative 3 would result in no change in groundwater flow. While this would eliminate the potential for adverse impacts, Alternative 3 would also continue the pattern of existing degradation related to human activity and the introduction of alien species. Further discussion on anchialine pools is contained in Section 3.9.2.

Marine Fishing Impacts

The proposed marina will increase the number of boats in the area and it is reasonable to assume that a portion of these new boats will engage in fishing activities. The increase in boats in the area would be primarily related to the marlin and tuna / pelagic fishery, coral reefs due to extractive fisheries, and SCUBA activities. The pressure on fish and invertebrate stocks is expected to increase with or without the marina. Harbor expansion provides the opportunity to address existing conditions to consolidate, focus, and fund management and enforcement activities at one location.

Compared to the proposed project, Alternative 1 would result in a 21 percent decrease in boat traffic, thereby lessening the potential for marine fishing impacts. The level of impacts in Alternative 2 would be similar to that of the proposed project. Alternative 3 would result in no change in existing marine fishing conditions, and no opportunity to address already existing pressure on fish and invertebrate stocks. Further discussion on marine fishing impacts is contained in Section 3.9.3.

Cultural and Archaeological Resources

The proposed project will integrate cultural and archaeological resources in the overall development. Archaeological sites recommended for preservation will be preserved, and cultural practices will be encouraged. Kona Kai Ola includes a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. Proposed is a 400-foot shoreline setback that would serve as a buffer between the ocean and developed areas. This coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and ʻAlula for community use.

Alternative 1 would contain all of the cultural archaeological features and the shoreline setback area would be 400 feet in the northern portion of the site and increase to 600 feet in the southern portion. Alternative 2 would preserve cultural and archaeological resources, but does not include a 400-foot shoreline setback. Alternative 3 would result in no change to existing cultural and archaeological resources and no addition of cultural and community facilities and activities. Further discussion on cultural and archaeological resources is contained in, respectively, Sections 4.1 and 4.2.

Noise

Project-generated noise is due to construction equipment and blasting, boats, marina activities, vehicle traffic, and the Kealakehe Wastewater Treatment Plant operations. Alternative 1 would generate less noise impacts due to reduced construction activities, fewer boats, less traffic and less on-site activity. Alternative 2 would also generate less noise due to reduced traffic and less on-site activity, but noise related to the excavation of the marina basin and an increase in the number of boats would be similar to that of the proposed project. Further discussion on noise impacts is presented in Section 4.4.

Socioeconomic Impacts

The proposed project will generate an increase in de facto population of an estimated 5,321 persons due to the increase in hotel and time-share units. The estimated de facto population increase in Alternative 1 is 37 percent less, at 3,363 persons, than the proposed project. The de facto population increase in Alternative 2 is similar to Alternative 1.

Employment in the commercial components will nearly double in Alternative 1, from a stabilized level of 1,429 full-time equivalent (FTE) positions in the proposed project to 2,740 in the Alternative 1.

Under Alternative 1, the total operating economic activity at Kona Kai Ola will increase due to the added commercial space more than off-setting the fewer visitor units, moving upward from $557.6 million per year to circa $814.3 million annually. The total base economic impact resulting from development and operation of Alternative 1 will similarly be higher by between 35 and 45 percent than that of the proposed project.

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County revenues. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The estimated absorption periods for marketable components of Alternative 1 are generally shorter than those for the same components in the proposed project. Marina slips under Alternative 1 are estimated to be absorbed within 2 years after groundbreaking, as compared with 9 years for absorption of slips in the proposed project. Hotel rooms under Alternative 1 are estimated to be absorbed within 4 years after groundbreaking, as compared with 7 years under the proposed project. Time-share units would be absorbed within 10 years under Alternative 1, while 15 years are projected under the proposed project. Due to the planned increase in commercial facilities under Alternative 1, the absorption period of commercial space is estimated at 14 years, as compared with 8 years for absorption of such facilities under the proposed project.

The State and County will still both receive a net benefit (tax receipts relative to public expenditures) annually on a stabilized basis under the Alternative 1. The County net benefits will be some $12.2 million per year under the Alternative 1 versus $14.9 million under the proposed project. The State net benefits will increase under the Alternative 1 to about $37.5 million annually, up substantially from the $11.4 million in the proposed project.

Due to the lower de facto population at build-out, the effective stabilized public costs for both the State and County will decline meaningfully under the Alternative 1, dropping from $7.7 million annually for the County and $36.5 million for the State, to $4.9 million and $23 million per year, respectively.

Alternative 3 would result in no increase in de facto population and improvement to economic conditions. Further discussion on social and economic impacts are contained in, respectively, Sections 4.5 and 4.6.

Vehicular Traffic

The proposed project will impact the nearby road network that currently is congested during peak traffic times. The proposed project includes roadway improvements that would reduce the impact and improve roadway conditions for the regional community.

Alternative 1 includes the same roadway system improvements as the proposed project, yet would reduce vehicular traffic by 35 percent when compared to the proposed project. Alternative 2 would have similar traffic conditions and roadway improvements as Alternative 1. Alternative 3 would result in no increase in traffic and no roadway improvements.

Marina Traffic Study

The increase in boat traffic due to the proposed 800-slip marina would cause entrance channel congestion during varying combinations of existing and new marina peak traffic flow. Worst case conditions of active sport fishing weekend and summer holiday recreational traffic result in traffic volumes exceeding capacity over a short afternoon period. Mitigation to address boat traffic in the proposed project include widening the entrance channel, traffic control, implementation of a permanent traffic control tower, or limiting vessel size.

Alternative 1 would result in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent reduction during peak existing conditions. The reduction to 400 slips also reduces the impacts of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Alternative 2 would have the same level of boat traffic as the proposed project. Alternative 3 would not meet the demand for additional boat slips and would not generate additional boat traffic. Further discussion on marina traffic is contained in Section 4.8.

Police, Fire and Medical Services

The proposed project will impact police, fire and medical services due to an increase in de facto population and increased on-site activity. Alternatives 1 and 2 would have similar levels of impact as the proposed project due to increased on-site activity. Further discussion on police, fire and medical services are contained, respectively, in Sections 4.10.1, 4.10.2 and 4.10.3.

Drainage and Storm Water Facilities

The proposed project will increase drainage flows, quantities, velocities, erosion, and sediment runoff.

Alternative 1 involves a reduction of the project density that would reduce storm runoff from the various land uses due to a reduction in impervious surfaces associated with hotel and time-share development and to the creation of more open space. However, roadway areas will increase by about 30 percent in Alternative 1. Storm runoff from proposed streets would therefore increase; thus requiring additional drainage facilities and possibly resulting in no net savings. The golf course in Alternative 2 may also change drainage characteristics from those of the proposed project and may not reduce impacts. Alternative 3 would result in no change in existing conditions and no improvements to drainage infrastructure. Further discussion on drainage and storm water facilities is contained in Section 4.10.5

Wastewater Facilities

The proposed development is located within the service area of the Kealakehe WWTP and a sewer system will be installed that connects to the WWTP. The sewer system will be comprised of a network of gravity sewers, force mains, and pumping stations which collect and convey wastewater to the existing Kealakehe WWTP. Project improvements will incorporate the usage of recycled / R1 water. Improvements implemented by the proposed project will also accommodate the needs of the regional service population.

Alternative 1 would generate approximately 10 percent less wastewater flow than the proposed project. Wastewater flow in Alternative 2 is undetermined. Alternative 3 would result in no additional flow, as well as no improvements that will benefit the regional community. Further discussion on wastewater facilities is contained in Section 4.10.6.

Potable Water Facilities

The proposed project average daily water demand is estimated at 1.76 million gallons per day. Existing County sources are not adequate to meet this demand and source development is required. The developer is working with DLNR and two wells have been identified that will produce a sustainable yield that will serve the project. These wells will also serve water needs beyond the project.

Alternative 1 would result in net decrease of about five percent of potable water demand. Alternative 2 may have a lower water demand than the proposed project as long as potable water is not used for irrigation. Alternative 3 would result in no additional flow, as well as no source development that will benefit the regional community. Further discussion on potable water facilities is contained in Section 4.10.8.

Energy and Communications

Regarding Alternative 1, preliminary estimates for electrical, telecommunications, and cable resulted in a net demand load that remains similar to the proposed project. Further discussion on energy and communications is contained in Section 4.10.9.1.

The proposed project will increase the demand for electrical energy and telecommunications. The demand would be reduced in Alternative 1 because the number of boat slips and units would decrease. Similarly, Alternative 2 would have fewer units than the proposed project and therefore reduce energy demands. Further reduction in energy demand for either alternative could be achieved by using seawater air conditioning (SWAC) and other energy reduction measures, as planned by the developer. Further discussion on energy and telecommunications is contained in Section 4.10.9.2.

Water Features and Lagoons

The proposed project includes a brackishwater pond, lagoons, and marine life exhibits supplied by clean seawater. The water features in Alternative 1 would significantly decrease by 74 percent from 19 acres in the proposed project to five acres in Alternative 1. This decrease in water features would result in a corresponding decrease in water source requirements and seawater discharge. Alternative 2 does not include the seawater features. Alternative 3 would result in no additional demand for water source requirements and seawater discharge.

2.2.2 Conformance with Public Plans and Policies

State of Hawai'i

Chapter 343, Hawai'i Revised Statutes

Compliance with this chapter is effected, as described in Section 5.1.1 in regard to the proposed project and the alternatives discussed.

- State Land Use Law, Chapter 205, Hawai'i Revised Statutes

  The discussion in Section 5.1.2 is directly applicable to Alternative 1, the proposed project. Alternative 1 will involve a setback of 400 feet that increases to 600 feet along the southern portion of the project site's shoreline area. Alternative 2 does not provide for such a setback, but may still require approvals from DLNR for cultural, recreational, and community uses and structures within the Conservation district.

- Coastal Zone Management Program, Chapter 205A, Hawai'i Revised Statutes

  Recreational Resources:

  In addition to the discussion of consistency with the associated objective and policies, as described in Section 5.1.3, the reduction from the proposed project's 800-slip marina to a 400-slip marina under Alternative 1 will still expand the region's boating opportunities and support facilities. The existing harbor entrance will still be utilized under this alternative; however, potential risks relating to boat traffic and congestion in the marina entrance area will be reduced significantly. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities, and marine science center remain important recreational components under Alternative 1.

Alternative 2 includes a golf course component, which would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Alternative 2, like the proposed project, will expand the region's boating opportunities and support facilities through its 800-slip marina. However, the potential adverse impacts of increased boat traffic from the size of the marina are significant enough to offset the benefits of increased boating opportunities.

Coastal Ecosystems:

The discussion in Section 5.1.3 is directly applicable to Alternative 1.

Alternative 1 not only reduces the number of slips proposed by 50 percent, but it also reduces the size of the marina from 45 acres to 25 acres. The 25-acre marina will increase the body of water within the existing harbor, but to a significantly lesser extent than the proposed project's estimated increase, which is also applicable to the 45-acre size that is proposed for the marina under Alternative 2.

The findings of the Harbor Water Quality Modeling Study conclude that a reduction in the size of the harbor expansion is an alternative that will mitigate the risk of significant impacts upon water quality within the marina and existing harbor. Accordingly, the reduction in both the number of slips and the size of the marina basin under Alternative 1, in combination with proper facilities design, public education, and enforcement of harbor rules and regulations, would result in fewer long-term impacts to water quality and coastal ecosystems. Short-term (construction-related) impacts would likely remain the same although the reduction in the total acreage of excavation is expected to result in a shorter duration of such impacts.

In addition to its 800-slip marina and potential adverse impacts upon water quality and the marine environment, Alternative 2 includes a golf course component, which has the potential to impact coastal ecosystems by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Economic Uses

Although reduced in the number of slips, the smaller marina under Alternative 1 will nevertheless serve public demand for more boating facilities in West Hawai'i and is consistent with the objective and policies and discussion set forth in Section 5.1.3. The economic impacts of Alternative 2, while comparable to those of the proposed project's marina development, are notably marginal as to the golf course component, based on the marketability analysis that indicates a condition of saturation within the region.

Coastal Hazards

The discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Tsunami risks mainly affect the large shoreline setback area that is proposed for the project and Alternative 1. Alternative 2 projects a transient accommodation site that is partially within the tsunami hazard zone and thus carries a higher hazard risk. However, the essential requirement for these alternatives, as well as the proposed project, is a well-prepared and properly implemented evacuation plan.

Beach Protection

Discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Alternative 1 and, to a lesser extent, Alternative 2, will retain the shoreline area in its natural condition.

Similar to the proposed project, Alternative 1 provides for a shoreline setback of considerable width within which no structure, except for possible culturally-related structures, would be allowed. Alternatives 1 and 2 will thus be designed to avoid erosion of structures and minimize interference with natural shoreline processes.

Marine Resources

The discussion in Section 5.1.3 is also applicable to Alternative 1 which is described to be an alternative that is specifically projected to mitigate anticipated adverse impacts on water quality and the marine environment that might otherwise result from the original harbor design and scale, which is also incorporated in Alternative 2 . The reduced marina size under Alternative 1 is projected to meet water quality standards and enable greater compliance with the objective and policies addressed in this section.

Alternative 2 includes a golf course component and thus the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Hawai'i State Plans, Chapter 226, Hawai'i Revised Statutes

Section 226-4 (State goals), 5 (Objectives and policies for population, and 6 (Objective and policies for economy in general):

The discussion in Section 5.1.4 is applicable to Alternatives 1 and 2, in addition to the proposed project. These development concepts generally conform to the goals, objectives, and policies set forth in these sections because they will provide some degree of economic viability, stability, and sustainability for future generations. Kona Kai Ola will convert essentially vacant land into a mixed-use development with a distinctive marina and boating element, providing a wide range of recreational, business, and employment opportunities to the community.

Section 226-8 Objective and policies for the economy – the visitor industry:

Alternatives 1 and 2 will be consistent with the State's economic objective and policies relating to the tourism industry for the same reasons that are discussed in regard to the proposed project in Section 5.1.4. They will incorporate JDI's commitment to sustainability principles in the planning and design of the development concepts in Alternatives 1 and 2. Although the total hotel and time-share unit count is reduced to approximately 1,500 in Alternatives 1 and 2, the transient accommodations component of these alternatives will still further the State's objective and policies for increased visitor industry employment opportunities and training, foster better visitor understanding of Hawai'i's cultural values, and contribute to the synergism of this mixed-use project concept that addresses the needs of the neighboring community, as well as the visitor industry.

Section 226-11 Objectives and policies for the physical environment: land-based, shoreline and marine resources:

Alternative 1 is expected to involve less potential adverse impacts upon these environmental resources than the proposed project. Likewise, and Alternative 2 would have less adverse impact because of its reduction in the size of the marina and in the total hotel and time-share unit count. Alternative 1 carries less potential risk to water quality and related impacts upon the marine environment and anchialine pool ecosystems. Although approximately three anchialine pools are expected to be destroyed, the great majority of pools will be preserved within and outside of the proposed 400-foot shoreline setback.

The golf course component in Alternative 2 has the potential to impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the marina basin and nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools by introducing the chemicals into the pond systems.

Section 226-12 Objective and policies for the physical environment: scenic, natural beauty, and historic resources:

The discussion in Section 5.1.4 is directly applicable to Alternative 1 and describes the compliance with the objective and policies addressed.

The golf course component of Alternative 2 would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area.

Just as with the proposed project, Alternatives 1 and 2 would also be designed to blend with the natural terrain and to honor and protect the cultural history, resources, and practices of these lands.

Section 226-13 Objectives and policies for the physical environment: land, air and water quality:

As stated above, because of the reduction in both the number of slips and the size of the marina basin, with proper facilities design, public education and enforcement of harbor rules and regulations, Alternative 1 is anticipated to cause fewer long-term impacts to water quality than either the proposed project or Alternative 2. Based on the findings of the Harbor Water Quality Modeling Study, water quality resulting from a reduced marina basin size as proposed under Alternative 1 is expected to be similar to existing conditions.

As previously noted, Alternative 2 has the potential to adversely impact water quality by increasing the nutrient loading in surface runoff and groundwater by introducing pesticides, herbicides and other chemicals common in golf course development and maintenance into the marina basin and nearshore waters surrounding the project site.

Section 226-14 Objectives and policies for facility systems - general:

Alternatives 1 and 2 will conform to the objective and policies of this section on the grounds that are discussed in regard to the proposed project in Section 5.1.4. The master-planning and phasing of the project concepts under these alternatives will be coordinated with associated public and private infrastructural planning and related private and public infrastructural financing. The cost of the marina construction and project-related infrastructure is to be borne by the developer, resulting in considerable savings for the public. In addition, the projected lease revenue from these public lands will provide additional public benefits by establishing a revenue stream for capital improvements and maintenance of a range of State facilities.

Section 226-15 Objectives and policies for facility systems - solid and liquid wastes:

In addition to the developer's commitment to sustainable development design, the project will involve upgrades to the County of Hawai'i's Kealakehe Wastewater Treatment Plant to meet current needs, as well as the project's future needs. This commitment is applicable to Alternatives 1 and 2, as well as the proposed project that is discussed in Section 5.1.4.

Section 226-16 Objectives and policies for facility systems – water:

The discussion of water conservation methods and the need to secure additional potable water sources in Section 5.1.4 is also applicable to Alternative 1 and demonstrates conformity to the objective and policies for water facilities. Alternative 2 involves greater irrigation demands in regard to its golf course component and greater potable water demands for human consumption than those for Alternative 1. Alternative 2 is expected to face more serious challenges in securing adequate and reliable sources of water.

Section 229-17 Objectives and policies for facility systems – transportation:

Alternatives 1 and 2 will conform to this objective and policies because they will present water transportation opportunities, including the possible use of transit water shuttles to Kailua-Kona, as described in regard to the proposed project in Section 5.1.4.

Section 226-18 Objectives and policies for facility systems – energy:

Alternatives 1 and 2 conform to these objective and policies through the use of energy efficient design and technology and commitment to the use and production of renewable energy to serve the project's needs. Solar energy production, solar hot water heating, and the use of deep cold seawater for cooling systems are currently identified as means of saving substantial electrical energy costs for the community and the developer.

Section 226-23 Objectives and policies for socio-cultural advancement – leisure:

Alternative 1 conforms to this objective and related policies for the reasons offered in Section 5.1.4 in regard to the proposed project. Alternative 1 will be of greater conformity with the policy regarding access to significant natural and cultural resources in light of the 400-600 foot shoreline setback that has been designed for this alternative.

Although it does not propose the considerable shoreline setback that is planned for Alternative 1, Alternative 2 is consistent with this objective and related policies in incorporating opportunities for shoreline-oriented activities, such as the walking trails. In addition, the golf course component adds a more passive recreation alternative to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Section 226-25 Objectives and policies for socio-cultural advancement-culture:

The discussion in Section 5.1.4 is relevant to Alternatives 1 and 2 and demonstrate their conformity the objective and policies of this section.

Both alternatives involve the preservation and protection of cultural features that have been identified by the Cultural Impact Assessment and archaeological studies for the project area. Both provide for public shoreline access, and both will continue the policy of close consultation with the local Hawaiian community and cultural and lineal descendants in the planning of cultural resource preservation and protection.

Section 226-103 Economic priority guidelines:

Alternatives 1 and 2 conform to these guidelines for the same reasons that are set forth in Section 5.1.4. They involve private investment in a public project that will create economic diversification through a mix of marina, industrial, commercial, visitor, and cultural facilities. This presents a wide range of entrepreneurial opportunities, long-term employment opportunities, and job training opportunities.

Section 226-104 Population growth and land resources priority guidelines:

As described in Section 5.1.4, the policy support for the proposed project also extends to the similar development concepts considered in Alternatives 1 and 2. Those alternatives conform to the guidelines of this section because they involve an urban development under parameters and within geographical bounds that are supported by the County's General Plan, a preliminary form of the Kona Community Development Plan, the County's Keahole to Kailua Regional Development Plan, and the reality of being located along the primary commercial/industrial corridor between Keahole Airport and Kailua-Kona. As with the proposed project, the development concepts of Alternatives 1 and 2 are essentially alternatives for the implementation and "in-filling" of the urban expansion area in North Kona.

DHHL Hawai'i Island Plan

This 2002 plan projects DHHL's Honokōhau makai lands for commercial use. As compared to the proposed project and Alternative 2, Alternative 1 presents an expanded commercial component that provides greater compliance with the plan, while addressing certain beneficiaries' concerns about the scale of the marina originally required in the Project. Alternative 2 also conforms to the recommended commercial uses in the makai lands but to a lesser degree than Alternative 1 because of its more limited commercial component. Like the proposed project, its marina size and number of slips raise environmental issues, as more specifically discussed in Part 3, and community concerns.

County of Hawai'i General Plan

HCGP Section 4 – Environmental Quality Goals, Policies and Courses of Action:

Alternative 1 is consistent with this section. It presents a reduction in both the number of slips and the size of the marina basin that, in combination with proper facilities design, public education and enforcement of harbor rules and regulations, would result in very few long term impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions.

Alternative 2 is the least consistent with this section. In addition to the potential significant impacts of its 800 slip marina basin, its golf course component has the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides and other chemicals common in golf course use and management into the nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools beyond their current conditions by introducing such substances into the pool systems.

HCGP Section 7 – Natural Beauty Goals and Policies:

Alternative 2 conforms to some degree with this section. Its golf course component would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area, as demonstrated in other makai golf courses within the region.

HCGP Section 8 – Natural Resources and Shoreline:

Alternative 1 is most consistent with the goals and policies of this section. It would require considerably less marina excavation than the proposed project and Alternative 2 and would reduce the potential risk of long-term adverse impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions with the degree of reduction in marina basin size that is proposed under Alternative 1. This reduction is also expected to reduce potential impacts upon anchialine pools and their ecosytems, as well as shoreline and marine resources that are affected by water quality. Alternative 1 also retains the shoreline preservation and protection concepts that are proposed in and described for the Project.

HCGP Section 10 – Public Facilities Goals and Policies:

The discussion in Section 5.2.1. in relation to the proposed project is applicable to Alternatives 1 and 2. Improvements to public facilities are are integral to the Kona Kai Ola development. The provision of additional boat slips and numerous road improvements, including a makai extension of Kuakini Highway south to Kailua-Kona are incorporated into plans for the project's development. In light of these elements, Alternatives 1 and 2 are consistent with the goals and policies of this section.

HCGP Section 11 – Public Utility Goals, Policies:

As with the proposed project, Alternatives 1 and 2 are consistent with the goals and policies of this section, based on the relevant grounds set forth in Section 5.2.1. The developer is committed to design, fund, and develop environmentally sensitive and energy efficient utility systems to the extent possible, as described previously in Part 5. Its master planning provides for the coordinated development of such systems with the objective of achieving significant savings for the public. As previously-mentioned example, the project development involves the upgrading of the Kealakehe Wastewater Treatment Plant.

HCGP Section 12 – Recreation:

Alternative 1 is consistent with the goals, policies, and courses of action for North Kona in this section.

Although the number of slips is reduced under Alternative 1, the region's boating opportunities and support facilities will still be expanded. The existing marina entrance would still be utilized under this alternative. However, concerns relating to increased activity leading to increased congestion in the marina entrance area would be mitigated to a certain extent. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities and marine science center remain important components of Alternative 1.

The golf course component of Alternative 2 would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola. Alternative 2 is also considered to be consistent with this section.

HCGP Section 13 and 13.2 – Transportation:

The reduced marina component under Alternative 1 will still provide transportation opportunities and provide for possible use of transit water shuttles to Kailua-Kona, although to a lesser degree than under the proposed project and Alternative 2 . However, in each scenario, internal people-movers are planned, and numerous roadway improvements are planned for coordination with public agencies, including but not limited to the construction of the Kuakini Highway extension between Honokōhau and Kailua-Kona. Accordingly, both Alternatives 1 and 2 are consistent with the goals, policies, and courses of action for North Kona under these sections of the General Plan.

HCGP Section 14.3 – Commercial Development:

For the reasons presented in the discussion under Section 226-104 of the State Plan, the planned commercial component under Alternatives 1 and 2 are consistent with this section.

HCGP Section 14.8 – Open Space:

Alternatives 1 and 2 are consistent with the goals and policies of this section. Alternative 1 provides a considerable (400-600 foot) shoreline setback along the entire ocean frontage of the project site as a means of protecting the area's scenic and open space resources, as well as natural and cultural resources. Although it does not incorporate the shoreline setback planned in Alternative 1, Alternative 2 provides a golf course component would contribute to the amount of open space that is currently proposed and allow additional view corridors to be created.

Community Development Plans

Community development plans are being formulated for different regions in the County in order to supplement the County's General Plan. The Kona Kai Ola project is located in the Kona Community Development Plan (CDP) area. Maps associated with the preliminary work phases

of the Kona CDP include the Kona Kai Ola project site within the "Preferred Urban Growth" boundary of the North Kona district. The Kona CDP process is guided by a Steering Committee composed of a broad cross-section of the community. The Steering Committee will eventually complete its work and recommend the CDP's adoption.

After the DEIS was published, the Kona CDP has progressed to the development of plans for the major urban growth corridor north of Kailua-Kona. The Kona CDP has produced a draft plan showing a transit oriented development that includes a midlevel public transit corridor along the mauka residential elevation, and a makai transit corridor that runs along a proposed new frontage road just makai and parallel to Queen Kaahumanu Highway. The development plan for Alternative 1 includes the Kuakini Highway as part of this proposed frontage road and transit line from Kailua Kona to the Kealakehe area, along with a transit stop at Kona Kai Ola. The Alternative 1 plan also includes a road that could be extended to be part of the proposed frontage road should it be approved and implemented. In addition, the Kona CDP has continued to emphasize the principles of smart growth planning with mixed use urban areas where people can live, work, play and learn in the same region. Kona Kai Ola has been specifically designed to be consistent with this policy in order to provide a stable employment base close to where people live in the mauka residential areas already planned for DHHL and HHFDC lands.

It should be noted that currently and over the years, the 1990 Keāhole to Kailua Development Plan (K-to-K Plan) guides land use actions by the public and private sectors. It is intended to carry out the General Plan goals and policies related to the development of the portion of North Kona area, including the Kona Kai Ola site. The "Preferred Growth Plan" of the Keāhole to Kailua Development Plan identifies the project site as a new regional urban center to include commercial, civic, and financial business related uses, an expanded "Harbor Complex," a shoreline road, and a shoreline park. The proposed project and the development concepts in Alternatives 1 and 2 are therefore consistent with the recommendations in the Keāhole to Kailua Development Plan.

Hawai'i County Zoning

As shown on Figure AA, the project site is zoned "Open". Under Section 25-5-160 of the Hawai'i County Code, "The O (Open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands)".

Some of the proposed uses at Kona Kai Ola are permitted uses in the Open zone such as:

- Heiau, historical areas, structures, and monuments;
- Natural features, phenomena, and vistas as tourist attractions;
- Private recreational uses involving no aboveground structure except dressing rooms and comfort stations;

- Public parks;
- Public uses and structures, as permitted under Section 25-4-11.

In addition to those uses permitted outright, the following uses are permitted after issuance of a use permit:

- Yacht harbors and boating facilities; provided that the use, in its entirety, is compatible with the stated purpose of the O district.
- Uses considered directly accessory to the uses permitted in this section shall also be permitted in the O district.

The proposed time-share and hotel units and commercial uses would not be consistent with the zoning designation of "Open". Project implementation therefore requires rezoning of portions of the project to the appropriate zoning category or use permits for certain uses.

Special Management Area

As shown in Figure AB, the entire project area up to the highway is within the coastal zone management zone known as the Special Management Area ("SMA"). At the County level, implementation of the CZM Program is through the review and administering of the SMA permit regulations. Kona Kai Ola complies with and implements the objectives and policies of the Coastal Zone Management (CZM) Program, and a full discussion is provided in Section 5.1.3. The development concepts in the proposed project and Alternatives 1 and 2 will be subject to applicable SMA rules and regulations.

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
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January 30, 2007

Micah Kane
Department of Hawaiian Home Lands
PO Box 1879
Honolulu, Hawaii 96805

Attn: Linda Chinn

Dear Mr. Kane:

Subject: Draft environmental impact statement (EIS), **Kona Kai Ola**

We have the following comments to offer:

Marina: Will boaters be able to live at the marina? How will potable water be supplied and how will wastewater be handled? Will there be any slips be for day or short-term use only? What will be the limit to such stays? What fees will be charged for the slips?

Housing: Section 4.5.2 describes current conditions but does not enumerate any mitigation measures. Housing for construction workers is briefly mentioned. Will there be new housing for workers, and if so, where will it be located, what impacts and mitigation measures will there be, and what will be the use of this housing once construction is completed?

Landscaping: Include a landscape master plan in the FEIS, keeping in mind the following: Hawaii Revised Statutes 103D-408 requires the use of native Hawaiian flora whenever and wherever possible. Your plan may inadvertently include invasive plant species. Before finalizing your plan consult the Division of Forestry & Wildlife of DLNR at 587-0166 or go to the Hawaii Ecosystems at Risk (HEAR) website at www.hear.org to eliminate those species that may pose a threat to the environment.

Harbormaster's facility; palm tree corridor:

Harbormaster's facility: Section 4.3.1 lists an optimum location, but does not indicate if this is where it will definitely be sited.

Palm tree corridor: Section 4.3 states that the palm trees may need to be removed from the harbor entrance road. In the final EIS indicate whether they will be removed or not, and if so, transplanted elsewhere on site.

If decisions have not been made on the harbormaster's facility or the palm tree corridor by the time of FEIS preparation, include them as unresolved issues, and indicate when they will be resolved.

Public water features: These are mentioned in section 1.5.1 under *Ocean Recreation and Cultural Emphasis*. What are the features and where will they be located?

Bike paths, hiking trails and pedestrian paths: No details are included on these. Where will they be located? What are the design details? If alternative locations are being considered, include this in your discussion as well.

Visual impacts: Include drawings or diagrams of the proposed buildings and any proposed landscaping that show the final appearance of the project. Identify public viewpoints of the project site from which visual impacts may occur, especially of mauka and makai viewplanes. Show these impacts by superimposing a rendering of the proposed facilities onto photographs taken from public vantage points.

Mitigation measures: Throughout section 3 mitigation measures are listed as recommendations or suggestions. In addition some are vague. The EIS needs to list definitive mitigation measures so that those reviewing and/or those making policy decisions about the project will know the resulting extent of the negative impacts. Several examples follow:

Impacts to marine life: Section 3.9.5 notes a low percentage of rates of negative impacts (collisions, entanglements) with sea turtles, but these rates are associated with high mortality (95%, 75 %, 52%). The discussion does not give mitigation measures that will be carried out. The measures listed are suggestions, such as, "... may need to implement additional regulations"; "...educational programs will help to mitigate possible impacts due to increased boaters"; "... it is recommended that educational signs be erected...." While new regulations are being promulgated and educational programs and signage benefitting (human) harbor users are being implemented, sea turtles will die at elevated rates from collisions and entanglements due to increased numbers of marina users. In the final EIS list dedicated mitigation measures that will reduce or reverse these deleterious impacts.

Traffic impacts: The mitigation measures listed in this section are suggestions and recommendations. In the final EIS list measures that will be implemented.

Cultural impacts assessment: The assessment included as Appendix K (Kealakehe Commercial & Industrial Park) appears to apply to an adjacent 200-acre parcel of land. An impacts assessment needs to be done for the specific area included in this project.

Cumulative impacts: In addition to Lai O'pua Villages, Keahuolu Subdivisions, Lanihau Business Park and Kohanaiki residential community, expand your discussion and analysis to also include UH Center at West Hawaii (2000 FEIS), an extensive university/housing/commercial development which should now be in the implementation phase, and Kula Nei (2006 EISPN), a 220-unit housing development mauka of Kailua town. The factors in your analysis should include traffic, noise, air quality, water resources, drainage, and flora and fauna.

Alternatives analysis: Your discussion does not give sufficient detail and analysis. Various factors have been mentioned but not analyzed, such as:

- a marina basin of "not less than 45 acres ...";
- "800 boat slips...";
- "JDI is not pursuing the golf course option;"
- "Section 4.6 reviewed various development schemes ... currently proposed density and mix ... "

Include a fuller discussion for all design and location options that were considered but rejected, with the rationale for each rejection. An update to the alternatives section of executive summary will also be required.

Project density: Jacoby has indicated that the proposed project density is the minimum required to provide an acceptable level of economic return. If DHHL decides to downsize the project, will this annul Jacoby's contract with DHHL? Who would then take over development?

Title page signature: The *applicant* (A responsible official of JDI) needs to sign and indicate direction over the EIS contents.

Permits and approvals: In section 5.3, list the status of each permit or approval. If some applications have not yet been made, indicate the expected dates of application.

Comment deadlines: In the EISPN correspondence section a letter from Philip Mosher and Marie Aguilar, and a letter from Scott Gorrell were both stamped "Late – after close of comment period." Keep in mind the deadline for comments is a *postmark* deadline, not a receipt deadline. Comment letters on the draft EIS postmarked by February 6th, 2007 must be responded to and reproduced in the final EIS.

Abbreviations: In this list correct HELCO to read Hawaiian Electric *Light* Company.

If you have any questions, call Nancy Heinrich at 586-4185.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON
Director

c: Berna Cabacungan, Oceanit

oceanit
innovation through engineering & scientific excellence

July 23, 2007

Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawai'i
235 South Beretania St., Ste. 702
Honolulu, Hawai'i 96813

Dear Ms. Salmonson:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated January 30, 2007

Thank you for your comments on the Kona Kai Ola Draft Environmental Impact Statement. Our responses to your comments are based on the sequence of the topics in your letter and are as follows:

Marina

On-board residents will not be permitted in the new Kona Kai Ola Marina. Potable water and wastewater needs at the marina will be served by the infrastructure systems that serve the overall project.

Regarding marina fees and specific permitted operations, these will be determined as the project progresses and information will be included in the appropriate permit applications.

Housing

In response to DEIS comments, a study of workforce housing requirements was prepared. Findings are summarized in EIS Section 4.6.5, Workforce Housing Impacts, and Appendix C-1 contains the new study. It is estimated that Kona Kai Ola will generate a workforce housing need of 625 units, based on the ratio set forth in Hawai'i County Ordinance Chapter 11, Section 4, Affordable Housing Requirements. Another method of calculating the need for affordable worker housing units is based on approximately 80 percent of the total in-migrant worker needing housing that meet affordable housing pricing guidelines. This results in a high end range of 859 units.

Oceanit Center 828 Fort Street Mall, Suite 600 Honolulu, Hawaii 96813 Phone: 808.531.3017 Fax: 808.531.3177
www.oceanit.com

As agreements between the State and JDI prohibit residential development at Kona Kai Ola, workforce housing would need to be located off-site. The most suitable location for workforce housing units is the Villages at La‘i‘Ōpua community, a DHHL project, or within the Hawai‘i Housing Finance and Development Corporation affordable housing development planned for Keahuolū. These are two State-owned undertakings directly across the highway in the same or adjacent ahupua‘a. Locating workforce affordable housing units in these communities would substantially lessen the traffic impacts associated with a community subject workforce. Alternatively, the State lands adjacent to Waikoloa Village would be appropriate.

JDI will comply with all affordable housing requirements of applicable Hawai‘i County ordinances.

The additional EIS text that includes the added EIS Section 4.6.5, Workforce Housing Impacts, is contained in Attachment 1 of this letter.

Landscaping

Figure E, Green / Open Space, provides a preliminary concept of overall landscape design. A detailed landscape plan will be prepared as the project during the rezoning process. As discussed in the DEIS and EIS Section 1.5.5, the project will focus on incorporating native Hawaiian plants, including native dryland species, in its landscaping plan. The project will also retain a significant amount of the black lava features that make the Kona Kai Ola site so distinctive. In addition to promoting the use of native Hawaiian plants, these measures will also reduce water demand. We will comply with your request to contact the DLNR Division of Forestry and Wildlife to ensure that invasive plant species are not included in the landscape master plan.

Harbor Master’s Facility; palm tree corridor

As discussed in the EIS Section 4.3, Visual Resources, the harbor master’s facility is proposed to be a small one- or two-story structure set back approximately 500 feet from the harbor entry channel.

Regarding the number of palm trees in the palm tree corridor that may be removed, EIS Section 4.3.2, Anticipated Impacts and Recommended Mitigation, notes that portions of a proposed roadway may be able to incorporate some of the existing trees. The determination of number of trees will be made as project plans progress, and this will be noted as an unresolved issue.

The following text is added to EIS Section 10, Unresolved Issues. “The palm tree corridor may be affected by construction of the proposed project in that some of the existing trees may need to be removed. Portions of the proposed roadway may be able to incorporate some of the existing trees. The determination of number of trees will be made as project plans progress, and this will be noted as an unresolved issue.”

Public water features

As depicted in Figure D, Preliminary Concept Plan, Kona Kai Ola water features will generally flow in an east to west direction. As discussed in the EIS Section 4.10.10, Water Features of the Lagoon, the exhibits at Kona Kai Ola would include an interactive snorkeling lagoon, a ray lagoon, a shark lagoon, a turtle lagoon, a swimming lagoon and associated holding pools. The fish, ray, shark and turtle exhibits will display only those species which are found in Hawaiian waters. This is both to showcase the color and diversity found in Hawai‘i’s undersea ecosystem, as well as the need to protect this fragile environment. The large seawater lagoon with the lagoon park is intended for public use.

Bike paths, hiking trails and pedestrian paths

As discussed in the EIS Section 4.9, Trails, Bike Paths, and Pedestrian Access, Kona Kai Ola proposes to create a network of trails and pedestrian access points both mauka-makai and laterally along the shore. Bike paths will be included as part of the transportation network. The layout for the entire development at Kona Kai Ola will be designed at a density and scale which encourages walking, biking and transit usage.

Where appropriate, public trails will connect culturally and historically significant features on the project site by improving public access via trails. A trail network will be established to and within the 400-foot setback area along the shoreline. The on-site trail network will support the development of the Ala Kahakai National Historic Trail.

Visual impacts

In response to your comments, a view impact analysis was prepared and is presented in Section 4.3 of the EIS. Five views are presented in Figures U-1 through U-5, and these views include:

- An overall view of the project looking west from the Villages of La‘i ‘Ōpua looking makai;
- A close-up view looking west from the main entrance into the project;
- A view looking south from the north side of Honokōhau Harbor Entrance Channel,
- A close-up view looking east from ocean of the coastline and makai parcels, and
- A view of the project looking east from the ocean.

Attachment 2 contains additions and revisions to the EIS text of Section 4.3.2 regarding Anticipated Impacts and Mitigation as related to Visual Resources.

Mitigation measures

Revisions to the EIS text have been made to identify definitive mitigation measures. Revised text is included throughout the EIS.

Regarding impacts to marine life, additional studies were conducted in response to DEIS comments. These studies were prepared by Marine Acoustics, Inc., and include a detailed description of marine mammal and sea turtles species in the affected environment (Appendix S), an underwater noise measurements and estimation study (Appendix T-1), and underwater acoustics analysis (Appendix T-2). Findings are summarized in EIS Section 3.9.4, Marine Mammals and Sea Turtles. Specific mitigation measures, such as in-air and in-water buffer zones during construction, are identified. The revised Section 3.9.4 is included in its entirety in Attachment 3 of this letter.

Regarding traffic impacts, the EIS has been revised to indicated that mitigation measures are not just recommended but will be implemented as part of Kona Kai Ola. The sentence in Section 4.7.7 has been revised to read: "Based on the intersection operations, the following mitigation measures ~~are recommended to~~ will be implemented in conjunction with the proposed Kona Kai Ola development:"

Cultural Impact Assessment

The DEIS contains two Cultural Impact Assessments in Appendix K. The study to which you refer was prepared by Pualani Kanakaʻole Kanahele in 2001 as part of a previous development plan for the DHHL parcel. The DEIS for the DHHL project was not published, and the project did not proceed. Concurrence has been granted by DHHL to discuss and include the 2001 CIA in this EIS. Dr. Taupouri Tangarō completed the most recent cultural impact assessment for the project site and surrounding area. These studies are contained in separate appendices in the EIS for clarity purposes. Appendix L-1 contains the 2006 study, and Appendix L-2 contains the 2001 study,

Cumulative Impacts

The discussion on cumulative impacts has been expanded to include the projects you identified, as well as other projects and major infrastructure improvements. Further, the factors you identify have been included, as well as impacts due to underwater acoustics. Attachment 4 contains the revised text for Section 8, Cumulative Impacts.

Alternatives Analysis

In response to DEIS comments, additional harbor water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor.

Three alternatives are therefore evaluated in the EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin and a decrease in hotel and time-share units, Alternative 2, which is an alternative that had been previously discussed, but not included in the proposed project, that includes an 800-slip harbor and a golf course, and Alternative 3, the no-project alternative. These alternatives are summarized in the Executive Summary and discussed and analyzed in Section 2, Alternatives Analysis. Attachment 5 contains additions and revisions to the EIS text of the Alternatives Analysis section.

Project density

Alternative 1, which was previously discussed in this letter, reflects reduced number of boat slips and timeshare and visitor units. A comparison between impacts related to the proposed project concept and impacts related to Alternative 1 indicates that a reduction in the acreage and number of slips in the marina and a reduction in the number of hotel and timeshare units would generate less environmental, social and economic impacts. Although positive economic impacts would be reduced, Alternative 1 can be considered as a preferable alternative because of reduced environmental impacts. However, while it can be concluded that the 25-acre marina in Alternative 1 would be the preferred size, the DLNR agreement establishes the size of the marina at 45 acres and 800 slips. An amendment to the DLNR agreement is required in order to allow Alternative 1 to proceed, and JDI will be working with DLNR and DHHL to explore agreement amendments.

Title page signature

The EIS will include JDI's signature that indicates responsibility for the direction for EIS contents. Attachment 6 shows additions and revisions to the EIS text of the Responsible Official.

Permits and approvals

In response to your comments, Table 3 has been added to Section 5.3, Permits Required for Project. This table lists required permits and approvals, project action that triggers the permits and approvals and time frame in which applications for such permits and approvals will occur. The following text has been added to EIS Section 5.3, Permits Required for Project:

Table 3: Permits Required for the Project

Agency	Permit or Approval	Requirement	Time Frame
U.S. Army Corps of Engineers	Department of the Army (DOA) Individual Permit	Work in navigable waters; placing fill in waters of the U.S., placing navigation aids Will incorporate: ▪ Rivers and Harbors Act Section 10 ▪ Clean Water Act Sections 401 and 404 ▪ Coastal Zone Management Act Section 307 ▪ Endangered Species Act Section 7 ▪ National Historic Preservation Act Section 106	Prior to any in-water work or fill or placement of navigation aids or modification of terrestrial habitat that may impact species listed under Endangered Species Act
U.S. Coast Guard	Private Aids to Navigation approval	For approval for marking aids to navigation	Prior to placement. Note: placement requires DOA Permit.
State Board of Land and Natural Resources	Easement over Submerged Lands / Shared Harbor Channel Entrance	HRS Section 171-53 (6)	Prior to commencement of operations of new marina
State Department of Business, Economic Development & Tourism	Determination of Hotel Development	HRS Section 171-42	Prior to approval of Master Development Plan
State Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL)	Conservation District Use Permit (CDUP)	For any work in the conservation district ▪ Kuakini Highway extension and SWAC pipe; Shoreline Park ▪ Hawaiian Cultural Park, Ocean Front Trail	Prior to any work in the conservation district
DLNR Commission on Water Resource Management	Well Construction Permit, Pump Installation Permit	For well construction or ground water source development	Prior to construction or development
State Department of Health (DOH) Clean Water Branch	401 Water Quality Certification	Triggered by DOA permit	Start simultaneously with DOA permit
		NPDES	
	- Individual Permit	Discharge into state waters	Prior to construction
	- NOI Appendix C	Construction activities on one or more acres	Prior to construction
	- NOI Appendix G	Construction dewatering	Prior to construction
	- NOI Appendix L	Discharge of circulation water from decorative ponds	Prior to construction

Agency	Permit or Approval	Requirement	Time Frame
	All NPDES applications	Copy to DLNR/State Historic Preservation Division	Simultaneously with DOH NPDES submittals
	Zone of Mixing	Include with NPDES for discharge into state waters	Concurrent with NPDES application
DOH Safe Drinking Water Branch	Water Source Approval and capacity demonstration	For new drinking water sources	After source is identified
	Operator Certification	For operators of water systems	Before system use
	Construction Plan Review	For water system improvements and connections	Before construction
	Underground Injection Control (UIC) Permit	For injection well operations	Before operations
DOH Clean Air Branch	Dust control management plan	Recommended only, not required	During construction planning
DOH Noise, Radiation, & Indoor Air Quality Branch	No permit	Comply with Administrative Rules Chapter 11-46, Community Noise Control	During construction
County of Hawai‘i	Special Management Area (SMA) Major Permit	Work in the SMA	Prior to any construction or other work in the SMA (does not include DHHL land)
	Zoning	Must be consistent with the General Plan	After acceptance of EIS
	Building Permit	To erect a new structure including fences, swimming pools and retaining walls more than 3’-0" in height, and water catchments regardless of depth or capacity	Prior to construction
	Grading, Grubbing, and Stockpiling Permits	For volumes as specified by county	Prior to activity
	Development, subdivision, drainage and flood zone reviews	For development	Prior to construction

Comment deadlines

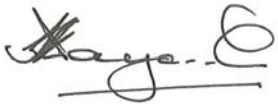
Responses to all DEIS comments will be made, including those received before and after the postmark date.

Abbreviations

The correction per your suggestion has been made in the EIS.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

4.6.5 Workforce Housing Impacts

In response to DEIS comments, a study of possible workforce requirements and related secondary impacts was conducted by The Hallstrom Group; this study is presented in Appendix C-2. This study was based on a four-step study process that included 1) quantification of population and employment projections, 2) .analysis of West Hawai'i employment demand and supply, 3) characterization of the subject workforce, and 4) quantification of subject workforce housing impacts.

The population and job count on the Hawai'i Island are forecast to increase by approximately 70 percent during the 24 year projection period that ends in 2030. On average, at least 60 percent of the population growth will be a result of net in-migration to the County.

Although trends will be slowing relative to recent decades, a significant portion of the population and business expansion will be directed towards West Hawai'i. In the next two decades, the population and job count in West Hawai'i will increase by about 80 percent, reaching 128,200 residents and 87,400 employment positions by 2030. The available approved or entitled, proposed and announced new projects and their associated forecast job creation supply will not be sufficient to meet estimated employment demand over time. Further, with the approaching build-out of the major West Hawai'i resorts and residential-orientation of the newer resort communities, few opportunities will exist for expansion in the historically-vital tourism economic sector.

As discussed in Section 4.6.3.2, implementation of the Kona Kai Ola master plan will create a total of 3,842 on-site full time equivalent employment positions in the operating businesses of the development. The project is estimated to be operational around 2012, following completion of infrastructure and Phase I construction, and will continue until the community reaches build-out and stabilization in 2026.

Approximately 45 percent of the jobs will be entry level positions with an average annual wage of $20,000 in current dollars. Another 40 percent will be mid-level jobs with average yearly pay of $32,000, and, 15 percent will be management/high-skill positions with wages averaging $50,000.

Approximately 2,147 of the jobs in the subject project will be filled by persons who have in-migrated to the Big Island. However, only a nominal portion would be specifically relocated to West Hawai'i as a result of the development.

The total net housing load created by Kona Kai Ola in-migrant workers will be 1,074 units. This in-migration will generate a need for a range of 625 to 859 affordable housing units, as follows:

- As discussed in Section 4.5.2.2, under Hawai'i County Ordinance Chapter 11, Section 4 Affordable Housing Requirements, hotel uses generating more than 100 employees on a full-time equivalent basis must earn one affordable housing credit for every four full-time equivalent jobs created. Application of the "1 to 4" ratio to all of the transient units proposed for Kona Kai Ola (hotel and time-share) results in a workforce housing requirement of 625 units.

- Another method of calculating the need for affordable worker housing units is to estimate that approximately 80 percent of the total in-migrant worker need housing that meet affordable housing pricing guidelines. This results in a high end range of 859 units.

Based on affordable housing pricing guidelines, affordable housing units will have an estimated sales price of $216,000 to $292,000.

As agreements between the State and JDI prohibit residential development at Kona Kai Ola, workforce housing would need to be located off-site. Probable and desirable locations for workforce housings were based on availability, efficiencies and surveys conducted of area workers. Possible locations in support of Kona Kai Ola included the mid-elevation lands of the Keahole to Kailua-Kona Corridor, between the Queen Kaʻahumanu fronting commercial/industrial developments and Mamalahoa Highway; and in the Waikoloa Village expansion areas.

The most suitable location for workforce housing units is the Villages at La'i'Ōpua community, a DHHL project, or within the Hawaiʻi Housing Finance and Development Corporation affordable housing development planned for Keahuolū. These are two State-owned undertakings directly across the highway in the same ahupuaʻa . Locating workforce affordable housing units in these communities would substantially lessen the traffic impacts associated with a community subject workforce. Alternatively, the State lands adjacent to Waikoloa Village would be appropriate.

JDI will comply with all affordable housing requirements of applicable Hawai'i County ordinances.

4.6.6 Market and Economic Impacts Associated with Alternative 1

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County coffers. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The additional commercial sites in the near-highway lands will also be in demand as the area continues its evolution into the northerly gateway of the Kona urban center. The increased retail acreage will further capitalize on the available frontage-related opportunities by generating greater cumulative attraction for the development and enabling increased product diversity supporting a wider spectrum of businesses.

Absorption of the visitor-oriented inventory would be proportionately shorter with fewer hotel and time-share sites and units to be marketed, and fewer marina slips to be filled. The absorption time-frame for the larger commercial component will be longer, while the amount of marina-support and other leasable acreage is the same as in the proposed project and will require a similar absorption period.

Table 3 compares the primary marketable components of the proposed project and Alternative 1 and their estimated absorptions:

Attachment 2

4.3.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigation

Due to its location within the Queen Ka'ahumanu Highway view plane, the project has the potential to impact public views of the coastline in this area of North Kona. In addition to the General Plan, the *West Hawai'i Coastal View Study* of 1990 notes that "urbanization and public improvements may …offer the greatest opportunity to protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources."

Depending on the development plan for the commercial parcel, the palm trees along the existing entrance road to the harbor may need to be removed. However, portions of a proposed roadway may be able to incorporate some of the existing palm trees.

The proposed Harbormaster Control Tower is proposed to be a small two-story structure set back approximately 500 feet from the harbor entry channel and located in a small second floor area. Hence, this facility will be visible from the ocean and the Kaloko-Honokōhau National Historical Park. Marina designers and DOBOR have determined that the harbormaster facility needs to be at the proposed location and at the proposed height to ensure the safety of marina traffic into and around the existing Honokōhau Harbor and the new marina. To mitigate view impacts on the adjacent Kaloko-Honokōhau National Historical Park, design measures to minimize impacts will be employed. Further, it is proposed that the ground floor of the ~~Harbormaster Control Tower~~harbormaster observation hale be made available for park uses, such as a visitor center. Alternatively, the harbor master observation hale may only be a single story building.

To mitigate visual impacts, a 400-foot buffer zone along the shoreline will be preserved as open space. Improvements within this buffer zone will be limited to lateral shoreline public trails, mauka-makai access trails from the project site, and cultural or environmental-related improvements relating to existing features within the buffer zone. No buildings or structures shall be proposed within the 400-foot shoreline setback area, with the possible exception of culturally-related structures.

To control building mass near the shoreline, development sites directly adjacent to the shoreline area are limited by design covenants to a lower unit density. Buildings immediately adjacent to the shoreline setback are proposed at one and two stories height to minimize building mass against the shoreline setback area.

Buildings located further inland will increase to a maximum of four stories, in keeping with the "coconut tree height" general limit. The quantity of landscaped or re-naturalized open space should be emphasized near the setback area by design covenants.

The northern edge of the large commercial parcel contiguous to the water feature by Queen Ka'ahumanu Highway will be limited by design covenants to one-story structures. Structures on the remaining area of the parcel will be limited to the equivalent of three stories in height. The larger building mass at the southern portion of the parcel will provide a screen for the existing earth berm around the waste-water treatment plant from the Highway.

Major roadways, parking areas, and areas surrounding all major structures will be landscaped in accordance with a landscape master plan.

A visual impact study was conducted to illustrate various views of the Kona Kai Ola development. In the computer simulated views, no existing buildings are shown on the existing harbor area.

Five views are illustrated and in this FEIS and are described as follows:

- Figure U-1: View from the Villages of La'i 'Ōpua.

  This gives an overall mauka to makai view of the entire project from the Villages of La'i 'Ōpua. The existing wastewater treatment plant and the lands belonging to Queen Lili'uokalani Trust are to the left. The National Historical Park and existing entry channel to Honokōhau small boat harbor are to the right. Queen Ka'ahumanu Highway is in the foreground with the ocean in the background.

  The existing view of the site from this vantage point is of a barren lava field devoid of vegetation that gently slopes to the ocean. The large pools of the existing wastewater treatment plant dominate this desolate landscape. This computerized view of the proposed project depicts how Kona Kai Ola intends to transform this desolate lava field into a vibrant mixed use community. This view also shows how the project will retain 40% of the land area in open space with lagoons, community areas and a vast shoreline park.

  The project's proposed roadway system can be clearly seen. The Kuakini Highway Extension Right of Way is depicted in the foreground. A new access road that will serve the existing marina is on the lower right. On the left is a collector road that borders the wastewater treatment plant and provides access to the uses along the coastline. A road also connects these two roads through the core of the project. Finally, there is a road that will service the uses along the coastline and provide access to the park at the harbor's entrance.

  The water feature through the central core of the project is clearly visible. This central feature provides an amenity to the mauka parcels as it meanders through the project to the proposed marina to help with water circulation.

  The buildings within the project are no more than three to four stories tall or no higher than a coconut tree.

- Figure U-2: View of the main entrance into the project.

  The existing wastewater treatment plant and the lands belonging to Queen Lili'uokalani Trust are to the left. The National Historical Park and existing entry channel to Honokōhau small boat harbor are to the right. Queen Ka'ahumanu Highway and main entrance to the project are in the foreground.

  The existing view from this vantage point is of the existing intersection of Queen Ka'ahumanu Highway and the access road to Honokōhau Harbor. Barren lava fields extend out from the road to the north and south. The road is lined with coconut trees. The access road leads to the existing HonokōhauHarbor to the east.

This view shows the proposed main entrance into the project at the intersection of the Queen Ka'ahumanu Highway and the proposed Kuakini Highway Extension. The Kuakini Highway Extension veers to the left upon entering the project and extends all the way to Kailua-Kona. This proposed roadway will provide a parallel route to Queen Ka'ahumanu Highway, alleviate traffic in the region, and provide an important alternate route into Kailua-Kona.

This view also shows the inviting main entry to the project, which is accomplished by the retention of a large open space area and using setbacks along the Kuakini Highway Extension. The coconut trees along the existing access road to the harbor, will be carefully relocated to a site within the project and provided with necessary care and irrigation. The open area along the highway is a planned natural park with a brackish water pond, designed as a habitat for migratory birds that currently visit the area. A view corridor connecting this park through the core of the project to the proposed marina was designed to create mauka and makai views through the interior of the project.

- Figure U-3: View from North Side of Honokōhau Harbor Entrance Channel

This gives a view looking from the north side of the entrance channel near the makai entry to the Kaloko Honokōhau National Historical Park. The image only shows the new construction that will be added to the existing fuel dock and various State buildings that already located in this area near the fuel dock lease area. The small harbormaster observation hale is shown in the foreground. This is shown as a small two story structure, but it could alternatively be only a single story.

To the right on the makai side, the shoreline cultural park can be seen, along with a proposed cultural center located adjacent to the cultural park. Also shown is a conceptual design for an outdoor hula performance area. The trail is shown for illustrative purposes only and would be designed to blend in with the natural lava landscape. The anchialine pools and historic sites are not shown, but will be protected in the shoreline cultural park. The buildings close to the shoreline park are limited to one and two story buildings, while the buildings closer to the marina are shown at a height of four stories at the highest. The new harbor basin, shown at 800 slips, is surrounded by a public promenade, with a mix of commercial, hotel, time-share uses, as well as public parks for launching one and two-man outrigger canoes. The vessels currently in the outer basin of the existing harbor would be moved into the new harbor facility, leaving the whole area of the outer basin for transiting to and from the new harbor to the ocean.

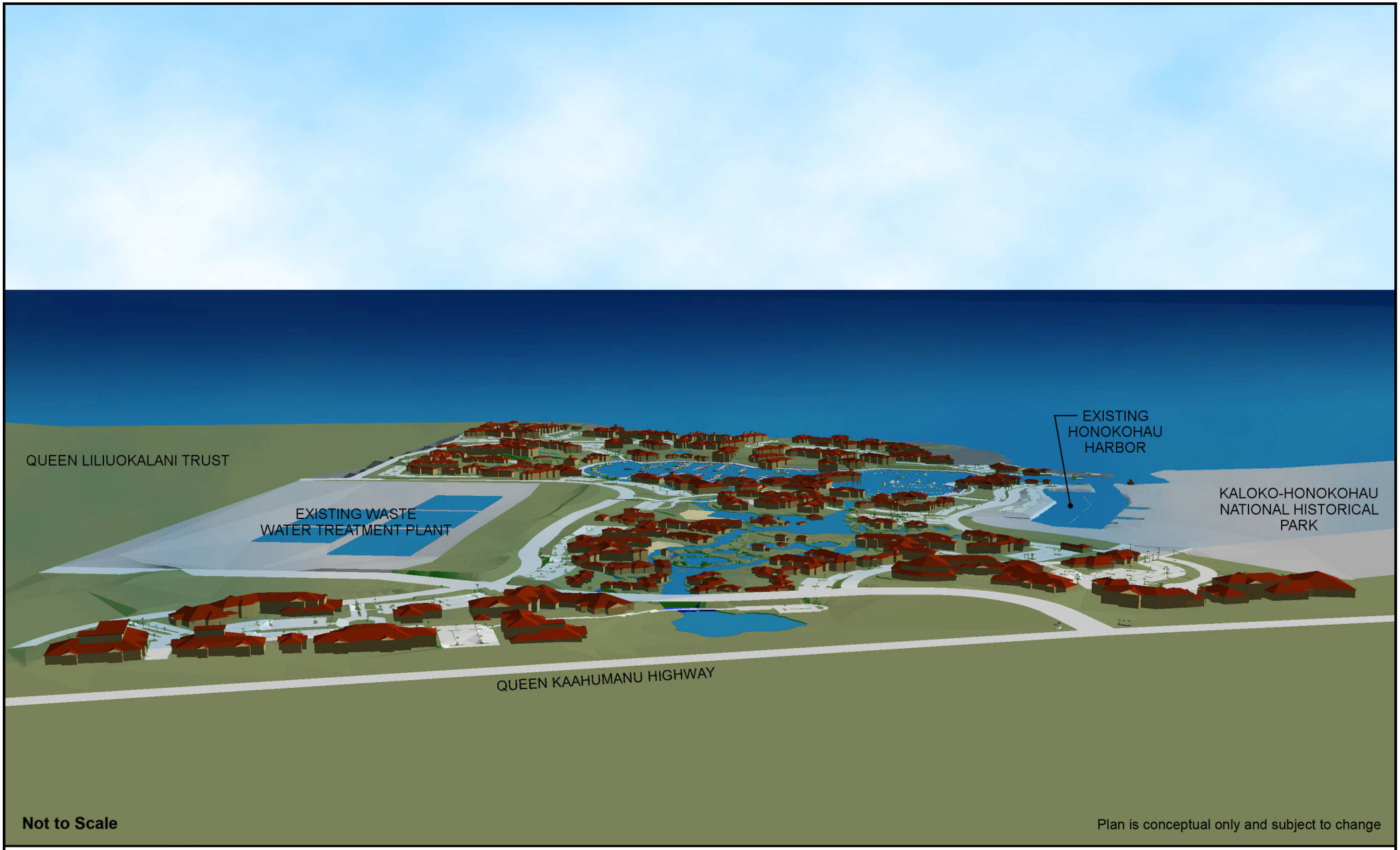


Figure U-1: View from Villages of Laʻi ʻŌpua

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Figure U-2: View of Main Entrance Into the Project

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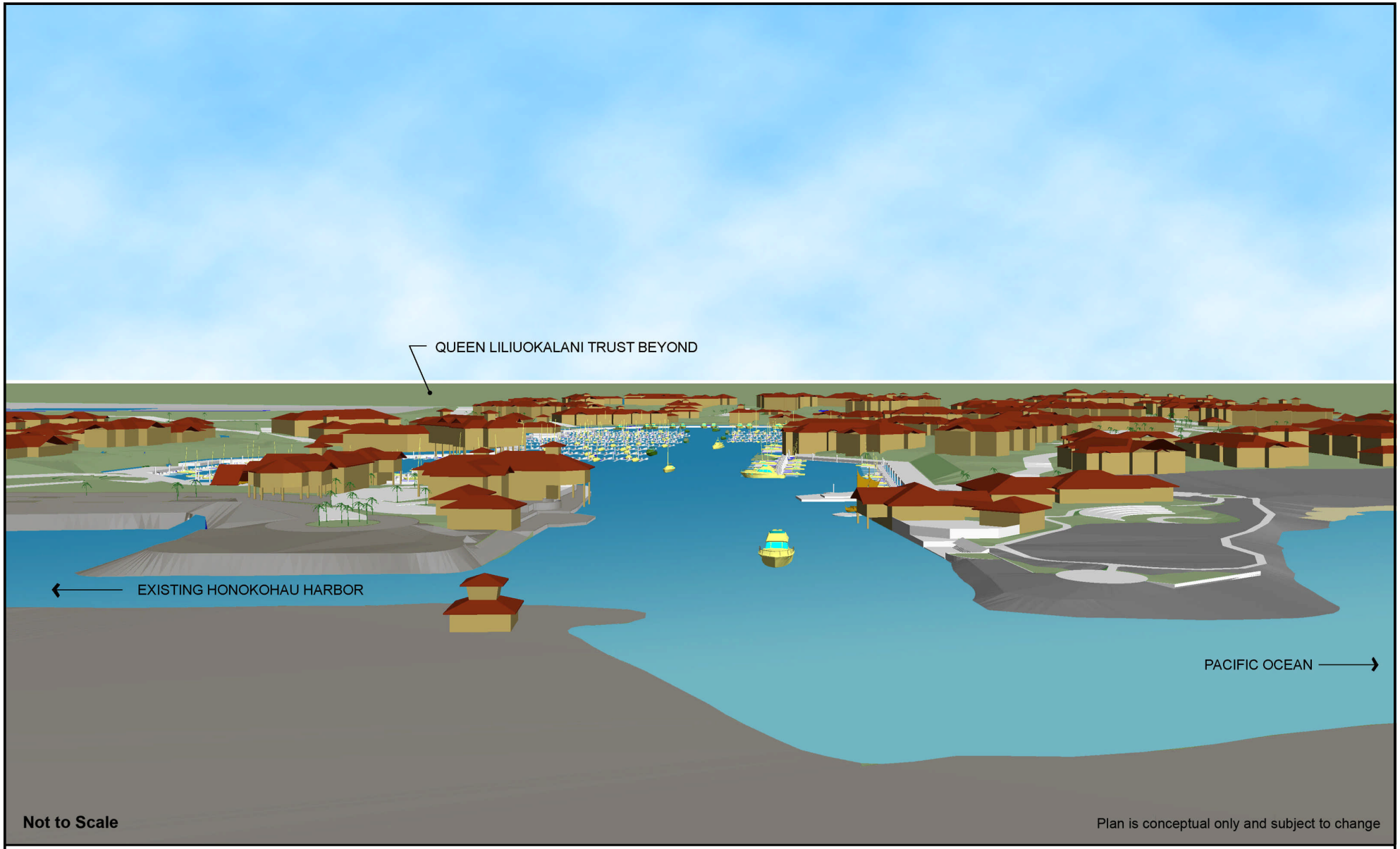

Figure U-3: View from North Side of Honokōhau Harbor Entrance Channel

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- Figure U-4: Close-up view from ocean of the coastline and makai parcels

  The view from the coastline shows a lava field that gently slopes up towards the Highway. As part of the development proposal, Kona Kai Ola's goal is to provide public shoreline access and connections to the coastal trail system. Greenways will be provided between the makai development parcels to preserve and complement the existing natural landscape. Within these wide areas will be vehicular access for public parking, passive recreation facilities such as barbecue and picnic facilities, and comfort stations to service users and hikers on the coastal trail system, which is being designed to be made part of the Ala Kahakai National Historic Trail system. They will also serve as view channels to the ocean from mauka areas of the Project. Mauka views from the shoreline are important view planes that are being maintained as part of this development.

- Figure U-5: View of the project from the ocean

  This gives an overall view of the entire project. The existing landscape is a barren lava field having the existing wastewater treatment plant and existing harbor and support buildings as the only developed areas. The National Historical Park and existing entry channel to Honokōhau Small Boat Harbor are to the left, with Alula Beach on the coast.

  The site gently slopes down from the highway to the ocean. The dark gray area at the coastline indicates a 400' shoreline setback, which will be left undeveloped with the exception of a coastal trail system. From the coastal trail, two lateral greenbelts provide public access to the shoreline and coastal trail system. Originating in Kailua-Kona, the coastal trail system will continue towards the Kaloko-Honokōhau National Historical Park, past the project site and cove beach, and terminate at the proposed Cultural Museum and park, with anchialine ponds and a heiau. As part of the marina development, water taxis will shuttle pedestrians across the marina, from the makai to the mauka. Pedestrian-friendly paths are integrated throughout the project to connect the development parcels with the commercial areas and the marina promenade. The existing wastewater treatment plant is seen in the background and will be buffered by a landscaped berm.

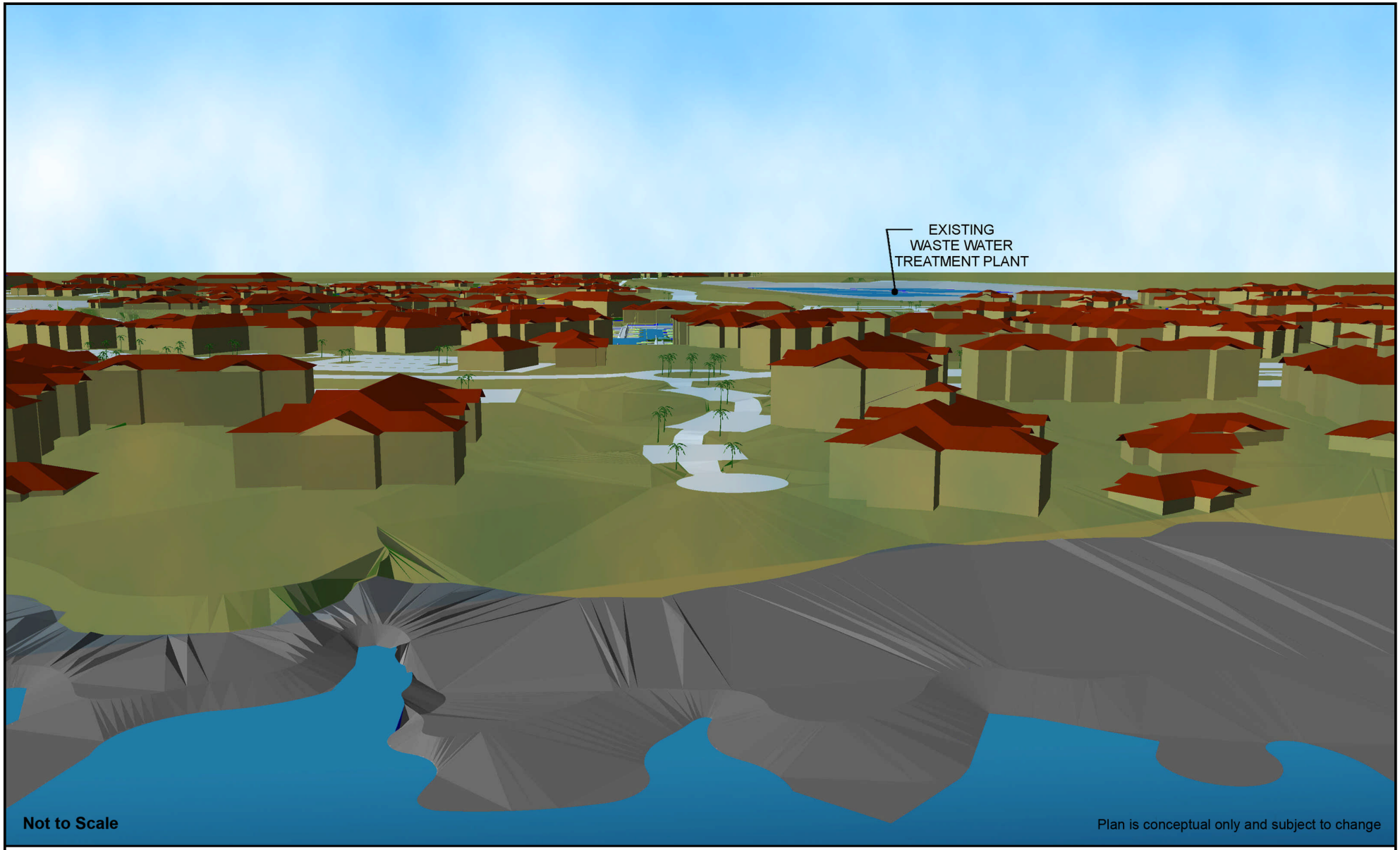

Figure U-4: Close-Up View from Ocean of the Coastline and Makai Parcels

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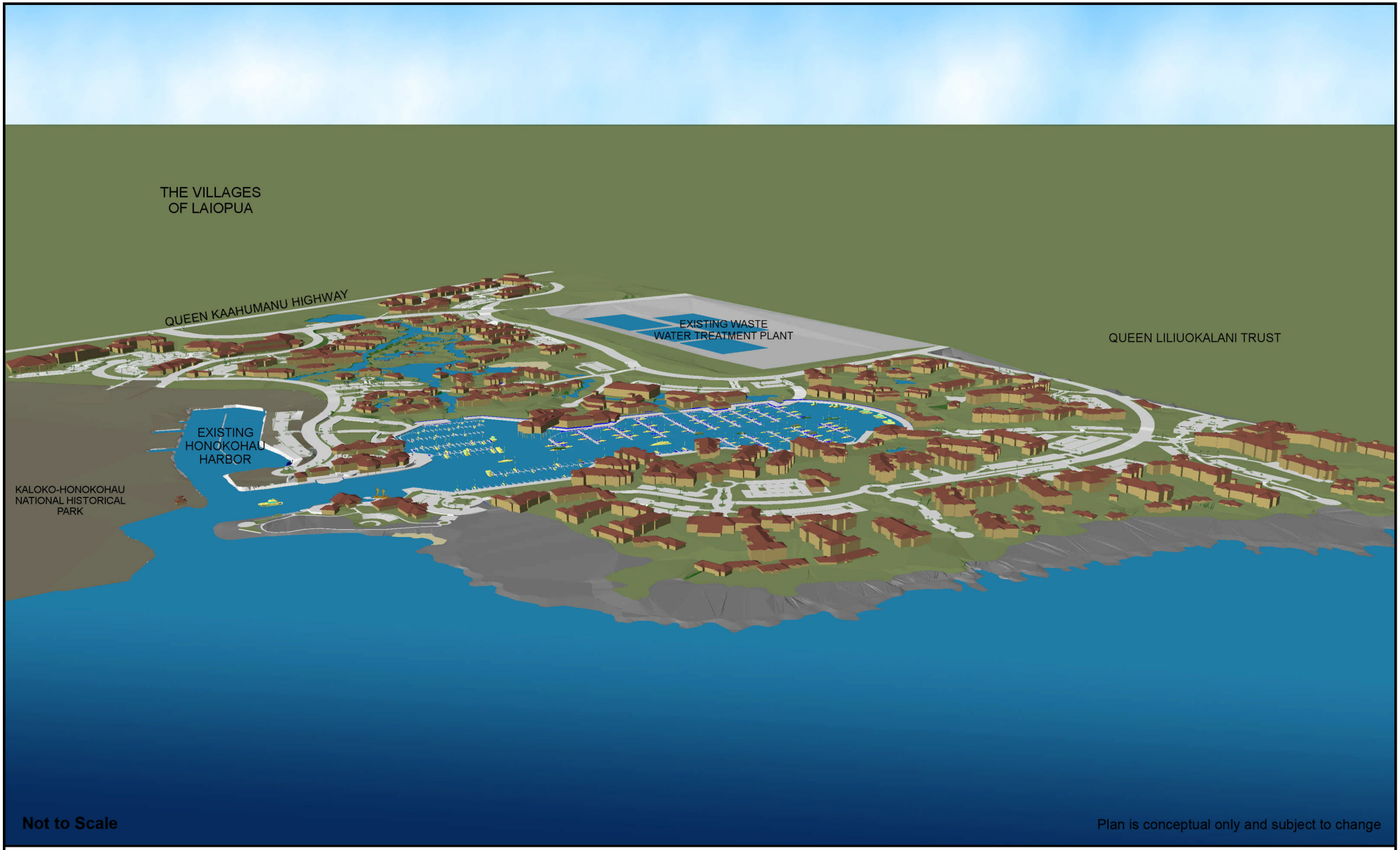

Figure U-5: View of the Project from the Ocean

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Attachment 3

The increased level of fisheries knowledge has spawned an atmosphere of stewardship in the general charter-boat fishing community. With catch and release programs returning upwards of 40 percent of the Kona catch back to the ocean there is an obvious awareness that the value of catching the fish is often far greater than the value of selling it. It is ~~recommended~~ proposed that facilities and programs to foster continued stewardship, fisheries science, tracking of all fish catch, and educational programs be implemented in the design of the new marina facilities.

The proposed marina, marina support facilities, public marina promenade, fishing club, and marine science center will provide a venue for implementing the following efforts:

- Efforts to promote tag and release will be fostered through public education and the implementation of more "Catch and Release – Only" tournaments.
- Promote management through catch limits to possibly include slot weight catch limits, ~~ie.~~i.e. must tag & release animals between 250–950 pounds
- Promote various other stewardship measures relating to fisheries conservation.

~~3.9.5~~3.9.4 Marine Mammals and Sea Turtles

In addition to water quality, which is discussed in Section 3.9.1.3, other environmental impacts that may affect marine mammals and sea turtles include noise and vessel collisions. The following sections describe existing conditions, potential impacts and suggested mitigations to prevent negative impacts to marine mammals and sea turtles from noise and vessel collisions.

~~3.9.5.1~~3.9.4.1 ~~Existing Conditions~~Affected Environment

A number of marine mammal and turtle species are found in Hawaiian waters near the Kona Kai Ola project site. Detailed information on the abundance, behavior, threats to the species, hearing ability and vocalization data is provided for all species in Appendix S. Data on the most prevalent endangered species and species of particular interest are summarized here.

Humpback Whales: The population of h~~H~~umpback whales (*Megaptera novaeangliae*) around Hawai'i was estimated to be between ~~are mammals and belong to the baleen whale suborder, *mysticeti*. An estimated~~ 4,500-6,500 in 2000 ~~whales migrate between subpolar Alaska and Hawai'i each year~~ (Mobley et al 2001). The population growth rate between 1993 and 2000 is estimated to be seven percent indicating that the population is recovering from its dramatic reduction due to commercial whaling. It is worth noting that this is considered a high rate of increase for a mammalian species.

The highest densities of animals are found within the 100 fathom isobath. ~~and seek refuge in shallow waters close to shore.~~ Most humpbacks off Hawai'i are found north of Honokōhau in the waters of the Hawaiian Islands Humpback Whale National Marine Sanctuary. Nevertheless, they are commonly seen off Honokōhau in winter months. Humpbacks are not deep diving animals. Whales in Hawai'i typically dive to less than 100 feet, although occasional deeper dives are possible (Hamilton et al. 1997)The whales breed and give birth while in Hawai'i during the winter months, and migrate north to feed each spring.

~~Humpback whales found in Hawai'i's waters are part of a global population of Humpback whales that was reduced by over 250,000 individuals, or 90 percent, due to hunting (Johnson et al 1984). In 1966, the International Whaling Commission instituted a moratorium on all hunting of whales globally, and populations have begun to rebound. The North Pacific population of humpback whales, with a population of approximately 15,000 prior to hunting, is recovering from an estimated low of 1,000 individuals (Rice 1978, Johnson et al 1984). Humpback whales are also protected under the Federal Endangered Species Act. It is estimated that Hawai'i's population of Humpback whales is growing by 7% annually (Mobley et al 2001).~~

Congress designated the Hawaiian Islands Humpback Whale National Marine Sanctuary (HINMS) on November 4, 1992, and was followed by the Governor of Hawai'i's formal approval in 1997. The Sanctuary's purpose includes protecting humpback whales and their habitat within the Sanctuary, educating the public about the relationship of humpback whales to the Hawaiian Islands marine environment, managing the human uses of the Sanctuary, and providing for the identification of marine resources and ecosystems of national significance for possible inclusion in the Sanctuary. The sanctuary is approximately four nautical miles north of Honokōhau Harbor.

~~While waters surrounding the main Hawaiian islands constitute one of the world's most important North Pacific humpback whale habitats (Calambokidis et al. 1997), the Sanctuary actually encompasses five noncontiguous marine protected areas across the Main Hawaiian Islands, totaling 1370 square miles. Almost half of this area surrounds the islands of Maui, Lāna'i and Moloka'i. Smaller areas are designated on the North shore of Kaua'i, North and Southeast shores of O'ahu, and Hawai'i's Kona Coast. On Hawai'i's Kona Coast, the Sanctuary encompasses the entire northwest-facing coast, consisting of submerged lands and waters seaward of the shoreline to the 100-fathom (183 meter) isobath from 'Upolu Point southward to Keāhole Point, which is approximately four nautical miles north of Honokōhau Harbor.~~

Whales have very sensitive hearing, so any loud underwater sound has ~~may have~~ the potential to disturb these animals. ~~Vessel collisions are also a concern with whales.~~ Playback experiments have estimated that humpback whales will respond to biologically meaningful sound at levels as low as 102 dB re 1 µPa, a level that is similar to background ambient noise (Frankel et al. 1995). Increases in vessel numbers will lead to an increase in noise from operating boats. However, even at its greatest predicted increase, the median sound level from active boats is not expected to raise sound levels to an intensity that would be considered an impact (Level B take) to marine mammal population (See Appendices T-2 and T-3). Humpback whale song ranges from 20 Hz to over 10,000 Hz, with most acoustic energy typically concentrated in the 100-1000 Hz range. This vocal production and the anatomy of their inner ear indicate that these animals are most sensitive to low-frequency sound (Ketten 1992).

Numerous studies have shown that human activity can affect humpback whale behavior, including vessel activity (Bauer 1986; Norris 1994; Corkeron 1995; McCauley et al. 1996; Scheidat et al. 2004), oceanographic research (Frankel and Clark 2000; Frankel and Clark 2002), and sonar (Miller et al. 2000; Fristrup et al. 2003). If the humpback whale population continues to expand at its present rate (8%/year) it can be expected that greater numbers of whales will extend into waters off the Kona Coast. This is likely to increase the demand for whale watching vessels from the new harbor and this increase will have a negative impact on the whale population expansion. The increase in both the number of vessels and number of whales increases the chance for collisions.

Vessel collisions are also a major concern. The majority of whale strikes occur~~red~~ where whales and boats are most common, such as in ~~and boats watching are common as in~~ shallow waters between Lāna‘i and Maui. In a recent study, three of ~~conducted by NMFS on~~ 22 ~~27~~ recorded whale-vessel collisions ~~strikes~~ in the main Hawaiian Islands ~~, only two were recorded~~ occurred off the Kona coast. (Lammers et al. 2003). That study also found that 14 of the 22 collisions were reported between 1995 and 2003. This observed increase may result from more awareness of the issue, or from the greater number of both whales and vessels in Hawaiian waters. In Hawai‘i, data from 1972 to 1996 reveal at least six entanglements of humpback whales in commercial fishing equipment (Mazzuca et al. 1998). These data also indicate an increasing trend of entanglement since 1992 and a three-fold increase in death and entanglement occurrences related to human activity in 1996.

It is highly unlikely that humpback whales will approach to within the Level A or Level B impact “take” zones created by the explosive blasts of harbor construction. However, the sounds generated by these explosions will be within the frequency hearing range of humpback whales and could potentially be heard by whales between Kona and Maui. Modeling predicts that the maximum sound level two miles offshore the site is less than 150 dB re1 µPa, which is less than the threshold for Level B impacts. As the explosions are planned to occur daily for up to 9 months, the cumulative impact of this noise must be considered if construction is anticipated when whales are expected in the area (December 15 – March 30).~~In one instance, a fishing boat was pulling in a catch and was lifted by a whale. In the other instance, a whale was struck by a dive boat heading towards its diving spot.~~

Dolphins: A number of dolphin species are found in the waters near Honokōhau Harbor. Detailed information on all of these can be found in Appendix S. Spinner dolphins (*Stenella longirostris*) are regularly seen in shallow water and in close proximity to the project site. ~~Spinner dolphins (*Stenella longirostris*), often inhabit waters within Honokōhau Bay and at times intentionally congregate near the harbor channel to take advantage by bow-riding outgoing vessels. "Spinners" common name stems from their habit of leaping clear of the water and twirling in the air.~~ They are the smallest dolphins typically seen in Hawai‘i, with a mature size of 6 feet in length and 160 pounds.

Spinners school in pods of a few animals to ~~100~~ 180 or more, with pod sizes of 1-20 being most common (Östman-Lind et al. 2004). They ~~and show community behavior when~~ feed~~ing in~~ on mesopelagic fish, squid and shrimp in deep water at night, and rest in nearshore shallow waters during the day (Norris and Dohl 1980; Benoit-Bird et al. 2001). ~~when they come near shore to play and rest. On the Island of Hawai'i, Kealakekua Bay is one location of almost daily spinner visits, but they frequent many other bays along the coast and regularly rest in Honokōhau Bay.~~ There are seven primary resting areas along the Kona coast of Hawai'i, including Honokōhau Bay, where spinners are regularly seen near the harbor entrance (Östman-Lind et al. 2004). There is some evidence that the spinner dolphins may be resident to the area (Östman-Lind et al. 2004), making them more susceptible to repeated disturbance.

The hearing ability of spinner dolphins has not been measured. However, hearing of the related striped dolphin (*Stenella coeruleoalba*) was measured between 500 Hz and 160 kHz, with maximum sensitivity at 64 kHz (Kastelein et al. 2003). The hearing response of this single dolphin was less sensitive below 32 kHz than other dolphins. ~~As all marine mammals have very sensitive hearing, any loud underwater sounds have the potential to disturb dolphins as well. Given the sporting habit of spinners and other dolphins of bow-riding ships and small boat wakes, they are apparently not overtly impacted by vessel traffic noises.~~

Despite their limited sensitivity to low frequency sound, spinner dolphins have been shown to be impacted by human activity. Examples include interruption of resting activity and increases in the number of higher energy behaviors (Luna-Valiente and Bazúa-Durán 2006). Numerous studies describe changes in distribution (Haviland-Howell et al. in press) and short-term behavioral changes of dolphins in response to vessel traffic (Bejder et al. 1999; Scarpaci et al. 2000; Gregory and Rowden 2001; Nowacek et al. 2001; Van Parijs and Corkeron 2001; Ritter 2002; Lusseau 2003; Ng and Leung 2003). However, it has been established that for at least one population of bottlenose dolphins, these repeated short-term effects translate into long-term detrimental effects on the affected population (Bejder et al. 2006a; Bejder et al. 2006b).

In Hawai'i, some entanglements of spinner dolphins have been observed (Nitta and Henderson 1993; Rickards et al. 2001) but no estimate of annual human-caused mortality and serious injury is available. A habitat issue of increasing concern is the potential effect of swim-with-dolphin programs and other tourism activities focused on spinner dolphins around the main Hawaiian Islands (Östman-Lind et al. 2004).

Hawaiian Monk Seals: Endangered Hawaiian Monk Seals (*Monachus schauinslandi*, Hawaiian Name: 'Ilio holo I ka uaua) ~~are on the endangered species list . They~~ are rare, but not unknown along the Kona Coast. ~~Fortunately, monk seals are air breathing and spend the majority of their time above water where they are easily observed. If a monk seal is reported observed in the area, Kona Kai Ola would work with relevant agencies to protect the seal.~~ Most monk seals are found in the Northwest Hawaiian Islands, but recent aerial surveys estimated that there are 52 seals in the main Hawaiian Islands (Baker and Johanos 2004). There have been 13 sightings between 2003 and 2006 in the vicinity of Kaloko-Honokōhau National Historical Park (NOAA protected species division data) indicating regular, albeit low-level use of these areas by monk seals. ~~One~~Two birth on the Island of Hawai'i have~~s~~ been reported (Baker and Johanos 2004).

The best population estimates for Hawaiian monk seals (as of 2003) was 1,244 (Carretta et al. 2004). However the population is currently showing a decline that has been continuing since the 1950s (Antonelis et al. 2006).

Underwater hearing in the Hawaiian monk seal has been measured between 300 Hz to 40 kHz. Their most sensitive hearing is at 12 to 28 kHz, which is a narrower range compared to other phocids. Above 30 kHz, their hearing sensitivity drops markedly (Thomas et al. 1990).

Monk seals are very intolerant of human activity and are easily disturbed. When the U.S. military inhabited Sand Island and the Midway Islands and Kure Atoll, the monk seals disappeared until after the military left. Monk seals prefer to be solitary animals (Reeves et al., 2002).

Sea Turtles: Five species of sea turtles are known to frequent Hawaiian waters, with Hawaiian green sea turtles (*Chelonia mydas*) by far the most abundant at 97% of the total numbers, hawksbill turtles (*Eretmochelys imbricata*, 1.7% of total), olive ridley turtles (*Lepidochelys olivacea*, 0.8%), and occasional sightings of leatherback (*Dermochelys coriacea*) and loggerhead sea turtles (*Caretta caretta*, Chaloupka, et al, 2006, from stranding reports). Green sea turtles are the most plentiful large marine herbivore in the world and have experienced a very successful population recovery in Hawaiian waters since 1974 when harvest was outlawed in Hawai'~~i~~i, and 1978 when they became protected under the Endangered Species Act (Balazs, et al. 2004). Both green sea turtles and hawksbills are known to breed and nest on beaches within the main Hawaiian Islands, and have a 25-30 year generation time with a life span of 60-70 years (Balazs et al 2004). Total population numbers of green sea turtles in the Hawaiian archipelago have not been estimated, but the population has at least tripled since the 1970s and may now be approaching the carrying capacity of the islands (Chaloupka, et al. 2006).

Bartol et al. (1999) measured the hearing of juvenile loggerhead sea turtles using auditory evoked potentials to low-frequency tone bursts found the range of hearing to be from at least 250 to 750 Hz. The frequency range that was presented to the turtles was from 250 Hz to 1000 Hz (Bartol et al. 1999).

Most recently, Bartol and Ketten (2006) used auditory evoked potentials to determine the hearing capabilities of subadult green sea turtles and juvenile Kemp's ridleys. Subadult Hawaiian green sea turtles detected frequencies between 100 and 500 Hz, with their most sensitive hearing between 200 and 400 Hz. However, two juvenile green turtles tested in Maryland had a slightly expanded range of hearing when compared to the subadult greens tested in Hawai'i. These juveniles responded to sounds ranging from 100 to 800 Hz, with their most sensitive hearing range from 600 to 700 Hz. The two juvenile Kemp's ridleys had a more restricted range (100 to 500 Hz) with their most sensitive hearing falling between 100 and 200 Hz (Bartol and Ketten 2006).

Adult ~~G~~green turtles are primarily herbivorous often seen on reefs as deep as 100+ feet but much more common in shallower waters. Foraging behavior of green turtles is well documented and in Hawai‘i is typically characterized by numerous short dives (4 to 8 min) in shallow water (typically less than 3 m) with short surface intervals (less than 5 sec) (Rice et al. 1999).Resting periods are characterized by longer dives (over 20 min) in deeper water (4 to 40 m) with surface intervals averaging 2.8 min (Rice et al. 1999). The amount of time that turtles spend foraging versus resting is still largely unknown. Green turtles in Hawai‘i frequently use small caves and crevices in the sides of reefs as resting areas, and spend significant amounts of time on the tops of reefs (Balazs et al. 1987). Green turtles are known to be resident in Kiholo Bay, Hawai‘i (Balazs et al. 2000), and presumably other areas as well, potentially increasing their susceptibility to vessel collision and/or repeated disturbance. Two turtle “cleaning stations” have been reported near the mouth of Honokōhau Harbor. ~~During periods of calm water green sea turtles are often seen over very shallow reef flats where the choicest of algae are to be found. While some turtles may "rest" upon the surface, it is much more common to find them in small caves or wedged between coral heads where they are less subject to shark attacks. Green sea turtles may occasionally be seen far at sea (they nest in French Frigate Shoals in the NW Hawaiian Islands), but they are much more prevalent over the shallow shoreline areas where they forage for food.~~

Vessel collisions and potential noise impacts are a concern with regard to turtles. In a study of 3,861 turtle strandings in the main Hawaiian Islands from 1982 – 2003 (Chaloupka, et al. 2006), boat strikes accounted for only about 2.7 percent of the cases and were almost always fatal (95 percent). Entanglement in gill nets accounted for about six percent of strandings and also had a high rate of mortality (75 perce~~d~~nt). Hook and line entanglement (seven percent of strandings) was much less likely to result in the death of the turtle (52 percent mortality). At least 20 green sea turtles have stranded in Honokōhau Harbor or along the boundaries of Kaloko- Honokōhau National Historical Park. ~~Of all 3,861 strandings recorded in the Main Hawaiian Islands since 1982 only three occurred within 10 miles north or south of Honokōhau Harbor (Balazs, personal communication from NMFS database).~~

Recent increases in longline fisheries may be a serious source of mortality. Greens comprised 14% of the annual observed take of all species of turtles by the Hawai‘i-based longline fishery between 1990 to 1994 (NMFS 1998a). Over the period of 1994 to 1999, it was estimated that an annual average of 40 green sea turtles were caught by the Hawai‘i-based longline fishery (McCracken 2000).

Recent proliferation of a tumorous disease known as fibropapillomatosis (Herbst 1994) may reverse improvements in the status of the Hawaiian stock (NMFS 1998a), although recent modeling suggests that population levels continue to increase despite the disease (Chaloupka and Balazs 2005). The disease is characterized by grayish tumors of various sizes, particularly in the axial regions of the flippers and around the eyes. This debilitating condition can be fatal and neither a cause nor a cure has been identified.

Hawksbill turtles (Eretmochelys imbricate) are observed less often than green sea turtles near Honokōhau. About 20-30 female hawksbills nest annually in the Main Hawaiian Islands (NMFS 1998b). In 20 years of netting and hand-capturing turtles at numerous nearshore sites in Hawai‘i, only eight hawksbills (all immatures) have been encountered at capture sites including Kiholo Bay and Ka‘u (Hawai‘i), Palo‘ou (Moloka‘i) and Makaha (O‘ahu) (NMFS 1998b). It was only recently discovered that hawksbills appear to be specialist sponge carnivores (Meylan 1988). Previously they had been classified as opportunistic feeders on a wide variety of marine invertebrates and algae.

Increasing human populations and the concurrent destruction of habitat are also a major concern for the Pacific hawksbill populations (NMFS 1998b). Hawksbill turtles appear to be rarely caught in pelagic fisheries (McCracken, 2000). However, incidental catches of hawksbill turtles in Hawai‘i do occur, primarily in nearshore gillnets (NMFS 1998b). The primary threats to hawksbills in Hawai‘i are increased human presence, beach erosion and nest predation (*e.g.,* by mongooses) (NMFS 1998b).

~~3.9.5.2~~3.9.4.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigation

A complete analysis of the in-air and in-water potential acoustic impacts from the construction of the Kona Kai Ola small boat harbor was completed by Marine Acoustics, Inc.(MAI) and is included in this document as Appendix T-3. In conducting this analysis, the best available scientific, environmental, geologic, and meteorological data were obtained and used to calculate the acoustic transmission loss (TL) and subsequently to predict the received levels (RLs) at the five receiver sites. State of the art acoustic propagation models were employed in this analysis to determine in-air and in-water TL. MAI used the Acoustic Integration Model© (AIM©) to assess the impact of the predicted acoustic sound field on the species of marine mammals that could conceivably occur near the Kona Kai Ola project site.

The conclusion of that report determined that the criteria for Level A impacts to marine mammals for either in-air or in-water conditions at the receiver sites were never exceeded for the model source and receiver locations for non-blasting activities. However, these thresholds could be exceeded by the explosive blasting used to create the new harbor. For both in-air or in-water acoustic propagation, this only occurred when an animal was within about 200 meters (656 ft) of the explosion, This condition could only occur when the explosive source was at locations farthest north in the new harbor and closest to the existing harbor. This condition mandates that a safety range out to at least 200 meters (656 ft) of the source be shown to be clear of all marine mammals and sea turtle prior to each blast to preclude potential Level A takes.

The MAI report indicated that the in-air RLs for the explosive sources would exceed the assumed 100 dBA threshold for Level B harassment of pinnipeds (seals) for ranges out to about 0.4 nm (i.e., 800 yds [731 m]). This threshold is nominally for pinnipeds, but it should be extended to surface resting marine mammals and basking or beached sea turtles. Therefore, an in-air safety buffer of at least 731m from any explosive source is proposed, that should be maintained and found clear of marine mammals and basking or beached sea turtles prior to any blasts. It should be noted that although a receiver site was not modeled specifically in the existing harbor, that area is often within the range of this safety buffer and that extra care should be taken to ensure that no marine mammals or sea turtle are in the existing harbor prior to any blast. Analysis of the most restrictive Level B in-water explosive threshold shows that it is only exceeded when an animal is closer than 300 m (984 ft) from the explosive source.

Although the possibility exists for Level B impacts to marine mammals, based purely on the sound fields produced by the explosive blasts, analysis is the marine mammal distribution and movement as predicted by the AIM model, indicates that this is very unlikely situation. Therefore, it is expected that there will be much less than 0.5 Level B takes, with or without mitigation. But the mitigation safety buffer must still be enforced to preclude the unlikely possibility of marine mammals or sea turtle being near the explosive sources when they are used.

It should be recognized that several mitigation measures are already built into the proposed project. For example, the proposed practice to maintain a rock "dam" separating the construction site from the existing harbor reduces acoustic energy propagating to area potentially containing marine mammals or sea turtles. Also, this dam precludes animals from entering the construction area. This dam or land-bridge will be in place for all drilling and dredging activities, except for the removal of the land bridge itself.

Several other possible methods of mitigation are available to the Kona Kai Ola project, and feasibility, practicality, and benefit will be discussed with the National Marine Fisheries Service (NMFS) during consultation, and may be implemented subsequent to that consultation. The first possible mitigation technique is to acoustically monitor the potentially impacted areas during construction to: a) assess the accuracy of the modeling and b) to interact proactively with construction personnel to ensure that the identified threshold levels are not exceeded. Although the best available science and data was used to model the acoustics of the area, numerous conservative assumptions needed to be built into the modeling. By monitoring the actual levels received, in-situ corrections/updates to modeled parameters could potentially reduce the built--in conservativeness and reduce the potentially impacted areas. For example, the modeling assumes that all of the small voids in the bedrock are water-filled and therefore impart minimum attenuation on the acoustic signal as it propagates through. If even a small percentage of the voids are gas-filled, this attenuation would increase greatly and the impacted area would be reduced.

Another possible mitigation technique would be to augment the land-based visual observer, who it is assumed would verify that the area was clear the animals, with boat-based observers. This would increase the effectiveness of recognizing the presence of marine mammals and sea turtles in the potentially affected areas.

Additionally, interactions with the construction teams to alter the blasting methods modeled could potentially mitigate and reduce acoustic impacts to marine animals. A blasting expert will be consulted to develop a discontinuous non-linear blasting plan that will optimize cancellation of the explosion pressure wave into the marine environment. Examples of possible changes include: reducing charge size, reducing the depth drilled and blasted during any blast, reducing the number of blast holes or the volume of each blast, etc. The combination of these techniques with acoustic monitoring could potentially allow a large portion of the northern third of the harbor to be excavated with little or no potential impact to marine animals.

Interactions with NMFS during the consultation period will be used to examine these or any other techniques which may be identified. Also, the project is requesting help in identifying any possible method known to NMFS to establish and maintain turtle exclusion areas, especially in the existing harbor, without harassing the turtles. It may become apparent during those consultations that even with the identified buffer zones and mitigation techniques that an Incidental Harassment Authorization (IHA) is required, especially for the northern third of the proposed harbor.

Marine Acoustics, Inc. also completed a study of the expected ambient noise levels in Honokōhau Bay as a result of the increased vessel traffic from the expanded harbor. This report is included in this document as Appendix T-2. That report concluded that the average maximum daytime ambient noise levels would be expected to increase about 9.7 dB across the frequency spectrum from 100 Hz – 2 kHz, with the quadrupling of the vessels using the expanded harbor (i.e., the proposed action). Although significant, this increase would occur primarily during daylight hours, and the predicted median ambient noise would still be below 100 dB for all frequencies. The other significant factor is that there will be a quadrupling of the number of localized (i.e., small) individual sound fields in the area. These sound fields surround the individual boat that are contributing to the overall ambient noise. Noise levels in excess of 120 dB extend out to about 550 m (1804 ft) from these boats, with even high levels at closer ranges. Short of actual collisions with animals, Level A impacts are unlikely for noise levels typically generated by small boats. The Level B threshold nominally extends to approximately ten meters around each boat (depending on equipment such as size of motor, conditions of propeller and other equipment). Therefore potential Level B impacts to marine mammals and sea turtles would only occur within this range. Therefore, the chance for potential Level B impacts is small.

Completion of the harbor expansion project will increase the vessel traffic crossing the Hawaiian Islands Humpback Whale National Marine Sanctuary, the southern boundary of which is approximately four nautical miles north of Honokōhau Harbor. At a time when the whale population is growing, an increase of vessel traffic may increase the likelihood of vessel-whale collisions. Related to vessel traffic, an increase in whale watching activities is also likely. Vessels participating in these activities directly seek out higher whale population densities, increasing the likelihood of collisions, but also having the potential for disrupting whale behaviors such as resting, courting, mating or birthing.

As noted earlier, however, of the ~~27~~ 22 recorded whale strikes in the main Hawaiian Islands, only ~~two~~ three were recorded off the Kona coast. Sanctuary managers may need to implement additional regulations for private and/or commercial activities directly involving whale encounters. Mariner education programs, already in place as part of Sanctuary operations, will help to mitigate possible impacts due to increased boaters, and the proposed marine science center will complement Sanctuary educational programs.

~~Impacts to turtles may occur during construction of the marina. Since most of the marina will be excavated in a land-locked condition, turtles will not be subject to any potential harm from excavation. Experience during construction of the Ko Olina lagoons, and the expansion of the Barber's Point Harbor on O'ahu indicate that turtles abandoned their offshore (30-100 ft depth) resting habitats and concentrated in very near shore waters adjacent to the harbor and, at times, even within the active construction areas as soon as blasting and excavation began. Although no turtle injuries or mortalities were reported during either of those harbor construction activities, this should serve as a cautionary example for future coastal construction activities.~~

An increased level of impacts to turtles from increased boating and fishing activities may occur. ~~The level of impact documented by National Marine Fisheries Service is limited to only three turtle mortalities confirmed, since 1982, from a total of 3,861 strandings throughout the Main Hawaiian Islands~~. Of the 3,861 turtle strandings recorded from the Main Hawaiian Islands since 1982, 75% were mortalities, and of these about 4% (~est. 116, from Figure 3 of Chaloupka, et.al.) were from boat strikes and 3 of these occurred within 10 miles of Honokōhau Harbor. Data from NPS staff at the adjacent Kaloko-Honokōhau National Historical Park show a total of 20 strandings within the parking (19) and harbor (1) between 2000 and 2006 with one attributed to boat strike and 6 to fishing gear entanglement. Eleven additional gear entanglements and one additional boat strike were also recorded but not listed as strandings. Human caused impacts from fishing and boat strikes are anticipated to increase as turtle populations continue to increase and boating /fishing activities increase with the expanding harbor.

~~It would appear that anthropomorphic impact to turtles from boat strikes and fishing activities is very low along the Kona Coast adjacent to the existing harbor. It is likely that this is due in part to the relatively steep ocean bottom that limits the habitat of the turtles to the very nearshore areas away from the areas of heavy boat traffic~~. Recognition by the general public that sea turtles are protected ~~also~~ puts a heavy social pressure on fishermen who may inadvertently catch a sea turtle, and is likely a factor in the recovery of this species. Although no adverse impacts to turtles have been documented within the existing harbor, the close proximity of boats and turtles in this environment is cause for concern.

~~During land-based construction of the marina, no mitigation is necessary as previous experience has shown that turtles are not adversely impacted by these activities.~~ Once the land bridge is open, ~~however,~~ it is highly likely that turtles will be attracted into the new harbor and be subject to potential harm from in-water construction of piers or other facilities. During this period of time and until the harbor is operational, ~~it is recommended that a~~ mesh barrier will be ~~is~~ erected across the new harbor channel to exclude turtles from the inner basin. The mesh size needs to be selected in consultation with ~~regulatory~~ NMFS ~~agencies~~ to make sure it does not entangle turtles.

As the new harbor area will ~~likely~~possibly attract turtles to the basin (similar to the existing harbor) and an increase in boat traffic is expected in the harbor channel there will be an increased possibility of turtle strikes within the channel and new harbor area. To minimize this possibility it is ~~recommended~~ proposed that educational signs be erected around the harbor describing the turtles and warning boaters to be cautious while traversing harbor channels. The slow no-wake lane in the entrance channel should also be strictly enforced and the State should consider extending the slow no-wake zone further out to the first green buoy.

~~As all marine mammals have very sensitive hearing, any loud underwater sounds have the potential to disturb these creatures. Potential underwater acoustics may impact marine mammals and sea turtles during construction activities, such as blasting and pile driving. Appendix Q contains a study of underwater noise impacts during the construction and operation of the proposed project.~~

~~To mitigate impacts related to noise generated by construction activities, such as blasting and pile driving, a program to monitor sound levels and the presence of marine mammals and sea turtles will be implemented. Construction activities will be adjusted if whales, monk seals, dolphins or sea turtles are in the vicinity. Further, keeping the land bridge closed to the ocean until all major pile driving and blasting are completed will further avoid adverse impacts.~~

~~Increased boat traffic will result in increased low intensity sounds in the harbor area and along transit routes. The ecological role played by anthropomorphic sound in the marine environment has recently received heightened awareness. Evidence from declassified Department of Defense ocean recordings off of San Diego show that background sound levels off-shore of the harbor have increased approximately ten-fold in 30 years. Much of this increase in sound level has been ascribed to large ship traffic. While intense sound levels can adversely impact marine mammals and potentially other species, this level of sound pressure has not been shown to be produced by the small boats envisioned to occupy the new marina.~~

~~Adverse impacts of lower intensity noise, such as from small boat engines, have been very difficult to quantify. No definitive information is available to determine the level of impact produced by increase in small boat generated noise on fish, marine mammals and sea turtles. Given the sporting habit of spinners and other dolphins of bow-riding ships and small boat wakes, they are apparently not overtly impacted by vessel traffic noises.~~

~~However, boat-generated noises can be reduced by slowing boats to "slow-no-wake" in the main traffic lane of the entrance channel. The State could also consider extending the "slow-no-wake" lane out to the first green buoy. Appropriate signage to enforce these requirements is recommended.~~

~~3.9.6~~3.9.5 Ciguatera

Attachment 4

8 Cumulative Impacts

In general, West Hawai‘i is expected to continue to change with more urbanized uses being introduced to the region. West Hawai‘i’s population is forecasted to increase by 37 to 53 percent by 2020. It is expected that the economy will continue to be driven primarily by growth in the visitor industry and associated recreational real estate. ~~and~~ West Hawai‘i is expected to continue to attract most of the island’s visitors. Visitor units and tourism related employment are expected to experience corresponding increases.

The project is located in the midst of major changes due to development, and the projects nearest Kona Kai Ola are as follows:

Kula Nei Project: Located approximately 2.5 miles northeast of Kona Kai Ola, the Kula Nei project is on approximately 150 acres. The Shopoff Group is proposing to develop the property for low density residential development which would consist of about 270 residential units of which up to 220 single-family home sites that would include affordable housing units. The project published its Environmental Impact Statement Preparation Notice in November of 2006.

Kaloko Heights: The proposed Stanford Carr Development project is on approximately 400 acres of land approximately two miles northeast of the Kona Kai Ola project. The proposed development is for 1,500 residential units including affordable and moderately priced homes, and would include a five-acre commercial project.

Palani Ranch: Currently in its conceptual long-range planning, the Palani Ranch Co., Inc. owns approximately 500 acres of land approximately 1.6 miles east of the Kona Kai Ola project.

Villages of La‘i‘Ōpua: Less than a mile east of the Kona Kai Ola project is the 1,015 acre master-planned community that would include about 4,000 plus single-family and multi-family residential units, recreational facilities, and community and neighborhood commercial complexes. DHHL owns approximately 980 acres within the villages. The project consists of 14 different villages. Villages 4 and 5 are the next phases of development and would create approximately 300 lots including single-family homes. Additional Villages are planned for the future.

University of Hawai‘i Community Colleges: The University of Hawai‘i Center at West Hawai‘i is planning and designing of a University of Hawai‘i Community Colleges on land just east of the Kona Kai Ola project.

West Hawai‘i Business Park/Kaloko-Honokōhau Business Park: Lanihau Partners L.P. is proposing the development of approximately 330 acres of land just northeast of the Kona Kai Ola project. The proposed use of the site is for light industrial, business and commercial. Phase 1, 100 acres for industrial/mixed use and 100-plus acres for general industrial zoning use (quarry and related), and Phase 2, about 80 acres for industrial/mixed use, are estimated to be completed in 2012. Phase 3, about 40 acres designated for industrial/mixed use, is anticipated to start in 2011 through 2015 in conjunction with the Phase 2 development.

Kaloko Industrial Park, Phases III & IV: Less than a mile northeast of the Kona Kai Ola project is the approximately 233 acre Kaloko Industrial Park developed by TSA International, Limited. The proposed development is light industrial and industrial-commercial mixed use. Phase III and IV would consist of approximately 102 acres and will provide 82 lots. Phases I and II approximately 130 acres of area consisted of 85 lots been completed.

West Hawai'i Hospital: Planned Medical Community 21st Century is in the process of planning a new hospital on 35 acres immediately east of Kona Kai Ola project, in the Villages of La'i'Ōpua Village 8. Construction is estimated to take place between 2008 and 2013.

West Hawai'i Civic Center: Located less than a mile east, the County of Hawai'i's West Hawai'i Civic Center is located on seven acres of County land located in the Villages of La'i 'Ōpua. The civic center would be the County's one-stop service center that would include meeting rooms, motor vehicle registration, driver's licensing, offices for Real Property Tax, Department of Planning, Department of Public Works, Office of Aging, the Mayor's Office, the County Council office, Liquor Control and the Department of Parks and Recreation. Construction for the first phase was to begin in 2006.

Palamanui Development: Located near the Kona International Airport at Keahole, the Hiluhilu Development LLC proposes to develop a 725.2 acre parcel northeast of Kona Kai Ola. Palamanui will provide approximately 845 housing units (residences for the University of Hawai'i's West Hawai'i Campus and the community), a cultural center, commercial areas, an 18-hole golf course, athletic fields and medical wellness facilities.

Queen Lili'uokalani Trust: The Queen Lili'uokalani Trust owns land south and southeast to the Kona Kai Ola project. The 3,500 acres of land is a mix of both developed and undeveloped lands. Undeveloped entitled lands include 100 acres of mixed use, light industrial and commercial zoned and 20 acres of general commercial zoned.

Kona International Airport at Keāhole: Located 3.4 miles north of the Kona Kai Ola project is the Kona International Airport at Keāhole on approximately 4,422 acres of land, of which about 322 acres are leased to the Natural Energy Laboratory of Hawai'i and 421 acres to the Hawai'i Ocean Science and Technology Park. Plans for the airport include runway expansions and additional support facilities such as public parking, postal facilities, warehouses, and other facilities to meet the airport's growth needs. Expansion construction is expected to continue into 2015.

Kalaoa/Airport Properties: DHHL has preliminary plans for approximately 483 acres of land three miles north of the Kona Kai Ola project. Preliminary plans based on the Hawai'i Island Plan included 230 acres for general agriculture use, ten acres for commercial use; seven acres for community use, 100 acres for industrial use, and 136 acres for residential use.

Lokahi Subdivision: Located approximately 1.5 miles northeast of Kona Kai Ola is the Lokahi Subdivision proposed development by Westpro Development, Inc. The proposed development on an area of approximately 68 acres of land would include 190 lots for residential with park and related amenities. .

Kohanaiki Golf and Ocean Club: A project by the Rutter Development Corp./ KW Kohanaiki, LLC., is on approximately 450 acres of land approximately 1.5 miles north of the Kona Kai Ola project. The proposal project includes up to 500 homes, golf course, and clubhouse.

In addition to development projects, there are several proposed infrastructure improvements, as follows:

- Water
  - North Kona Water Source Development, Transmission and Storage for the Villages of La‘i‘Ōpua;
  - Palani Road to Keanalehu Drive Transmission Line for Villages of La‘i‘Ōpua;
  - Kealaka‘a Street to Keanalehu Drive Transmission Line for Villages of La‘i‘Ōpua;
- Sewer
  - Sewer along extension along Keanalehu Drive for Villages of La‘i‘Ōpua;
  - Electrical Substation with in the Villages of La‘i‘Ōpua;
- Roads
  - Keanalehu Drive Extension to Manawale‘a Street~~:~~;
  - Ane Koehokalole Highway Extension to Henry Street~~:~~;
  - Keanalehu Drive Extension to Palani Road~~:~~;
  - Kealakehe Parkway to Kealaka‘a Street Extension~~:~~;
  - Kealakehe Parkway / Queen Ka‘ahumanu Highway Intersection~~:~~;
  - Kealakehe Parkway Extension to Kuakini Highway~~:~~;
  - Queen Ka‘ahumanu Road Widening~~:~~;
  - Kamanu Street Extension to Kealakehe Parkway~~:~~;

~~Several other projects are anticipated to be forces for change in West Hawai‘i. Kona International Airport at Keāhole is planned for runway expansions and ancillary support facilities to meet growing airport needs projected for the next 15 years and areas for various commercial and industrial uses supporting airport activities are planned in three phases to the year 2015 and beyond. DHHL is proposing to make available 200 residential units in Kealakehe La‘i ‘Ōpua Village 4 and plans to build 376 residential units in Keahuolū Subdivisions. Lanihau is a proposed 336-acre business park with mixed light industrial and commercial uses with retention and expansion of an existing quarry and quarry related facilities. It intends to add approximately 250 industrial lots to the region over the next ten years. The Queen Lili‘uokalani Trust owns 3,500 acres in the Keahuolū ahupua‘a in the area adjacent to Kailua-Kona and just south of the proposed Kona Kai Ola development. Present developed areas include three shopping centers, a mature light industrial park and a residential low-rise condominium, and further development is anticipated.~~

~~To the north of the Kaloko-Honokōhau National Historical Park is Kohanaiki, a residential community that is being developed which includes 500 residences and a golf course. In the mauka areas of this part of North Kona, there are additional residential developments being planned.~~

Kona Kai Ola will be part of this overall context of change and growth. The most apparent cumulative change in the socio-economic environment is the visual impact of more urbanized areas replacing underdeveloped or vacant land. There will be an increase in visitor and resident populations, although Kona Kai Ola will not contribute significantly to resident population. Also expected are increases in housing and visitor units, more commercial establishments, more jobs, and more business opportunities.

As the region continues to develop, archaeological and cultural resources will be affected and evaluated for appropriate mitigation. The pressure for recreational areas and facilities will increase and the need for shoreline access will continue. The demand for increased public services, including schools, police and fire protection, and medical services, will increase.

The regional cumulative effects on the physical environment include the site-specific changes in topography and the increase in impervious surfaces which could affect regional drainage. There will be a change in flora and fauna habitat, and the ocean~~,~~ and ~~ponds~~ pools may be subject to runoff and pollution. Ocean habitats and the marine environment may also be affected by the increased number of resident and visitor users, more boats, and land-based runoff and activities.

Construction of the Kona Kai Ola project will also potentially add to the short-term cumulative underwater acoustic impacts related to land-based construction effort (i.e., the construction of buildings, roads and the infrastructure to service them) and, more importantly, the construction of the 45-acre, 800 boat slip harbor. Potential impact marine mammals and sea turtles, mitigation techniques will be employed to minimize these acute affects. Overall, the trend of development in the Kona area means increased anthropogenic noise.

The cumulative development will result in increased vehicular traffic, and the need for roadway improvements and alternative modes of transportation will increase. As the region continues to develop, noise levels may increase above current conditions, as more vehicles and new roadways, more structures, and generally increased human activity characterize the region. Emissions from cars and electricity-generating facilities will increase air pollution.

Infrastructure facilities will also be affected by cumulative development. The overall demand for potable water will increase with population growth. Wastewater flows will increase, and the North Kona Sewer Master Plan is being developed for Hawai'i County to address future sewer improvements. Solid waste disposal will also increase with the cumulative growth.

While the project will increase socio-economic and environmental impacts and demands on infrastructure systems, Kona Kai Ola will reduce or mitigate its impacts within the context of larger cumulative impacts. In working towards sustainability objectives, JDI intends to incorporate the latest environmental design and technology to create an energy efficient, low environmental impact, sustainable development at Kona Kai Ola. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality, as discussed in Section 1.5.2 ~~(LEED 2006)~~. ~~JDI's~~ Kona Kai Ola impacts on public infrastructure and utilities will be mitigated as proposed in this ~~D~~FEIS, and various measures are presented to reduce impacts related to the physical environment.

Further, the project includes components intended to serve the existing and future visitor and resident population, including a new marina. Shoreline access will be enhanced by a new ~~4~~00-foot shoreline setback, various parks, including a canoe launching area, a marine science center and other recreational features. On-site commercial areas will expand shopping alternatives. Further, the extension of Kuakini Highway that is part of project implementation will help to mitigate project and cumulative traffic impacts.

In addition, JDI ~~will~~ is in the process of establishing the Kona Kai Ola Community Foundation as a 501(C)(3) non-profit corporation to promote community efforts such as community development, community health care, job training, educational and cultural programs and projects. The primary target service population includes North Kona, and Hawai'i Island residents with a focus on native Hawaiians. JDI ~~will~~ has contributed $100,000 as initial funding. Ongoing financial support is to be provided by the land users of the Kona Kai Ola Project. The resources from this foundation can be used to address cumulative needs and efforts.

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Attachment 5

2 Alternatives Analysis

~~In typical land development projects, the initial planning process includes the exploration of alternatives to development objectives. In the EIS process, these alternatives are presented with a disclosure of reasons for the dismissal of non-preferred alternatives.~~

~~Kona Kai Ola does not follow this same pattern of alternatives evaluation.~~ As discussed in Section 1.4, the proposed Kona Kai Ola project is the result of agreements between JDI and the State DLNR and DHHL. The agreements and leases between the State and JDI stipulate the parameters of development for this site in terms of uses, quantities and size of many features, resulting in a limited range of land uses. Unlike a private property project, JDI is required to meet the criteria outlined in the agreements, thereby affording less flexibility in options and uses. From the developer's perspective, the agreements must also provide sufficient flexibility to allow for a development product that responds to market needs and provides a reasonable rate of return on the private investment.

The agreements between JDI and DLNR specify that the proposed harbor basin is to be 45 acres and accommodate 800 slips. This development proposal is the subject of this EIS. In response to DEIS comments, additional water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor. Comments on the DEIS from DLNR, from other government agencies, the neighbors and the general community also called for the consideration of alternatives in the EIS, including a project with a smaller harbor basin and less density of hotel and time-share units.

In response to these comments on the DEIS, three alternatives are evaluated in this Final EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin including a decrease in hotel and time-share units; Alternative 2, which is an alternative that had been previously discussed but not included in the proposed project, that includes an 800-slip harbor and a golf course; and Alternative 3, the no-project alternative. Each alternative is included in the EIS with an evaluation of their potential impacts. These project alternatives are presented to compare the levels of impacts and mitigation measures of the proposed project and alternative development schemes pursuant to requirements set forth in Chapter 343, HRS.

~~JDI is required to provide a new marina basin not less than 45 acres and a minimum of 800 new boat slips. Further, the agreements provide the following options for land uses at the project site:~~

- ~~Golf Course~~
- ~~Retail Commercial Facilities~~
- ~~Hotel Development Parcels~~
- ~~Marina Development Parcels~~
- ~~Community Benefit Development Parcels~~

~~JDI is not pursuing the golf course option and is proposing instead to create various water features throughout the project site. All other optional uses have been incorporated in Kona Kai Ola.~~

2.1 Project Alternatives

2.1.1 Alternative 1: 400-Slip Marina

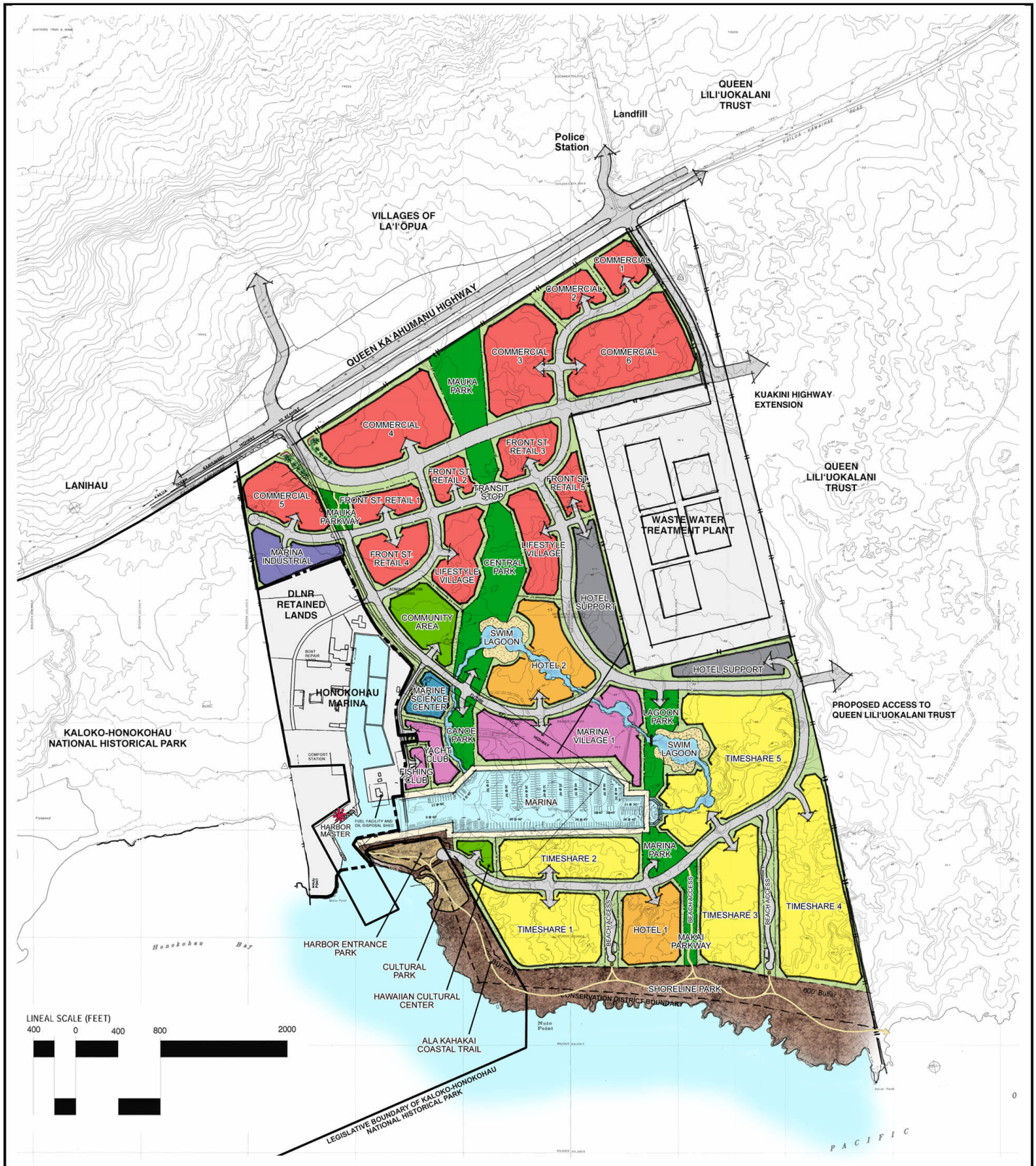
Studies conducted in response to DEIS comments found the construction and operation of an 800-slip marina may significantly impact the water quality within the marina and along the shoreline. Specifically, the Harbor Water Quality Modeling Study, as contained in Appendix U, found that the water circulation in a 45-acre 800-slip harbor was insufficient to maintain an acceptable level of water quality. Further, the existing harbor channel, which would serve both the existing and new harbors, could not adequately serve the increased boat traffic generated by an 800-slip marina during peak traffic. Mitigation measures to accommodate peak boat traffic included the widening of the existing channel, an action that would entail a complex process of Federal and State approvals and encounter significant environmental concern.

Concerns related to the proposed density of hotel and time-share units were also expressed in comments to the DEIS from members of the public, neighbors to the project site, especially the Kaniohale Community Association, and government agencies. Common themes in DEIS comments were related to impacts regarding traffic, project requirements of potable water and infrastructure systems, including sewer, drainage, utility and solid waste systems, and socioeconomic impacts.

In response to the water quality study results, and to the DEIS comments, an alternative plan was developed with a smaller marina with less boat slips, and a related decrease in hotel and time share units. Illustrated in Figure G, Alternative 1 reflects this lesser density project, and features a 400-slip marina encompassing 25 acres. For the purposes of the Alternative 1 analysis, JDI assumed 1,100 time-share units and 400 hotel rooms. Project components include:

- 400 hotel units on 34 acres
- 1,100 time-share units on 106 acres
- 143 acres of commercial uses
- 11 acres of marina support facilities
- 214 acres of parks, roads, open spaces, swim lagoons and community use areas

In addition, Alternative 1 would include the construction of a new intersection of Kealakehe Parkway with Queen Ka'ahumanu Highway, and the extension of Kealakehe Parkway to join Kuakini Highway to cross the lands of Queen Lili'uokalani Trust, and connecting with Kuakini Highway in Kailua-Kona. This is a significant off-site infrastructure improvement and is included in the agreements between the State and JDI.



Source: PBR HAWAII

Plan is conceptual only and subject to change

Figure G: Alternative 1: 400-Slip Marina

LEGEND

- TIME SHARE
- HOTEL
- RETAIL / COMMERCIAL
- MARINA RETAIL
- MARINA SUPPORT / COMMERCIAL
- MARINE SCIENCE CENTER
- COMMUNITY AREA / CULTURAL CENTER
- SWIM LAGOON
- MARINA
- UTILITIES
- PARKS & GREEN SPACE
- SHORELINE
- HARBOR ENTRANCE PARK / CULTURAL PARK

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Like the proposed project, Alternative 1 would have a strong ocean orientation, and project components that support this theme would include various water features including seawater lagoons and a marine science center. The new Alternative 1 harbor would include a yacht club, fishing club, a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. The coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and 'Alula for community use. Additional Alternative 1 community areas would include facilities and space for community use, including programs of the Kona Kai Ola Community Foundation, which supports community programs in health care, culture, education, and employment training for the local community, especially to native Hawaiians. Like the original proposed plan, Alternative 1 includes 40 percent of the land in parks, roads, open spaces, swim lagoons and community use areas.

2.1.2 Alternative 2: Golf Course Feature

Alternative 2 was among the alternatives discussed at a community charrette in September 2003. It includes a golf course, which is a permitted use in the DLNR agreement and DHHL lease. As Figure H illustrates, an 18-hole championship golf course would occupy 222 acres on the southern portion of the project site. As with the proposed project, Alternative 2 includes an 800-slip marina on a minimum of 45 acres.

To support the economic viability of the project, other Alternative 2 uses include:

- Golf course clubhouse on three acres
- 1,570 visitor units on 88 acres fronting the marina
- 118 acres of commercial uses
- 23 acres of community uses

Community uses in Alternative 2 include an amphitheater, a canoe facilities park, a community health center, a Hawaiian cultural center and fishing village, a marine science center and employment training center. The sea water lagoon features contained in the proposed project and Alternative 1 are not included in this alternative.

2.1.3 Alternative 3: No Action

In Alternative 3, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.

~~The economic viability and sustainability of the project is determined by the density and uses proposed. Because JDI is obligated to develop an 800-slip marina for the State, complete road improvements, and provide various public enhancement features at its own expense, the density proposed for the income generating features of the development must be sufficient to provide an acceptable level of economic return for JDI. The market study, which is discussed in Section 4.6, reviewed various development schemes and determined that the currently proposed density and mix is the optimum to meet the anticipated financing and development cost obligations for the public features associated with the development.~~

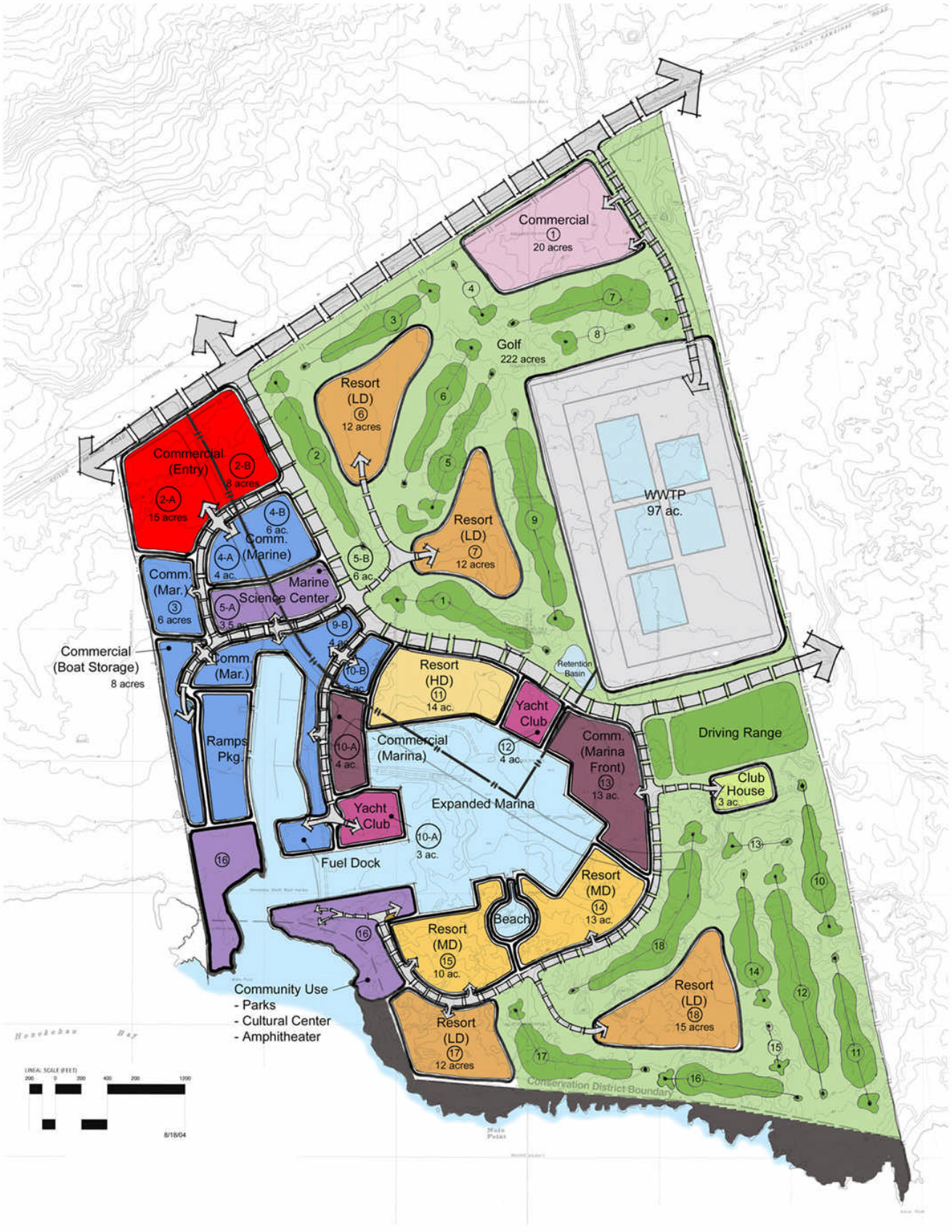

Figure H. Alternative 2: Golf Course Alternative

Legend

N E S W

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2.2 Alternatives Analysis

As discussed in Section 2.1, the proposed Kona Kai Ola project (also referred to as "proposed project") is defined by development requirements related for a marina and the related uses that would be needed to generate a reasonable rate of return that covers development costs.

Beginning with Section 2.2.1, the alternative development concepts are comparatively assessed for potential impacts that may reasonably be expected to result from each alternative. Following is an overview of the primary observations of such assessment.

Alternative 1 includes half of the State-required boat slips and 60 percent of the proposed hotel and time-share units and, due to the decreased density, this alternative would generate significantly less environmental and socio-economic impacts. A harbor water quality model found the reduction of the volume of the new marina basin by about half (approximately 25 acres) significantly improved the water circulation and quality. Further, the reduced number of boat slips would generate less boat traffic, thereby reducing congestion and the need to mitigate impacts further by the widening of the existing harbor channel.

A project with fewer hotel and time-share units and increased commercial space with a longer (14 years) absorption period would change the mix of employment offered by the project, and slightly increase the overall employment count. The public costs/benefits associated with Alternative 1 would change, compared to the proposed project, with a general increase in tax collections, and a general decrease in per capita costs. Detailed discussion of Alternative 1 potential economic impacts are provided in Section 4.6.6. Comparisons of levels of impact are presented throughout this FEIS.

While this analysis might indicate that the 25-acre marina in Alternative 1 would be the more prudent choice, the DLNR agreement establishes the minimum size and slip capacity of the marina at 45 acres and 800 slips, respectively. Amendments to the DLNR agreement would be required in order to allow Alternative 1 to proceed as the preferred alternative. Hence, selection of the preferred alternative is an unresolved issue at the writing of this FEIS.

Alternative 2, the golf course alternative, was not previously considered to be the preferred alternative primarily because market conditions at the time of project development might not likely support another golf course. Further, DHHL has a strategy goal to have more revenue-generating activities on the commercial lease lands within the project area. In addition, concerns have been expressed as to environmental impacts of coastal golf courses, including the potential adverse impact on Kona's water supply if potable water is used for golf course irrigation.

While Alternative 3, the no-project alternative, would not generate adverse impacts related to development of these lands associated with the construction and long-term operations, it would also not allow for an expanded public marina that would meet public need and generate income for the public sector. Further, the no-project alternative would foreclose the opportunity to create a master-planned State-initiated development that would result in increased tax revenue, recreation options and community facilities. Crucial privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities, and public access would not be contributed.

~~Hence, the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.~~

~~The no-project alternative would therefore not generate adverse impacts associated with the construction and long-term operations would not occur.~~

~~Likewise, the creation of a master-planned state-initiated development, resulting in increased employment, tax revenue, recreation options and community facilities, would not be created. Privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities and public access would not be contributed.~~

Further, the creation of revenue-producing businesses on the DHHL property to fund homestead programs would not occur, resulting in fewer potential benefits for Hawaiians.

Hence, the agreements and leases between the State and JDI indicate that the no-action alternative is not in the public interest~~has been rejected at this time~~.

2.2.1 Impact Comparison

Grading and Excavation

The proposed project requires grading and excavation. Both actions may impact groundwater due to rainfall runoff during construction. Alternative 1 would require a significantly smaller excavation for the marina basin and would therefore carry a lesser risk of potential adverse effects on water quality. Alternative 2 would require the same basin excavation as the proposed project, and would also include extensive grading and filling to build the golf course, the latter of which would generate additional impacts. Alternative 3 would result in no change to the geography, topography and geology.

Further discussion on grading and excavation is contained in Section 3.3.

Natural Drainage

Most precipitation infiltrates into the porous ground at the site, and no significant sheet flow is likely. Alternative 1 would generate similar levels of impacts on natural drainage as those of the proposed project and thus require similar mitigation measures. The golf course in Alternative 2 would not be as porous since the site would be graded, soil would be placed, and grass and other landscaping would be grown. Sheet flow and runoff can occur on a golf course, and drainage patterns might change. Alternative 3 would result in no change to the existing natural drainage pattern. Further discussion on natural drainage is contained in Section 3.4.

Air Quality

Air quality will be affected by construction activities, as well as pollutants from vehicular, industrial, natural, and agricultural sources. Alternative 1 would generate less construction air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin and fewer long-term impacts by reducing traffic 35 and 40 percent during, respectively, AM and PM peak traffic times. Construction of Alternative 2 would result in fugitive dust and exhaust from equipment and is expected to generate the same level of air quality impact as the proposed project. Alternative 3 would result in no change to existing air quality. Further discussion on air quality is contained in Section 3.5.

Terrestrial Environment

To provide additional habitat for shorebirds and some visiting seabirds, the project proposes to construct a brackishwater pond area suitable for avian fauna, including stilts, coots and ducks. While habitat expansion is beneficial, there is also a possibility that these species may be exposed to activity that may harm them. Alternative 1 would not include a brackish water pond, but will include 5 acres of seawater features, which is 74 percent less than the 19 acres of seawater features in the proposed project. While this would reduce beneficial impacts, it would also decrease exposure to potentially harmful activity. Alternative 2 does not include the brackish water pond features, but would include drainage retention basins that would attract avian fauna and expose them to chemicals used to maintain golf course landscaping. While Alternative 3 would result in no increase in potentially harmful activity, it would also not provide additional habitat for avian fauna. Further discussion on the terrestrial environment is contained in Section 3.7.

Groundwater

Groundwater at the project site occurs as a thin basal brackish water lens. It is influenced by tides and varies in flow direction and salt content. The existing Honokōhau Harbor acts as a drainage point for local groundwater. Any impact to groundwater flow from the proposed harbor is likely to be localized. The proposed marina basin will not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance.

There will be differences in the flow to the marina entrance between the proposed project and Alternative 1. Alternative 1, being smaller in size, will have less impact on groundwater flow than the proposed marina. Alternative 2 will have a similar impact to groundwater quality as the proposed project. Alternative 2 may also impact water quality by contributing nutrients and biocides to the groundwater from the golf course. Alternative 3 would result in no change in existing groundwater conditions. Further discussion on groundwater is contained in Section 3.8.1.

Surface Water

There are no significant natural freshwater streams or ponds at the site, but there are brackish anchialine pools. Surface water at the project site will be influenced by rainfall. Runoff typically percolates rapidly through the permeable ground. The proposed project will include some impermeable surfaces, which together with building roofs, will change runoff and seepage patterns.

Alternative 1 is a lower density project that is expected to have proportionally less impact on surface water and runoff patterns and less potential impact on water quality than the proposed project. Alternative 2 would have more impact on surface water quality than the proposed project due to fertilizers and biocides carried by runoff from the golf course. Alternative 3 would result in no change to surface water conditions. Further discussion on surface water is contained in Section 3.8.2.

Nearshore Environment and Coastal Waters

The potential adverse impacts to the marine environment from the proposed project are due to the construction of an 800-slip marina and the resulting inflow of higher salinity seawater and inadequate water circulation, both of which are anticipated to impair water quality to the extent of falling below applicable standards. One possible mitigation measure is to significantly reduce the size of the marina expansion.

The reduced marina size (from 45 to 25 acres) and reduced lagoon acreage in Alternative 1 are expected to result in a proportionate reduction in seawater discharging into the new harbor and increased water circulation. Alternative 2 includes the same marina basin size and is therefore subject to the same factors that are expected to adversely affect water quality.

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water quality in the proposed harbor depends on several components. These include salinity, nutrients, and sediments that come from the ocean, rainfall runoff, water features with marine animals, and dust. The smaller project offered as Alternative 1 is expected to produce a reduced amount of pollutants and reduce the risk of adverse impact upon water quality.

It is notable that the 45-acre marina basin planned in the proposed project and Alternative 2 only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd. The resulting flushing from such inflow would be expected to better maintain water quality. However, it is unclear whether 60 mgd of brackish groundwater would be available. As proposed in Alternative 1, reduction of the volume of the new marina basin by 45 percent will significantly improve the flushing and water quality because the lower volume can be flushed by the available groundwater flow.

In addition, there could be higher rainfall runoff from the Alternative 2 golf course into the harbor, because the grassed golf course will be less porous than the natural surface. The golf course will also require relatively high levels of fertilizer, biocides, and irrigation, all of which could contribute to adverse water quality impacts.

Further discussion on nearshore environment and coastal waters is contained in Section 3.9.1.

Anchialine Pools

Anchialine pools are located north of Honokōhau Harbor, and south of the harbor on the project site. The marine life in these pools is sensitive to groundwater quality, and changes due to construction and operation of the project could degrade the viability of the pool ecosystem. In the southern complex, 3 anchialine pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction in the proposed project and Alternatives 1 and 2.

Predicting the extent of change in groundwater flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is therefore extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Due to the uncertainty of changes in groundwater flow and quality due to marina construction, the variability in impacts between the proposed project and Alternatives 1 and 2 is unknown at this time. Alternative 3 would result in no change in groundwater flow. While this would eliminate the potential for adverse impacts, Alternative 3 would also continue the pattern of existing degradation related to human activity and the introduction of alien species. Further discussion on anchialine pools is contained in Section 3.9.2.

Marine Fishing Impacts

The proposed marina will increase the number of boats in the area and it is reasonable to assume that a portion of these new boats will engage in fishing activities. The increase in boats in the area would be primarily related to the marlin and tuna / pelagic fishery, coral reefs due to extractive fisheries, and SCUBA activities. The pressure on fish and invertebrate stocks is expected to increase with or without the marina. Harbor expansion provides the opportunity to address existing conditions to consolidate, focus, and fund management and enforcement activities at one location.

Compared to the proposed project, Alternative 1 would result in a 21 percent decrease in boat traffic, thereby lessening the potential for marine fishing impacts. The level of impacts in Alternative 2 would be similar to that of the proposed project. Alternative 3 would result in no change in existing marine fishing conditions, and no opportunity to address already existing pressure on fish and invertebrate stocks. Further discussion on marine fishing impacts is contained in Section 3.9.3.

Cultural and Archaeological Resources

The proposed project will integrate cultural and archaeological resources in the overall development. Archaeological sites recommended for preservation will be preserved, and cultural practices will be encouraged. Kona Kai Ola includes a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. Proposed is a 400-foot shoreline setback that would serve as a buffer between the ocean and developed areas. This coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and ʻAlula for community use.

Alternative 1 would contain all of the cultural archaeological features and the shoreline setback area would be 400 feet in the northern portion of the site and increase to 600 feet in the southern portion. Alternative 2 would preserve cultural and archaeological resources, but does not include a 400-foot shoreline setback. Alternative 3 would result in no change to existing cultural and archaeological resources and no addition of cultural and community facilities and activities. Further discussion on cultural and archaeological resources is contained in, respectively, Sections 4.1 and 4.2.

Noise

Project-generated noise is due to construction equipment and blasting, boats, marina activities, vehicle traffic, and the Kealakehe Wastewater Treatment Plant operations. Alternative 1 would generate less noise impacts due to reduced construction activities, fewer boats, less traffic and less on-site activity. Alternative 2 would also generate less noise due to reduced traffic and less on-site activity, but noise related to the excavation of the marina basin and an increase in the number of boats would be similar to that of the proposed project. Further discussion on noise impacts is presented in Section 4.4.

Socioeconomic Impacts

The proposed project will generate an increase in de facto population of an estimated 5,321 persons due to the increase in hotel and time-share units. The estimated de facto population increase in Alternative 1 is 37 percent less, at 3,363 persons, than the proposed project. The de facto population increase in Alternative 2 is similar to Alternative 1.

Employment in the commercial components will nearly double in Alternative 1, from a stabilized level of 1,429 full-time equivalent (FTE) positions in the proposed project to 2,740 in the Alternative 1.

Under Alternative 1, the total operating economic activity at Kona Kai Ola will increase due to the added commercial space more than off-setting the fewer visitor units, moving upward from $557.6 million per year to circa $814.3 million annually. The total base economic impact resulting from development and operation of Alternative 1 will similarly be higher by between 35 and 45 percent than that of the proposed project.

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County revenues. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The estimated absorption periods for marketable components of Alternative 1 are generally shorter than those for the same components in the proposed project. Marina slips under Alternative 1 are estimated to be absorbed within 2 years after groundbreaking, as compared with 9 years for absorption of slips in the proposed project. Hotel rooms under Alternative 1 are estimated to be absorbed within 4 years after groundbreaking, as compared with 7 years under the proposed project. Time-share units would be absorbed within 10 years under Alternative 1, while 15 years are projected under the proposed project. Due to the planned increase in commercial facilities under Alternative 1, the absorption period of commercial space is estimated at 14 years, as compared with 8 years for absorption of such facilities under the proposed project.

The State and County will still both receive a net benefit (tax receipts relative to public expenditures) annually on a stabilized basis under the Alternative 1. The County net benefits will be some $12.2 million per year under the Alternative 1 versus $14.9 million under the proposed project. The State net benefits will increase under the Alternative 1 to about $37.5 million annually, up substantially from the $11.4 million in the proposed project.

Due to the lower de facto population at build-out, the effective stabilized public costs for both the State and County will decline meaningfully under the Alternative 1, dropping from $7.7 million annually for the County and $36.5 million for the State, to $4.9 million and $23 million per year, respectively.

Alternative 3 would result in no increase in de facto population and improvement to economic conditions. Further discussion on social and economic impacts are contained in, respectively, Sections 4.5 and 4.6.

Vehicular Traffic

The proposed project will impact the nearby road network that currently is congested during peak traffic times. The proposed project includes roadway improvements that would reduce the impact and improve roadway conditions for the regional community.

Alternative 1 includes the same roadway system improvements as the proposed project, yet would reduce vehicular traffic by 35 percent when compared to the proposed project. Alternative 2 would have similar traffic conditions and roadway improvements as Alternative 1. Alternative 3 would result in no increase in traffic and no roadway improvements.

Marina Traffic Study

The increase in boat traffic due to the proposed 800-slip marina would cause entrance channel congestion during varying combinations of existing and new marina peak traffic flow. Worst case conditions of active sport fishing weekend and summer holiday recreational traffic result in traffic volumes exceeding capacity over a short afternoon period. Mitigation to address boat traffic in the proposed project include widening the entrance channel, traffic control, implementation of a permanent traffic control tower, or limiting vessel size.

Alternative 1 would result in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent reduction during peak existing conditions. The reduction to 400 slips also reduces the impacts of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Alternative 2 would have the same level of boat traffic as the proposed project. Alternative 3 would not meet the demand for additional boat slips and would not generate additional boat traffic. Further discussion on marina traffic is contained in Section 4.8.

Police, Fire and Medical Services

The proposed project will impact police, fire and medical services due to an increase in de facto population and increased on-site activity. Alternatives 1 and 2 would have similar levels of impact as the proposed project due to increased on-site activity. Further discussion on police, fire and medical services are contained, respectively, in Sections 4.10.1, 4.10.2 and 4.10.3.

Drainage and Storm Water Facilities

The proposed project will increase drainage flows, quantities, velocities, erosion, and sediment runoff.

Alternative 1 involves a reduction of the project density that would reduce storm runoff from the various land uses due to a reduction in impervious surfaces associated with hotel and time-share development and to the creation of more open space. However, roadway areas will increase by about 30 percent in Alternative 1. Storm runoff from proposed streets would therefore increase; thus requiring additional drainage facilities and possibly resulting in no net savings. The golf course in Alternative 2 may also change drainage characteristics from those of the proposed project and may not reduce impacts. Alternative 3 would result in no change in existing conditions and no improvements to drainage infrastructure. Further discussion on drainage and storm water facilities is contained in Section 4.10.5

Wastewater Facilities

The proposed development is located within the service area of the Kealakehe WWTP and a sewer system will be installed that connects to the WWTP. The sewer system will be comprised of a network of gravity sewers, force mains, and pumping stations which collect and convey wastewater to the existing Kealakehe WWTP. Project improvements will incorporate the usage of recycled / R1 water. Improvements implemented by the proposed project will also accommodate the needs of the regional service population.

Alternative 1 would generate approximately 10 percent less wastewater flow than the proposed project. Wastewater flow in Alternative 2 is undetermined. Alternative 3 would result in no additional flow, as well as no improvements that will benefit the regional community. Further discussion on wastewater facilities is contained in Section 4.10.6.

Potable Water Facilities

The proposed project average daily water demand is estimated at 1.76 million gallons per day. Existing County sources are not adequate to meet this demand and source development is required. The developer is working with DLNR and two wells have been identified that will produce a sustainable yield that will serve the project. These wells will also serve water needs beyond the project.

Alternative 1 would result in net decrease of about five percent of potable water demand. Alternative 2 may have a lower water demand than the proposed project as long as potable water is not used for irrigation. Alternative 3 would result in no additional flow, as well as no source development that will benefit the regional community. Further discussion on potable water facilities is contained in Section 4.10.8.

Energy and Communications

Regarding Alternative 1, preliminary estimates for electrical, telecommunications, and cable resulted in a net demand load that remains similar to the proposed project. Further discussion on energy and communications is contained in Section 4.10.9.1.

The proposed project will increase the demand for electrical energy and telecommunications. The demand would be reduced in Alternative 1 because the number of boat slips and units would decrease. Similarly, Alternative 2 would have fewer units than the proposed project and therefore reduce energy demands. Further reduction in energy demand for either alternative could be achieved by using seawater air conditioning (SWAC) and other energy reduction measures, as planned by the developer. Further discussion on energy and telecommunications is contained in Section 4.10.9.2.

Water Features and Lagoons

The proposed project includes a brackishwater pond, lagoons, and marine life exhibits supplied by clean seawater. The water features in Alternative 1 would significantly decrease by 74 percent from 19 acres in the proposed project to five acres in Alternative 1. This decrease in water features would result in a corresponding decrease in water source requirements and seawater discharge. Alternative 2 does not include the seawater features. Alternative 3 would result in no additional demand for water source requirements and seawater discharge.

2.2.2 Conformance with Public Plans and Policies

State of Hawai'i

Chapter 343, Hawai'i Revised Statutes

Compliance with this chapter is effected, as described in Section 5.1.1 in regard to the proposed project and the alternatives discussed.

- State Land Use Law, Chapter 205, Hawai'i Revised Statutes

  The discussion in Section 5.1.2 is directly applicable to Alternative 1, the proposed project. Alternative 1 will involve a setback of 400 feet that increases to 600 feet along the southern portion of the project site's shoreline area. Alternative 2 does not provide for such a setback, but may still require approvals from DLNR for cultural, recreational, and community uses and structures within the Conservation district.

- Coastal Zone Management Program, Chapter 205A, Hawai'i Revised Statutes

  Recreational Resources:

  In addition to the discussion of consistency with the associated objective and policies, as described in Section 5.1.3, the reduction from the proposed project's 800-slip marina to a 400-slip marina under Alternative 1 will still expand the region's boating opportunities and support facilities. The existing harbor entrance will still be utilized under this alternative; however, potential risks relating to boat traffic and congestion in the marina entrance area will be reduced significantly. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities, and marine science center remain important recreational components under Alternative 1.

Alternative 2 includes a golf course component, which would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Alternative 2, like the proposed project, will expand the region's boating opportunities and support facilities through its 800-slip marina. However, the potential adverse impacts of increased boat traffic from the size of the marina are significant enough to offset the benefits of increased boating opportunities.

Coastal Ecosystems:

The discussion in Section 5.1.3 is directly applicable to Alternative 1.

Alternative 1 not only reduces the number of slips proposed by 50 percent, but it also reduces the size of the marina from 45 acres to 25 acres. The 25-acre marina will increase the body of water within the existing harbor, but to a significantly lesser extent than the proposed project's estimated increase, which is also applicable to the 45-acre size that is proposed for the marina under Alternative 2.

The findings of the Harbor Water Quality Modeling Study conclude that a reduction in the size of the harbor expansion is an alternative that will mitigate the risk of significant impacts upon water quality within the marina and existing harbor. Accordingly, the reduction in both the number of slips and the size of the marina basin under Alternative 1, in combination with proper facilities design, public education, and enforcement of harbor rules and regulations, would result in fewer long-term impacts to water quality and coastal ecosystems. Short-term (construction-related) impacts would likely remain the same although the reduction in the total acreage of excavation is expected to result in a shorter duration of such impacts.

In addition to its 800-slip marina and potential adverse impacts upon water quality and the marine environment, Alternative 2 includes a golf course component, which has the potential to impact coastal ecosystems by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Economic Uses

Although reduced in the number of slips, the smaller marina under Alternative 1 will nevertheless serve public demand for more boating facilities in West Hawai'i and is consistent with the objective and policies and discussion set forth in Section 5.1.3. The economic impacts of Alternative 2, while comparable to those of the proposed project's marina development, are notably marginal as to the golf course component, based on the marketability analysis that indicates a condition of saturation within the region.

Coastal Hazards

The discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Tsunami risks mainly affect the large shoreline setback area that is proposed for the project and Alternative 1. Alternative 2 projects a transient accommodation site that is partially within the tsunami hazard zone and thus carries a higher hazard risk. However, the essential requirement for these alternatives, as well as the proposed project, is a well-prepared and properly implemented evacuation plan.

Beach Protection

Discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Alternative 1 and, to a lesser extent, Alternative 2, will retain the shoreline area in its natural condition.

Similar to the proposed project, Alternative 1 provides for a shoreline setback of considerable width within which no structure, except for possible culturally-related structures, would be allowed. Alternatives 1 and 2 will thus be designed to avoid erosion of structures and minimize interference with natural shoreline processes.

Marine Resources

The discussion in Section 5.1.3 is also applicable to Alternative 1 which is described to be an alternative that is specifically projected to mitigate anticipated adverse impacts on water quality and the marine environment that might otherwise result from the original harbor design and scale, which is also incorporated in Alternative 2 . The reduced marina size under Alternative 1 is projected to meet water quality standards and enable greater compliance with the objective and policies addressed in this section.

Alternative 2 includes a golf course component and thus the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Hawai'i State Plans, Chapter 226, Hawai'i Revised Statutes

Section 226-4 (State goals), 5 (Objectives and policies for population, and 6 (Objective and policies for economy in general):

The discussion in Section 5.1.4 is applicable to Alternatives 1 and 2, in addition to the proposed project. These development concepts generally conform to the goals, objectives, and policies set forth in these sections because they will provide some degree of economic viability, stability, and sustainability for future generations. Kona Kai Ola will convert essentially vacant land into a mixed-use development with a distinctive marina and boating element, providing a wide range of recreational, business, and employment opportunities to the community.

Section 226-8 Objective and policies for the economy – the visitor industry:

Alternatives 1 and 2 will be consistent with the State's economic objective and policies relating to the tourism industry for the same reasons that are discussed in regard to the proposed project in Section 5.1.4. They will incorporate JDI's commitment to sustainability principles in the planning and design of the development concepts in Alternatives 1 and 2. Although the total hotel and time-share unit count is reduced to approximately 1,500 in Alternatives 1 and 2, the transient accommodations component of these alternatives will still further the State's objective and policies for increased visitor industry employment opportunities and training, foster better visitor understanding of Hawai'i's cultural values, and contribute to the synergism of this mixed-use project concept that addresses the needs of the neighboring community, as well as the visitor industry.

Section 226-11 Objectives and policies for the physical environment: land-based, shoreline and marine resources:

Alternative 1 is expected to involve less potential adverse impacts upon these environmental resources than the proposed project. Likewise, and Alternative 2 would have less adverse impact because of its reduction in the size of the marina and in the total hotel and time-share unit count. Alternative 1 carries less potential risk to water quality and related impacts upon the marine environment and anchialine pool ecosystems. Although approximately three anchialine pools are expected to be destroyed, the great majority of pools will be preserved within and outside of the proposed 400-foot shoreline setback.

The golf course component in Alternative 2 has the potential to impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the marina basin and nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools by introducing the chemicals into the pond systems.

Section 226-12 Objective and policies for the physical environment: scenic, natural beauty, and historic resources:

The discussion in Section 5.1.4 is directly applicable to Alternative 1 and describes the compliance with the objective and policies addressed.

The golf course component of Alternative 2 would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area.

Just as with the proposed project, Alternatives 1 and 2 would also be designed to blend with the natural terrain and to honor and protect the cultural history, resources, and practices of these lands.

Section 226-13 Objectives and policies for the physical environment: land, air and water quality:

As stated above, because of the reduction in both the number of slips and the size of the marina basin, with proper facilities design, public education and enforcement of harbor rules and regulations, Alternative 1 is anticipated to cause fewer long-term impacts to water quality than either the proposed project or Alternative 2. Based on the findings of the Harbor Water Quality Modeling Study, water quality resulting from a reduced marina basin size as proposed under Alternative 1 is expected to be similar to existing conditions.

As previously noted, Alternative 2 has the potential to adversely impact water quality by increasing the nutrient loading in surface runoff and groundwater by introducing pesticides, herbicides and other chemicals common in golf course development and maintenance into the marina basin and nearshore waters surrounding the project site.

Section 226-14 Objectives and policies for facility systems - general:

Alternatives 1 and 2 will conform to the objective and policies of this section on the grounds that are discussed in regard to the proposed project in Section 5.1.4. The master-planning and phasing of the project concepts under these alternatives will be coordinated with associated public and private infrastructural planning and related private and public infrastructural financing. The cost of the marina construction and project-related infrastructure is to be borne by the developer, resulting in considerable savings for the public. In addition, the projected lease revenue from these public lands will provide additional public benefits by establishing a revenue stream for capital improvements and maintenance of a range of State facilities.

Section 226-15 Objectives and policies for facility systems - solid and liquid wastes:

In addition to the developer's commitment to sustainable development design, the project will involve upgrades to the County of Hawai'i's Kealakehe Wastewater Treatment Plant to meet current needs, as well as the project's future needs. This commitment is applicable to Alternatives 1 and 2, as well as the proposed project that is discussed in Section 5.1.4.

Section 226-16 Objectives and policies for facility systems – water:

The discussion of water conservation methods and the need to secure additional potable water sources in Section 5.1.4 is also applicable to Alternative 1 and demonstrates conformity to the objective and policies for water facilities. Alternative 2 involves greater irrigation demands in regard to its golf course component and greater potable water demands for human consumption than those for Alternative 1. Alternative 2 is expected to face more serious challenges in securing adequate and reliable sources of water.

Section 229-17 Objectives and policies for facility systems – transportation:

Alternatives 1 and 2 will conform to this objective and policies because they will present water transportation opportunities, including the possible use of transit water shuttles to Kailua-Kona, as described in regard to the proposed project in Section 5.1.4.

Section 226-18 Objectives and policies for facility systems – energy:

Alternatives 1 and 2 conform to these objective and policies through the use of energy efficient design and technology and commitment to the use and production of renewable energy to serve the project's needs. Solar energy production, solar hot water heating, and the use of deep cold seawater for cooling systems are currently identified as means of saving substantial electrical energy costs for the community and the developer.

Section 226-23 Objectives and policies for socio-cultural advancement – leisure:

Alternative 1 conforms to this objective and related policies for the reasons offered in Section 5.1.4 in regard to the proposed project. Alternative 1 will be of greater conformity with the policy regarding access to significant natural and cultural resources in light of the 400-600 foot shoreline setback that has been designed for this alternative.

Although it does not propose the considerable shoreline setback that is planned for Alternative 1, Alternative 2 is consistent with this objective and related policies in incorporating opportunities for shoreline-oriented activities, such as the walking trails. In addition, the golf course component adds a more passive recreation alternative to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Section 226-25 Objectives and policies for socio-cultural advancement-culture:

The discussion in Section 5.1.4 is relevant to Alternatives 1 and 2 and demonstrate their conformity the objective and policies of this section.

Both alternatives involve the preservation and protection of cultural features that have been identified by the Cultural Impact Assessment and archaeological studies for the project area. Both provide for public shoreline access, and both will continue the policy of close consultation with the local Hawaiian community and cultural and lineal descendants in the planning of cultural resource preservation and protection.

Section 226-103 Economic priority guidelines:

Alternatives 1 and 2 conform to these guidelines for the same reasons that are set forth in Section 5.1.4. They involve private investment in a public project that will create economic diversification through a mix of marina, industrial, commercial, visitor, and cultural facilities. This presents a wide range of entrepreneurial opportunities, long-term employment opportunities, and job training opportunities.

Section 226-104 Population growth and land resources priority guidelines:

As described in Section 5.1.4, the policy support for the proposed project also extends to the similar development concepts considered in Alternatives 1 and 2. Those alternatives conform to the guidelines of this section because they involve an urban development under parameters and within geographical bounds that are supported by the County's General Plan, a preliminary form of the Kona Community Development Plan, the County's Keahole to Kailua Regional Development Plan, and the reality of being located along the primary commercial/industrial corridor between Keahole Airport and Kailua-Kona. As with the proposed project, the development concepts of Alternatives 1 and 2 are essentially alternatives for the implementation and "in-filling" of the urban expansion area in North Kona.

DHHL Hawai'i Island Plan

This 2002 plan projects DHHL's Honokōhau makai lands for commercial use. As compared to the proposed project and Alternative 2, Alternative 1 presents an expanded commercial component that provides greater compliance with the plan, while addressing certain beneficiaries' concerns about the scale of the marina originally required in the Project. Alternative 2 also conforms to the recommended commercial uses in the makai lands but to a lesser degree than Alternative 1 because of its more limited commercial component. Like the proposed project, its marina size and number of slips raise environmental issues, as more specifically discussed in Part 3, and community concerns.

County of Hawai'i General Plan

HCGP Section 4 – Environmental Quality Goals, Policies and Courses of Action:

Alternative 1 is consistent with this section. It presents a reduction in both the number of slips and the size of the marina basin that, in combination with proper facilities design, public education and enforcement of harbor rules and regulations, would result in very few long term impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions.

Alternative 2 is the least consistent with this section. In addition to the potential significant impacts of its 800 slip marina basin, its golf course component has the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides and other chemicals common in golf course use and management into the nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools beyond their current conditions by introducing such substances into the pool systems.

HCGP Section 7 – Natural Beauty Goals and Policies:

Alternative 2 conforms to some degree with this section. Its golf course component would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area, as demonstrated in other makai golf courses within the region.

HCGP Section 8 – Natural Resources and Shoreline:

Alternative 1 is most consistent with the goals and policies of this section. It would require considerably less marina excavation than the proposed project and Alternative 2 and would reduce the potential risk of long-term adverse impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions with the degree of reduction in marina basin size that is proposed under Alternative 1. This reduction is also expected to reduce potential impacts upon anchialine pools and their ecosytems, as well as shoreline and marine resources that are affected by water quality. Alternative 1 also retains the shoreline preservation and protection concepts that are proposed in and described for the Project.

HCGP Section 10 – Public Facilities Goals and Policies:

The discussion in Section 5.2.1. in relation to the proposed project is applicable to Alternatives 1 and 2. Improvements to public facilities are are integral to the Kona Kai Ola development. The provision of additional boat slips and numerous road improvements, including a makai extension of Kuakini Highway south to Kailua-Kona are incorporated into plans for the project's development. In light of these elements, Alternatives 1 and 2 are consistent with the goals and policies of this section.

HCGP Section 11 – Public Utility Goals, Policies:

As with the proposed project, Alternatives 1 and 2 are consistent with the goals and policies of this section, based on the relevant grounds set forth in Section 5.2.1. The developer is committed to design, fund, and develop environmentally sensitive and energy efficient utility systems to the extent possible, as described previously in Part 5. Its master planning provides for the coordinated development of such systems with the objective of achieving significant savings for the public. As previously-mentioned example, the project development involves the upgrading of the Kealakehe Wastewater Treatment Plant.

HCGP Section 12 – Recreation:

Alternative 1 is consistent with the goals, policies, and courses of action for North Kona in this section.

Although the number of slips is reduced under Alternative 1, the region's boating opportunities and support facilities will still be expanded. The existing marina entrance would still be utilized under this alternative. However, concerns relating to increased activity leading to increased congestion in the marina entrance area would be mitigated to a certain extent. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities and marine science center remain important components of Alternative 1.

The golf course component of Alternative 2 would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola. Alternative 2 is also considered to be consistent with this section.

HCGP Section 13 and 13.2 – Transportation:

The reduced marina component under Alternative 1 will still provide transportation opportunities and provide for possible use of transit water shuttles to Kailua-Kona, although to a lesser degree than under the proposed project and Alternative 2 . However, in each scenario, internal people-movers are planned, and numerous roadway improvements are planned for coordination with public agencies, including but not limited to the construction of the Kuakini Highway extension between Honokōhau and Kailua-Kona. Accordingly, both Alternatives 1 and 2 are consistent with the goals, policies, and courses of action for North Kona under these sections of the General Plan.

HCGP Section 14.3 – Commercial Development:

For the reasons presented in the discussion under Section 226-104 of the State Plan, the planned commercial component under Alternatives 1 and 2 are consistent with this section.

HCGP Section 14.8 – Open Space:

Alternatives 1 and 2 are consistent with the goals and policies of this section. Alternative 1 provides a considerable (400-600 foot) shoreline setback along the entire ocean frontage of the project site as a means of protecting the area's scenic and open space resources, as well as natural and cultural resources. Although it does not incorporate the shoreline setback planned in Alternative 1, Alternative 2 provides a golf course component would contribute to the amount of open space that is currently proposed and allow additional view corridors to be created.

Community Development Plans

Community development plans are being formulated for different regions in the County in order to supplement the County's General Plan. The Kona Kai Ola project is located in the Kona Community Development Plan (CDP) area. Maps associated with the preliminary work phases

of the Kona CDP include the Kona Kai Ola project site within the "Preferred Urban Growth" boundary of the North Kona district. The Kona CDP process is guided by a Steering Committee composed of a broad cross-section of the community. The Steering Committee will eventually complete its work and recommend the CDP's adoption.

After the DEIS was published, the Kona CDP has progressed to the development of plans for the major urban growth corridor north of Kailua-Kona. The Kona CDP has produced a draft plan showing a transit oriented development that includes a midlevel public transit corridor along the mauka residential elevation, and a makai transit corridor that runs along a proposed new frontage road just makai and parallel to Queen Kaahumanu Highway. The development plan for Alternative 1 includes the Kuakini Highway as part of this proposed frontage road and transit line from Kailua Kona to the Kealakehe area, along with a transit stop at Kona Kai Ola. The Alternative 1 plan also includes a road that could be extended to be part of the proposed frontage road should it be approved and implemented. In addition, the Kona CDP has continued to emphasize the principles of smart growth planning with mixed use urban areas where people can live, work, play and learn in the same region. Kona Kai Ola has been specifically designed to be consistent with this policy in order to provide a stable employment base close to where people live in the mauka residential areas already planned for DHHL and HHFDC lands.

It should be noted that currently and over the years, the 1990 Keāhole to Kailua Development Plan (K-to-K Plan) guides land use actions by the public and private sectors. It is intended to carry out the General Plan goals and policies related to the development of the portion of North Kona area, including the Kona Kai Ola site. The "Preferred Growth Plan" of the Keāhole to Kailua Development Plan identifies the project site as a new regional urban center to include commercial, civic, and financial business related uses, an expanded "Harbor Complex," a shoreline road, and a shoreline park. The proposed project and the development concepts in Alternatives 1 and 2 are therefore consistent with the recommendations in the Keāhole to Kailua Development Plan.

Hawai'i County Zoning

As shown on Figure AA, the project site is zoned "Open". Under Section 25-5-160 of the Hawai'i County Code, "The O (Open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands)".

Some of the proposed uses at Kona Kai Ola are permitted uses in the Open zone such as:

- Heiau, historical areas, structures, and monuments;
- Natural features, phenomena, and vistas as tourist attractions;
- Private recreational uses involving no aboveground structure except dressing rooms and comfort stations;

- Public parks;
- Public uses and structures, as permitted under Section 25-4-11.

In addition to those uses permitted outright, the following uses are permitted after issuance of a use permit:

- Yacht harbors and boating facilities; provided that the use, in its entirety, is compatible with the stated purpose of the O district.
- Uses considered directly accessory to the uses permitted in this section shall also be permitted in the O district.

The proposed time-share and hotel units and commercial uses would not be consistent with the zoning designation of "Open". Project implementation therefore requires rezoning of portions of the project to the appropriate zoning category or use permits for certain uses.

Special Management Area

As shown in Figure AB, the entire project area up to the highway is within the coastal zone management zone known as the Special Management Area ("SMA"). At the County level, implementation of the CZM Program is through the review and administering of the SMA permit regulations. Kona Kai Ola complies with and implements the objectives and policies of the Coastal Zone Management (CZM) Program, and a full discussion is provided in Section 5.1.3. The development concepts in the proposed project and Alternatives 1 and 2 will be subject to applicable SMA rules and regulations.

Attachment 6

Kona Kai Ola
Final Environmental Impact Statement
Kealakehe, North Kona District, Island of Hawai‘i

Prepared for:
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For Accepting Authority:
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July 2007

I indicate that this Final Environmental Statement and all ancillary documents were prepared under my direction or supervision and that the information submitted, to the best of my knowledge, fully addresses the document content requirements as set forth in Chapter 343, Hawai‘i Revised Statutes, and Section 11-200-18, Hawai‘i Administrative Rules.

KONA MARINA DEVELOPMENT GROUP LLC,
A Hawai‘i limited liability company

By: JACOBY MARINA MANAGEMENT LLC,
A Hawai‘i limited liability company
Its Manager

By: _____
JACOBY DEVELOPMENT, INC.,
A Georgia corporation
Its Manager
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HRD06/2857

February 5, 2007

Dayan Vithanage
Oceanit
828 Fort Street Mall, 6th Floor
Honolulu, HI 96813

RE: Draft Environmental Impact Statement for the Proposed Kona Kai Ola Development, N. Kona, Hawai'i Island, TMK 7-4-008: 71-72, 099 and 003 (portion).

Dear Dayan Vithanage,

The Office of Hawaiian Affairs (OHA) is in receipt of your December 25, 2006 submission which proposes the construction of 700 hotel rooms, 1,803 timeshare units and 800 boat slips on 530 acres of public lands (including ceded lands). OHA offers the following comments:

OHA is obligated to work towards the betterment of native Hawaiians and Hawaiians, and to serve the needs and interests of a wide and diverse beneficiary group. OHA must also ensure that other agencies, on the State and County levels, such as the Land Use Commission and Department of Land and Natural Resources Historic Preservation Division, uphold their constitutionally, statutorily and judicially mandated obligations to the native Hawaiian and Hawaiian people.

Section 10-3(4), HRS, states that a core purpose of OHA shall be:

> *(4) Assessing the policies and practices of other agencies impacting on native Hawaiians and Hawaiians, and conducting advocacy efforts for native Hawaiians and Hawaiians.*

Section 10-1(b) states that:

> *(b) It shall be the duty and responsibility of all state departments and instrumentalities of state government providing services and programs which affect native Hawaiians and Hawaiians to actively work toward the goals of this chapter and to cooperate with and assist wherever possible the office of Hawaiian affairs.[L 1979, c 196, pt of Section 2]*

In light of these statutory provisions, OHA takes guidance from Article XII, Section 7, of the Constitution of the State of Hawaii which states:

> *TRADITIONAL AND CUSTOMARY RIGHTS, Section 7. The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights. [Add Const Con 1978 and election Nov 7, 1978]*

These laws of our *'āina*, and the State of Hawai'i, can not be arbitrarily applied when convenient or at the whim of various governmental officers and agencies. They must be taken seriously and adhered to in good spirit and intent. Many private developments work in conjunction with State and County agencies to arrive at decisions which can profoundly impact the constitutionally protected rights of our beneficiaries.

Notwithstanding the strong Constitutional mandates and statutory obligations set forth to recognize the duties of the State of Hawai'i and its sub-agencies to protect the traditional and customary rights of native Hawaiians and Hawaiians, the Hawaii Supreme Court has set forth judicial guidance and interpretation in this regard as well.

In *Public Access Shoreline* Hawai'i *vs.* Hawai'i *County Planning Commission (PASH), 79 Hawai'i 425 (1995),* hereinafter PASH, the Hawaii Supreme Court, recognizing over 150 years of court decisions validating the existence of Native Hawaiian traditional and customary rights as part of the state's common law, reiterated that:

> *The State is obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Hawaiians.*

In *Ka Pa'akai*, the Hawaii Supreme Court, again noting it was clear that the State and its agencies are obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Hawaiians, to the extent feasible, noted the findings of the Hawaii State Legislature in 2000 that:

> *[T]he past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture. Act 50, H.B. NO. 2895, H.D. 1, 20th Leg. (2000).*

The *Ka Pa'akai* court also noted:

> *With regard to native Hawaiian standing, this court has stressed that "the rights of native Hawaiians are a matter of great public concern in Hawai'i." Pele Defense Fund v. Paty, 73 Haw. 578, 614, 837 P.2d 1247, 1268 (1992), certiorari denied, 507 U.S. 918, 113 S. Ct. 1277, 122 L. Ed. 2d 671 (1993).*

The *Ka Pa'akai* court also set forth an analytical framework, in that instance for the LUC to adhere to, but in the spirit and intent of the law, a framework that all State and County entities should follow, which is espoused as follows. The proper analysis of cultural impacts should include:

> *1) the identity and scope of "valued cultural, historical, or natural resources" in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area; (2) the extent to which those resources -- including traditional and customary native Hawaiian rights -- will be affected or impaired by the proposed action; and (3) the feasible action, if any, to be taken by the (agency) to reasonably protect native Hawaiian rights if they are found to exist.*

This framework, as set forth by the Hawaii Supreme Court, is a good beginning to address the obligations of the State of Hawai'i and its agencies, to properly identify, consider, and mitigate adverse impacts to the traditional and customary rights of Hawaiians which we are all obligated to protect.

Anchialine Ponds

Page 48 of the Draft Environmental Impact Statements (DEIS) states that "These ponds also show evidence of human impact, including discarded bottles, cans, wrappers, diapers, toilet paper, ect., " followed by the statement that "if no restoration or maintenance activities are instituted to reserve these ponds, the ecosystems will degrade beyond recovery." The DEIS finds the mitigation measures listed on page 51 as being the only means for the overall recovery of anchialine ponds south of the Honokohau Harbor. It is OHA's position that the health and protection of Hawai'i's natural resources cannot be contingent on real estate development. In fact, our staff finds that it is the responsibility of the Department of Land and Natural Resources (DLNR) to protect Anchialine Ponds located on DLNR lands. We base this assessment on the DLNRs' constitutionally mandated mission which directs the DLNR to "manage, administer and exercise control over public lands… water resources," and to "manage and administer state parks, historic sites, forests, forest reserves, aquatic life," and "aquatic life sanctuaries." Therefore, if the anchialine ponds located on the subject property are in disrepair-which they are, it is not only the fault of the DLNR, but it is the *responsibility* and burden of the DLNR to

restore and maintain them. Protection and restoration of public trust resources is in the purview of the DLNR and not real estate developers.

The DLNR is also constitutionally mandated to protect natural resources "for the benefit of present and future generations, the State and its political subdivisions shall conserve and protect Hawaii's natural beauty and all natural resources, including land, water, air, minerals and energy sources, and shall promote the development and utilization of these resources in a manner consistent with their conservation and in furtherance of the self-sufficiency of the State. All public natural resources are held in trust by the State of Hawaii for the benefit of the people." OHA finds the above-listed mandate in direct conflict with the DEIS's conclusion that the proposed development will affect the environment so that "the change in the local groundwater flow pattern in the vicinity of the proposed marina will impact the anchialine ponds that are located between the proposed marina and the shoreline south of the harbor entrance. The salinity of the anchialine ponds will increase due to the reduction of brackish groundwater (P. 48)." This being the case, it is safe to assume that the existing pond shrimp *(Metabetaeus lohena)* and the orangeback damsel fly *(Megalagrion xanthomelas)* within the subject properties will be greatly jeopardized and, more likely, completely and irrevocably destroyed.

Based on the aforementioned, OHA posits that the DLNRs' constitutional mandate and the proposed development of DLNRs' subject public lands are mutually exclusive. Based on this conclusion alone, OHA objects to the subject development as it is involve degradation, misuse and mismanagement of Hawai'i's public trust resources as established in the State Constitution.

Cultural Concerns

The project area here has been subjected to various archaeological inventory survey and reconnaissance work dating as far back as the 1930's. There has also been archaeological work performed on neighboring parcels as well for other projects. In looking at the traditional cultural landscape as a whole, one can see that much of the tangible cultural history of the area has been obliterated and decimated. The Cultural Impact Study done for this project notes on page 19, with regard to "Cultural Sites", that:

> *Kealakehe ahupua'a has survived the heavy large-scale development as seen in the southern ahupua'a from Lanihau to Keauhou. These ahupua'a are a micro-megalopolis of continuous hotels, beach houses, condos and subdivisions. Little clues are left of older civilization where the natural world dictated life. These ahupua'a to the south had some of the more impressive cultural sites that have given way to a new lifestyle.*

This is an excellent insight provided by the CIS and establishes the importance of what historically remains in Kealakehe as an ahupua'a. The State of Hawaii Historic Preservation Laws are modeled after the National Historic Preservation Act of 1966 and the National Park

Service National Register of Historic Places presents certain standards for criteria in considering whether a historic property is eligible for listing on the National Register as follows:

> **Criteria for Evaluation**
> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
> **A.** That are associated with events that have made a significant contribution to the broad patterns of our history; or
> **B.** That are associated with the lives of persons significant in our past; or
> **C.** That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> **D.** That have yielded or may be likely to yield, information important in prehistory or history.

The State of Hawai'i Historic Preservation Program sets forth criteria based upon the National Park Service standards with a very critical additional criteria added to address the concerns of the native Hawaiian population. Section13-284-6, Hawaii Administrative Rules (HAR) sets forth the criteria for significance evaluations as follows:

> §13-284-6 Evaluation of significance. (a) Once a historic property is identified, then an assessment of significance shall occur. The agency shall make this initial assessment or delegate this assessment, in writing, to the SHPD. This information shall be submitted concurrently with the survey report, if historic properties were found in the survey.
> (b) To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:
> (1) Criterion "a". Be associated with events that have made an important contribution to the broad patterns of our history;
> (2) Criterion "b". Be associated with the lives of persons important in our past;
> (3) Criterion "c". Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

> (4) Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history; or
> (5) Criterion "e". Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.
> A group of sites can be collectively argued to be significant under any of the criteria.

Furthermore, Section 13-284-6 (c), HAR, states:

> (c) Prior to submission of significance evaluations for properties other than architectural properties, the agency shall consult with ethnic organizations or members of the ethnic group for whom some of the historic properties may have significance under criterion "e", to seek their views on the significance evaluations. For native Hawaiian properties which may have significance under criterion "e", the Office of Hawaiian Affairs also shall be consulted.

The State of Hawaii's addition of criterion "e" pertaining to an additional significance of an evaluated cultural site as having an "important value to the native Hawaiian people" and the duty to consult with the Office of Hawaiian Affairs regarding these significance assessments has been wholly lacking in this project's historic preservation review process.

Neither the developer's archaeological consultant nor the State Historic Preservation Division possess the capacity to determine whether any historical site found and evaluated, meets the criteria for having an "important value to the native Hawaiian people." Thus the obligation to meaningfully consult with the Office of Hawaiian Affairs so that the Hawaiian people can determine what is valuable to them.

To see so many discovered cultural resources meeting only one or two criteria and designated for destruction via no action or "data recovery" which is essentially the same as destruction, further magnifies the harm of the total and complete failure to adhere to the spirit and intent of Chapter 6E, HRS.

What little cultural, natural and historical resources left become increasingly important and crucial to the traditional and customary native Hawaiian practices that exist there due to the

catastrophic loss of these resources in the larger area. The traditional and customary practices which are protected by the Constitution of the State of Hawai`i also inherently require the protection and perpetuation of the natural, cultural and historical resources which these practices rely upon to exist.

Noting that the 127 sites identified in the 2006 Archaeological Inventory Survey report were "significant" for their information value is right on point. These sites are important to Native Hawaiians for their information value and for being tangible connections to ancestors from the area of concern. However, the destruction of these sites to obtain archaeological data and similar information is of great concern to our beneficiaries.

Culturally, viewing the amount of cultural sites designated for "data recovery" or "no further work" is appalling, and especially in light of the lack of application of Criterion "e" with regards to the significance and importance of these remaining vestiges of our culture has to the Hawaiian people.

The relatively intact ahu known as "CS3" and found makai is important to the Hawaiian people, but so too are the other ahu which may be in disrepair, as well as Hale o Lono, the heiau which was noted to be in disrepair, but which may be ultimately chosen by the Native Hawaiian community to be restored, rebuilt and reinvigorated as many historic properties are across the entire state. The "lack of site integrity" has been utilized by some in the development and historic preservation field as a weapon to advocate for the destruction of Hawaiian sites, such as the ongoing issue with attempts to destroy and relocate a trail in a nearby mauka development project.

As can be seen from recent development work in nearby Kohanaiki, underground chambers containing significant cultural mea such as ki'i, as well as ancestral human burial sites can often be found in this area during development activities and not found during archaeological survey work. This is also a major concern of ours and not limited to this project or area but presents issues across the island chain.

This project will have a negative and devastating impact on what precious little is left of our culture, especially in the makai area of Kealakehe ahupua'a.

Archaeological Resources

Of primary concern for OHA is the applicant's efforts to mitigate adverse impacts to historic properties. Our staff believes that the sheer amount of historic properties slated for destruction, via bulldozing and/or data recovery is unreasonable and unacceptable. Of the 127 historic properties located on subject lands currently controlled by DLNR, only 25 are slated for

preservation. This is a preservation percentage of 20 %. What is important to note is that of the 25 sites slated for preservation, 11 are within the Legislative Boundary for Kaloko-Honokohau National Historic Park and are therefore not within the purview of the subject development, but rather the National Park Service. The remaining 14 sites within DLNR lands that are slated for preservation comprise only 11% of the known historic properties on the parcel. Of the 58 historic properties located on the Department of Hawaiian Home Lands parcel, only 4 are slated for preservation. This is a preservation percentage of 7%.

The total of historic properties located on both parcels subject to development is 185. Of these, only 15 are slated for preservation. This brings the preservation percentage for the entire development to 8%. This is unacceptable for an area so rich in cultural resources. This is also unacceptable given that the subject historic properties, ownership boundaries aside, are within the same cultural landscape as those within the Kaloko-Honokohau National Historic Park. It is therefore reasonable that the historic properties located within the subject properties are of the same importance as those located within Kaloko-Honokohau National Historic Park and, as imperative in reconstructing the history of West Hawai'i Island, they should be afforded the same level of protection.

In general, OHA feels that the protection measures proposed for the subject properties are not sufficient and will cause irrevocable harm to the presently intact cultural landscape. OHA urges the applicant and all applicable regulatory agencies to require the preservation of State Inventory of Historic Places (SIHP) #'s -1895 to 1884 (North-to-South) and SIHP -1884 to 2557 (East-to-West). OHA would also like to remind DLNR of its constitutional mandate to manage and protect historic sites for the benefit of the people of the State of Hawai'i.

Alternatives Listed

Due to the fact that the dredging portion of the proposed development will require U.S. Army Corps of Engineers permits (Sections 404 and 10), The National Environmental Policy Act (NEPA) of 1969, as amended, will be triggered. NEPA requires "a detailed statement by the responsible official on . . . alternatives to the proposed action." (42 U.S.C. §4332(C)) The alternatives presented in an EIS are "the heart of the environmental impact statement" (40 C.F.R. 1502.14, see also 42 U.S.C. 4332(C)), and an "inadequate range of alternatives presented" is one of three major sources of successful litigation against EISs.

Congress designed the requisite alternatives section to provide a clear choice among options to the public and the decision-makers. Only two alternatives are presented in this Draft EIS: one being the Army's preferred alternative, another being the required "no action." This is not an adequate representation of a possible range of alternatives, according to the U.S. Supreme Court and various federal courts.

One federal appellate court found that even eleven alternatives did not provide an "adequate range" of diverse possibilities. (*California v. Block*, 690 F.2d 753 (9th Cir. 1982)) The court noted that possible alternatives could be infinite, and that an agency only had to consider an array of alternatives that represented the range of possibilities. Even this has not been accomplished here.

Page 19 of the DEIS states that "the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina complexes, and community-oriented uses would not be realized." If this is the case, OHA recommends that the only feasible alternative is the No-Alternative option.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck, Native Rights Policy Advocate, at (808) 594-0239 or jessey@oha.org.

Aloha,

Clyde W. Nāmu'o
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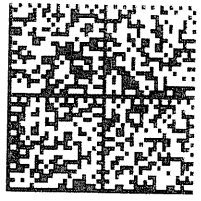

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July 23, 2007

Clyde W. Nāmuʻo, Administrator
State of Hawaiʻi Office of Hawaiian Affairs
711 Kapiʻolani Blvd., Ste. 500
Honolulu, Hawaiʻi 96813

Dear Mr. Nāmuʻo:

Subject: Kona Kai Ola Draft Environmental Impact Statement
Response to Your Comments Dated February 5, 2007

Thank you for your comments of February 5, 2007, on the Kona Kai Ola Draft Environmental Impact Statement.

We acknowledge your discussion on pages 1 through 3 on the legal and analytical framework regarding the obligations of the State and its agencies to properly identify, consider and mitigate of adverse impacts to the traditional and customary rights of Hawaiians. We assure you that the developer is committed to planning and implementing Kona Kai Ola in a manner that is consistent, compliant and respectful of the laws and legal precedence you discussed.

Anchialine Ponds

We acknowledge that the DEIS contained the statements you cited regarding the existing conditions of anchialine pools located onsite and the possible project impacts related to the degradation of the anchialine pools. The DEIS presented information stating that harbor construction would cause an increase in salinity in the anchialine pools makai of the proposed marina basin to become equivalent to the ocean at 35 parts per thousand (ppt) and that the anchialine biology would then perish.

In response to DEIS comments and to further study the pools south of the entrance channel of Honokōhau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. The report is contained in Appendix H-2 of the EIS and is summarized in EIS Sections 3.9.2.1 and 3.9.2.2. In addition, further comment on the groundwater hydrology effects on anchialine pools was prepared by Waimea Water Services and is contained in Appendix G-3 of the EIS. Attachment 1 contains the EIS Sections 3.9.2.1 and 3.9.2.2.

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The DEIS identified 22 anchialine pools. Further studies determined that three of these pools are actually part of an estuary complex with direct connection to the ocean. Of the 19 anchialine pools, six were considered high tide pools (exposed only at medium or high tide), seven were considered pool complexes (individual pools at low tide and interconnected at high tide), and six were single isolated pools. Of the 19 anchialine pools, three pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction.

While the second survey confirmed the presence of direct human use and disturbance, such as trash receptacles and toilet facilities, it found that the greatest degradation to the majority of the anchialine and estuarine resources was due to the presence of alien fish, including topminnows and tilapia, and introduced plants, predominantly pickelweed and mangrove.

The additional studies indicate that the remaining pools may not increase in salinity to levels unhealthy for *H. rubra* and *M. lohena* and other anchialine pool fauna. Waimea Water Services found that harbor construction would cut off some of the fresher ground-water flow. However, predicting the extent of change in flow is difficult if not impossible even with numerous boreholes and intense sampling. The tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is extremely difficult. The shallow lavas are of the pāhoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pāhoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Hence, the additional studies found that changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, the developer is committed to practicing good stewardship over the pools to be preserved and eliminating or reducing alien species to the extent practicable. The developer recognizes it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Mitigation measures to facilitate the long term health of the remaining anchialine pools will be based on environmental monitoring, which is vital as an early warning system to detect potential environmental degradation. A series of quantitative baseline analysis of the physio-chemical and biological components within the project site will provide a standard by which the effects of the development, anthropogenic activities, and natural phenomena on these environments can be measured.

The framework for the mitigation plan will include three measures intended to meet these objectives, including bioretention, salinity adjustment and possible new pools.

Bioretention, which is a Best Management Practice (BMP) is a feasible application for the proposed development. There is a probability that nutrients and other potential pollutants will runoff landscaping and impermeable surfaces such as roadways and parking lots during medium or high rainfall events. Some of these pollutants could enter the groundwater table and into anchialine pools and ultimately the ocean. As an alternative to directing runoff into the ground through drywells, storm water may be directed into bioretention areas such as constructed surface or subsurface wetlands, vegetated filter strips, grass swales, and planted buffer areas. Storm water held and moved through these living filter systems are essentially stripped of most potential pollutants, and allowed to slowly infiltrate back to the groundwater table.

Another mitigation measure that would be included in the management plan is salinity adjustment. In the 2006 assessment regarding the impact to the southern pools from the proposed construction of the harbor, it was stated that this construction would cause the salinity in the anchialine pools to become equivalent to the ocean at 35 ppt. It was then concluded that the anchialine biology would perish.

There is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and final determination of anchialine salinity following the harbor construction. The assessment that all anchialine pools will be barren with the construction of the harbor may be premature. *Halocaridina rubra* (‘ōpae‘ula) are routinely drawn from high salinity wells at 30-32 ppt. If the pools do become full strength seawater at 35 ppt, there exists uncertainty on the long-term effects to anchialine organisms, since there are no long-term studies or examples of native anchialine ecosystems at 35 ppt. Native anchialine pool vegetation also has relatively high salinity tolerance.

If the salinity were expected to rise to 35 ppt, possible mitigation in the management plan will include methods to surcharge man-made anchialine pools created adjacent to or in the vicinity of natural pools with low salinity well water. If sufficient volume is used, it is theoretically possible to lower salinity in adjacent natural anchialine pools. This surcharge method has been successfully used to raise salinity in anchialine pools in West Hawai‘i and cause the salinity rise in adjacent pools of at least up to 10 meters away. Surcharging with low salinity should work as well or better since the lower density water will essentially float atop the higher salinity water at the surface layer, and move throughout the complex of natural pools. Surcharging may also be a

viable mitigation to dilute and more rapidly disperse any pollutants that may be detected in the pools.

Another mitigation measure includes the creation of new anchialine pools. There is significant opportunity to create new anchialine pools and greatly expand the native habitat and resource. It has been demonstrated at several projects in West Hawai'i that anchialine pools can be created and will be colonized with a full complement of anchialine species endemic to the area. Anchialine pools are considered focal points of higher productivity relative to the subterranean groundwater habitat around them. Their productivity promotes an increase in population levels of anchialine species within the pools themselves and throughout the subterranean habitat surrounding them.

Cultural Concerns

We note your acknowledgement regarding findings of the Cultural Impact Assessment regarding the importance of what historically remains in the Kealakeha ahupua'a. The developer shares the concern of the cultural significance of the Kona Kai Ola project site, and this concern is embodied in various features in the project, such as preservation of significant archaeological resources, the establishment of a Hawaiian cultural center, the preservation and enhancement of historic trails where possible, and the support of the Ala Kahakai National Historic Trail System through the creation of a trail system that connects the project site to neighboring lands.

Your discussion of the criteria outlined in the Rules Governing Procedures for Historic Preservation Review is contained in the DEIS and EIS Section 4.2.1, Existing Conditions. According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and shall meet one or more of the criteria you list.

We acknowledge your concern regarding consultation with the Office of Hawaiian Affairs during the preparation of the archaeological assessment and note that initial consultation with the State Historic Preservation Division (SHPD) has occurred. Further consultation will occur with SHPD, and your agency, ethnic organizations or members of ethnic groups, including native Hawaiians, for whom some of the sites may have significance in order to seek their views.

We disagree, however, with your assertion that neither the consultant nor SHPD "possess the capacity to determine whether any historical site . . . meets the criteria for having an 'important value to the native Hawaiian people'." HAR Section 284-1 clearly designates SHPD as DLNR's representative agency in carrying out the State Historic Preservation Rules, which includes the evaluation of significance using Criterion "e." Further, Alan Haun and Associates, the archaeological consultant on the Kona Kai Ola project, meets standards for professional archaeologists set by the National Park Service and Chapter 13-281 of the Hawaii Administrative Rules.

The basis for determining which sites would be further studied and preserved is the aforementioned criteria. The criteria provide a management tool that addresses levels of significance and future action. Hence, while archaeological features have cultural value, not all archaeological sites meet Criterion "e." If all sites are

significant for cultural value, then it renders such significance useless as a management tool.

Further, the identification of eleven sites as culturally significant based on the presence of burials or ritual architecture is consistent with recommendations in the Cultural Impact Assessment. We call your attention to Chapter 5 of the Cultural Impact Assessment which is contained in Appendix L-1 of the EIS. The study recommends "a full inventory of archaeological sites . . . especially where burials are located." It further recommends that "the developers react responsive to burials should they be exposed." The cultural consultant did not recommend preservation of sites solely for their cultural value.

You reference a "relatively intact ahu known as 'CS3' " on page 7, third paragraph. The archaeological consultant did not use a designation system that uses letter / number combinations, and it is not possible to discuss the site you reference. We note that the archaeological study documented 80 ahu. A number of these mark trails. Most of the remaining ones are isolated with no obvious purpose aside from marking a location for some undetermined purpose.

Archaeological Resources

You assert that that the percentage of sites recommended for preservation is too low at seven to eight percent. We disagree. The criteria for preservation are not based on percentages of sites preserved, but rather whether a site meets criteria for such preservation. Preservation is normally considered for sites assessed as significant for more than one criterion. Most of the sites are solely significant for research potential, and this is the norm. Further, as previously discussed, these findings are consistent with recommendations from the Cultural Impact Assessment.

Alternatives Listed

As explained in the DEIS, the agreement between JDI and the State of Hawai'i established a required scope and scale of the project for which the impact analysis was provided. Several comments have addressed the fact that alternatives other than the No Project Alternative were not addressed in the DEIS Section 2, Alternatives Analysis.

While Kona Kai Ola is of the position that alternative actions other than a No Project alternative are not currently feasible absent an amendment to the agreement with the State, the agency and public comments and additional information generated as a result of inquiry into issues raised by the comments have been helpful in identifying alternative actions that will serve the State's goal of providing additional marina slips for the Kona area and that will serve to reduce or mitigate anticipated effects of the proposed development.

Thus, agencies such as the Land Division of the Department of Land and Natural Resources, the U.S. Department of the Interior Fish and Wildlife Service, the Planning Department of the County of Hawai'i, and the Office of Environmental Quality Control (OEQC), as well as community organizations have commented that a reduced scale marina and related facilities should be considered. The OEQC has

also asked that the alternative of a reduced scale project be evaluated under the assumption that DHHL may determine that a downsized project would be preferred.

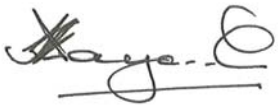
In response to these comments on the DEIS and in consideration of measures to mitigate anticipated impacts, the EIS Section 2, Alternatives Analysis, has been revised to describe the following alternatives, which are discussed in more detail in the EIS:

- Alternative 1 is a project involving a 400-slip marina, 400 hotel units, 1,100 time-share units, and commercial and support facilities. This alternative would enhance water quality and avoid the need to widen the existing harbor entrance channel, as well as reduce traffic and socioeconomic impacts.
- Alternative 2 is an alternative that had been previously discussed, but not included in the proposed project that includes an 800-slip harbor and a golf course, and
- Alternative 3 is the no-action alternative.

A comparison between impacts related to the proposed project concept and impacts related to Alternative 1 indicates that a reduction in the acreage and number of slips in the marina, as well as the reduction in hotel and time-share units, would generate less environmental, social and economic impacts. Although positive economic impacts would be reduced, Alternative 1 can be considered as a preferable alternative because of reduced environmental impacts. However, while it can be concluded that the 25-acre marina in Alternative 1 would be the preferred size, the DLNR agreement establishes the size of the marina at 45 acres and 800 slips. An amendment to the DLNR agreement is required in order to allow Alternative 1 to proceed. Hence, selection of Alternative 1 is an unresolved issue at this time. The additional EIS text that includes the added EIS Section 2, Alternative Analysis, is contained in Attachment 2 of this letter.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,



Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Home Lands
Jacoby Development, Inc.

Attachment 1

The conditions with the project constructed were found to be phosphorous limited. Several simulations were performed including and excluding the inflow from the marine exhibits which provides an additional nitrogen load and also varying the location of this inflow. It was found that the inflow from the marine exhibits can have a beneficial effect on flushing, especially when positioned within the existing harbor basin. However, its effect is significantly less than the effect due to the brackish groundwater inflow. When the exhibit inflow is excluded or positioned at the east end of the new marina, its effect is small in terms of flushing due to its high salinity. From a water quality perspective, since the loads from the exhibit inflow consist primarily of nitrogen, it does not cause increased algae growth. However, this exhibit inflow does raise the concentrations of ammonia and nitrate in the system.

Simulation results indicate that under the conditions when the post-expansion system receives an additional brackish inflow into the new 25-acre marina on the order of 30 mgd or more, water quality within the harbor system and in the surrounding waters remained similar to existing conditions. These conditions are expected to occur based on the findings reported by Waimea Water Services (2007), which states that the proposed marina would exhibit the same or similar flushing action as the existing marina.

An additional mitigation measure proposed by Waimea Water Services (2007), if sufficient inflow is not intercepted, consists of drilling holes in the bottom of the new marina to enhance this inflow and facilitate flushing within the proposed system.

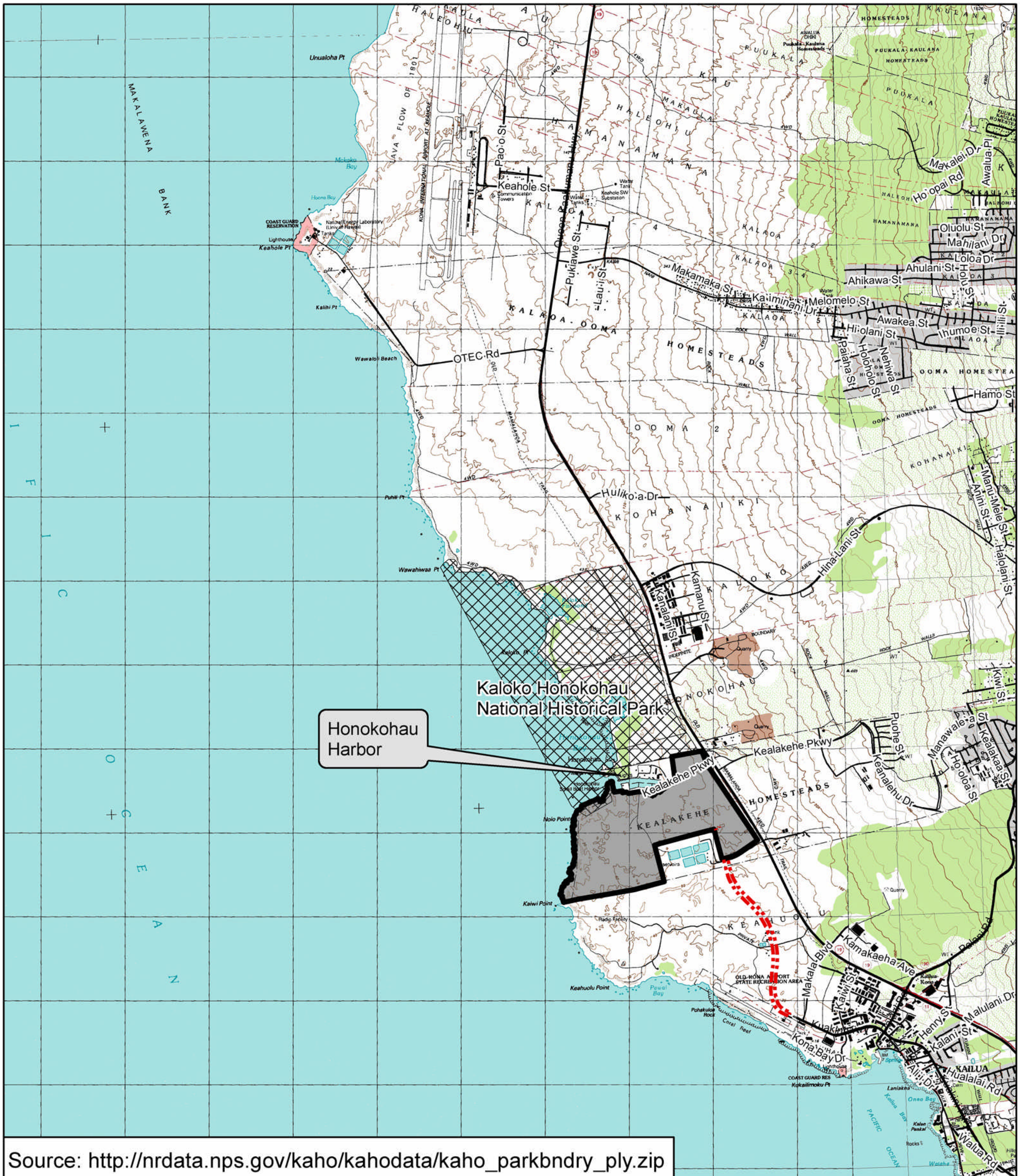
~~3.9.3~~3.9.2 Anchialine ~~Ponds~~ Pools

Two studies on anchialine pools were conducted in this EIS process. The anchialine ~~ponds~~ pools water quality studies and ~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute and is~~biota surveys were conducted by David A. Ziemann, Ph.D. of the Oceanic Institute in October 2006 and are included as Appendix ~~G~~H-1. That survey included pools located both north and south of Honokōhau Harbor. In response to DEIS comments and to further study the pools south of entrance channel of Honokōhau Harbor, a second study was conducted by David Chai of Aquatic Research Management and Design in June 2007. The second survey focused on intensive diurnal and nocturnal biological surveys and limited water quality analysis of the southern group of anchialine pools exclusively. The report is contained in Appendix H-2.

~~3.9.3.1~~3.9.2.1 Existing Conditions

Anchialine ~~ponds~~ pools exist in inland lava depressions near the ocean. Two anchialine ~~pond~~ pool complexes are located immediately to the north and south of the Honokōhau Harbor entrance channel. The complex to the north is located wholly within the designated boundaries of the Kaloko-Honokōhau National Historical Park as shown in Figure Q~~O~~. Many of the ~~ponds~~ pools in the southern complex are within the park administrative boundary as well. ~~Ponds~~ Pools in the northern complex show little evidence of anthropogenic impacts. Many contain typical vegetation and crustacean species in high abundance.

Figure R locates anchialine pools near the harbor entrance and pools~~Ponds~~ in the southern complex are depicted in Figure S.



Source: http://nrdata.nps.gov/kaho/kahodata/kaho_parkbndry_ply.zip

Figure Q: National Historical Park Service Legislative Boundary Map

Legend

- Project Site
- Proposed Parkway
- National Park Boundary

0 2,500 5,000 Feet

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JDI — Jacoby Development, Inc.

Source: Oceanic Institute

Figure R: Anchialine Pool Locations

N
W E
S

0 2,000 4,000 Feet

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JDI
JACOBY DEVELOPMENT, INC.

Source: Aquatic Resources Management And Design

Figure S: Anchialine Pool Locations in Southern Complex

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JDI
JACOBY DEVELOPMENT, INC.

The 2006 study identified 22 pools in the southern complex. The 2007 study found that three of the 22 pools are part of an estuary complex with direct connection to the ocean. While there were several signs of direct human use and disturbance, such as trash receptacles and toilet facilities, the greatest degradation to the majority of the anchialine and estuarine resources was due to the presence of alien fish, including topminnows and tilapia, and introduced plants, predominantly pickleweed and mangrove. ~~are moderately to heavily impacted, with many containing exotic fish that exclude the anchialine crustaceans. The ponds also show evidence of human impact, including discarded bottles, cans, wrappers, diapers, toilet paper, etc. Water quality conditions within the ponds generally reflect the conditions of the underlying groundwater.~~

~~Figure P locates anchialine ponds near the harbor entrance. The study conducted as a part of this EIS show that the anchialine ponds south of the harbor entrance are moderately to heavily impacted by human activities and introduced fish populations. The study found that the nitrogen phosphorus concentrations in these ponds are significantly higher compared to the ponds north of the harbor entrance. The sources of these additional nutrients are not known. Continuous influx of nutrients will eventually degrade the water quality to levels that could alter the pond ecology.~~

Biota surveys in the two pond systems clearly indicate that counts of typical pond denizens show a remarkable difference between the northern and southern ~~ponds~~ pools. In the northern ~~ponds~~ pools the number of *Halocaridina rubra* ranged from a low of 20–25 to too numerous to count. The biota rich pond bottoms appeared red due to the *Halocaridina rubra* numbers. The only other species visible was the predatory shrimp *Metabetaeus lohena*. In contrast, only four out of the 22 ~~ponds~~ pools examined in the southern pond complex showed a decreased presence of *Halocaridina rubra* (6 to 200) individuals in the pond, and three ~~ponds~~ pools contained *Metabetaeus lohena*. Eight of the ~~ponds~~ pools contained numbers of introduced minnows which is an apparent predator of *Halocaridina rubra* and *Metabetaeus lohena*.

The 2007 study found three of the pools identified in the 2006 study were part of an estuary complex with direct connection to the ocean, and that the southern complex contained 19 anchialine pools. The study further found that a majority of the southern pools are degraded biologically and physically, primarily due to the effects of introduced fish and plant species. Six pools are currently devoid of alien fish, but they face a high level of threat due to the proximity of pools that have these species. Of the 19 anchialine pools, six were considered high tide pools (exposed only at medium or high tide), seven were considered pool complexes (individual pools at low tide and interconnected at high tide), and six were single isolated pools. Of the 19 anchialine pools, three pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction.

The DEIS presented information stating that harbor construction would cause an increase in salinity in the anchialine pools makai of the proposed marina basin to become equivalent to the ocean at 35 ppt. and that the anchialine biology would then perish. There is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and final determination of anchialine salinity following the harbor construction. The assessment that all anchialine pools will be barren with the construction of the harbor may be premature. *Halocaridina rubra* (opae ula) are routinely drawn from high salinity wells at 30-32 ppt.

Within the 19 pools, native and non-native fauna included 14 species comprised of 5 fish, 2 mollusca, and 6 crustacea. Algae within the pools primarily consisted of a mixed assemblage of diatoms and cyanobacteria, with several pools dominated by matted filamentous *Cladophora*, sp. The darker cave/overhang pools and high tide pools had epilithic *Hildenbrandia* sp. covering the rock substrate. Riparian vegetation was dominated by introduced species consisting of Pickleweed (*Batis maritima*), Mangrove (*Rhyzophora mangle*), and Christmasberry (*Shinus terebenthifolius*). Only two species of native plants Akulikuli (*Sesuvium portulacastrum*) and Makaloa (*Cyperus laevigatus*) existed near the pools and comprised only few small patches and a single tuft (respectively).

Most of the hypogeal anchialine shrimp have adapted to the presence of minnows by foraging in the pools at night. During daylight hours, only the adult shrimp appear to coexist at low population levels with the smaller *P. reticulata*, but the larger *G. affinis* and *Oreochromis* prevent the daytime appearance of hypogeal shrimp due to predation.

The average salinity in Kealakehe pools is relatively high at 13.5 ppt compared to most other pools along the West Hawai'i coastline, having an average of approximately 7 ppt. This high salinity appears to be characteristic of this region, and is similar to the average of most pools within the adjacent ahupua'a of Honokōhau and Kaloko. The levels of nitrate-nitrogen levels are relatively high compared to other undeveloped areas, but fall in the range of some developed landscapes. Other water quality parameters, including pH and temperature, fall into normal ranges for anchialine pools.

This relatively high salinity is the likely reason aquatic insects were not found in any pools at Kealakehe. Though the rare damselfly *Megalagrion xanthomelas* has been observed and collected from Kaloko, a statewide assessment of its range has not found it to occur in water with salinity greater than 3ppt. However, there has been an unsubstantiated occurrence of the nymph in a pool of up to 8ppt (Polhemus, 1995).

Another species of concern is the hypogeal decapod shrimp *Metabetaeus lohena.* These shrimp are sometimes predatory on *H. rubra* but are more often opportunistic omnivores similar to *H. rubra.* Predusk and nocturnal sampling at high tide is clearly the optimal method to determine habitat range and population densities for this species. These shrimp were found in 13 of the 19 pools, 7 of which had *M. lohena* only at night. The occurrences of *H. rubra* were found in 16 of 19 sampled pools, 8 of which had 'Ōpae'ula observed only at night. Consequently, despite having numerous degraded anchialine resources at Kealakehe, there are opportunities for many of the pools to be restored and enhanced to a level where large populations of anchialine shrimp and other native species may return to inhabit the pools as they likely have in the past.

~~As mentioned earlier, the southern ponds also had elevated concentrations of nutrients indicating water quality degradation. These factors indicate that if no restoration or maintenance activities are instituted to reserve these ponds, these ecosystems will degrade beyond recovery.~~

~~3.9.3.2~~3.9.2.2 Anticipated Impacts and ~~Recommended~~ Proposed Mitigations

The anchialine ~~ponds~~ pools that are located north of the existing harbor are not likely to be impacted because no development activities are proposed north of the existing harbor. It is highly unlikely that existing groundwater flows to the Kaloko-Honokōhau pond system to the north of the existing harbor will be impacted by the proposed marina to the south.

Of the 19 pools in the southern complex, three would be eliminated due to harbor construction. Regarding the remaining pools, the DEIS noted that t~~T~~he change in the local groundwater flow pattern in the vicinity of the proposed marina ~~will~~ would impact the anchialine ~~ponds~~ pools that are located between the proposed marina and the shoreline south of the harbor entrance. The 2006 study (Appendix H-1) noted that t~~T~~he salinity of the anchialine ~~ponds~~ pools ~~will~~ would increase due to reduction of brackish groundwater, and that ~~. Some ponds will be excavated to make the new harbor basin. T~~those ~~ponds~~ pools that are not excavated will revert to full salinity, causing the loss of their habitat. ~~and associated aquatic flora and fauna. However, current investigations indicate that these ponds are already enriched by nutrients and the density of associated aquatic fauna is very low. In addition, trash from visitors, and introduction of minnows has already degraded the pond ecology.~~ Even without the potential impacts from the proposed marina construction, the pond ecology might change irreversibly from the nutrient input, human indifference and expansion of non native fauna species.

Further studies conducted in response to DEIS comments (Appendix H-2, and Appendix G-3) indicate that the remaining pools may not increase in salinity to levels unhealthy for *H. rubra* and *M. lohena* and other anchialine pool fauna. In addition, these studies determined that there are realistic mechanisms employed elsewhere that would mitigate changes due to groundwater changes. Waimea Water Services found that harbor construction would cut off some of the fresher ground-water flow. However, predicting the extent of change in flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore.

Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented. The mitigation plan will be based on the following objectives:

Objective 1 To preserve, maintain, and foster the long-term health and native ecological integrity of anchialine pools at Kealakehe.

Objective 2 To protect and promote cultural practices and traditions surrounding anchialine resources at Kealakehe.

Objective 3 To provide education, interpretation, and interactive opportunities for the community to learn about and appreciate the anchialine resources.

Objective 4 To acquire a pond manager to implement the program, conduct monitoring, research, and reporting, and provide education to the community about anchialine and estuarine resources.

Mitigation measures to facilitate the long-term health of the remaining anchialine pools will be based on environmental monitoring, which is vital as an early warning system to detect potential environmental degradation. A series of quantitative baseline analysis of the physio-chemical and biological components within the project site will provide a standard by which the effects of the development, anthropogenic activities, and natural phenomena on the environment can be measured. The framework for the mitigation plan will include three measures intended to meet these objectives, including bioretention, salinity adjustment and possible new pools.

As a mitigation measure, bioretention, which is a Best Management Practice (BMP) is a feasible application for the proposed development. There is a probability that nutrients and other potential pollutants will runoff landscaping and impermeable surfaces such as roadways and parking lots during medium or high rainfall events. Some of these pollutants could enter the groundwater table and into anchialine pools and ultimately the ocean. As an alternative to directing runoff into the ground through drywells, storm water should be directed into bioretention areas such as constructed surface or subsurface wetlands, vegetated filter strips, grass swales, and planted buffer areas. Storm water held and moved through these living filter systems are essentially stripped of most potential pollutants, and allowed to slowly infiltrate back to the groundwater table.

Bioretention is a Best Management Practice (BMP) that would be a highly appropriate application for the proposed development. Further, BMPs utilized in series may incorporate several storm water treatment mechanisms in a sequence to enhance the treatment of runoff. By combining structural and/or nonstructural treatment methods in series rather than singularly, raises the level and reliability of pollutant removal. Another means to reduce the potential for groundwater contamination is to increase soil depth above the standard in landscaped areas. This will allow chemicals to be held in the soils longer for more complete plant uptake and breakdown of these chemicals by soil microbes. A specific guide for chemical application by landscape maintenance personnel will be a beneficial tool to help avoid contamination of groundwater resources.

Another mitigation measure that may be included in the management plan is salinity adjustment. In the 2006 assessment regarding the impact to the southern pools from the proposed construction of the harbor, it was stated that this construction would cause the salinity in the anchialine pools to become equivalent to the ocean at 35ppt. It was then concluded that the anchialine biology would perish.

However, there is currently a level of uncertainty by professional hydrologists as to the exact movement of surface groundwater and a final determination of anchialine salinity following the harbor construction. The dynamics of groundwater movement through a porous lava medium both seaward and laterally along the coastline is an inexact science. This is compounded by the variations in water density, including stratification of salinity within the proposed harbor and capillary movement of low-density surface water through the substrata.

The assessment that all anchialine pools will be barren with the construction of the harbor may therefore be premature. *H. rubra* are routinely drawn from high salinity wells at 30 – 32 ppt and survive in this salinity for years. Further, high populations *H. rubra* and *M. lohena* have thrived and reproduced in pool salinities of 27ppt. If the pools do become full strength seawater at 35ppt, there exists uncertainty on the long-term effects to anchialine organisms, since there are no long-term studies or examples of native anchialine ecosystems at 35ppt. Native anchialine pool vegetation also has relatively high salinity tolerance.

If the salinity were expected to rise to 35 ppt, possible mitigation in the management plan will include methods to surcharge man-made anchialine pools created adjacent to or in the vicinity of natural pools with low salinity well water. If sufficient volume is used, it is theoretically possible to lower salinity in adjacent natural anchialine pools. This surcharge method has been successfully used to raise salinity in anchialine pools and cause the salinity rise in adjacent pools of at least up to 10 meters away. Surcharging with low salinity should work as well or better since the lower density water will essentially float atop the higher salinity water at the surface layer, and move throughout the complex of natural pools. Surcharging may also be a viable mitigation to dilute and more rapidly disperse any pollutants that may be detected in the pools.

Another mitigation measure includes the creation of new anchialine pools. There is significant opportunity to create new anchialine pools and greatly expand the native habitat and resource. It has been demonstrated at several projects in West Hawai'i that anchialine pools can be created and will be colonized with a full compliment of anchialine species endemic to the area. Anchialine pools are considered focal points of higher productivity relative to the subterranean groundwater habitat around them. Their productivity promotes an increase in population levels of anchialine species within the pools themselves and throughout the subterranean habitat surrounding them.

~~No realistic mechanisms are envisioned for re-injecting fresh water into these systems to maintain their ecological balance as an anchialine system. These ponds will be changed from a brackish water system to a marine system. But, those ponds in the area of the shoreline park and cultural park will be cleaned of vegetation and protected from other physical alteration. A buffer zone around these newly established marine ponds will be protected as well.~~

~~The anchialine pond shrimp (*Metabetaeus lohena)* and the orangeback damsel fly (*Megalagrion xanthomelas)* are listed as candidate endangered species in the Federal Register and were both recorded in surveys of these anchialine ponds done in 2004 by US Geological Survey Biological Resources Division and the NPS Inventory and Monitoring Program. Low numbers of *Metabetaeus lohena* were encountered in three of the 22 ponds surveyed in the southern pond complex. *Megalagrion xanthomelas* was not encountered in any of the southern pond complex ponds during the recent study. The low density of *Metabetaeus lohena* and the observed absence of *Megalagrion xanthomelas* may be due to the impacts from high nutrient input and general degradation of the ponds.~~

~~An attempt should be made to move as much of the existing population of *Metabetaeus lohena* from these anchialine ponds before they become too saline, to possible newly excavated ponds that may be developed off-site. These shrimp should not be introduced into existing populated ponds to avoid any potential pathogenic impacts to the healthy ponds.~~

~~Public education on the unique ecology of the anchialine ponds and the need for preserving their ecology will reduce future human impacts in other healthy ponds.~~

~~Further recommended mitigation includes restoration to degraded anchialine ponds off the project site, preferably those located at the adjacent Kaloko-Honokōhau National Historical Park.~~

Attachment 2

2 Alternatives Analysis

~~In typical land development projects, the initial planning process includes the exploration of alternatives to development objectives. In the EIS process, these alternatives are presented with a disclosure of reasons for the dismissal of non-preferred alternatives.~~

~~Kona Kai Ola does not follow this same pattern of alternatives evaluation.~~ As discussed in Section 1.4, the proposed Kona Kai Ola project is the result of agreements between JDI and the State DLNR and DHHL. The agreements and leases between the State and JDI stipulate the parameters of development for this site in terms of uses, quantities and size of many features, resulting in a limited range of land uses. Unlike a private property project, JDI is required to meet the criteria outlined in the agreements, thereby affording less flexibility in options and uses. From the developer's perspective, the agreements must also provide sufficient flexibility to allow for a development product that responds to market needs and provides a reasonable rate of return on the private investment.

The agreements between JDI and DLNR specify that the proposed harbor basin is to be 45 acres and accommodate 800 slips. This development proposal is the subject of this EIS. In response to DEIS comments, additional water quality studies and modeling were conducted. These studies determined that the water circulation in a 45-acre 800-slip marina would be insufficient to maintain the required standard of water quality. The models of water circulation suggest that a new 25-acre harbor basin could successfully maintain required water quality in the new harbor. Comments on the DEIS from DLNR, from other government agencies, the neighbors and the general community also called for the consideration of alternatives in the EIS, including a project with a smaller harbor basin and less density of hotel and time-share units.

In response to these comments on the DEIS, three alternatives are evaluated in this Final EIS and include Alternative 1, which is a plan with a 25-acre 400-slip harbor basin including a decrease in hotel and time-share units; Alternative 2, which is an alternative that had been previously discussed but not included in the proposed project, that includes an 800-slip harbor and a golf course; and Alternative 3, the no-project alternative. Each alternative is included in the EIS with an evaluation of their potential impacts. These project alternatives are presented to compare the levels of impacts and mitigation measures of the proposed project and alternative development schemes pursuant to requirements set forth in Chapter 343, HRS.

~~JDI is required to provide a new marina basin not less than 45 acres and a minimum of 800 new boat slips. Further, the agreements provide the following options for land uses at the project site:~~

- ~~Golf Course~~
- ~~Retail Commercial Facilities~~
- ~~Hotel Development Parcels~~
- ~~Marina Development Parcels~~
- ~~Community Benefit Development Parcels~~

~~JDI is not pursuing the golf course option and is proposing instead to create various water features throughout the project site. All other optional uses have been incorporated in Kona Kai Ola.~~

2.1 Project Alternatives

2.1.1 Alternative 1: 400-Slip Marina

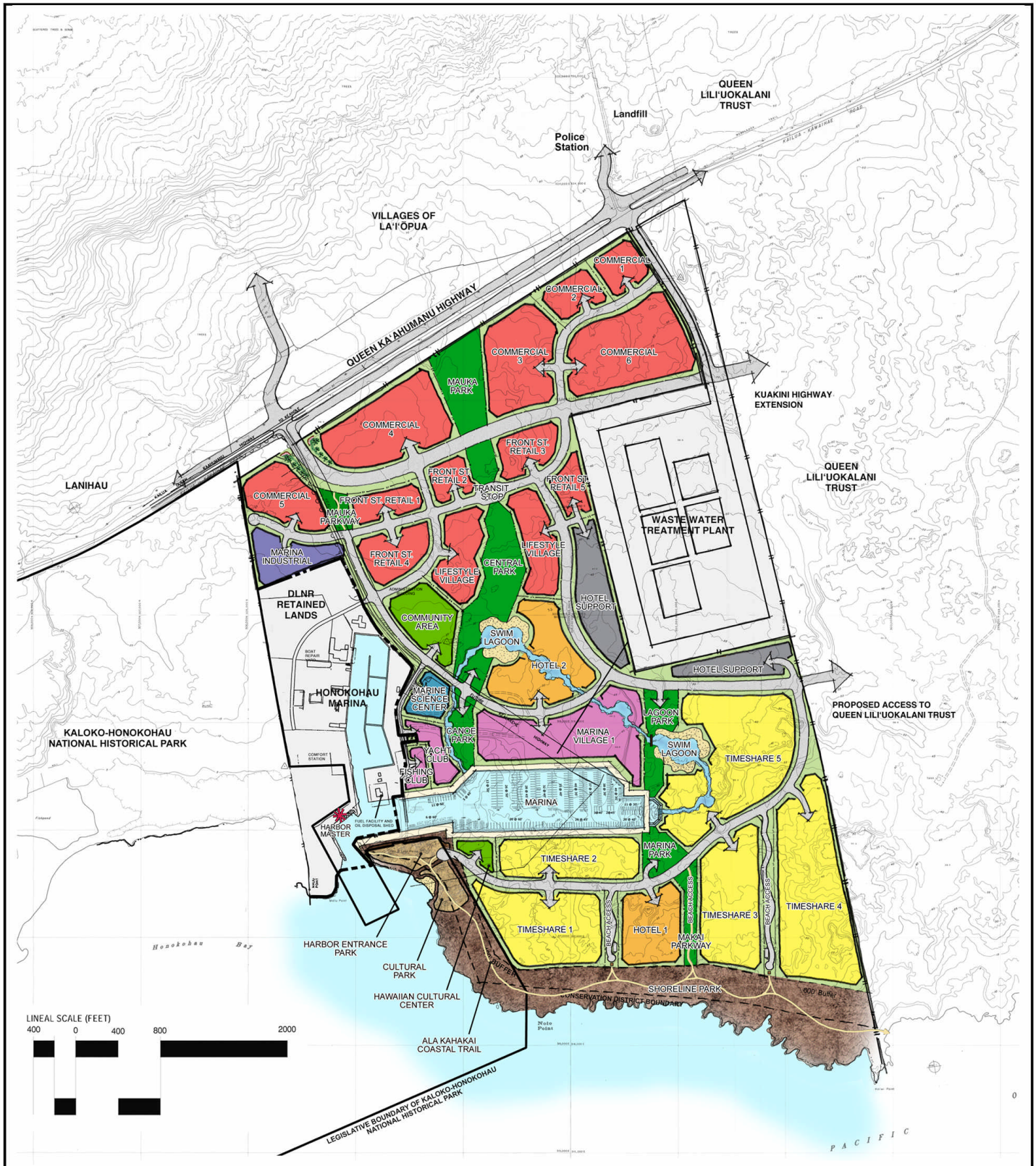
Studies conducted in response to DEIS comments found the construction and operation of an 800-slip marina may significantly impact the water quality within the marina and along the shoreline. Specifically, the Harbor Water Quality Modeling Study, as contained in Appendix U, found that the water circulation in a 45-acre 800-slip harbor was insufficient to maintain an acceptable level of water quality. Further, the existing harbor channel, which would serve both the existing and new harbors, could not adequately serve the increased boat traffic generated by an 800-slip marina during peak traffic. Mitigation measures to accommodate peak boat traffic included the widening of the existing channel, an action that would entail a complex process of Federal and State approvals and encounter significant environmental concern.

Concerns related to the proposed density of hotel and time-share units were also expressed in comments to the DEIS from members of the public, neighbors to the project site, especially the Kaniohale Community Association, and government agencies. Common themes in DEIS comments were related to impacts regarding traffic, project requirements of potable water and infrastructure systems, including sewer, drainage, utility and solid waste systems, and socioeconomic impacts.

In response to the water quality study results, and to the DEIS comments, an alternative plan was developed with a smaller marina with less boat slips, and a related decrease in hotel and time share units. Illustrated in Figure G, Alternative 1 reflects this lesser density project, and features a 400-slip marina encompassing 25 acres. For the purposes of the Alternative 1 analysis, JDI assumed 1,100 time-share units and 400 hotel rooms. Project components include:

- 400 hotel units on 34 acres
- 1,100 time-share units on 106 acres
- 143 acres of commercial uses
- 11 acres of marina support facilities
- 214 acres of parks, roads, open spaces, swim lagoons and community use areas

In addition, Alternative 1 would include the construction of a new intersection of Kealakehe Parkway with Queen Ka'ahumanu Highway, and the extension of Kealakehe Parkway to join Kuakini Highway to cross the lands of Queen Lili'uokalani Trust, and connecting with Kuakini Highway in Kailua-Kona. This is a significant off-site infrastructure improvement and is included in the agreements between the State and JDI.



Source: PBR HAWAII

Plan is conceptual only and subject to change

Figure G: Alternative 1: 400-Slip Marina

LEGEND

- TIME SHARE
- HOTEL
- RETAIL / COMMERCIAL
- MARINA RETAIL
- MARINA SUPPORT / COMMERCIAL
- MARINE SCIENCE CENTER
- COMMUNITY AREA / CULTURAL CENTER
- SWIM LAGOON
- MARINA
- UTILITIES
- PARKS & GREEN SPACE
- SHORELINE
- HARBOR ENTRANCE PARK / CULTURAL PARK

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Like the proposed project, Alternative 1 would have a strong ocean orientation, and project components that support this theme would include various water features including seawater lagoons and a marine science center. The new Alternative 1 harbor would include a yacht club, fishing club, a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. The coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and 'Alula for community use. Additional Alternative 1 community areas would include facilities and space for community use, including programs of the Kona Kai Ola Community Foundation, which supports community programs in health care, culture, education, and employment training for the local community, especially to native Hawaiians. Like the original proposed plan, Alternative 1 includes 40 percent of the land in parks, roads, open spaces, swim lagoons and community use areas.

2.1.2 Alternative 2: Golf Course Feature

Alternative 2 was among the alternatives discussed at a community charrette in September 2003. It includes a golf course, which is a permitted use in the DLNR agreement and DHHL lease. As Figure H illustrates, an 18-hole championship golf course would occupy 222 acres on the southern portion of the project site. As with the proposed project, Alternative 2 includes an 800-slip marina on a minimum of 45 acres.

To support the economic viability of the project, other Alternative 2 uses include:

- Golf course clubhouse on three acres
- 1,570 visitor units on 88 acres fronting the marina
- 118 acres of commercial uses
- 23 acres of community uses

Community uses in Alternative 2 include an amphitheater, a canoe facilities park, a community health center, a Hawaiian cultural center and fishing village, a marine science center and employment training center. The sea water lagoon features contained in the proposed project and Alternative 1 are not included in this alternative.

2.1.3 Alternative 3: No Action

In Alternative 3, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.

~~The economic viability and sustainability of the project is determined by the density and uses proposed. Because JDI is obligated to develop an 800-slip marina for the State, complete road improvements, and provide various public enhancement features at its own expense, the density proposed for the income generating features of the development must be sufficient to provide an acceptable level of economic return for JDI. The market study, which is discussed in Section 4.6, reviewed various development schemes and determined that the currently proposed density and mix is the optimum to meet the anticipated financing and development cost obligations for the public features associated with the development.~~

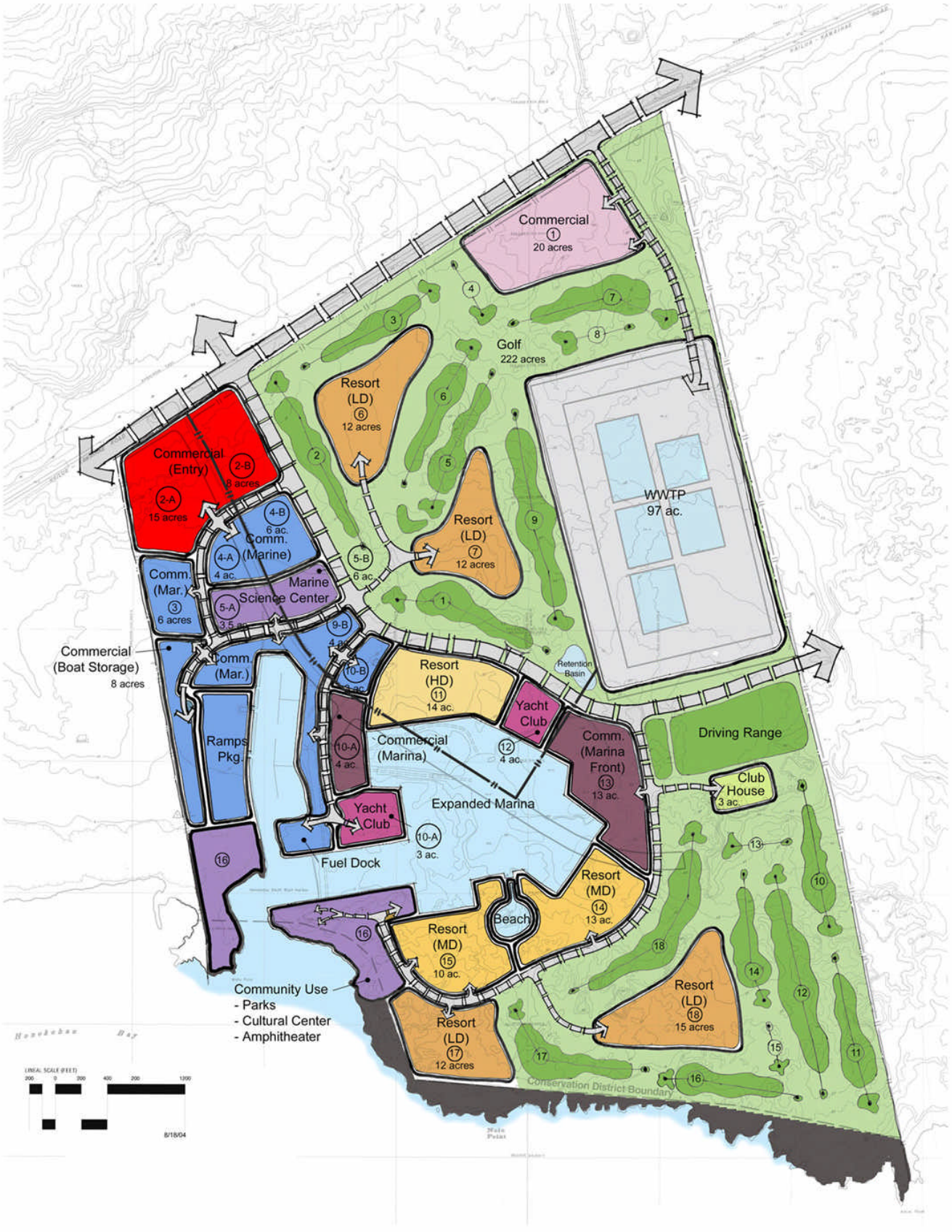

Figure H. Alternative 2: Golf Course Alternative

Legend

N E S W

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2.2 Alternatives Analysis

As discussed in Section 2.1, the proposed Kona Kai Ola project (also referred to as "proposed project") is defined by development requirements related for a marina and the related uses that would be needed to generate a reasonable rate of return that covers development costs.

Beginning with Section 2.2.1, the alternative development concepts are comparatively assessed for potential impacts that may reasonably be expected to result from each alternative. Following is an overview of the primary observations of such assessment.

Alternative 1 includes half of the State-required boat slips and 60 percent of the proposed hotel and time-share units and, due to the decreased density, this alternative would generate significantly less environmental and socio-economic impacts. A harbor water quality model found the reduction of the volume of the new marina basin by about half (approximately 25 acres) significantly improved the water circulation and quality. Further, the reduced number of boat slips would generate less boat traffic, thereby reducing congestion and the need to mitigate impacts further by the widening of the existing harbor channel.

A project with fewer hotel and time-share units and increased commercial space with a longer (14 years) absorption period would change the mix of employment offered by the project, and slightly increase the overall employment count. The public costs/benefits associated with Alternative 1 would change, compared to the proposed project, with a general increase in tax collections, and a general decrease in per capita costs. Detailed discussion of Alternative 1 potential economic impacts are provided in Section 4.6.6. Comparisons of levels of impact are presented throughout this FEIS.

While this analysis might indicate that the 25-acre marina in Alternative 1 would be the more prudent choice, the DLNR agreement establishes the minimum size and slip capacity of the marina at 45 acres and 800 slips, respectively. Amendments to the DLNR agreement would be required in order to allow Alternative 1 to proceed as the preferred alternative. Hence, selection of the preferred alternative is an unresolved issue at the writing of this FEIS.

Alternative 2, the golf course alternative, was not previously considered to be the preferred alternative primarily because market conditions at the time of project development might not likely support another golf course. Further, DHHL has a strategy goal to have more revenue-generating activities on the commercial lease lands within the project area. In addition, concerns have been expressed as to environmental impacts of coastal golf courses, including the potential adverse impact on Kona's water supply if potable water is used for golf course irrigation.

While Alternative 3, the no-project alternative, would not generate adverse impacts related to development of these lands associated with the construction and long-term operations, it would also not allow for an expanded public marina that would meet public need and generate income for the public sector. Further, the no-project alternative would foreclose the opportunity to create a master-planned State-initiated development that would result in increased tax revenue, recreation options and community facilities. Crucial privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities, and public access would not be contributed.

~~Hence, the only valid alternative to the proposed project is the no-action alternative. In this alternative, the project site would be left vacant, and the proposed marina, hotel and time-share facilities, commercial and marina industrial complexes, and community-oriented uses would not be realized.~~

~~The no-project alternative would therefore not generate adverse impacts associated with the construction and long-term operations would not occur.~~

~~Likewise, the creation of a master-planned state-initiated development, resulting in increased employment, tax revenue, recreation options and community facilities, would not be created. Privately-funded improvements, such as the marina, regional roadway and circulation improvements, and improvements to the existing wastewater treatment plant, would not be implemented. Private funds toward the development of community-oriented facilities such as parks, other recreational facilities and public access would not be contributed.~~

Further, the creation of revenue-producing businesses on the DHHL property to fund homestead programs would not occur, resulting in fewer potential benefits for Hawaiians.

Hence, the agreements and leases between the State and JDI indicate that the no-action alternative is not in the public interest~~has been rejected at this time~~.

2.2.1 Impact Comparison

Grading and Excavation

The proposed project requires grading and excavation. Both actions may impact groundwater due to rainfall runoff during construction. Alternative 1 would require a significantly smaller excavation for the marina basin and would therefore carry a lesser risk of potential adverse effects on water quality. Alternative 2 would require the same basin excavation as the proposed project, and would also include extensive grading and filling to build the golf course, the latter of which would generate additional impacts. Alternative 3 would result in no change to the geography, topography and geology.

Further discussion on grading and excavation is contained in Section 3.3.

Natural Drainage

Most precipitation infiltrates into the porous ground at the site, and no significant sheet flow is likely. Alternative 1 would generate similar levels of impacts on natural drainage as those of the proposed project and thus require similar mitigation measures. The golf course in Alternative 2 would not be as porous since the site would be graded, soil would be placed, and grass and other landscaping would be grown. Sheet flow and runoff can occur on a golf course, and drainage patterns might change. Alternative 3 would result in no change to the existing natural drainage pattern. Further discussion on natural drainage is contained in Section 3.4.

Air Quality

Air quality will be affected by construction activities, as well as pollutants from vehicular, industrial, natural, and agricultural sources. Alternative 1 would generate less construction air quality impacts than the proposed project due to the reduced amount of intensive groundwork associated with the smaller marina basin and fewer long-term impacts by reducing traffic 35 and 40 percent during, respectively, AM and PM peak traffic times. Construction of Alternative 2 would result in fugitive dust and exhaust from equipment and is expected to generate the same level of air quality impact as the proposed project. Alternative 3 would result in no change to existing air quality. Further discussion on air quality is contained in Section 3.5.

Terrestrial Environment

To provide additional habitat for shorebirds and some visiting seabirds, the project proposes to construct a brackishwater pond area suitable for avian fauna, including stilts, coots and ducks. While habitat expansion is beneficial, there is also a possibility that these species may be exposed to activity that may harm them. Alternative 1 would not include a brackish water pond, but will include 5 acres of seawater features, which is 74 percent less than the 19 acres of seawater features in the proposed project. While this would reduce beneficial impacts, it would also decrease exposure to potentially harmful activity. Alternative 2 does not include the brackish water pond features, but would include drainage retention basins that would attract avian fauna and expose them to chemicals used to maintain golf course landscaping. While Alternative 3 would result in no increase in potentially harmful activity, it would also not provide additional habitat for avian fauna. Further discussion on the terrestrial environment is contained in Section 3.7.

Groundwater

Groundwater at the project site occurs as a thin basal brackish water lens. It is influenced by tides and varies in flow direction and salt content. The existing Honokōhau Harbor acts as a drainage point for local groundwater. Any impact to groundwater flow from the proposed harbor is likely to be localized. The proposed marina basin will not result in any significant increase in groundwater flow to the coastline, but rather a concentration and redirection of the existing flows to the harbor entrance.

There will be differences in the flow to the marina entrance between the proposed project and Alternative 1. Alternative 1, being smaller in size, will have less impact on groundwater flow than the proposed marina. Alternative 2 will have a similar impact to groundwater quality as the proposed project. Alternative 2 may also impact water quality by contributing nutrients and biocides to the groundwater from the golf course. Alternative 3 would result in no change in existing groundwater conditions. Further discussion on groundwater is contained in Section 3.8.1.

Surface Water

There are no significant natural freshwater streams or ponds at the site, but there are brackish anchialine pools. Surface water at the project site will be influenced by rainfall. Runoff typically percolates rapidly through the permeable ground. The proposed project will include some impermeable surfaces, which together with building roofs, will change runoff and seepage patterns.

Alternative 1 is a lower density project that is expected to have proportionally less impact on surface water and runoff patterns and less potential impact on water quality than the proposed project. Alternative 2 would have more impact on surface water quality than the proposed project due to fertilizers and biocides carried by runoff from the golf course. Alternative 3 would result in no change to surface water conditions. Further discussion on surface water is contained in Section 3.8.2.

Nearshore Environment and Coastal Waters

The potential adverse impacts to the marine environment from the proposed project are due to the construction of an 800-slip marina and the resulting inflow of higher salinity seawater and inadequate water circulation, both of which are anticipated to impair water quality to the extent of falling below applicable standards. One possible mitigation measure is to significantly reduce the size of the marina expansion.

The reduced marina size (from 45 to 25 acres) and reduced lagoon acreage in Alternative 1 are expected to result in a proportionate reduction in seawater discharging into the new harbor and increased water circulation. Alternative 2 includes the same marina basin size and is therefore subject to the same factors that are expected to adversely affect water quality.

In the existing Honokōhau Harbor, water quality issues focus on the potential for pollutants, sediments, mixing and discharge into the nearshore marine waters. Before the harbor was constructed, any pollutants entrained within the groundwater were believed to have been diffused over a broad coastline.

The water quality in the proposed harbor depends on several components. These include salinity, nutrients, and sediments that come from the ocean, rainfall runoff, water features with marine animals, and dust. The smaller project offered as Alternative 1 is expected to produce a reduced amount of pollutants and reduce the risk of adverse impact upon water quality.

It is notable that the 45-acre marina basin planned in the proposed project and Alternative 2 only becomes viable from a water quality impact standpoint if the additional brackish groundwater inflow into the new marina exceeds 60 mgd. The resulting flushing from such inflow would be expected to better maintain water quality. However, it is unclear whether 60 mgd of brackish groundwater would be available. As proposed in Alternative 1, reduction of the volume of the new marina basin by 45 percent will significantly improve the flushing and water quality because the lower volume can be flushed by the available groundwater flow.

In addition, there could be higher rainfall runoff from the Alternative 2 golf course into the harbor, because the grassed golf course will be less porous than the natural surface. The golf course will also require relatively high levels of fertilizer, biocides, and irrigation, all of which could contribute to adverse water quality impacts.

Further discussion on nearshore environment and coastal waters is contained in Section 3.9.1.

Anchialine Pools

Anchialine pools are located north of Honokōhau Harbor, and south of the harbor on the project site. The marine life in these pools is sensitive to groundwater quality, and changes due to construction and operation of the project could degrade the viability of the pool ecosystem. In the southern complex, 3 anchialine pools with a combined surface area of $20m^2$ would be eliminated due to the harbor construction in the proposed project and Alternatives 1 and 2.

Predicting the extent of change in groundwater flow is difficult if not impossible even with numerous boreholes and intense sampling. The actual flow of groundwater towards the sea is minimal today, and tidal measurements show that tide fluctuations represent more than 90 percent in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tide, which indicate a vertical and horizontal pressure regime between bore hole 6 and the ocean and harbor. Hence, the tides alone create a mixing system that increases salinity, as the flow approaches the point of discharge which will be either the channel or the shore. Another factor that could influence groundwater quality is the increased local recharge from irrigation between the channel and shore. This will add fresh water to the lens locally but is not quantified at this time.

Quantification of these impacts, including the flow of groundwater through each pond, is therefore extremely difficult. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual pools. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the pools.

Changes in groundwater quality may or may not impact biological communities in the anchialine and estuarine environment. In either case, it is important to understand these relationships to effectively manage the resource. If there is significant deviation from the baseline especially in regard to nutrients, pathogens, and toxins, a mitigation plan to determine the cause and take decisive appropriate action will be implemented.

Due to the uncertainty of changes in groundwater flow and quality due to marina construction, the variability in impacts between the proposed project and Alternatives 1 and 2 is unknown at this time. Alternative 3 would result in no change in groundwater flow. While this would eliminate the potential for adverse impacts, Alternative 3 would also continue the pattern of existing degradation related to human activity and the introduction of alien species. Further discussion on anchialine pools is contained in Section 3.9.2.

Marine Fishing Impacts

The proposed marina will increase the number of boats in the area and it is reasonable to assume that a portion of these new boats will engage in fishing activities. The increase in boats in the area would be primarily related to the marlin and tuna / pelagic fishery, coral reefs due to extractive fisheries, and SCUBA activities. The pressure on fish and invertebrate stocks is expected to increase with or without the marina. Harbor expansion provides the opportunity to address existing conditions to consolidate, focus, and fund management and enforcement activities at one location.

Compared to the proposed project, Alternative 1 would result in a 21 percent decrease in boat traffic, thereby lessening the potential for marine fishing impacts. The level of impacts in Alternative 2 would be similar to that of the proposed project. Alternative 3 would result in no change in existing marine fishing conditions, and no opportunity to address already existing pressure on fish and invertebrate stocks. Further discussion on marine fishing impacts is contained in Section 3.9.3.

Cultural and Archaeological Resources

The proposed project will integrate cultural and archaeological resources in the overall development. Archaeological sites recommended for preservation will be preserved, and cultural practices will be encouraged. Kona Kai Ola includes a canoe park, and a cultural park with a focus on Hawaiian maritime cultural heritage of the voyaging canoe. Proposed is a 400-foot shoreline setback that would serve as a buffer between the ocean and developed areas. This coastal area would be protected with a shoreline park with trails and public access parking for walking and shoreline fishing, and a cultural park surrounding the heiau, the cultural sites and ʻAlula for community use.

Alternative 1 would contain all of the cultural archaeological features and the shoreline setback area would be 400 feet in the northern portion of the site and increase to 600 feet in the southern portion. Alternative 2 would preserve cultural and archaeological resources, but does not include a 400-foot shoreline setback. Alternative 3 would result in no change to existing cultural and archaeological resources and no addition of cultural and community facilities and activities. Further discussion on cultural and archaeological resources is contained in, respectively, Sections 4.1 and 4.2.

Noise

Project-generated noise is due to construction equipment and blasting, boats, marina activities, vehicle traffic, and the Kealakehe Wastewater Treatment Plant operations. Alternative 1 would generate less noise impacts due to reduced construction activities, fewer boats, less traffic and less on-site activity. Alternative 2 would also generate less noise due to reduced traffic and less on-site activity, but noise related to the excavation of the marina basin and an increase in the number of boats would be similar to that of the proposed project. Further discussion on noise impacts is presented in Section 4.4.

Socioeconomic Impacts

The proposed project will generate an increase in de facto population of an estimated 5,321 persons due to the increase in hotel and time-share units. The estimated de facto population increase in Alternative 1 is 37 percent less, at 3,363 persons, than the proposed project. The de facto population increase in Alternative 2 is similar to Alternative 1.

Employment in the commercial components will nearly double in Alternative 1, from a stabilized level of 1,429 full-time equivalent (FTE) positions in the proposed project to 2,740 in the Alternative 1.

Under Alternative 1, the total operating economic activity at Kona Kai Ola will increase due to the added commercial space more than off-setting the fewer visitor units, moving upward from $557.6 million per year to circa $814.3 million annually. The total base economic impact resulting from development and operation of Alternative 1 will similarly be higher by between 35 and 45 percent than that of the proposed project.

Alternative 1, which has a reduced marina size of 25 acres, and fewer hotel and time-share units, would have a meaningful market standing, create significant economic opportunities, and provide a net benefit to State and County revenues. From a market perspective, a smaller Kona Kai Ola would still be the only mixed use community in the Keahole to Kailua-Kona Corridor offering competitive hotel and time-share product.

The estimated absorption periods for marketable components of Alternative 1 are generally shorter than those for the same components in the proposed project. Marina slips under Alternative 1 are estimated to be absorbed within 2 years after groundbreaking, as compared with 9 years for absorption of slips in the proposed project. Hotel rooms under Alternative 1 are estimated to be absorbed within 4 years after groundbreaking, as compared with 7 years under the proposed project. Time-share units would be absorbed within 10 years under Alternative 1, while 15 years are projected under the proposed project. Due to the planned increase in commercial facilities under Alternative 1, the absorption period of commercial space is estimated at 14 years, as compared with 8 years for absorption of such facilities under the proposed project.

The State and County will still both receive a net benefit (tax receipts relative to public expenditures) annually on a stabilized basis under the Alternative 1. The County net benefits will be some $12.2 million per year under the Alternative 1 versus $14.9 million under the proposed project. The State net benefits will increase under the Alternative 1 to about $37.5 million annually, up substantially from the $11.4 million in the proposed project.

Due to the lower de facto population at build-out, the effective stabilized public costs for both the State and County will decline meaningfully under the Alternative 1, dropping from $7.7 million annually for the County and $36.5 million for the State, to $4.9 million and $23 million per year, respectively.

Alternative 3 would result in no increase in de facto population and improvement to economic conditions. Further discussion on social and economic impacts are contained in, respectively, Sections 4.5 and 4.6.

Vehicular Traffic

The proposed project will impact the nearby road network that currently is congested during peak traffic times. The proposed project includes roadway improvements that would reduce the impact and improve roadway conditions for the regional community.

Alternative 1 includes the same roadway system improvements as the proposed project, yet would reduce vehicular traffic by 35 percent when compared to the proposed project. Alternative 2 would have similar traffic conditions and roadway improvements as Alternative 1. Alternative 3 would result in no increase in traffic and no roadway improvements.

Marina Traffic Study

The increase in boat traffic due to the proposed 800-slip marina would cause entrance channel congestion during varying combinations of existing and new marina peak traffic flow. Worst case conditions of active sport fishing weekend and summer holiday recreational traffic result in traffic volumes exceeding capacity over a short afternoon period. Mitigation to address boat traffic in the proposed project include widening the entrance channel, traffic control, implementation of a permanent traffic control tower, or limiting vessel size.

Alternative 1 would result in a 21 percent reduction in boat traffic congestion under average existing conditions and ten percent reduction during peak existing conditions. The reduction to 400 slips also reduces the impacts of congestion at the entrance channel, thereby reducing the need for any modifications to the entrance channel.

Alternative 2 would have the same level of boat traffic as the proposed project. Alternative 3 would not meet the demand for additional boat slips and would not generate additional boat traffic. Further discussion on marina traffic is contained in Section 4.8.

Police, Fire and Medical Services

The proposed project will impact police, fire and medical services due to an increase in de facto population and increased on-site activity. Alternatives 1 and 2 would have similar levels of impact as the proposed project due to increased on-site activity. Further discussion on police, fire and medical services are contained, respectively, in Sections 4.10.1, 4.10.2 and 4.10.3.

Drainage and Storm Water Facilities

The proposed project will increase drainage flows, quantities, velocities, erosion, and sediment runoff.

Alternative 1 involves a reduction of the project density that would reduce storm runoff from the various land uses due to a reduction in impervious surfaces associated with hotel and time-share development and to the creation of more open space. However, roadway areas will increase by about 30 percent in Alternative 1. Storm runoff from proposed streets would therefore increase; thus requiring additional drainage facilities and possibly resulting in no net savings. The golf course in Alternative 2 may also change drainage characteristics from those of the proposed project and may not reduce impacts. Alternative 3 would result in no change in existing conditions and no improvements to drainage infrastructure. Further discussion on drainage and storm water facilities is contained in Section 4.10.5

Wastewater Facilities

The proposed development is located within the service area of the Kealakehe WWTP and a sewer system will be installed that connects to the WWTP. The sewer system will be comprised of a network of gravity sewers, force mains, and pumping stations which collect and convey wastewater to the existing Kealakehe WWTP. Project improvements will incorporate the usage of recycled / R1 water. Improvements implemented by the proposed project will also accommodate the needs of the regional service population.

Alternative 1 would generate approximately 10 percent less wastewater flow than the proposed project. Wastewater flow in Alternative 2 is undetermined. Alternative 3 would result in no additional flow, as well as no improvements that will benefit the regional community. Further discussion on wastewater facilities is contained in Section 4.10.6.

Potable Water Facilities

The proposed project average daily water demand is estimated at 1.76 million gallons per day. Existing County sources are not adequate to meet this demand and source development is required. The developer is working with DLNR and two wells have been identified that will produce a sustainable yield that will serve the project. These wells will also serve water needs beyond the project.

Alternative 1 would result in net decrease of about five percent of potable water demand. Alternative 2 may have a lower water demand than the proposed project as long as potable water is not used for irrigation. Alternative 3 would result in no additional flow, as well as no source development that will benefit the regional community. Further discussion on potable water facilities is contained in Section 4.10.8.

Energy and Communications

Regarding Alternative 1, preliminary estimates for electrical, telecommunications, and cable resulted in a net demand load that remains similar to the proposed project. Further discussion on energy and communications is contained in Section 4.10.9.1.

The proposed project will increase the demand for electrical energy and telecommunications. The demand would be reduced in Alternative 1 because the number of boat slips and units would decrease. Similarly, Alternative 2 would have fewer units than the proposed project and therefore reduce energy demands. Further reduction in energy demand for either alternative could be achieved by using seawater air conditioning (SWAC) and other energy reduction measures, as planned by the developer. Further discussion on energy and telecommunications is contained in Section 4.10.9.2.

Water Features and Lagoons

The proposed project includes a brackishwater pond, lagoons, and marine life exhibits supplied by clean seawater. The water features in Alternative 1 would significantly decrease by 74 percent from 19 acres in the proposed project to five acres in Alternative 1. This decrease in water features would result in a corresponding decrease in water source requirements and seawater discharge. Alternative 2 does not include the seawater features. Alternative 3 would result in no additional demand for water source requirements and seawater discharge.

2.2.2 Conformance with Public Plans and Policies

State of Hawai'i

Chapter 343, Hawai'i Revised Statutes

Compliance with this chapter is effected, as described in Section 5.1.1 in regard to the proposed project and the alternatives discussed.

- State Land Use Law, Chapter 205, Hawai'i Revised Statutes

  The discussion in Section 5.1.2 is directly applicable to Alternative 1, the proposed project. Alternative 1 will involve a setback of 400 feet that increases to 600 feet along the southern portion of the project site's shoreline area. Alternative 2 does not provide for such a setback, but may still require approvals from DLNR for cultural, recreational, and community uses and structures within the Conservation district.

- Coastal Zone Management Program, Chapter 205A, Hawai'i Revised Statutes

  Recreational Resources:

  In addition to the discussion of consistency with the associated objective and policies, as described in Section 5.1.3, the reduction from the proposed project's 800-slip marina to a 400-slip marina under Alternative 1 will still expand the region's boating opportunities and support facilities. The existing harbor entrance will still be utilized under this alternative; however, potential risks relating to boat traffic and congestion in the marina entrance area will be reduced significantly. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities, and marine science center remain important recreational components under Alternative 1.

Alternative 2 includes a golf course component, which would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Alternative 2, like the proposed project, will expand the region's boating opportunities and support facilities through its 800-slip marina. However, the potential adverse impacts of increased boat traffic from the size of the marina are significant enough to offset the benefits of increased boating opportunities.

Coastal Ecosystems:

The discussion in Section 5.1.3 is directly applicable to Alternative 1.

Alternative 1 not only reduces the number of slips proposed by 50 percent, but it also reduces the size of the marina from 45 acres to 25 acres. The 25-acre marina will increase the body of water within the existing harbor, but to a significantly lesser extent than the proposed project's estimated increase, which is also applicable to the 45-acre size that is proposed for the marina under Alternative 2.

The findings of the Harbor Water Quality Modeling Study conclude that a reduction in the size of the harbor expansion is an alternative that will mitigate the risk of significant impacts upon water quality within the marina and existing harbor. Accordingly, the reduction in both the number of slips and the size of the marina basin under Alternative 1, in combination with proper facilities design, public education, and enforcement of harbor rules and regulations, would result in fewer long-term impacts to water quality and coastal ecosystems. Short-term (construction-related) impacts would likely remain the same although the reduction in the total acreage of excavation is expected to result in a shorter duration of such impacts.

In addition to its 800-slip marina and potential adverse impacts upon water quality and the marine environment, Alternative 2 includes a golf course component, which has the potential to impact coastal ecosystems by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Economic Uses

Although reduced in the number of slips, the smaller marina under Alternative 1 will nevertheless serve public demand for more boating facilities in West Hawai'i and is consistent with the objective and policies and discussion set forth in Section 5.1.3. The economic impacts of Alternative 2, while comparable to those of the proposed project's marina development, are notably marginal as to the golf course component, based on the marketability analysis that indicates a condition of saturation within the region.

Coastal Hazards

The discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Tsunami risks mainly affect the large shoreline setback area that is proposed for the project and Alternative 1. Alternative 2 projects a transient accommodation site that is partially within the tsunami hazard zone and thus carries a higher hazard risk. However, the essential requirement for these alternatives, as well as the proposed project, is a well-prepared and properly implemented evacuation plan.

Beach Protection

Discussion and considerations set forth in Section 5.1.3 are also applicable to Alternatives 1 and 2 and indicate compliance with the objective and policies addressed. Alternative 1 and, to a lesser extent, Alternative 2, will retain the shoreline area in its natural condition.

Similar to the proposed project, Alternative 1 provides for a shoreline setback of considerable width within which no structure, except for possible culturally-related structures, would be allowed. Alternatives 1 and 2 will thus be designed to avoid erosion of structures and minimize interference with natural shoreline processes.

Marine Resources

The discussion in Section 5.1.3 is also applicable to Alternative 1 which is described to be an alternative that is specifically projected to mitigate anticipated adverse impacts on water quality and the marine environment that might otherwise result from the original harbor design and scale, which is also incorporated in Alternative 2 . The reduced marina size under Alternative 1 is projected to meet water quality standards and enable greater compliance with the objective and policies addressed in this section.

Alternative 2 includes a golf course component and thus the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the nearshore waters surrounding the project site.

Hawai'i State Plans, Chapter 226, Hawai'i Revised Statutes

Section 226-4 (State goals), 5 (Objectives and policies for population, and 6 (Objective and policies for economy in general):

The discussion in Section 5.1.4 is applicable to Alternatives 1 and 2, in addition to the proposed project. These development concepts generally conform to the goals, objectives, and policies set forth in these sections because they will provide some degree of economic viability, stability, and sustainability for future generations. Kona Kai Ola will convert essentially vacant land into a mixed-use development with a distinctive marina and boating element, providing a wide range of recreational, business, and employment opportunities to the community.

Section 226-8 Objective and policies for the economy – the visitor industry:

Alternatives 1 and 2 will be consistent with the State's economic objective and policies relating to the tourism industry for the same reasons that are discussed in regard to the proposed project in Section 5.1.4. They will incorporate JDI's commitment to sustainability principles in the planning and design of the development concepts in Alternatives 1 and 2. Although the total hotel and time-share unit count is reduced to approximately 1,500 in Alternatives 1 and 2, the transient accommodations component of these alternatives will still further the State's objective and policies for increased visitor industry employment opportunities and training, foster better visitor understanding of Hawai'i's cultural values, and contribute to the synergism of this mixed-use project concept that addresses the needs of the neighboring community, as well as the visitor industry.

Section 226-11 Objectives and policies for the physical environment: land-based, shoreline and marine resources:

Alternative 1 is expected to involve less potential adverse impacts upon these environmental resources than the proposed project. Likewise, and Alternative 2 would have less adverse impact because of its reduction in the size of the marina and in the total hotel and time-share unit count. Alternative 1 carries less potential risk to water quality and related impacts upon the marine environment and anchialine pool ecosystems. Although approximately three anchialine pools are expected to be destroyed, the great majority of pools will be preserved within and outside of the proposed 400-foot shoreline setback.

The golf course component in Alternative 2 has the potential to impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides, and other chemicals common in golf course use and management into the marina basin and nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools by introducing the chemicals into the pond systems.

Section 226-12 Objective and policies for the physical environment: scenic, natural beauty, and historic resources:

The discussion in Section 5.1.4 is directly applicable to Alternative 1 and describes the compliance with the objective and policies addressed.

The golf course component of Alternative 2 would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area.

Just as with the proposed project, Alternatives 1 and 2 would also be designed to blend with the natural terrain and to honor and protect the cultural history, resources, and practices of these lands.

Section 226-13 Objectives and policies for the physical environment: land, air and water quality:

As stated above, because of the reduction in both the number of slips and the size of the marina basin, with proper facilities design, public education and enforcement of harbor rules and regulations, Alternative 1 is anticipated to cause fewer long-term impacts to water quality than either the proposed project or Alternative 2. Based on the findings of the Harbor Water Quality Modeling Study, water quality resulting from a reduced marina basin size as proposed under Alternative 1 is expected to be similar to existing conditions.

As previously noted, Alternative 2 has the potential to adversely impact water quality by increasing the nutrient loading in surface runoff and groundwater by introducing pesticides, herbicides and other chemicals common in golf course development and maintenance into the marina basin and nearshore waters surrounding the project site.

Section 226-14 Objectives and policies for facility systems - general:

Alternatives 1 and 2 will conform to the objective and policies of this section on the grounds that are discussed in regard to the proposed project in Section 5.1.4. The master-planning and phasing of the project concepts under these alternatives will be coordinated with associated public and private infrastructural planning and related private and public infrastructural financing. The cost of the marina construction and project-related infrastructure is to be borne by the developer, resulting in considerable savings for the public. In addition, the projected lease revenue from these public lands will provide additional public benefits by establishing a revenue stream for capital improvements and maintenance of a range of State facilities.

Section 226-15 Objectives and policies for facility systems - solid and liquid wastes:

In addition to the developer's commitment to sustainable development design, the project will involve upgrades to the County of Hawai'i's Kealakehe Wastewater Treatment Plant to meet current needs, as well as the project's future needs. This commitment is applicable to Alternatives 1 and 2, as well as the proposed project that is discussed in Section 5.1.4.

Section 226-16 Objectives and policies for facility systems – water:

The discussion of water conservation methods and the need to secure additional potable water sources in Section 5.1.4 is also applicable to Alternative 1 and demonstrates conformity to the objective and policies for water facilities. Alternative 2 involves greater irrigation demands in regard to its golf course component and greater potable water demands for human consumption than those for Alternative 1. Alternative 2 is expected to face more serious challenges in securing adequate and reliable sources of water.

Section 229-17 Objectives and policies for facility systems – transportation:

Alternatives 1 and 2 will conform to this objective and policies because they will present water transportation opportunities, including the possible use of transit water shuttles to Kailua-Kona, as described in regard to the proposed project in Section 5.1.4.

Section 226-18 Objectives and policies for facility systems – energy:

Alternatives 1 and 2 conform to these objective and policies through the use of energy efficient design and technology and commitment to the use and production of renewable energy to serve the project's needs. Solar energy production, solar hot water heating, and the use of deep cold seawater for cooling systems are currently identified as means of saving substantial electrical energy costs for the community and the developer.

Section 226-23 Objectives and policies for socio-cultural advancement – leisure:

Alternative 1 conforms to this objective and related policies for the reasons offered in Section 5.1.4 in regard to the proposed project. Alternative 1 will be of greater conformity with the policy regarding access to significant natural and cultural resources in light of the 400-600 foot shoreline setback that has been designed for this alternative.

Although it does not propose the considerable shoreline setback that is planned for Alternative 1, Alternative 2 is consistent with this objective and related policies in incorporating opportunities for shoreline-oriented activities, such as the walking trails. In addition, the golf course component adds a more passive recreation alternative to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola.

Section 226-25 Objectives and policies for socio-cultural advancement-culture:

The discussion in Section 5.1.4 is relevant to Alternatives 1 and 2 and demonstrate their conformity the objective and policies of this section.

Both alternatives involve the preservation and protection of cultural features that have been identified by the Cultural Impact Assessment and archaeological studies for the project area. Both provide for public shoreline access, and both will continue the policy of close consultation with the local Hawaiian community and cultural and lineal descendants in the planning of cultural resource preservation and protection.

Section 226-103 Economic priority guidelines:

Alternatives 1 and 2 conform to these guidelines for the same reasons that are set forth in Section 5.1.4. They involve private investment in a public project that will create economic diversification through a mix of marina, industrial, commercial, visitor, and cultural facilities. This presents a wide range of entrepreneurial opportunities, long-term employment opportunities, and job training opportunities.

Section 226-104 Population growth and land resources priority guidelines:

As described in Section 5.1.4, the policy support for the proposed project also extends to the similar development concepts considered in Alternatives 1 and 2. Those alternatives conform to the guidelines of this section because they involve an urban development under parameters and within geographical bounds that are supported by the County's General Plan, a preliminary form of the Kona Community Development Plan, the County's Keahole to Kailua Regional Development Plan, and the reality of being located along the primary commercial/industrial corridor between Keahole Airport and Kailua-Kona. As with the proposed project, the development concepts of Alternatives 1 and 2 are essentially alternatives for the implementation and "in-filling" of the urban expansion area in North Kona.

DHHL Hawai'i Island Plan

This 2002 plan projects DHHL's Honokōhau makai lands for commercial use. As compared to the proposed project and Alternative 2, Alternative 1 presents an expanded commercial component that provides greater compliance with the plan, while addressing certain beneficiaries' concerns about the scale of the marina originally required in the Project. Alternative 2 also conforms to the recommended commercial uses in the makai lands but to a lesser degree than Alternative 1 because of its more limited commercial component. Like the proposed project, its marina size and number of slips raise environmental issues, as more specifically discussed in Part 3, and community concerns.

County of Hawai'i General Plan

HCGP Section 4 – Environmental Quality Goals, Policies and Courses of Action:

Alternative 1 is consistent with this section. It presents a reduction in both the number of slips and the size of the marina basin that, in combination with proper facilities design, public education and enforcement of harbor rules and regulations, would result in very few long term impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions.

Alternative 2 is the least consistent with this section. In addition to the potential significant impacts of its 800 slip marina basin, its golf course component has the potential to adversely impact marine resources by increasing the nutrient loading in surface runoff and groundwater and also by introducing pesticides, herbicides and other chemicals common in golf course use and management into the nearshore waters surrounding the project site. It also has the potential to adversely affect the anchialine pools beyond their current conditions by introducing such substances into the pool systems.

HCGP Section 7 – Natural Beauty Goals and Policies:

Alternative 2 conforms to some degree with this section. Its golf course component would create a park-like view that would potentially enhance the beauty of the project site and surrounding areas when considered in combination with the existing rugged natural beauty of the area, as demonstrated in other makai golf courses within the region.

HCGP Section 8 – Natural Resources and Shoreline:

Alternative 1 is most consistent with the goals and policies of this section. It would require considerably less marina excavation than the proposed project and Alternative 2 and would reduce the potential risk of long-term adverse impacts to water quality. Based on the findings of the Harbor Water Quality Modeling Study, water quality would remain similar to existing conditions with the degree of reduction in marina basin size that is proposed under Alternative 1. This reduction is also expected to reduce potential impacts upon anchialine pools and their ecosytems, as well as shoreline and marine resources that are affected by water quality. Alternative 1 also retains the shoreline preservation and protection concepts that are proposed in and described for the Project.

HCGP Section 10 – Public Facilities Goals and Policies:

The discussion in Section 5.2.1. in relation to the proposed project is applicable to Alternatives 1 and 2. Improvements to public facilities are are integral to the Kona Kai Ola development. The provision of additional boat slips and numerous road improvements, including a makai extension of Kuakini Highway south to Kailua-Kona are incorporated into plans for the project's development. In light of these elements, Alternatives 1 and 2 are consistent with the goals and policies of this section.

HCGP Section 11 – Public Utility Goals, Policies:

As with the proposed project, Alternatives 1 and 2 are consistent with the goals and policies of this section, based on the relevant grounds set forth in Section 5.2.1. The developer is committed to design, fund, and develop environmentally sensitive and energy efficient utility systems to the extent possible, as described previously in Part 5. Its master planning provides for the coordinated development of such systems with the objective of achieving significant savings for the public. As previously-mentioned example, the project development involves the upgrading of the Kealakehe Wastewater Treatment Plant.

HCGP Section 12 – Recreation:

Alternative 1 is consistent with the goals, policies, and courses of action for North Kona in this section.

Although the number of slips is reduced under Alternative 1, the region's boating opportunities and support facilities will still be expanded. The existing marina entrance would still be utilized under this alternative. However, concerns relating to increased activity leading to increased congestion in the marina entrance area would be mitigated to a certain extent. The 400-600 foot shoreline setback, public parks, trails, cultural areas, community facilities and marine science center remain important components of Alternative 1.

The golf course component of Alternative 2 would add a more passive recreation to the active and social components, such as boating, fishing, swimming, trails, walkways, parks, marine life, educational and interactive areas that are also part of the project. The golf course would enhance the range of leisure and recreational opportunities offered at Kona Kai Ola. Alternative 2 is also considered to be consistent with this section.

HCGP Section 13 and 13.2 – Transportation:

The reduced marina component under Alternative 1 will still provide transportation opportunities and provide for possible use of transit water shuttles to Kailua-Kona, although to a lesser degree than under the proposed project and Alternative 2 . However, in each scenario, internal people-movers are planned, and numerous roadway improvements are planned for coordination with public agencies, including but not limited to the construction of the Kuakini Highway extension between Honokōhau and Kailua-Kona. Accordingly, both Alternatives 1 and 2 are consistent with the goals, policies, and courses of action for North Kona under these sections of the General Plan.

HCGP Section 14.3 – Commercial Development:

For the reasons presented in the discussion under Section 226-104 of the State Plan, the planned commercial component under Alternatives 1 and 2 are consistent with this section.

HCGP Section 14.8 – Open Space:

Alternatives 1 and 2 are consistent with the goals and policies of this section. Alternative 1 provides a considerable (400-600 foot) shoreline setback along the entire ocean frontage of the project site as a means of protecting the area's scenic and open space resources, as well as natural and cultural resources. Although it does not incorporate the shoreline setback planned in Alternative 1, Alternative 2 provides a golf course component would contribute to the amount of open space that is currently proposed and allow additional view corridors to be created.

Community Development Plans

Community development plans are being formulated for different regions in the County in order to supplement the County's General Plan. The Kona Kai Ola project is located in the Kona Community Development Plan (CDP) area. Maps associated with the preliminary work phases

of the Kona CDP include the Kona Kai Ola project site within the "Preferred Urban Growth" boundary of the North Kona district. The Kona CDP process is guided by a Steering Committee composed of a broad cross-section of the community. The Steering Committee will eventually complete its work and recommend the CDP's adoption.

After the DEIS was published, the Kona CDP has progressed to the development of plans for the major urban growth corridor north of Kailua-Kona. The Kona CDP has produced a draft plan showing a transit oriented development that includes a midlevel public transit corridor along the mauka residential elevation, and a makai transit corridor that runs along a proposed new frontage road just makai and parallel to Queen Kaahumanu Highway. The development plan for Alternative 1 includes the Kuakini Highway as part of this proposed frontage road and transit line from Kailua Kona to the Kealakehe area, along with a transit stop at Kona Kai Ola. The Alternative 1 plan also includes a road that could be extended to be part of the proposed frontage road should it be approved and implemented. In addition, the Kona CDP has continued to emphasize the principles of smart growth planning with mixed use urban areas where people can live, work, play and learn in the same region. Kona Kai Ola has been specifically designed to be consistent with this policy in order to provide a stable employment base close to where people live in the mauka residential areas already planned for DHHL and HHFDC lands.

It should be noted that currently and over the years, the 1990 Keāhole to Kailua Development Plan (K-to-K Plan) guides land use actions by the public and private sectors. It is intended to carry out the General Plan goals and policies related to the development of the portion of North Kona area, including the Kona Kai Ola site. The "Preferred Growth Plan" of the Keāhole to Kailua Development Plan identifies the project site as a new regional urban center to include commercial, civic, and financial business related uses, an expanded "Harbor Complex," a shoreline road, and a shoreline park. The proposed project and the development concepts in Alternatives 1 and 2 are therefore consistent with the recommendations in the Keāhole to Kailua Development Plan.

Hawai'i County Zoning

As shown on Figure AA, the project site is zoned "Open". Under Section 25-5-160 of the Hawai'i County Code, "The O (Open) district applies to areas that contribute to the general welfare, the full enjoyment, or the economic well-being of open land type use which has been established, or is proposed. The object of this district is to encourage development around it such as a golf course and park, and to protect investments which have been or shall be made in reliance upon the retention of such open type use, to buffer an otherwise incompatible land use or district, to preserve a valuable scenic vista or an area of special historical significance, or to protect and preserve submerged land, fishing ponds, and lakes (natural or artificial tide lands)".

Some of the proposed uses at Kona Kai Ola are permitted uses in the Open zone such as:

- Heiau, historical areas, structures, and monuments;
- Natural features, phenomena, and vistas as tourist attractions;
- Private recreational uses involving no aboveground structure except dressing rooms and comfort stations;

- Public parks;
- Public uses and structures, as permitted under Section 25-4-11.

In addition to those uses permitted outright, the following uses are permitted after issuance of a use permit:

- Yacht harbors and boating facilities; provided that the use, in its entirety, is compatible with the stated purpose of the O district.
- Uses considered directly accessory to the uses permitted in this section shall also be permitted in the O district.

The proposed time-share and hotel units and commercial uses would not be consistent with the zoning designation of "Open". Project implementation therefore requires rezoning of portions of the project to the appropriate zoning category or use permits for certain uses.

Special Management Area

As shown in Figure AB, the entire project area up to the highway is within the coastal zone management zone known as the Special Management Area ("SMA"). At the County level, implementation of the CZM Program is through the review and administering of the SMA permit regulations. Kona Kai Ola complies with and implements the objectives and policies of the Coastal Zone Management (CZM) Program, and a full discussion is provided in Section 5.1.3. The development concepts in the proposed project and Alternatives 1 and 2 will be subject to applicable SMA rules and regulations.

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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January 2, 2007

Oceanit
Oceanit Center
828 Fort Street Mall, 6th Floor
Honolulu, Hawaii 96813

Attn: Dayan Vithanage

Re: Draft Environmental Impact Statement (DEIS)
Kona Kai Ola, Hawaii Island, North Kona
Tax Map Key: 7-4-008:071-072; 7-4-008:003 (portion); 7-4-008:099 (proposed parkway through project site)

In response to your December 19, 2006, notice, thank you for the opportunity to provide comments on the DEIS for the Kona Kai Ola development. The proposed project will be a 552-acre marina-focused development, consisting of a mix of uses including visitor and resident-serving commercial enterprises, 700 hotel units, 1800 time-share units, worker housing, marina services, and community-benefiting facilities.

We would like to call your attention to: (l) State energy conservation goals; and, (2) energy and resource efficiency and renewable energy and resource development.

1. **State energy conservation goals.** Project buildings, activities, and site grounds should be designed and/or retrofit with energy saving considerations. The mandate for such consideration is found in Chapter 344, HRS ("State Environmental Policy") and Chapter 226 ("Hawaii State Planning Act"). In particular, we would like to call to your attention HRS 226 18(c) (4) which includes a State objective of promoting all cost-effective energy conservation through adoption of energy-efficient practices and technologies.

   We note that you have considered Chapter 226-18 objectives and policies in your DEIS. You state "Kona Kai Ola will feature the latest energy efficient design and technology available to reduce energy demand of the project. It will also maximize the use and production of renewable energy on the project through solar energy production, solar hot water heating, and the use of deep cold seawater for district cooling system. Using cold deep seawater piped throughout the development for air conditioning will result in substantial electrical energy savings and costs for the community and developer.

   "...Solar hot water heating is also being planned for use throughout the development."

We recommend that you consult the County of Hawaii Energy Code early on in your project. Hawaii Electric Light Company, Inc., may also have demand-side management programs that offer rebates for installation of energy efficient technologies.

2. **Energy and resource efficiency and renewable energy and resource development.** We also note that the development is intended to be environmentally sustainable. In this regard, we refer you to two important directives affecting state agencies. First is Administrative Directive No. 06-01, which is also reflected in Act 96, 2006 SLH, which encourages State agencies and programs to increase their leadership commitment to implement innovative and resource efficient operations and management and to design and construct buildings to meet and receive certification for U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), among others. Second is Act 160, 2006 SLH, relating to the State Budget, which requires that each executive department shall plan for or install energy reduction, energy savings, or energy producing efforts and technologies to lessen electrical consumption or to increase efficiencies in using electrical energy.

We would like to call your attention to our website which provides detailed information on guidelines, directives and statutes, as well as studies and reports on aspects of energy efficiency (http://www.hawaii.gov/dbedt/info/energy/efficiency/state). Please also do not hesitate to contact Carilyn Shon, Energy Efficiency Branch Manager, at telephone number 587-3810, for additional information on energy efficiency and renewable energy resources.

Sincerely,

Maurice H. Kaya
Chief Technology Officer

c: OEQC
Department of Hawaiian Homelands
Jacoby Development, Inc.

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT, and TOURISM
Strategic Industries Division

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January 23, 2007

Mr. Maurice H. Kaya
Chief Technology Officer
Strategic Industries Division
Hawaii State Department of Business,
Economic Development & Tourism
235 South Beretania Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Kaya:

Subject: **Kona Kai Ola Draft Environmental Impact Statement (DEIS)**
Response to Your Comments Dated December 28, 2006

Thank you for your comments on the Kona Kai Ola DEIS. Your comments refer to 1) State energy conservation goals and 2) energy and resource efficiency and renewable energy and resource development, and this letter responds to those comments.

1. State energy conservation goals: As you state, we considered HRS 226-18, including section c, in our analysis of the proposed Kona Kai Ola project relative to compliance with public policies and plans. The project will implement various energy-efficient practices and technologies to comply with and promote State energy conservation objectives.

   Per your recommendation, we will consult the County of Hawaii Energy Code early in the project. We included Hawaii Electric Light Company, Inc., in our DEIS consultation and look forward to any recommendations to conserve energy, including demand-side management programs.

2. Energy and resource efficiency and renewable energy and resource efficiency and renewable energy and resource development: We appreciate your references to Administrative Directive No. 06-01 and Act 160, 2006 SLH, relating to the State Budget. As we discuss in Section 1.5.2 of the DEIS, the developer has experience with Leadership in Energy and Environmental Design (LEED) certification process from its other projects and intends to pursue LEED certification for its development of the Kona Kai Ola project.

Thank you for acknowledging energy conservation efforts in the Kona Kai Ola project, and for identifying relevant resources at the conclusion of your letter. These documents have been reviewed and recommendations will be addressed in the design and construction of the project.

Your comment letter and this response are included in the Final Environmental Impact Statement. We appreciate your participation in the environmental review process. Please submit a request to

our office if you would like to receive a printed or electronic copy of the Final Environmental Impact Statement, or portions thereof.

Sincerely,

Dayan Vithanage, P.E., PhD.
Director of Engineering

cc: Office of Environmental Quality Control
State Department of Hawaiian Homelands
Jacoby Development, Inc,