BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

May 13, 2003

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Finding of No Significant Impact for the Board of Water Supply's Proposed Nitrate Treatment System for Kunia Wells II, Ewa, Oahu, Hawaii, TMK: 9-2-001: 001

The Board of Water Supply has reviewed the comments received during the public comment period which began on February 23, 2002. We have determined that the environmental impacts of this project have been adequately addressed as discussed in the Final Environmental Assessment (EA) and therefore, are issuing a Finding of No Significant Impact. We request that the proposed project be published as a Finding of No Significant Impact in the next Office of Environmental Quality Control (OEQC) Bulletin.

We have enclosed the following:

- Completed OEQC Bulletin Publication Form;
- Four (4) copies of the Draft EA; and
- Project summary (for publication in the Environmental Notice) and diskette.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

FOR CLIFFORD S. JAMILE
Manager and Chief Engineer

Enclosures

cc: Marc M. Siah & Associates, Inc.

(KUNIA WELLS II NITRATE)

FINAL ENVIRONMENTAL ASSESSMENT

FINDING OF NO SIGNIFICANT IMPACT

FOR

THE NITRATE TREATMENT SYSTEM

FOR KUNIA WELLS II

EWA, OAHU, HAWAII

Prepared for:

Board of Water Supply
City and County of Honolulu

Prepared By:
Marc M. Siah & Associates, Inc.

MAY 2003

Marc M. Siah & Associates, Inc.
Consulting Civil • Structural • Environmental & Ocean Engineers
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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

This Final Environmental Assessment (FEA) is prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS) and Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Department of Health, State of Hawaii. The City and County of Honolulu Board of Water Supply (BWS) proposes to construct a new nitrate removal system ewa of the Kunia Wells II site along Kunia Road in the Ewa Plains. The proposed nitrate removal system will be integrated into the existing facility at Kunia Wells II consisting of a GAC Treatment Plant and two water storage reservoirs. Installation of this denitrification system will decrease existing and future nitrate concentrations present in well water at Kunia Wells II to levels below the United States Environmental Protection Agency's (USEPA) maximum contaminant level (MCL) requirements. Historically, the land in the vicinity of Kunia Wells II has been used for the cultivation of agricultural crops. Due to the relatively long history of fertilizer, insecticide and pesticide usage in the nearby agricultural fields, traces of nitrate have been found in the groundwater pumped from the Kunia well fields in recent years. In recent years years, nitrate levels at Kunia Wells II have ranged between 5.3 to 7.0 ppm. These concentrations may increase in the future as more nitrates trickle through into the groundwater. Nitrate in drinking water at levels above 10 parts per million (ppm) have proven to be a health risk for fetuses and infants of less than six months of age, thus, the USEPA has established a primary MCL of 10 mg/L for nitrate (NO_3-N).

The concerns over potential health hazards of nitrate in water supply along with indications of increasing levels of nitrate in water pumped from Kunia Wells II has prompted the BWS to evaluate the feasibility of nitrate removal facility. The targeted nitrate concentration is between 1.0 and 2.0 ppm after the proposed treatment. After careful evaluations of the existing technologies, Marc M. Siah & Associates, Inc. has identified Hungerford & Terry's Ionic Exchange Nitrate Removal System as the best treatment option for the removal of nitrate from well water at Kunia Wells II.

The proposed location for the new denitrification facility, as illustrated in Figure 1-2, is on a 2- acre portion of the 1844.5 acre parcel of land identified by Tax Map Key (TMK): 9-2-001:001. The parcel is located north of the H-1 Freeway in the Ewa plains on the leeward side of the Island of Oahu. The land is owned by the Estate of James Campbell. Marc M. Siah & Associates has contacted the Estate of James Campbell to discuss the availability of the proposed land. A copy of the letter to the Estate is included in Appendix C.

Special precautions will be taken to minimize disruptions to surrounding residences and roadways during the proposed construction activities. The project site is situated on land which has previously been disturbed by various agricultural activities. In response to our inquiry the State of Hawaii's Historic Preservation Division (SHPD) reported that there is neither any known historic site in the surrounding area, nor is it likely that any will be found. However, should any resources be encountered, construction will be stopped immediately and the State Historic Preservation Division (SHPD) will be contacted. Prior to construction of the proposed denitrification facility, the BWS will obtain all permits needed to complete the project.

Based on the information presented in this environmental assessment, the proposed action is anticipated to have no significant impact on the environment which would require the preparation of an Environmental Impact Statement. The proposed project, therefore, is expected to merit a determination of a Finding of No Significant Impact (FONSI).

SUMMARY

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SUMMARY OF THE FINAL ENVIRONMENTAL ASSESSMENT FOR THE NITRATE TREATMENT SYSTEM FOR KUNIA WELLS II

A. Proposing Agency

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843
Contact: Mr. Scot Muraoka, P.E.

B. Approving Authority

Mr. Clifford S. Jamile, P.E.
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

C. Name of Action

Evaluation of Nitrate Treatment Systems at Kunia Wells II.

D. Description of Proposed Action

The City and County of Honolulu Board of Water Supply (BWS) proposes to construct a Nitrate Treatment System for Kunia Wells II. The construction of this facility will enable the BWS to decrease the nitrate concentrations present in well water at Kunia Wells II in order to comply with Maximum Contaminant Level (MCL) requirements established by the U.S. Environmental Protection Agency (USEPA). As a result of this project, the BWS will be able to provide safe drinking water to the surrounding areas of Waipahu and Ewa. In an engineering study prepared by Marc M. Siah and Associates for the Board of Water Supply entitled "*Preliminary Engineering Study for Evaluation of Nitrate Treatment System at Kunia Wells II*" (Reference No. 8), six alternative technologies were evaluated for optimum feasibility. Based on the results of this study, Hungerford & Terry's Nitrate Removal Ionic Exchange System was selected as the best choice.

E. Project Setting

The project site is located in Kunia on the Ewa coastal plains of the Island of Oahu's leeward side. The proposed denitrification facility site is situated on a portion of a 1,844.5 acre parcel of land identified by Tax Map Key (TMK): 9-2-001:001 and owned by the Estate of James Campbell. The land parcel is located approximately 4 miles inland from Ewa Beach along Kunia Road, approximately 300 feet west of the existing Kunia Wells II Reservoirs and a Granular Activated Carbon (GAC) filtration facility. The proposed project site is designated as a Restricted Agricultural District (AG-1). Since the proposed project is classified as a Type-A utility, the development of the nitrate treatment facility is considered a permissible use of AG-1 land. Access to the denitrification system will be via an access road off Kunia Road mauka of the H-1 Freeway.

F. Relationship to Plans, Policies and Controls

Plan, policies, and controls considered in the evaluation of the project are as follows:

- State Land Use Districts
- Honolulu City and County General Plan
- Ewa Master Plan

G. Probable Impacts

Impacts associated with the proposed project can be divided into short-term and long-term effects. Short-term impacts are those related to the construction activities including noise, air and water quality, erosion, traffic, and public health and safety. Long-term impacts are those associated with the operation of the denitrification facility. These include impacts on flora, fauna, society, public health and safety, and infrastructure.

Short-term Impacts

Construction activities associated with the proposed project are not expected to have any significant short-term impacts on the surrounding environment. During construction, soil erosion control measures and appropriate Best Management Practices (BMPs) will be implemented. Potential soil loss is anticipated to be minimal and within an acceptable range. There will be no significant impacts on water quality, historical sites or archaeological features. Furthermore, there are no known rare or threatened species of flora or fauna in the project area. Traffic may increase locally on Kunia Road during construction, especially while

transporting construction equipment and materials, as well as while hauling away excavated material. This impact is not significant and will be properly mitigated by limiting the hauling and transportation of construction equipment and materials to off-peak traffic hours and by utilizing flagmen to ensure smooth traffic flow along the road. Noise control measures, such as muffling devices, will be employed on construction equipment during construction. Dust control measures, such as sprinkling and watering, will be implemented to minimize adverse impacts.

Long-term Impacts

In the long-term, the operation of the denitrification faciltiy will not have any adverse environmental impact. On the contrary, installation of the facility will result in safe drinking water being distributed to the surrounding areas, thus affecting public health and safety in a positive way. Any long-term impact to the visual resources of the area will be mitigated by planting screening trees along the eastern boundary of the site, between the denitrification facility and Kunia Road.

H. Alternatives Considered

No Action

The "No Action" alternative means that the denitrification facility will not be constructed and, as the population in the area increases, the water supply will remain contaminated and unacceptable for residential consumption. This alternative is unacceptable to the community since water supply issues would remain unresolved.

Delayed Action

The "Delayed Action" alternative means that the denitrification facility construction takes place at some time in the future. This alternative will postpone the resolution of increasing nitrate contamination concerns in the area, causing potential water supply shortages in the case where water supply from Kunia Wells II would have to be halted. Furthermore, the delay in construction of the denitrification facility will result in higher construction costs in the future due to inflation.

Alternative Technologies

As mentioned earlier, based on a detailed comparative study of six different candidate technologies, the Hungerford & Terry's Nitrate Removal Ionic Exchange System was recommended as the best option for the proposed denitrification facility. The other five technologies are referred to as "Alternative Technologies". The alternative technologies were found to be less favorable than the recommended option for the proposed treatment facility. In general, use of an alternative technology would result in higher costs, higher maintenance requirements, and more disruptive impacts to the environment.

I. Irreversible and Irretrievable Commitments of Resources

The proposed denitrification facility project involves irreversible and irretrievable uses of energy, labor, materials, and capital funds by the City and County of Honolulu's Board of Water Supply. Construction of the proposed denitrification facility will help resolve water potability concerns throughout the Waipahu and Ewa areas.

J. List of Necessary Permits and Approvals

The following permits and approvals are anticipated for the construction of the proposed denitrification facility:

Permit	Approving Agencies	Approximate Processing Time
Industrial Wastewater Discharge Permit	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Industrial Wastewater Overflow Discharge Permit	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Sewer Connection Application	Department of Planning and Permitting City and County of Honolulu	15 - 30 days

Building Permit	Department of Planning and Permitting City and County of Honolulu	30 - 45 days
Grading Permit	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Trenching Permit	Department of Transportation 727 Kakoi Street Honolulu, HI 96819	1 - 5 days
Noise Variance Permit	Department of Planning and Permitting City and County of Honolulu	90 -150 days
Height Variance Permit	Department of Planning and Permitting City and County of Honolulu	90 -150 days
NPDES: Strom Water Runoff Permit Hydrotesting Water Permii	Department of Health State of Hawaii Clean Water Branch	60-90 days

SECTION 1

INTRODUCTION AND PROJECT DESCRIPTION

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SECTION 1

INTRODUCTION AND PROJECT DESCRIPTION

1.1 Background

The Board of Water Supply (BWS) owns and operates two well fields in Kunia located in the Waipahu District on the Island of Oahu. Kunia Wells I is located about 0.6 miles mauka of the H-1 Freeway along Kunia Road. This well field consists of four wells with depths of 338, 350, 420, and 427 feet. Kunia Wells II is comprised of three wells with depths of 452, 454, and 460 feet. The fourth well is capped. Locations of the two Kunia well fields are shown in Figure 1-1.

In general, groundwater comprises about 75 to 80 percent of the water used for irrigation of agricultural land in the area. Due to the relatively long history of fertilizer, insecticide and pesticide usage in nearby agricultural fields, traces of nitrate have been detected in the groundwater pumped from the Kunia well fields in recent years. Nitrate not only occurs naturally in groundwater but is also present in higher levels mainly because of seepage from overlying agricultural fields. Nitrogen from synthetic fertilizers is the most notable nitrate source in groundwater contamination.

In 1991, the United States Environmental Protection Agency, under the Phase II Rule of the National Primary Drinking Water Regulations, established a maximum contaminant level (MCL) of 10 mg/L for nitrate (NO_3-N). Current research results have shown nitrate levels in drinking water above 10 parts per million (ppm) to be a health risk for fetuses and infants of less than six months of age causing methemoglobinemia (metHb), or baby blue syndrome. Infants and fetuses have a greater vulnerability to levels of nitrates in drinking water because they generally tend to have gastric fluid of a higher pH, which aids in the reduction of nitrate to nitrite. MetHb is an acute toxic response to nitrite exposure that prevents the transport of oxygen by the blood. Normal levels of metHb are 1% for adults and 2% for children. At 10% metHb, blue-tinged blood is seen; at 20%, cerebral anoxia begins; and at 50-60%, coma and death are possible.

In recent years, nitrate levels at Kunia Wells II have ranged between 5.3 to 7.0 ppm. Appendix D includes information on the level and spatial distribution of nitrate concentrations in the ground water well fields of the Board of Water Supply at and close to the proposed project site. The concerns over potential health hazards of nitrate in water supply along with indications that the levels of nitrate are increasing has prompted the BWS to propose the installation of a nitrate removal system for water withdrawn from Kunia Wells II. The targeted nitrate concentration is between 1.0 to 2.0 ppm after the proposed treatment. Marc M. Siah & Associates, Inc. has identified an ionic exchange system to be the best treatment technology for the removal of nitrate from well water at Kunia Wells II.

1.2 Project Location

The proposed project site is located in Kunia on the northern edge of the Waipahu District on the leeward side of the Island of Oahu, as shown in Figure 1-2. The Kunia area is on a slight

Figure 1-1 Location of Kunia Well Fields I and II

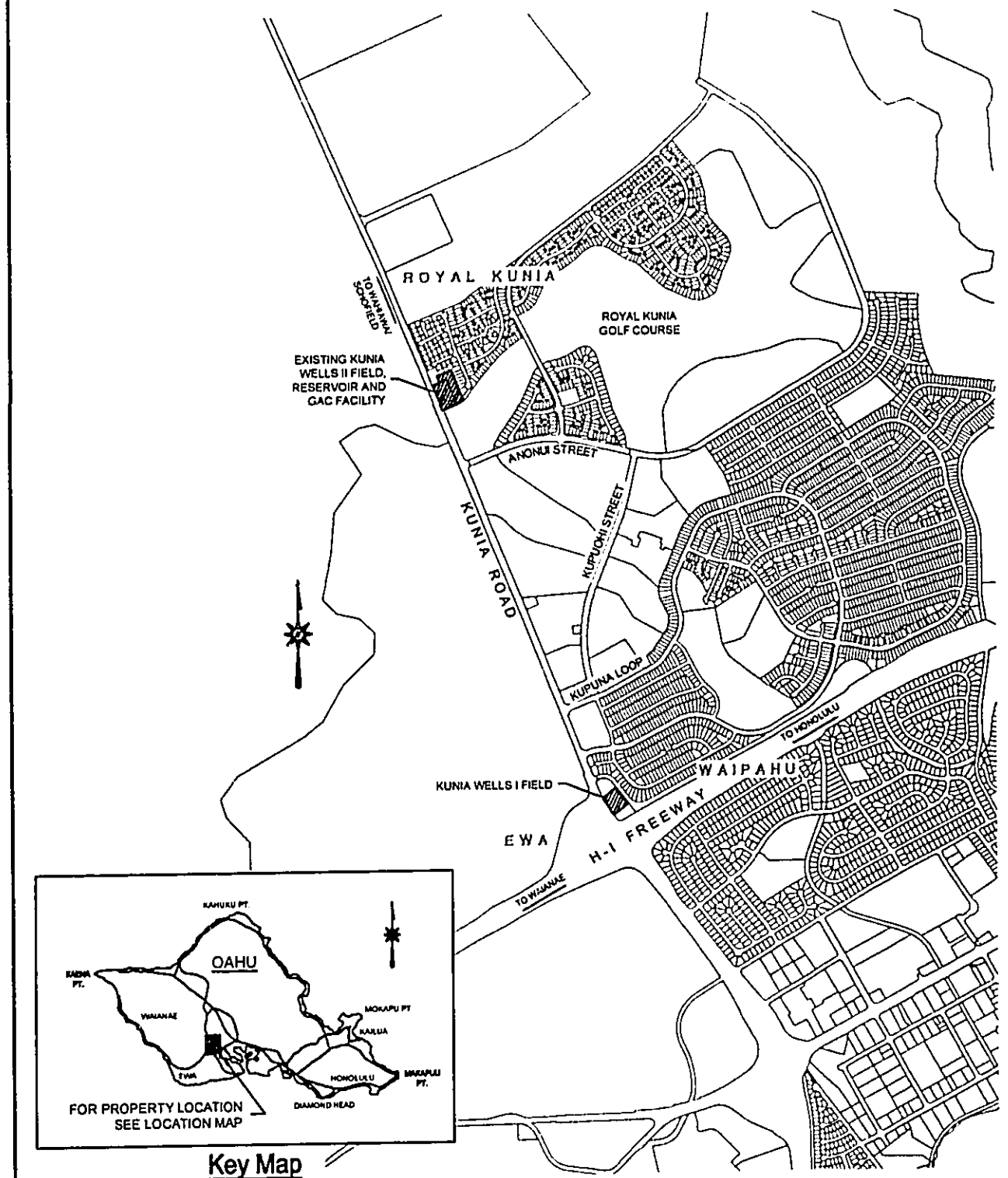

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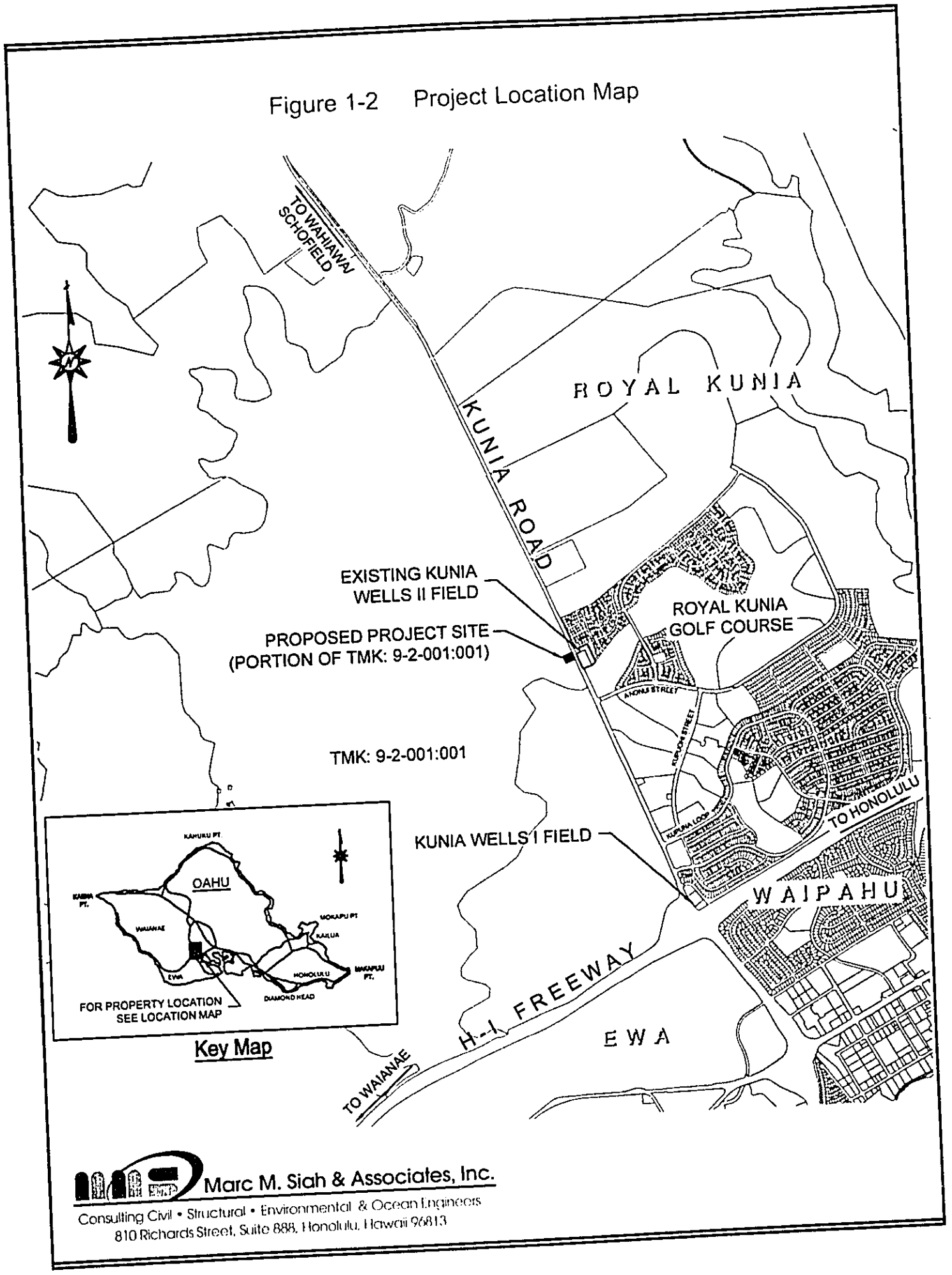
Figure 1-2 Project Location Map



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slope, with an average grade of less than seven (7) percent. The majority land in the surrounding area is owned by the Estate of James Campbell with approximately 6000 acres reserved for agricultural use. The proposed 5 MGD Ionic Exchange Nitrate Removal System will be located on a portion of the 1,844.5 acre parcel of land identified by TMK:9-2-001:001 and owned by the Estate of James Campbell. The proposed facility will be located approximately 6.5 miles inland from Ewa Beach approximately 300 feet to the west of the existing Kunia Wells II Reservoirs and GAC facility directly across Kunia Road, as shown in Figure 1-3. The site will occupy approximately 2 acres of the parcel with elevations ranging from 425 feet above mean sea level (MSL) at the southern boundary of the lot to 440 feet above MSL to the north of the site. Access to the denitrification facility is via Kunia Road which runs mauka of the H-1 Freeway.

The area surrounding the project site has historically been used for growing sugar cane. With the demise of the sugar industry in recent years, the area is undergoing a transition from predominantly agricultural to residential and other uses more compatible with the regional master plan for Ewa Plains. On the north, west, and south sides of the proposed site, lie vast expanses of former sugar cane lands. The property is currently used by independent farmers for growing vegetables and diversified agriculture. On the east side of the site, new housing developments have recently been constructed by private owners. An existing Hawaiian Electric Company 12.47 kV transmission line runs along Kunia Road and parallel to the proposed site. The transmission line currently supplies the electrical service to the BWS for Kunia Wells II.

1.3 Technology Selection

The process of selecting a feasible treatment technology for the proposed denitrification facility began by identifying several alternative technologies which meet the following minimum criteria:

1. The land requirements of the proposed technology is within a feasible area.

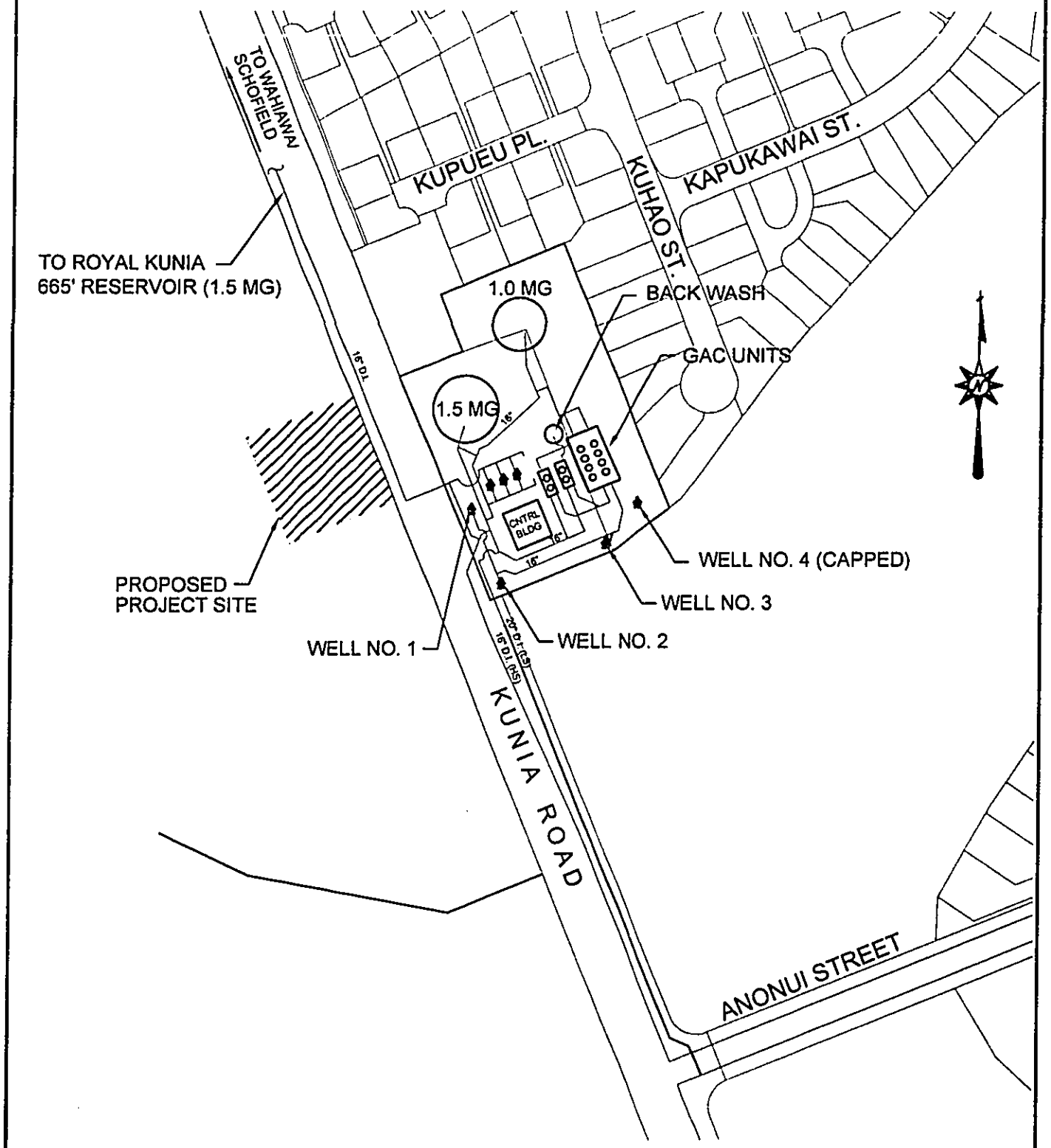
2. The proposed technology is the least expensive out of all alternatives.

3. The proposed technology is included in the list of the Best AvailableTechnologies (BAT) identified by the EPA for nitrate removal.

4. The proposed technology ranks the most feasible when compared to other alternatives.

In a preliminary engineering study prepared by Marc M. Siah & Associates, Inc. for the BWS entitled "*Preliminary Engineering Study for Evaluation of Nitrate Treatment System at Kunia Wells II*" (Reference No. 8), six denitrification technologies were identified for nitrate removal at Kunia Wells II. For each technology, two scenarios were investigated. The first scenario assumed complete treatment of entire influent water. The second scenario considered blending of treated and untreated water on a 4:1 ratio. A ranking matrix evaluating the feasibility of each technology was composed gauging Life Cycle Costs, Land Requirements, Effluent and Influent Water Quality, Discharge Method, Permitting, Operation and Maintenance, Manpower

Figure 1-3 Proposed Denitrification Facility Site



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Requirements, EPA Rating and Environmental Factors. Based on the results of this study, the blending option with Hungerford & Terry's Nitrate Removal Ionic Exchange System was recommended as the most feasible treatment alternative. Detailed information about the selection criteria may be readily obtained from the referenced Engineering Report.

1.4 Technical Description

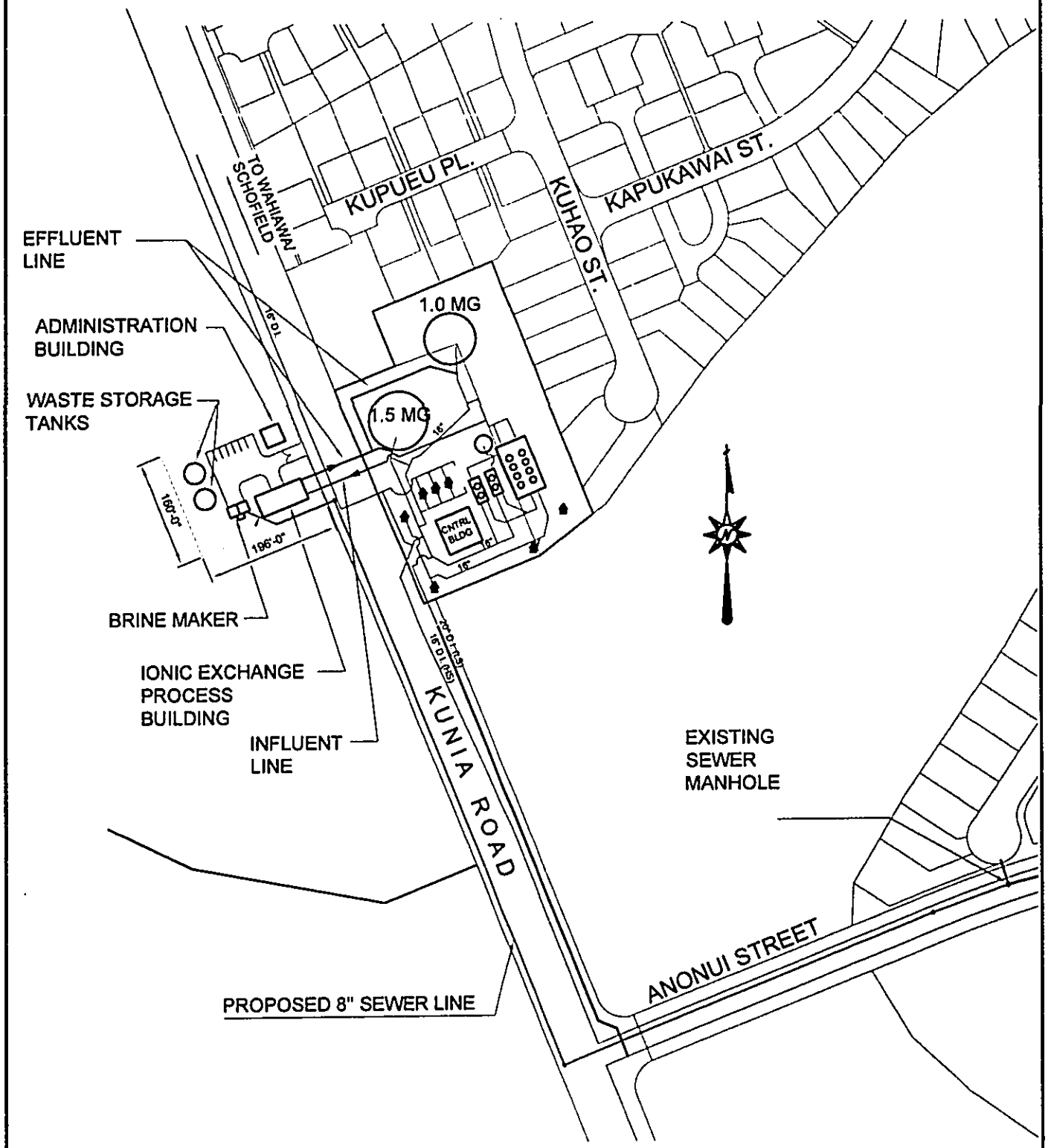
The 5-MGD Ionic Exchange Nitrate Removal Facility will be integrated into an existing groundwater treatment facility consisting of a Granular Activated Carbon (GAC) treatment system, a 1.0-million gallon (MG) and 1.5-MG water storage reservoirs at 440' as well as a 1.5-million gallon (MG) reservoir at 665'. The inlet to the denitrification facility will be fed by treated water from the Kunia Wells II GAC Treatment Plant, located immediately across from the proposed site, on the eastern side of Kunia Road. Approximately 303 linear feet of new 24-inch Ductile Iron (D.I.) pipe will connect the effluent from the GAC vessels to the inlet header of the ion exchange reactors. Following the denitrification process, the effluent from the reactor units will be conveyed to the inlet pipes of both the 1.0 and 1.5 million gallon water storage reservoirs located at the Kunia Wells II site by means of approximately 375 linear feet of 24-inch D.I. piping.

Waste effluent from the ion exchange reactors will be conveyed to two 100,000 gallon waste storage tanks with a 31-foot diameter and a 20-foot height located outside of the ion exchange process building. The tanks will be connected to an existing 18-inch sewer line, located along Anonui Street, by approximately 1736 linear feet of a new 8-inch sewer line. To account for the possibility that the sewer line gets plugged, two provisions are included in the design of the facility. Firstly, the capacity of the on-site waste storage tank is determined as twice the estimated waste generated by the facility per day. Secondly, an additional 100,000-gallon storage tank was incorporated in the design to provide the extra waste storage capacity in case of prolonged clogging of the sewer system. Both waste storage tanks will be connected to the sewer line for discharge of waste generated by the facility. Discharge to the sewer system is regulated by the Department of Environmental Services (ENV). It is to be noted that the Department of Environmental Services has already reviewed the permit application and issued an Industrial Wastewater Discharge Permit for this project. The Department of Environmental Services will determine the frequency and the type of testing that may be required in future.

The ionic exchange denitrification system will be constructed on a 2-acre parcel of land. The 28 feet high process building will occupy an area approximately 72 feet long by 32 feet wide of the parcel while only the upper 2 feet of accompanying 30 feet long by 20 feet wide (approximate dimensions) automatic brine maker tank will be exposed to view. All electrical control equipment will be housed in the process building. In addition, a roadway will be constructed to allow access and delivery of the supply to the facility. Landscaping will be provided to minimize erosion and to lessen the visual impact of the new facility.

The proposed ion exchange denitrification facility does not require handling or storage of hazardous chemicals. The required brine solution of innocuous sodium chloride does not need

Figure 1-4 Proposed Denitrification Facility Plan



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any special handling or storage requirements. The chemicals that may be used in the denitrification processes include sulfuric acid, sodium hydroxide, anhydrous ammonia, ferric chloride, and sodium bisulfite. Storage and handling of these chemicals shall be in strict compliance with the OSHA regulations. Operators shall be trained for handling and storing acidic and caustic chemicals. The chemicals will be stored in stand-alone cabinets, racks or containers that meet the OSHA regulations for storage of acidic, caustic, and other materials. The facility will include an emergency shower and eye wash equipment. Figure 1-4 shows the proposed site layout.

1.5 Project Cost

The preliminary construction costs for the project, as summarized in Appendix A, are estimated to be $5,229 million. This project may be funded by Federal Funds through the State of Hawaii's Drinking Water State Revolving Fund (DWSRF) program, which would constitute a federal action, and will require the project to meet al Hawaii DWSRF program requirements.

1.6 Construction Schedule

The construction of the project is scheduled to begin in April 2003 and last 450 days.

SECTION 2

DESCRIPTION OF THE EXISTING ENVIRONMENT

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SECTION 2

DESCRIPTION OF THE EXISTING ENVIRONMENT

2.1 Physical Setting

2.1.1 Climate

The climate observed in the Hawaiian Islands is a function of the upper air circulation in the region. The dominant circulation pattern is that of an anticyclone which is generally located to the northeast of the Islands. This anticyclone produces trade winds that blow out of the northeast approximately 60 percent of the year. An identifiable feature of trade winds is that the warm air masses passing over the ocean become moisture laden and are *subjected to orthographic* uplift when they reach the islands and forced to move over the mountains. As a result, the air becomes cool and saturated as it rises, producing rainfall.

The project site is located on the leeward side of the Island of Oahu. The average annual precipitation in the Kunia area is approximately 30 inches as shown in Figure 2-1. The largest percentage of rainfall occurs during the winter months of December through March. Temperature flux between summer and winter time periods is approximately 7° F with the average maximum daily temperature 88° F during August and the average minimum temperature of 64° F occurring in December.

2.1.2 Geology and Topography

Oahu is the third largest island in the State of Hawaii and covers an area 44 miles long by 30 miles wide. The total land area of Oahu is 604 square miles. The project site is located in the Ewa coastal plains. This region is bordered by the Koolau Range on the east and the Waianae Range to the west. During the volcanic activities along the Koolau Range, a series of lava flows, cinder cones and tuff cones were formed. These volcanic formations, which are very different in composition from the older Koolau rocks, are known as the Honolulu Volcanic Series. The geological features of the Ewa area are characterized by underlying basaltic flows with an extensive coral shelf which has been covered by an alluvium layer composed of silty-clay material. Figure 2-2 shows the geological features of Oahu.

The mild slopes of the existing topography at the proposed project site trend from the north to south. To the north of the site, existing elevations range from 440 to 435 feet, whereas the center and south sections of the parcel are approximately 430 feet and 425 feet above MSL, respectively. The average slope in the vicinity of the site is approximately 6.25 percent. The finished grade elevations of the project may be lower or higher than the existing grade. Figure 2-3 presents the general slope of the terrain in the area as delineated by the U. S. Geological Survey.

Figure 2-1 Mean Annual Precipitation for Oahu

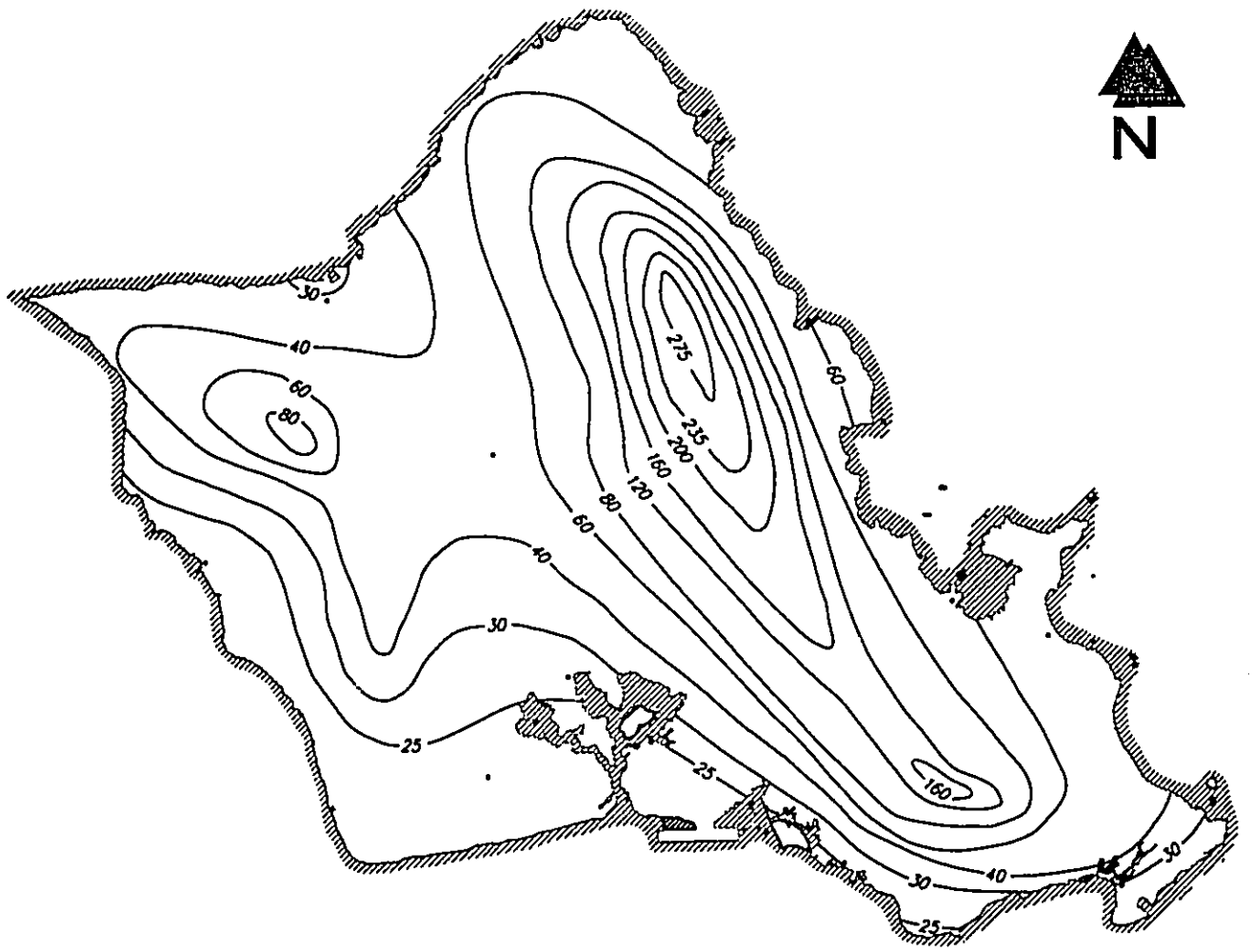

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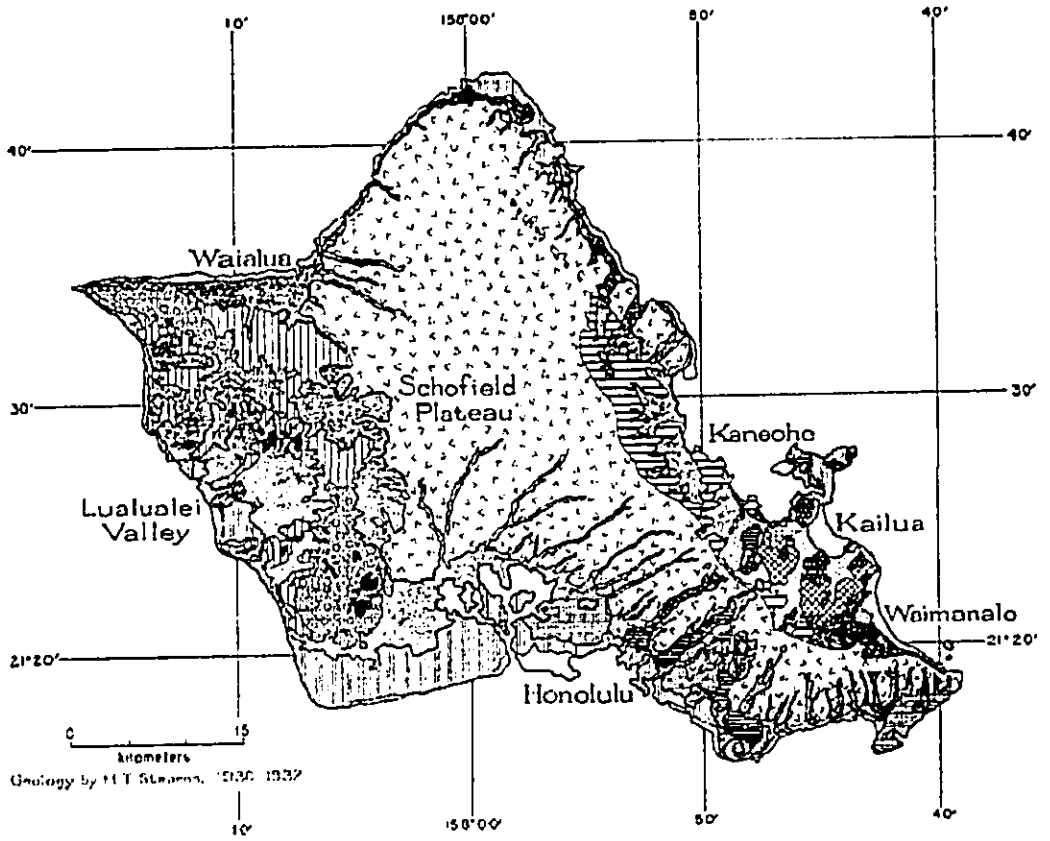
Figure 2-2 Geological Features of Oahu



SEDIMENTARY ROCKS

RECENT — PLEISTOCENE

Beach and dune sand

Alluvium

Limestone (Reefs and dunes)

VOLCANIC ROCKS

KOOLAU RANGE — WAIANAE RANGE

QUATERNARY

Lavas — Pyroclastics

Honolulu volcanic series

Kolekole volcanics

EROSIONAL UNCONFORMITY

TERTIARY

Flows — Dike complex

Caldera complex: Lava flows; Vent breccia; Dike complex

Koolau volcanic series

Upper member — Cone

Lower and middle members — Vent breccia

Waianae volcanic series

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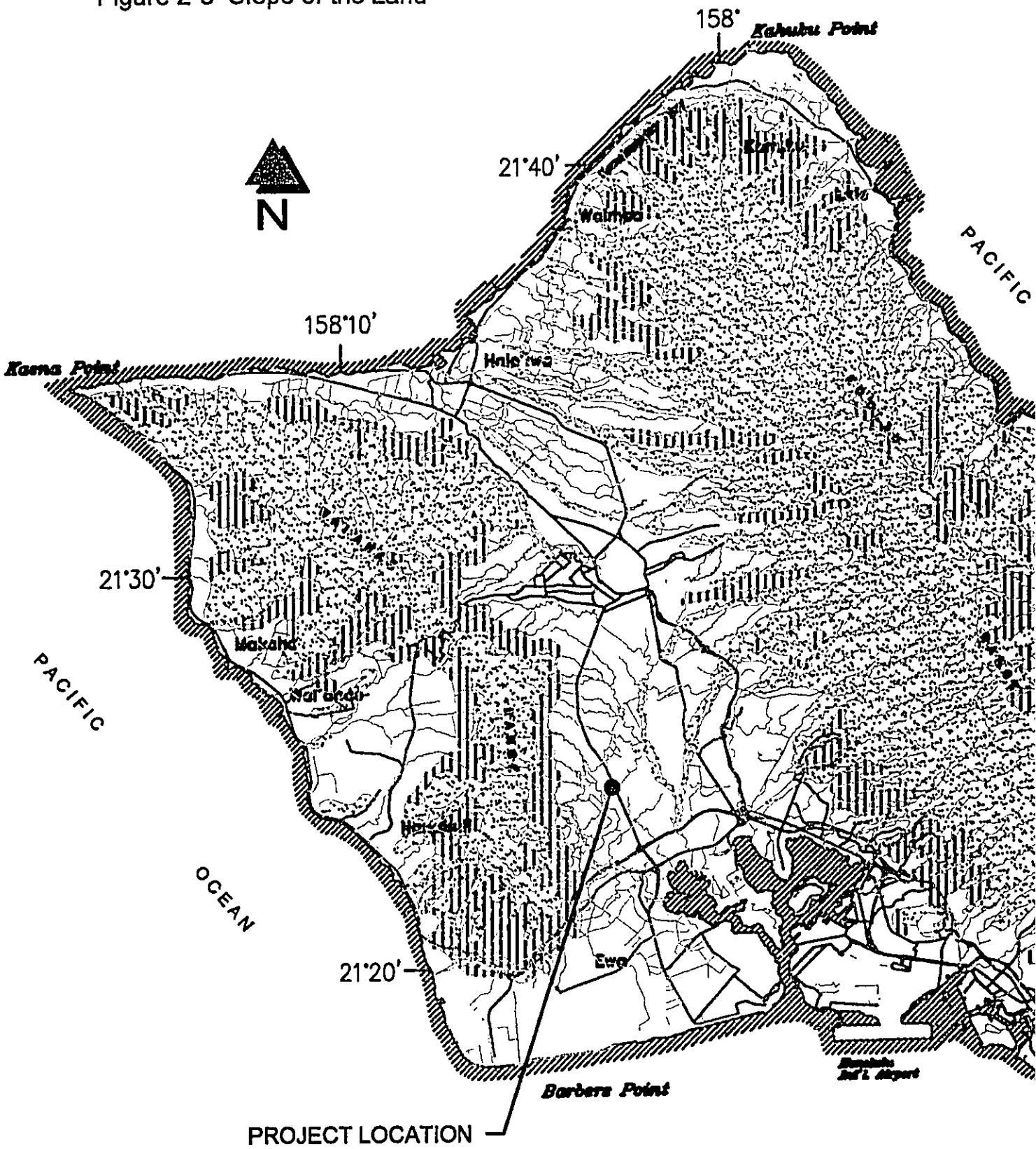
Figure 2-3 Slope of the Land



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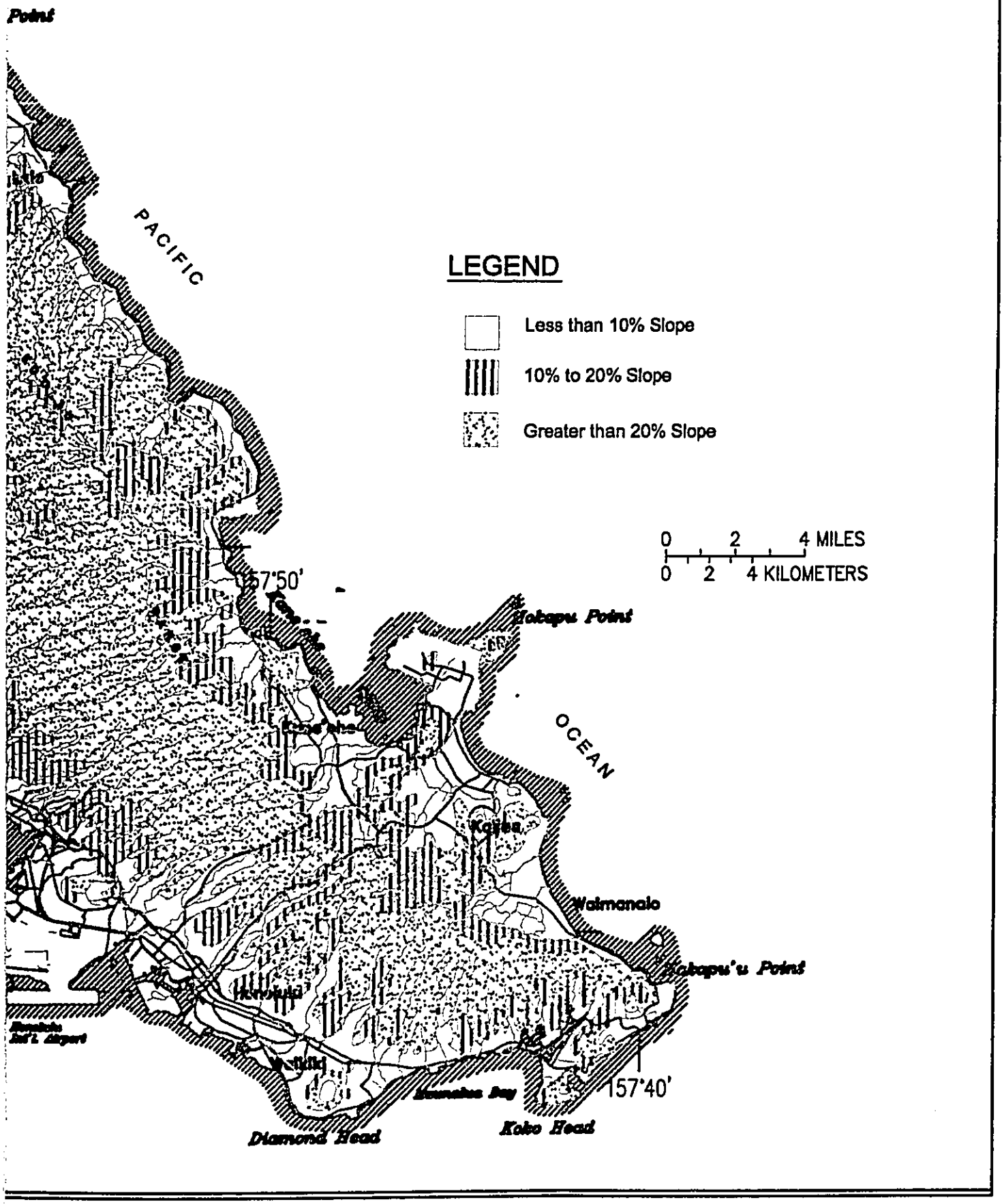

Point
PACIFIC
OCEAN
LEGEND
Less than 10% Slope
10% to 20% Slope
Greater than 20% Slope
0 2 4 MILES
0 2 4 KILOMETERS
157°50'
157°40'
Makapu Point
Kaiwa
Waimanalo
Makapu'u Point
Honolulu
Waikiki
Diamond Head
Koko Head

2.1.3 Soils

The general soil map of the Island of Oahu is depicted in Figure 2-4. The U.S. Natural Resources Conservation Service (NRCS) classifies the soil at the proposed denitrification facility site and the surrounding area as Helemano-Wahiawa Association. This association consists of well-drained, moderately fine textured soils on uplands on the Island of Oahu. The soils in this area are nearly level to moderately sloping and occur in broad areas dissected by very steep gulches. Helemano soils make up about 40 percent of the association, and Wahiawa soils 30 percent. Kunia, Lahaina, and Molokai soils make up the rest.

The proposed project site is situated in an area consisting of one soil series which the NRCS categorizes as the Molokai Series. There are four broad classes of soil types found within the proposed project site. They include Molokai Silty Clay Loam types MuA, MuB, MuC, and MuD. Figure 2-5 shows the general soil survey at the denitrification facility site.

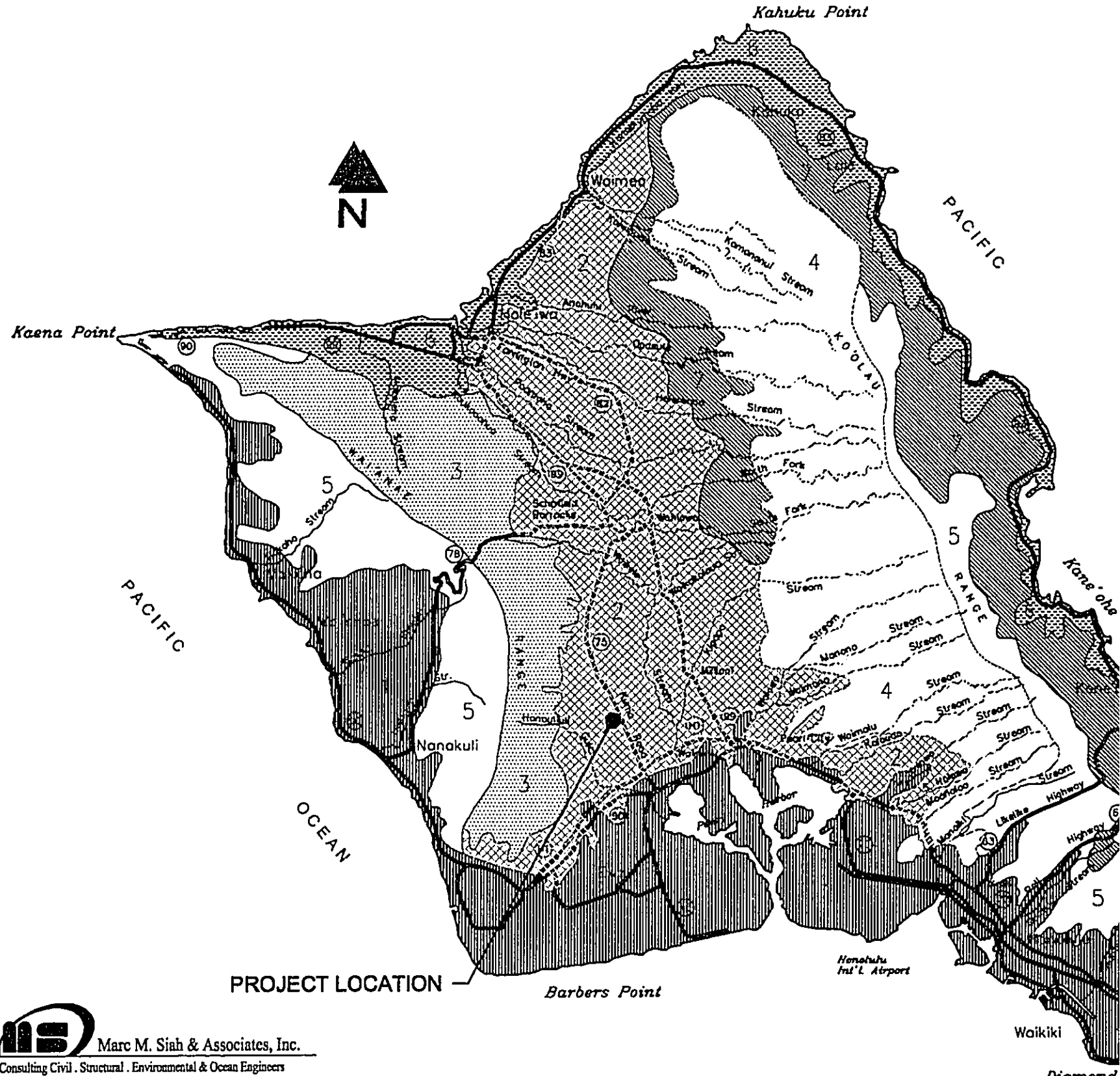
The Molokai Silty Clay Loam (MuA) type soil occurs on the majority of the proposed site. Typical slopes for Molokai Silty Clay Loam (MuA) range from 0 to 3 percent. This is a well drained soil on uplands on the islands of Maui, Lanai, Molokai and Oahu. The surface layer is a dark reddish-brown silty clay loam. The subsoil is dark reddish-brown silty clay loam that has a prismatic structure. The substratum is soft, weathered rock. The soil is slightly acid to neutral. Runoff is slow and the erosion hazard is slight.

The Molokai Silty Clay Loam (MuB) type soil occurs on the southwest side of the proposed site. Typical slopes for Molokai Silty Clay Loam (MuB) range from 3 to 7 percent. This is also a well drained soil on uplands on the islands of Maui, Lanai, Molokai and Oahu. The surface layer, subsoil and substratum are similar to the MuA soil type. The soil is also slightly acid to neutral. Runoff is slow to medium and the erosion hazard is slight to moderate.

The Molokai Silty Clay Loam (MuC) type soil occurs on the southeast side of the proposed site. Typical slopes for Molokai Silty Clay Loam (MuC) range from 7 to 15 percent. This is also a well drained soil on uplands on the islands of Maui, Lanai, Molokai and Oahu. This soil occurs on knolls and sharp slope breaks. The surface layer, subsoil and substratum are similar to the MuA and MuB soil types. The soil is also slightly acid to neutral. Runoff is medium and the erosion hazard is moderate.

The Molokai Silty Clay Loam (MuD) type soil occurs on the northeast side of the proposed site. Typical slopes for Molokai Silty Clay Loam (MuD) range from 15 to 25 percent. This soil occurs on Oahu. The surface layer, subsoil and substratum are similar to the MuA, MuB and MuC soil types. The soil is also slightly acid to neutral. Runoff is medium and the erosion hazard is severe.

Figure 2-4 General Soil Map of Oahu



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SOIL ASSOCIATIONS

1 — Lualualei–Fill land–Ewa association: Deep, nearly level to moderately sloping, well–drained soils that have a fine textured or moderately fine textured subsoil or underlying material, and areas of fill land; on coastal plains

2 — Helemano–Wahiawa association: Deep, nearly level to moderately sloping, well–drained soils that have a fine textured subsoil; on uplands

3 — Tropohumults–Dystrandepts association: Gently sloping to very steep, well–drained soils that are underlain by soft weathered rock, volcanic ash, or colluvium; on narrow ridges and side slopes

4 — Rough mountainous land–Kapaa association: Very steep land broken by numerous drainageways and deep, well–drained soils that have a fine textured or moderately fine textured subsoil; in gulches and on narrow ridges

5 — Rock land–Stony steep land association: Steep to precipitous, well–drained to excessively drained, rocky and stony land

6 — Kaena–Waialua association: Deep, mainly nearly level and gently sloping, poorly drained to excessively drained soils that have a fine–textured to coarse–textured subsoil or underlying material; on coastal plains and talus slopes and in drainageways

7 — Lolekaa–Waikane association: Deep, nearly level to very steep, well–drained soils that have a dominantly fine–textured subsoil; on fans, terraces, and uplands

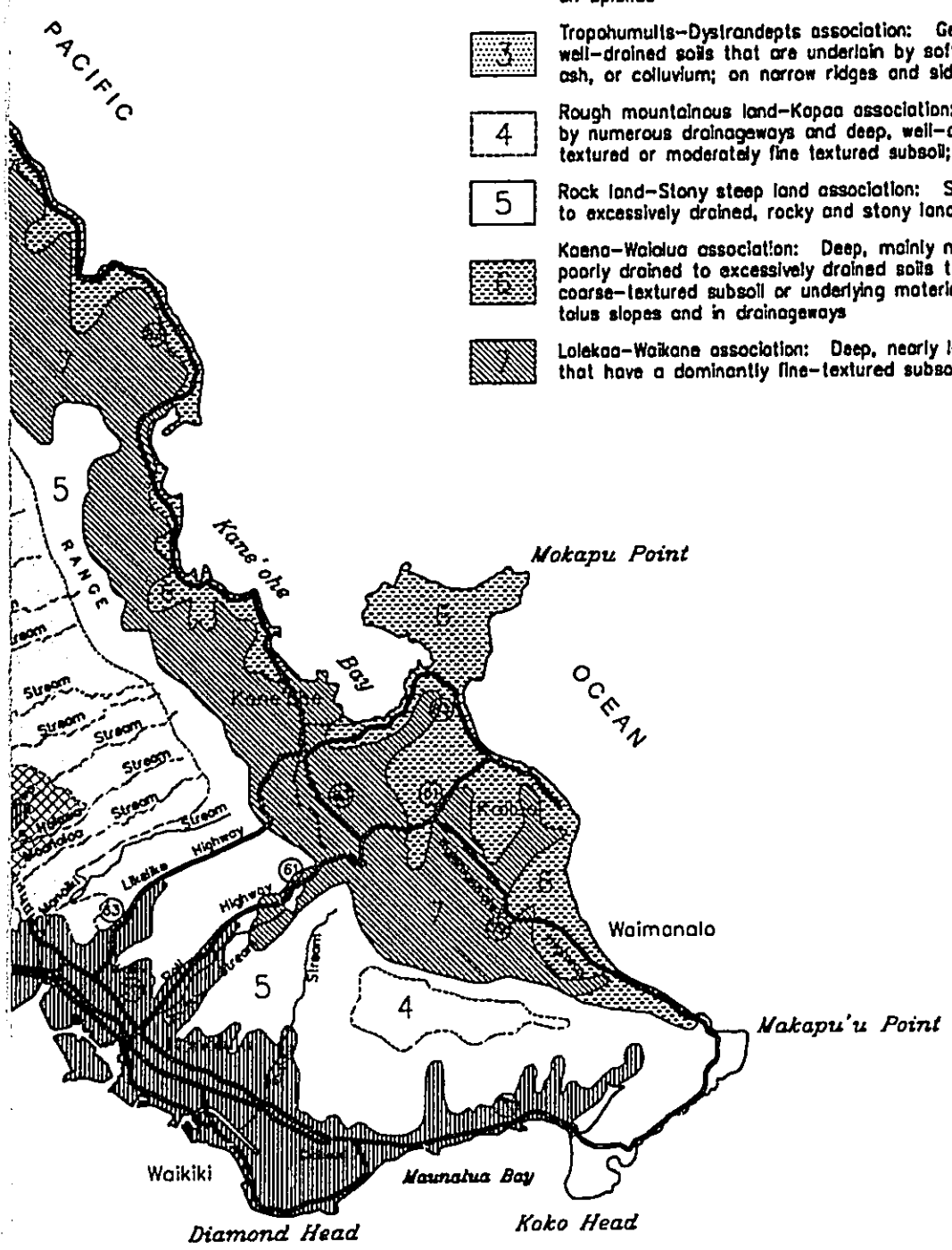
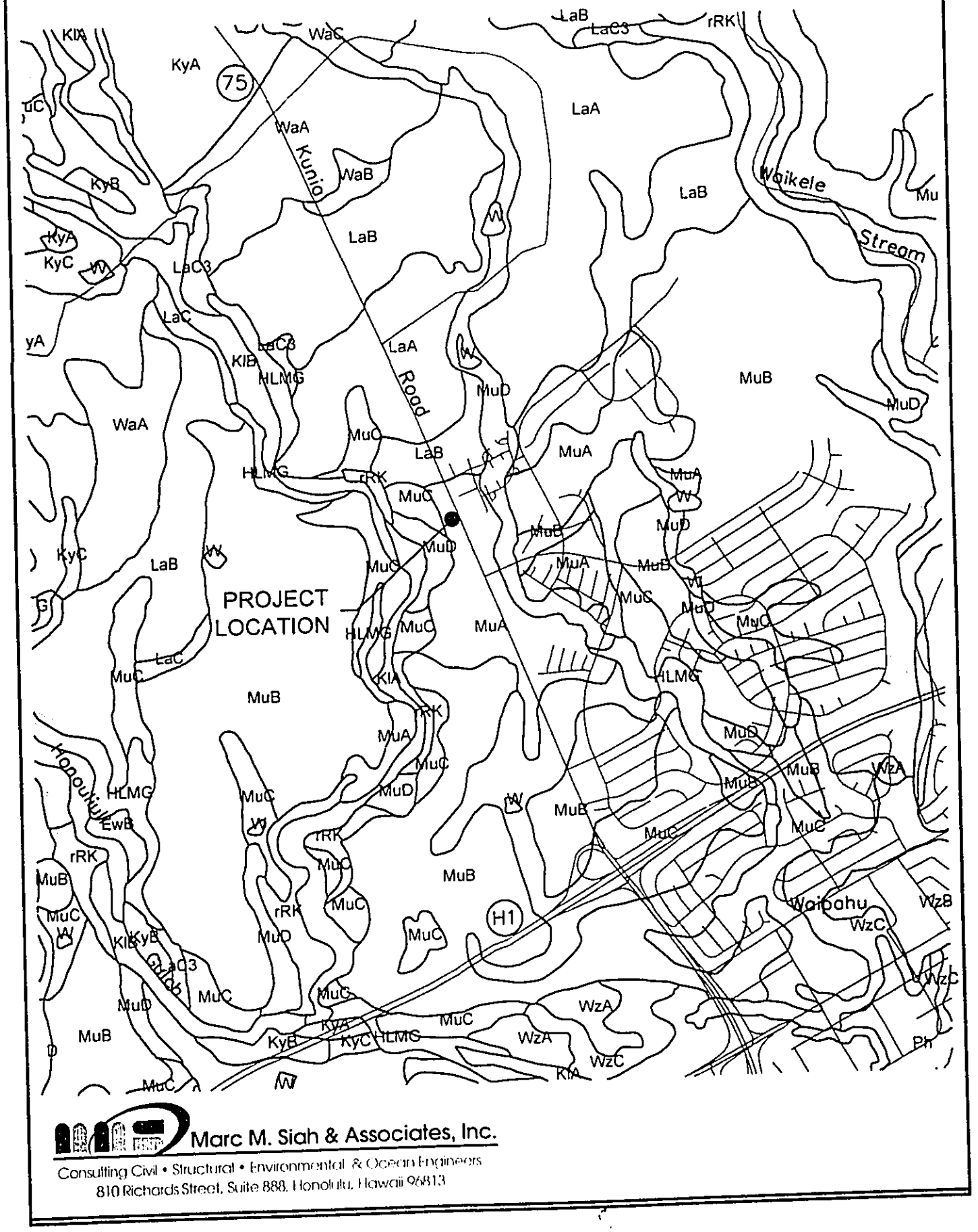


Figure 2-5 Soil Survey



2.1.4 Earthquake Hazards

The Hawaiian Islands are divided into three (3) seismic zones as specified by the Uniform Building code (UBC) for the purpose of structural design. The entire Island of Oahu is classified as Zone 2A as per UBC (1994), which is a seismically active area of the state. Given that the least active zone is Zone 0, and the most active zone is Zone 4, the possibility of an earthquake occurring on the Island of Oahu is moderate. As required by the BWS, all new structures will be designed and constructed to resist stresses produced by forces associated with the Seismic Zone 3.

2.1.5 Tsunami and Flood Hazards

The lowest ground elevation in the project area is approximately 425 feet above MSL along the southern side of the proposed denitrification facility site. According to tsunami inundation maps, the proposed project site is located outside the designated inundation zones.

Kunia Gulch is the closest natural drainage pathway to the proposed denitrification facility site. Presently, no records are available for flooding history in the area. Furthermore, based on the Flood Insurance Rate Map (FIRM) number 15003C0220 E dated November 20, 2000 the project site is designated as Zone D. This designation refers to areas in which flood hazards are undetermined. A recent study by Marc M. Siah & Associates showed that the 100-year flood levels for the nearby Honouliuli Gulch in the vicinity of its crossing of the H-1 Freeway may reach elevations as high as 84 feet. Therefore, any flooding at the proposed denitrification facility site is highly unlikely.

2.1.6 Flora and Fauna

The proposed project site is located within an urban area inside the Ewa ahupua'a. Historically, the proposed project site and the surrounding lands have been used for growing sugar cane up through the early nineteen eighties. The surrounding lands are currently used for agricultural purposes. No botanical survey would be undertaken for the proposed project. The reason for not performing any botanical survey is based on the simple fact that the proposed project site land is currently fallow and void of significant vegetation. Figure 2-6 depicts two pictures taken at a recent field survey showing the existing conditions of the proposed project site. The area surrounding the project site has no outstanding vegetative features and no proposed or listed threatened or endangered species. The day-to-day operation of the denitrification facility is not anticipated to adversely affect the local flora or fauna. Furthermore, it is not expected that new species of flora and fauna will migrate to the area as a result of this project. The trees that will be planted for screening and landscaping may provide additional habitat for birds and other fauna. The design consultant will consult with the Nature Conservancy of Hawaii on the use of native plants to re-vegetate the area near the

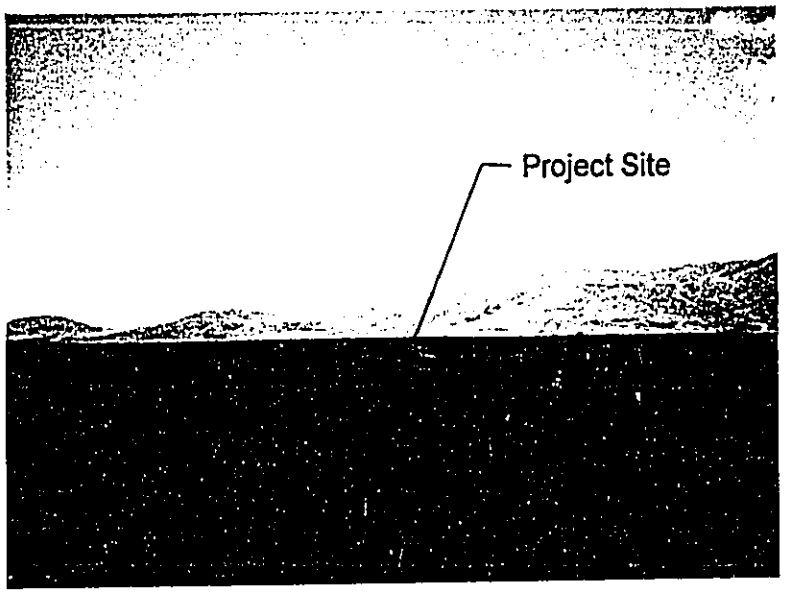


Figure 2-6 Views of the Land Parcel Site of the Proposed Facility

proposed denitrification facility.

In short, it is believed that the construction and the operations of the proposed facility would not result in any significant adverse impact on the flora and fauna in the Ewa ahupua'a.

2.1.7 Historical / Archaeological Features

The proposed denitrification facility is located on a parcel of land that has previously been disturbed and altered during construction of the surrounding residential structures and past sugar cane cultivation. Based on the records at the State Historic Preservation Division (SHPD), there is no historic or culturally sensitive sites on the parcel nor is it likely that any will be found. It was also noted that the sugar cane industry has cultivated the land to depths greater than historic sites are commonly found. A copy of the letter regarding this information is included in Appendix B. Should any historic artifact and/or burial sites be found during construction of the denitrification facility, work shall be immediately stopped and the State Historic Preservation officer and the Oahu Island Burial Council will be contacted for implementation of a proper monitoring and preservation program. Construction activities will resume only after the consultation and approval from both agencies and the implementation of a monitoring program, as required.

2.1.8 Cultural Resources

In assessing possible impacts of the proposed project on the cultural sources, the traditional Hawaiian ahupua'a approach was used. We contacted various Hawaiian organizations, provided them with information about the nature and the location of the proposed project, and consequently solicited their comments on possible impacts of the proposed project on the cultural resources. After phone discussions with Ms. Sharla Manley of OHA, she recommended that we contact the Ilioulaokalani Coalition and the KAHEA Alliance. We contacted Ms. Victoria Holt-Takamine, President of the Ilioulaokalani Coalition, and requested their comments. Similarly, we informed the KAHEA Alliance of the nature of the proposed project and requested their comments. We contacted the Queen Lili'uokalani Children's Center and discussed the project with Ms. Henrietta Egami who subsequently consulted with their Board. In addition, we contacted the State Foundation on Culture and the Arts and discussed the project with Messrs. Ken Hamilton and John "Keoni" Fujitani. In addition, the representatives of the Board of Water Supply attended the Waipahu Neighborhood Board monthly meeting on April 16, 2002 and presented the project to the board members and the attending citizens. All the neighborhood board members expressed their support for the project. It should be noted that in all our contacts we solicited not only comments about possible cultural impacts, but also asked for additional cross references who might comment on any possible impact of the proposed project to the cultural resources. Based on our

inquires and the resulting comments and responses that we have received to date, one may conclude that the proposed project would not affect the cultural resources at the Ewa ahupua'a.

The proposed project is located within the Ewa ahupua'a. Based on the afore-mentioned research on the cultural practices in the Ewa ahupua'a, one may conclude that there are no known cultural activities by any Hawaiian organization, Hawaiian group or individuals at the project site that would be interrupted because of the proposed facility. At the same time, the proposed facility will be located on a small parcel of land in Ewa ahupua'a and would not prevent or limit access by any Hawaiian organization, Hawaiian group or individual to any other site with cultural significance inside the Ewa ahupua'a. In other words, there are no known cultural activities on or off the project site in the Ewa ahupua'a that would be affected directly or indirectly due to the construction or operations of the proposed facility. Aside from cultural activities in the Ewa ahupua'a, the construction of the proposed facility will not result in exploitation, pollution, extinction of any rare, endangered, or in any other way significant plants or animals with regard to traditional and customary practices in the ahupua'a since there are no such plants or animals at the project site. Similarly, the construction or the operation of the proposed facility will not affect rare, endangered, or in any other way significant plants or animals with regard to traditional and customary practices off the project site in the Ewa ahupua'a. As for the marine ecology, the wastewater resulting from the proposed treatment facility will be discharged into the sewer system which is conveyed to the Honouliuli Wastewater Treatment Plant (WWTP). The volume of the wastewater from the proposed facility is estimated to be less than 50,000 gallons per day. The Honouliuli WWTP treats a total volume of 26 million gallons per day. In other words, the relative volume of the wastewater generated at the proposed facility when compared with the total volume of treated wastewater at the Honouliuli WWTP is 0.19 per cent. The discharge of the waste water generated by the proposed facility into the sewer system is subjected to the National Pollutant Discharge Elimination System (NPDES) permit regulations for industrial waste water as administered by the City and County of Honolulu Department of Environmental Services (ENV). The NPDES permit program establishes specific requirements for monitoring and evaluating the effects of water discharge to lakes, streams, and shoreline and addresses the impact on the quality of receiving waters. The insignificant relative volume of the waste generated by the facility to the total volume of waste treated at the Honouliuli WWTP, the filtration and treatment processes of the waste water at the WWTP, and the strict NPDES regulations for industrial discharge permits would prevent adverse impacts to the coral reefs, algae blooms, or other adverse impacts on the ecosystem. It is to be noted that the City and County of Honolulu Department of Environmental Services (ENV) has already granted the required NPDES Industrial Wastewater Discharge Permit Survey/Application for the proposed project. In addition, the Honolulu District of the U.S. Army Engineer, Department of the Army, has already determined that the proposed project will not include any work in waters of the United States, including adjacent wetlands.

In short, taking the traditional ahupua's approach and considering the above factors, the

proposed facility is not anticipated to cause any adverse impacts on the cultural resources, native plants and animals, or the ecosystem.

2.1.9 Wetlands

The Office of State Planning's Wetlands and Waterbird Recovery Habit map shows no wetlands in the project area as presented in Figure 2-7. The only wetland and/or sensitive riparian habitats near the proposed denitrification facility site is within the Kunia Gulch. U.S. Fish and Wildlife Service's National Wetland Inventory Map identifies the Kunia Gulch as an PEM1Cx habitat or *Palustrine, Emergent, Persistant, Seasonal, Excavated*. Figure 2-8 details this wetland designation and Table 2-1 provides a map legend. The proposed project does not impact the existing wetland ecosystem.

2.1.10 Air Quality

The Ewa Plains area is considered to be an open agricultural area which is not exposed to adverse air quality conditions. There are no visible point sources of airborne emissions in the immediate vicinity of the project site. The vehicular traffic on Kunia Road and the H-1 Freeway is the primary source of indirect emissions in the project area. The air quality along the project alignment is generally considered good and well within the State and Federal Ambient Air Quality Standards.

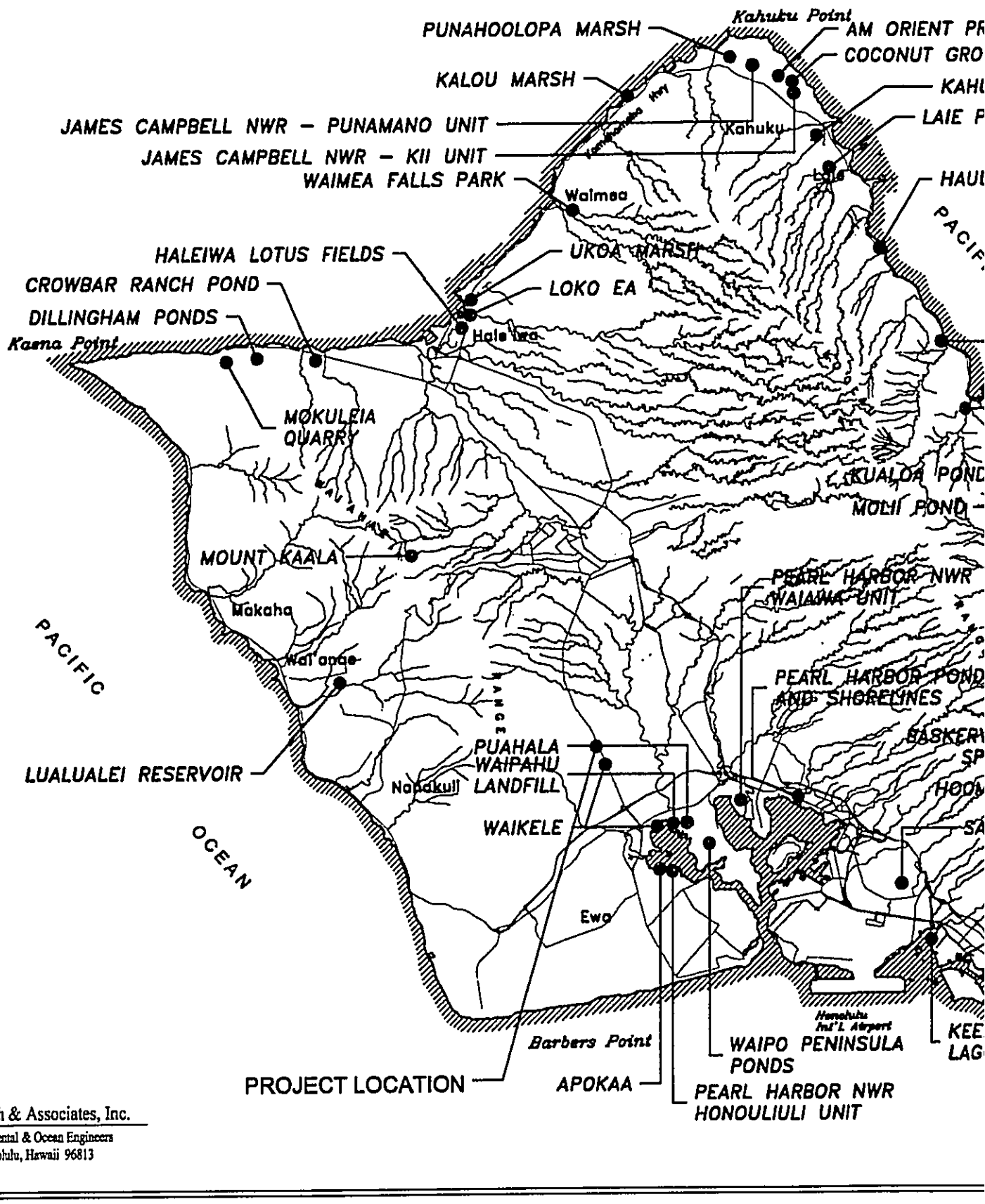
2.1.11 Noise Characteristics

The proposed denitrification facility site is located within an open agricultural area where there are no significant fixed noise generators in the vicinity of the project. Background noise in the area can be attributed to vehicular traffic and agricultural farming equipment. The ambient noise level in the project area is in the range of 25 to 30 decibels (dB) which is considered normal and acceptable.

2.1.11 Water Quality

The proposed denitrification facility site is approximately four miles away from the ocean. The only other waterway near the site is the Kunia Gulch, which is seasonal. Water flowing through the gulch combines with the Honouliuli Gulch Stream and eventually drains into Pearl Harbor's West Loch. According to the State Department of Health (DOH), the Kunia Gulch is classified as a Class 2 inland water. According to DOH guidelines regarding Class 2 waters, storm water discharges associated with industrial activities which meet the basic water quality criteria applicable to all waters specifies in DOH 11-54-04 (a) and all applicable requirements of Chapter 11-15 of Hawaii Administrative Rules, titled "Water Pollution Control" are permitted. Similarly,

Figure 2-7 Wetlands and Waterbird Recovery Habit Map



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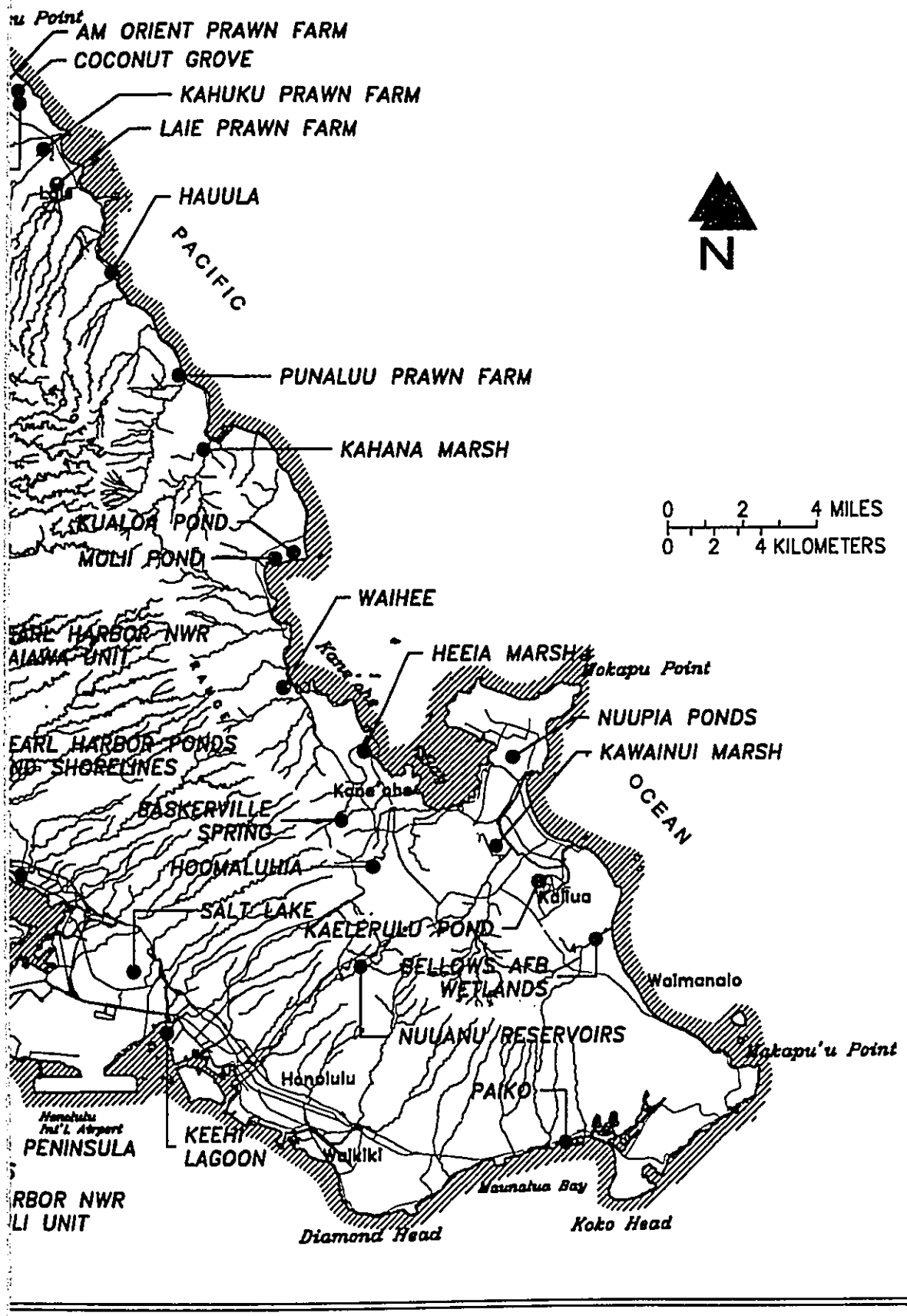
Point
AM ORIENT PRAWN FARM
COCONUT GROVE
KAHUKU PRAWN FARM
LAIE PRAWN FARM
HAUULA
PACIFIC
PUNALUU PRAWN FARM
KAHANA MARSH
KUALOA POND
MOLII POND
WAIHEE
EARL HARBOR NWR
AIAWA UNIT
HEEIA MARSH
Mokapu Point
NUUPIA PONDS
KAWAINUI MARSH
EARL HARBOR PONDS
ND SHORELINES
OCEAN
Kane'ohe
BASKERVILLE
SPRING
HOOMALUHIA
Kailua
SALT LAKE
KAELEPULU POND
BELLOWS AFB
WETLANDS
Waimanalo
NUUANU RESERVOIRS
Makapu'u Point
Honolulu
PAIKO
Honolulu
Int'L Airport
PENINSULA
KEEHI
LAGOON
Waikiki
Maunalua Bay
RBOR NWR
LI UNIT
Diamond Head
Koko Head
N
0 2 4 MILES
0 2 4 KILOMETERS

Figure 2-8 National Wetlands Inventory Map

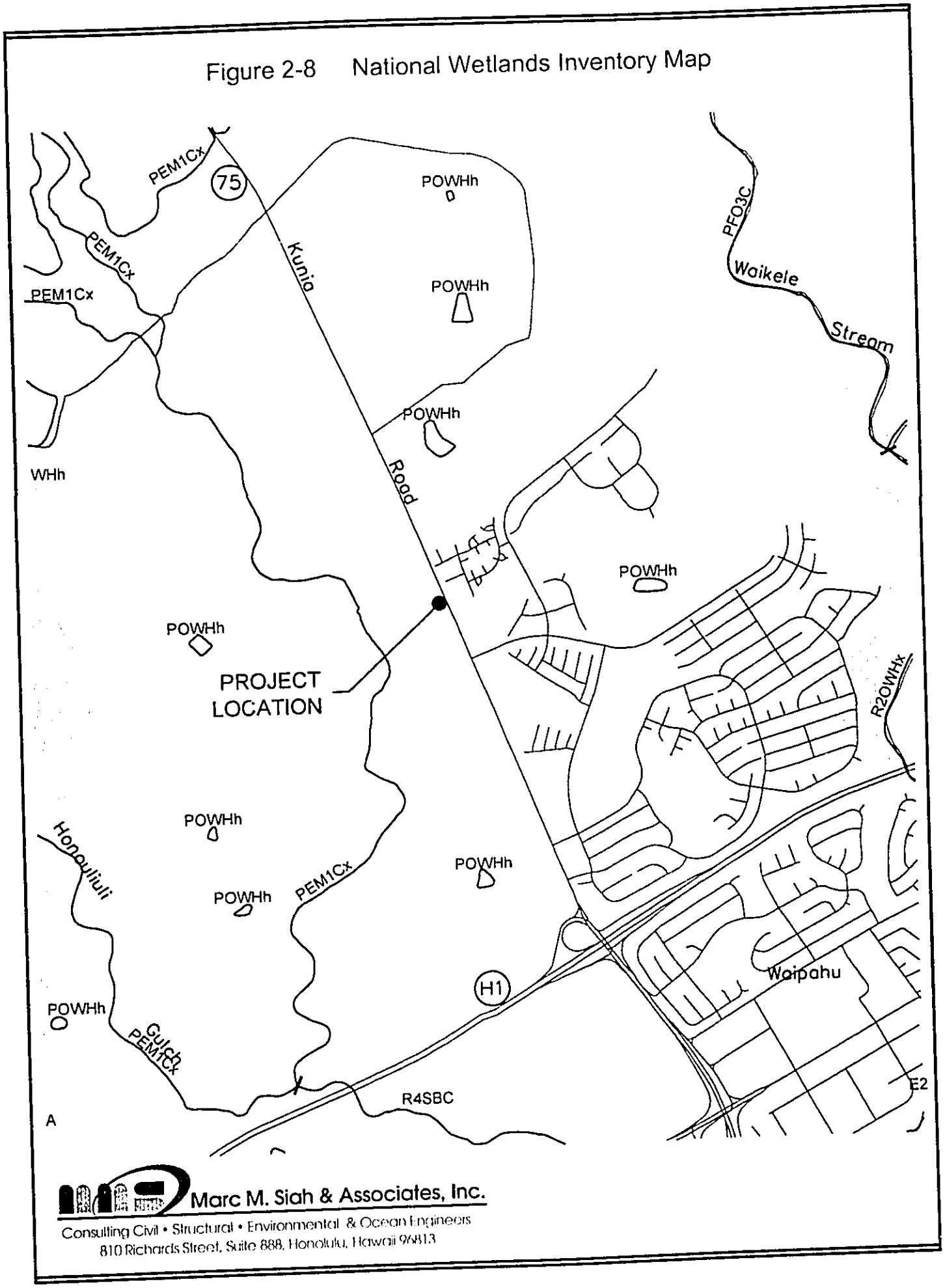

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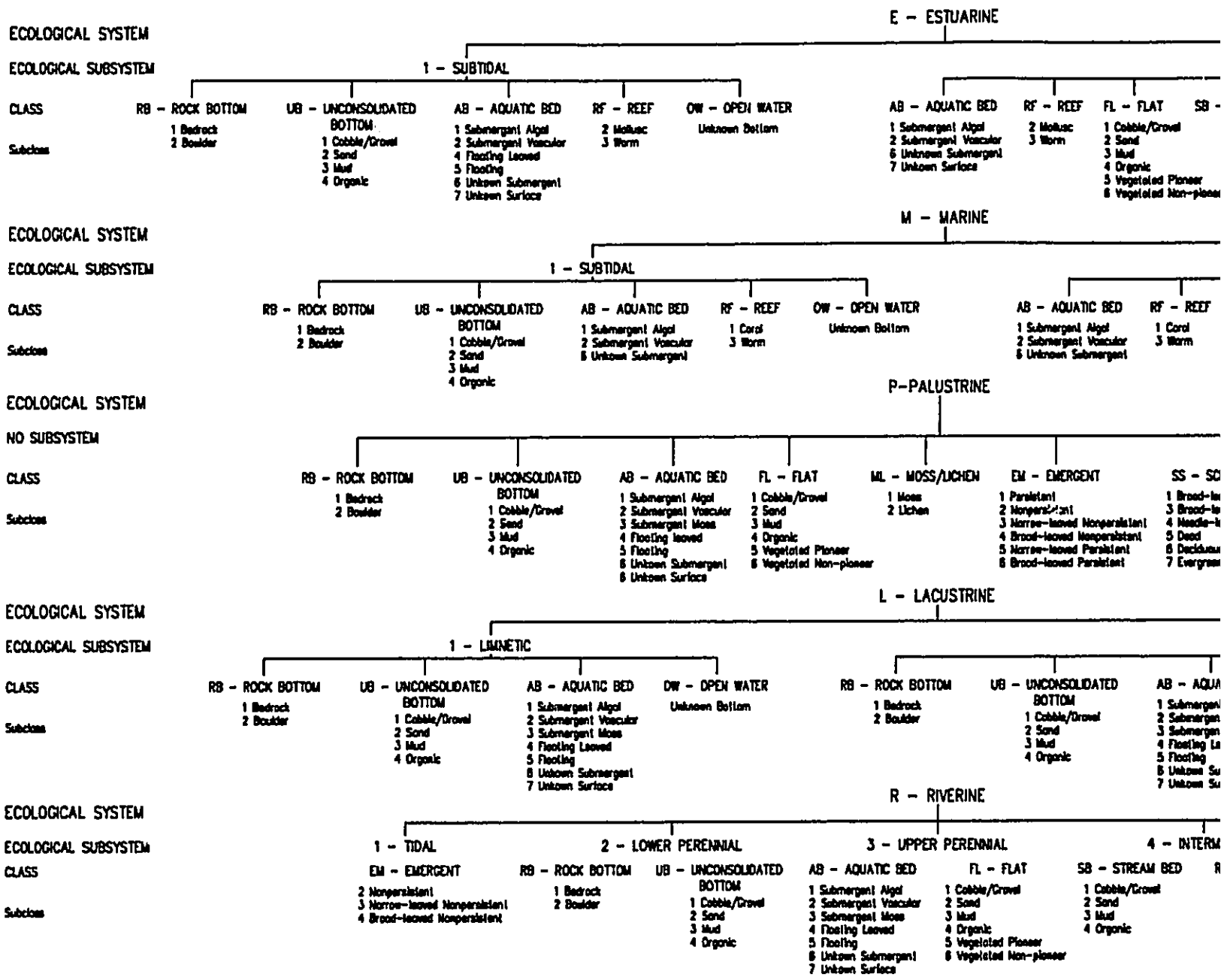
Table 2-1 National Wetlands Inventory Map Legend



MOD

In order to more adequately describe wetland and aquatic habitat
may be applied at the class or lower level in the hierarc

WATER REGIMEN				Coasta
Non-Tidal		Tidal		
A Temporary	H Permanent	K Artificial	R Seasonal Tidal	1 Hyper
B Saturated	J Intermittently Flooded	L Subtidal	S Temporary Tidal	2 Euhal
C Seasonal	K Artificial	M Irregularly Exposed	T Semipermanent Tidal	3 Mixoh
D Seasonal Well-drained	Z Intermittently Exposed/Permanent	N Regular	V Permanent Tidal	4 Polyh
E Seasonal Saturated	W Intermittently Flooded/Temporary	P Irregular	U Unknown	5 Mesoh
F Semipermanent	Y Saturated/Semipermanent/Seasonal			6 Oligoh
G Intermittently Exposed	U Unknown			0 Fresh

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E

2 – INTERTIDAL

D
ter
ent

RF – REEF
2 Mollusc
3 Worm

FL – FLAT
1 Cobble/Gravel
2 Sand
3 Mud
4 Organic
5 Vegetated Pioneer
6 Vegetated Non-pioneer

SB – STREAM BED
1 Cobble/Gravel
2 Sand
3 Mud
4 Organic

RS – ROCKY SHORE
1 Bedrock
2 Boulder
6 Vegetated Non-pioneer

BB – BEACH/BAR
1 Cobble/Gravel
2 Sand

EM – EMERGENT
1 Persistent
2 Nonpersistent
3 Narrow-leaved Nonpersistent
4 Broad-leaved Nonpersistent
5 Narrow-leaved Persistent
6 Broad-leaved Persistent

SS – SCRUB/SHRUB
1 Broad-leaved Deciduous
3 Broad-leaved Evergreen
4 Needle-leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

FO – FORESTED
1 Broad-leaved Deciduous
3 Broad-leaved Evergreen
4 Needle-leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

2 – INTERTIDAL

AB – AQUATIC BED
1 Submergent Algal
2 Submergent Vascular
6 Unknown Submergent

RF – REEF
1 Coral
3 Worm

FL – FLAT
1 Cobble/Gravel
2 Sand
3 Mud
6 Vegetated Non-pioneer

RS – ROCKY SHORE
1 Bedrock
2 Boulder
6 Vegetated Non-pioneer

BB – BEACH/BAR
1 Cobble/Gravel
2 Sand

EM – EMERGENT
1 Persistent
2 Nonpersistent
3 Narrow-leaved Nonpersistent
4 Broad-leaved Nonpersistent
5 Narrow-leaved Persistent
6 Broad-leaved Persistent

SS – SCRUB/SHRUB
1 Broad-leaved Deciduous
3 Broad-leaved Evergreen
4 Needle-leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

FO – FORESTED
1 Broad-leaved Deciduous
3 Broad-leaved Evergreen
4 Needle-leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

OW – OPEN WATER
Unknown Bottom

E

2 – LITTORAL

UB – UNCONSOLIDATED BOTTOM
1 Cobble/Gravel
2 Sand
3 Mud
4 Organic

AB – AQUATIC BED
1 Submergent Algal
2 Submergent Vascular
3 Submergent Moss
4 Floating Leaved
5 Floating
6 Unknown Submergent
7 Unknown Surface

FL – FLAT
1 Cobble/Gravel
2 Sand
3 Mud
4 Organic
5 Vegetated Pioneer
6 Vegetated Non-pioneer

RS – ROCKY SHORE
1 Bedrock
2 Boulder

BB – BEACH/BAR
1 Cobble/Gravel
2 Sand

EM – EMERGENT
2 Nonpersistent
3 Narrow-leaved Nonpersistent
4 Broad-leaved Nonpersistent

OW – OPEN WATER
Unknown Bottom

NIAL

4 – INTERMITTENT

5 – UNKNOWN PERENNIAL

– FLAT
/Gravel
ic
ated Pioneer
ated Non-pioneer

SB – STREAM BED
1 Cobble/Gravel
2 Sand
3 Mud
4 Organic

RS – ROCKY SHORE
1 Bedrock
2 Boulder

BB – BEACH/BAR
1 Cobble/Gravel
2 Sand

OW – OPEN WATER
Unknown Bottom

MODIFYING TERMS

quately describe wetland and aquatic habitats one or more of the water regimen, water chemistry, soil or special modifiers
d at the class or lower level in the hierarchy. The formed modifier may also be applied to the ecological system.

WATER CHEMISTRY

Tidal
R Seasonal Tidal
S Temporary Tidal
Exposed T Semipermanent Tidal
V Permanent Tidal
U Unknown

Coastal Salinity
1 Hyperhaline
2 Euhaline
3 Mixohaline (Brackish)
4 Polyhaline
5 Mesohaline
6 Oligohaline
0 Fresh

Inland Salinity
7 Hypersaline
8 Eusaline
9 Mixosaline
0 Fresh

pH Modifiers for all Fresh Water
a Acid
i Circumneutral
l Alkaline

SOIL
g Organic
n Mineral

SPECIAL MODIFIERS
b Beaver
d Partially Drained/Ditch
f Farmed
h Diked/Impounded
r Artificial
s Spoil
x Excavated

discharges covered by a National Pollutant Discharge Elimination System general permit and all applicable requirements of Chapter 11-15 of Hawaii Administrative Rules, titled "Water Pollution Control" are permitted.

2.2 Community Setting

2.2.1 Land Use And Ownership

Historically, the Ewa Plains has been the primary location for the island's agricultural resources. Specifically, the site for the proposed denitrification facility is located within the northern portion of the Ewa Plains, which has been cultivated by Oahu Sugar Co., Ltd. for the better part of the 20th century. Because of the relatively high sugar cane yields and low farming costs, the central portion of the Ewa Plains was referred to as the "golden triangle." Oahu Sugar Co., Ltd. did, however, cease operations in 1995, freeing up 10,500 acres on Oahu for other land uses. The 1844.5 acre parcel of land, which is identified by Tax Map Key (TMK): 9-2-001:001, is presently owned by the Estate of James Campbell. Marc M. Siah & Associates has contacted the Estate of James Campbell to discuss the availability of the proposed land. A copy of the letter to the James Campbell is included in Appendix C.

2.2.2 Population

The population density throughout the Kunia area is lower than the average density for Oahu. The nearest areas with concentrated populations are Waipahu and Makakilo. The Waipahu District, where the proposed site is located, has an estimated population of 31,000. Makakilo is located 2.5 miles to the west of the site with an estimated population of 10,000.

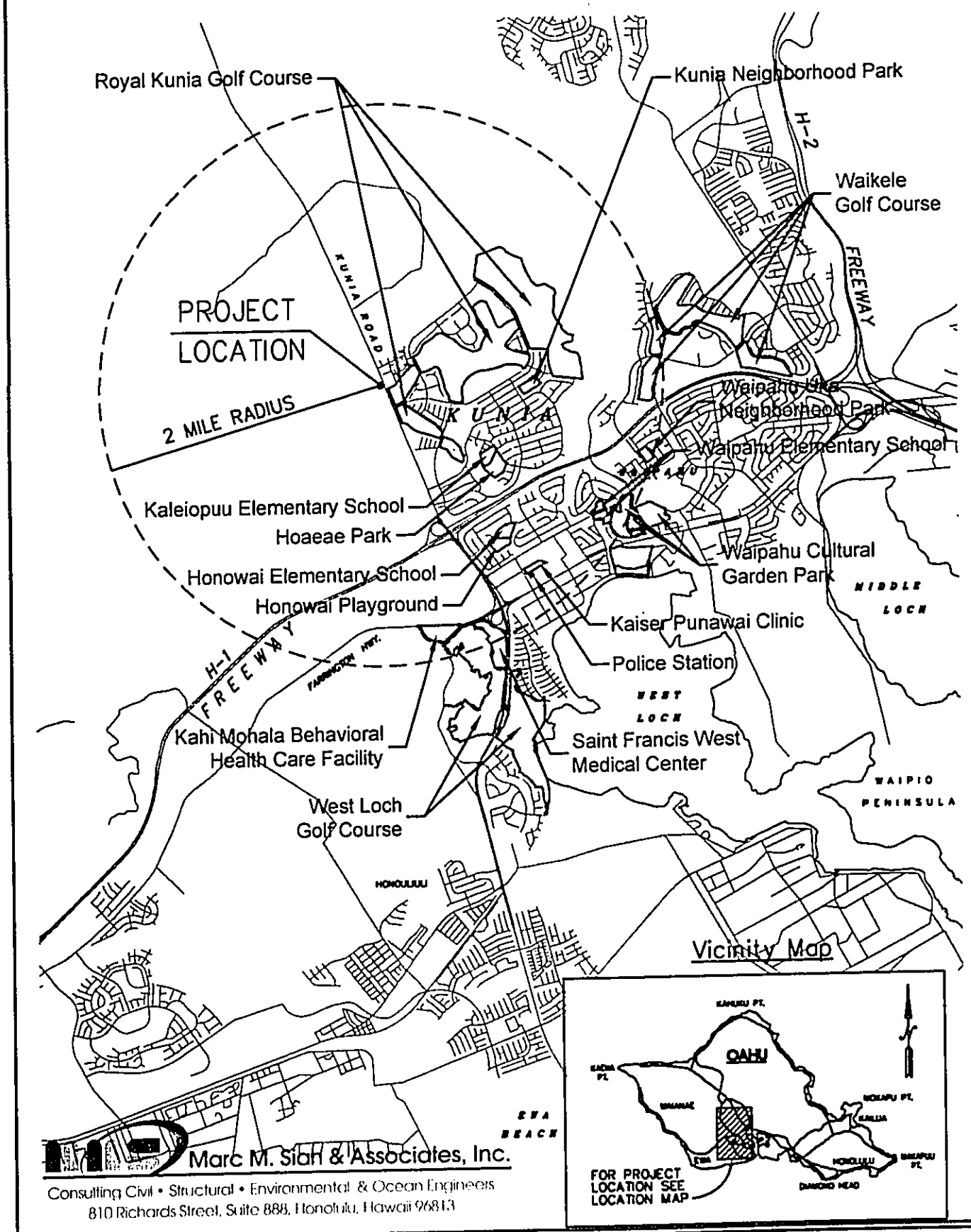
2.2.3 Economy

The economy of the Ewa Plains area is mainly agriculturally oriented. The immediate vicinity of the proposed denitrification facility site was cultivated by the Oahu Sugar Co., Ltd. until 1995. The general vicinity of the proposed denitrification facility site is currently used by independent farmers for growing vegetables and diversified agriculture.

2.2.4 Police and Fire Protection

Because the project site is not in a residential area, there are no police or fire stations in the immediate vicinity. The nearest police stations are in Waipahu and Kapolei. Fire protection for the area is supplied by stations located in Waipahu and Makakilo. Figure 2-9 shows the locations of these emergency services.

Figure 2-9 Community Facilities



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2.2.5 Medical Facilities

There are many medical facilities throughout the City and County of Honolulu. Health care on Oahu is provided by various general hospitals. Health care facilities for in-patient medical care include 29 hospitals of various types, including acute and long term facilities, 16 skilled nursing facilities and intermediate care facilities, and 261 care homes. Eight acute hospitals are operated directly by the state government and one by the federal government; 12 are nonprofit community hospitals. There are 7,651 beds available for general, acute, and other care services. Most of the other medical institutions, including the skilled nursing facilities, intermediate care facilities, and care homes, are privately owned. The only major medical facility in the general vicinity of the proposed project site is the Saint Francis West Medical Center located about 2 miles south of the site, between Waipahu and Ewa. Other facilities in the area include the Kahi Mohala Behavioral Healthcare Facility, which is near the Saint Francis West Medical Center, the Ewa Hospital located in Ewa and the Kaiser Punawai Clinic in Waipahu.

2.2.6 Recreational Facilities

The nearest recreational facilities to the proposed project site are primarily located within the adjacent residential areas. There are 11 parks within the west Waipahu, Makakilo, Kapolei and Ewa areas. These parks are, namely, the Mauka Lani Community Park, Mauka Lani Neighborhood Park, Makakilo Park, Kapolei Regional Park, Ewa Mahiko Park, West Loch Shoreline Community Park, Honowai Playground, Hoaeae Community Park, Pupuloe Street Mini Park, Waipahu Cultural Park and Waipahu Uka Park. The Ewa Plains area is also home to many golf courses. The eight nearest golf courses to the proposed denitrification facility site are the Kapolei, Hawaii Prince, Coral Creek, Ewa Villages, Ewa Beach International, West Loch, Waikele and the Hawaii Country Club golf courses. The nearest golf courses, Hawaii Country Club and West Loch, are 2.5 miles north and 2 miles south of the project site, respectively. Figure 2-8 indicates the locations of nearby recreational facilities.

2.2.7 Schools

There are numerous schools in the communities adjacent to the project area. The schools nearest to the proposed denitrification facility site are Kaleiopuu Elementary and Honowai Elementary. The nearest school, Kaleiopuu Elementary, is approximately 1.5 miles southeast from the project site. Refer to Figure 2-9 for the locations of these schools.

2.2.8 Refuse Collection and Disposal

Solid waste collection is provided by the City and County of Honolulu on a twice weekly

basis. Refuse from this area is collected and transported to the H-Power plant for final disposal.

2.2.9 Public Transportation

Bus service is the main public transportation system within the City and County of Honolulu. Regular daily bus schedules provide transportation services to residents in the Kunia area. Bus route numbers 433 and 97 Express pass in the vicinity of the proposed denitrification facility site. Handivan and Taxi Cab services are also available in the area upon request.

2.3 Infrastructure

2.3.1 Roadway and Traffic

The site is currently located along the west side of Kunia Road directly across from the Kunia Wells II GAC Plant and Reservoirs. Kunia Road runs perpendicular to the H-1 Freeway and serves as the access road to the existing Kunia Wells II. A roadway that turns off of Kunia Road will be constructed as the access road to the proposed denitrification facility project site.

2.3.2 Wastewater System

The project site is not currently serviced by the Ewa sewer system. The existing land is currently used for agriculture and has no permanent on-site structures that produce wastewater.

2.3.3 Electricity/Telephone

An existing Hawaiian Electric Company (HECO) 12.47 kV overhead transmission line runs along Kunia Road. This transmission line provides electrical service to the BWS for the Kunia Wells II site. An existing HECO 138 kV overhead transmission line crosses Kunia Road about 2 miles north of the proposed site and should have no impact to the proposed project. The proposed nitrate removal technology does not require any telemetry equipment.

2.3.4 Drainage

The Kunia Gulch, which lies approximately 880 feet west of the proposed site, is the

closest natural drainage pathway to the proposed denitrification facility site. The Kunia Gulch is part of the Honouliuli watershed, which encompasses approximately 6,900 acres of agricultural land, mostly located mauka of the H-1 Freeway and west of Kunia Road. The site will be graded in a manner that allows all on-site runoff to be collected and disposed of either through a ponding basin or piped into the storm drain system along the eastern side of Kunia Road.

2.4 Relationship to Land Use Plans, Policies, and Controls

The following land use plans, policies and controls apply to the project area.

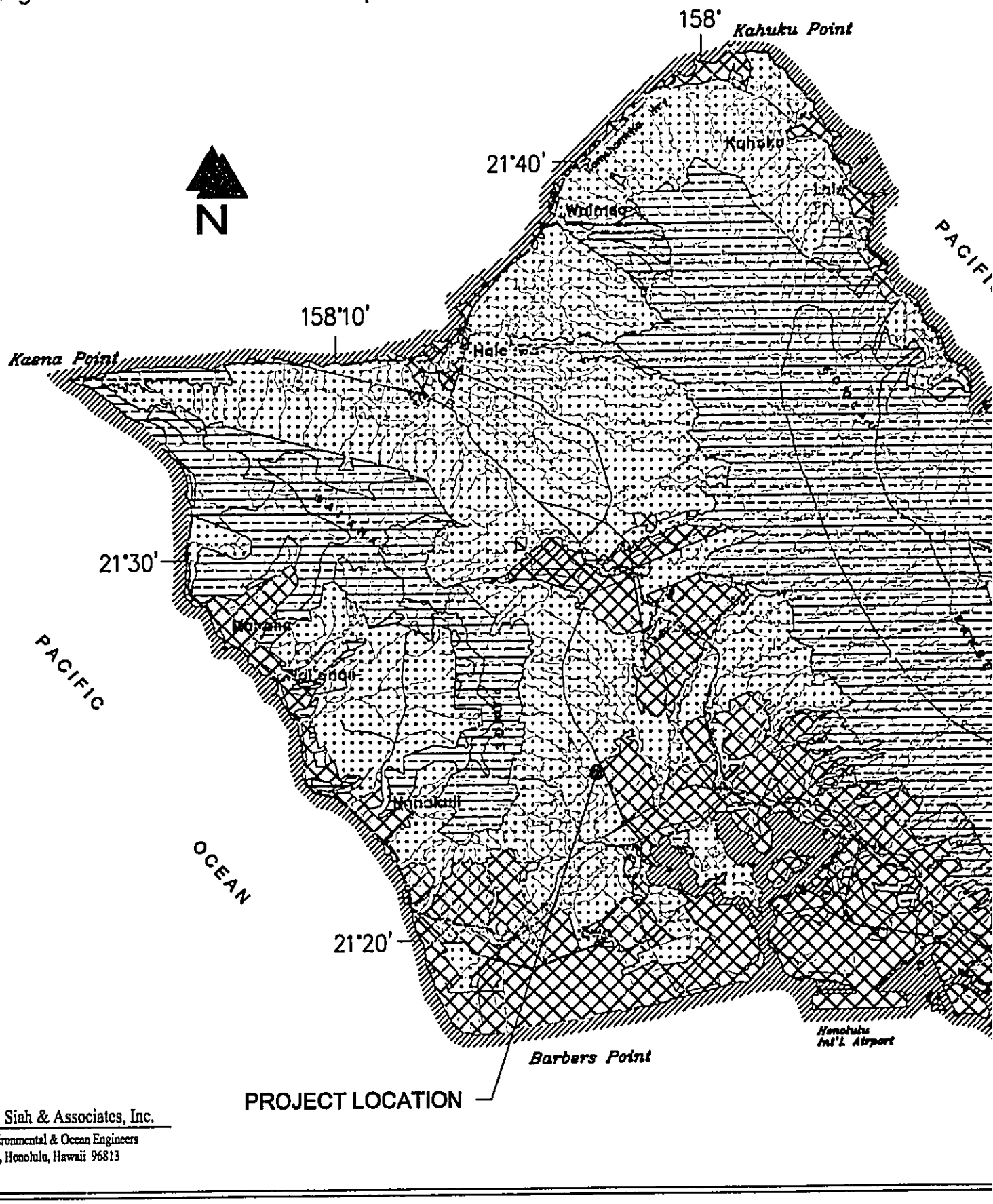
2.4.1 State Land Use Districts

Under the State Land Use Law, Chapter 205, Hawaii Revised Statutes, all lands are classified as either "Urban", "Rural", "Agricultural", or "Conservation". The project area is designated as an "Agricultural District", as shown in Figure 2-10. The proposed denitrification facility project is allowed within the agricultural district.

2.4.2 Honolulu City and County General Plan

The City and County of Honolulu's general plan is a comprehensive statement of objectives and policies which sets forth the long range development of Oahu and strategies of actions to achieve them. The comprehensive general plan addresses physical, social, economic and environmental concerns affecting the City and County of Honolulu. These objectives contain both statements of desirable conditions to be sought over the long term and statements of desirable conditions which can be achieved in the future. The main objectives of the general plan are: (1) to control the growth of Oahu's resident and visitor populations in order to avoid social, economic and environmental disruptions; (2) to plan for future population growth and to establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony; (3) to promote employment opportunities that will enable all the people of Oahu to attain a decent standard of living; (4) to maintain the viability of Oahu's visitor industry and agriculture; (5) to make full use of the economic resources of the sea and to increase the amount of Federal spending on Oahu; (6) to protect and preserve the natural environment and to preserve the natural monuments and scenic views of Oahu for the benefit of both residents and visitors; (7) to provide decent housing for all the people of Oahu at prices they can afford; (8) to improve the transportation system; (9) to meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal; (10) to maintain transportation and utility systems which will help Oahu continue to be a desirable place to live and visit; (11) to coordinate change in the physical environment of Oahu to ensure that all new development is timely, well-designed, and appropriate for the area in which it will be located; (12) to

Figure 2-10 Land Use District Map of Oahu



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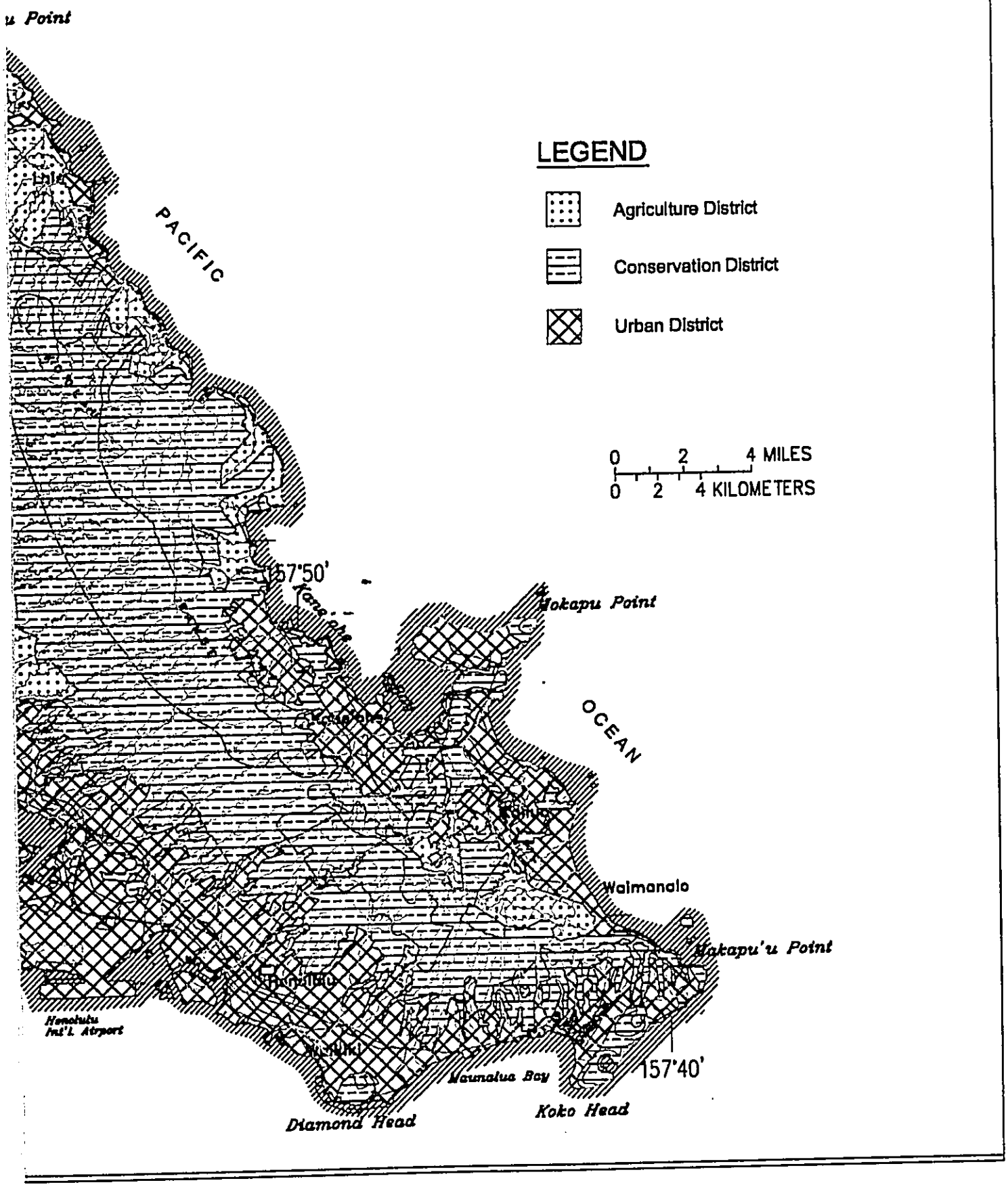

u Point
PACIFIC
OCEAN
LEGEND
Agriculture District
Conservation District
Urban District
0 2 4 MILES
0 2 4 KILOMETERS
157°50'
Kona
Makapu Point
Waimanalo
Makapu'u Point
Honolulu
Honolulu Int'l Airport
Waikiki
Maunalua Bay
157°40'
Koko Head
Diamond Head

maintain those development characteristics in the urban fringe and rural areas which make them desirable places to live and to maintain attractive, meaningful and stimulating environments throughout Oahu; (13) to promote and enhance the social and physical character of Oahu's old towns and neighborhoods; and (14) to protect the people of Oahu and their property against natural disasters and other emergencies, traffic and fire hazards, unsafe conditions, etc. The proposed denitrification facility project is consistent with this general plan. In addition to the General Plan, there are eight other development plans which serve to guide development and improvement of the City. These development plans, first adopted in the years 1981-83, cover eight geographical sub-regions encompassing the entire City and County of Honolulu as shown in Figure 2-11. Each region's growth and development is guided by its corresponding development plan, which delineates special area plans and zoning or other land use regulations in accordance with the City's General Plan.

The proposed denitrification facility project falls within the boundaries of the Ewa and Waipahu Development Plans. The proposed denitrification facility project will improve the existing water quality and aid in providing safe drinking water supplies to the Ewa and Waipahu areas as nitrate concentrations in well water increase at Kunia Wells II. The proposed denitrification facility project is consistent with the current Ewa and Waipahu Development Plans.

2.4.3 County Zoning

The proposed nitrate removal system project takes place within the City and County of Honolulu. The proposed site is in a zone designated as a Restricted Agricultural District (AG-1). Since the proposed project is classified as a Type-A utility, the development of the denitrification facility is considered a permissible use of AG-1 land.

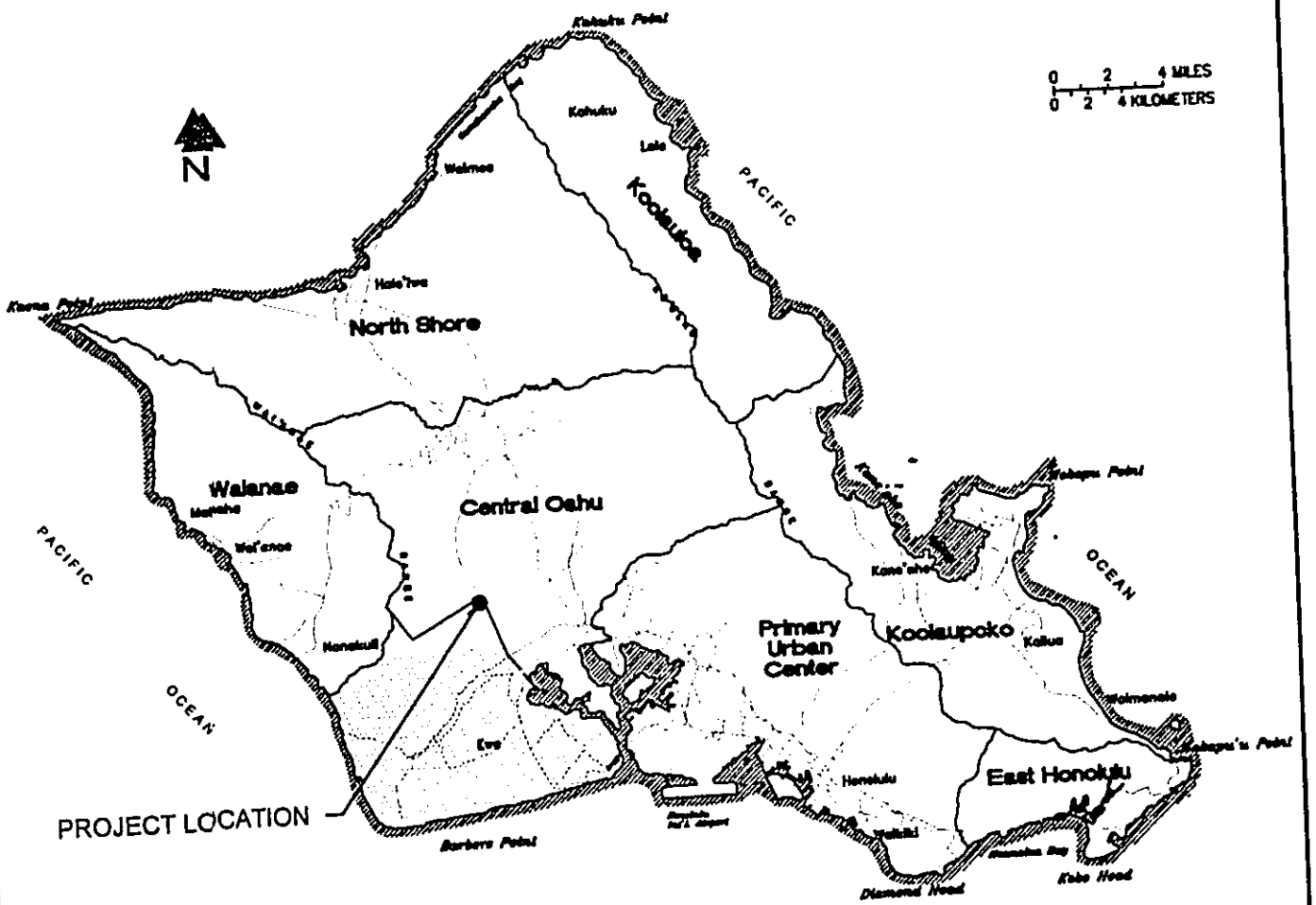
2.4.4 County Special Management Area

The proposed project site is not within the City and County of Honolulu's Special Management Area (SMA), as identified by the City and County of Honolulu Department of Land Utilization. Therefore, it is not subject to requirements of Chapter 205-A of the Hawaii Revised Statutes.

2.4.5 State of Hawaii's Drinking Water State Revolving Fund (DWSRF)

This project may be funded by Federal funds through the States of Hawaii's Drinking Water State Revolving Fund (DWSRF) program. The U.S. Congress established the DWSRF program as a new section 1452 of Safe Drinking Water Act (SDWA), 33 U.S.C. 300j-12, by the SDWA Amendments of 1996, Public Law 104-182. The DWSRF was established to help prevent contamination through source water protection and

Figure 2-11 Geographical Regions of Oahu



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enhanced water system management. The proposed project, which aims at removing nitrate from the drinking water at Kunia Wells II, is clearly consistent with the overall program intent to prevent potential contamination of water systems. This report includes all of the environmental information required for compliance with the DWSRF program.

2.4.6 Cross-Cutting Federal Authorities

The following sub-sections address the proposed project's relationship to other Federal "cross-cutting" authorities.

2.4.6.1 Archeological and Historical Preservation Act (16 U.S.C. § 469a-1) and National Historic Preservation Act (16 U.S.C. § 470(f))

As discussed Section 2.1.7, the proposed denitrification facility is located on a parcel of land that has previously been disturbed and altered during construction of the surrounding residential structures and past sugar cane cultivation. The surrounding lands are currently used for agricultural purposes. Both State of Hawaii's Historic Preservation Division (SHPD) of the Department of Land and Natural Resources and the Office of Hawaiian Affairs were consulted and provided with copies of a Draft EA for this project to ensure compliance with these statutes. Based on the records at the State Historic Preservation Division (SHPD), there is no historic or culturally sensitive sites on the parcel nor is it likely that any will be found. A copy of the letter regarding this information is included in Appendix B. Comments of the Office of Hawaiian affairs have been addressed and incorporated in this report (Appendix E).

2.4.6.2 Clean Air Act (42 U.S.C. § 7506(c))

As discussed in Section 2.1.10, the Ewa Plains area is considered to be an open agricultural area which is not exposed to adverse air quality conditions. The air quality along the project alignment is generally considered good and well within the State and Federal Ambient Air Quality Standards.There are no visible point sources of airborne emissions in the immediate vicinity of the project site. The vehicular traffic on Kunia Road and the H-1 Freeway is the primary source of indirect emissions in the project area. Since only minor amount of excavation will be required for this project, the fugitive dust will not be a problem during construction. Normal operation of the proposed facility will neither produce on-site air emission nor alter air flow in the vicinity of the facility. Similarly, no other measurable effect on the area's micro-climate will be resulted due to the operation of the proposed facility. The electrical power required for the operation of the proposed facility represents a minuscule increase to the total power use by the Hawaii Electric Company and its effect on the air quality is insignificant.

2.4.6.3 Coastal Zone Management Act (16 U.S.C. § 1456(c)(1))

In response to the Federal Coastal Zone Management Act of 1972, the Hawaii Coastal

Zone Management (CZM) Program, enacted as Chapter 205A, HRS, was promulgated in 1977. The CZM area encompasses the entire state, including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters.

The Hawaii Coastal Zone Management Program focuses on ten policy objectives:

- Recreational Resources. To provide coastal recreational opportunities accessible to the public and protect coastal resources uniquely suited for recreational activities that cannot be provided elsewhere.

- Historic Resources. To protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

- Scenic and Open Space Resources. To protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

- Coastal Ecosystems. To protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.

- Economic Uses. To provide public or private facilities and improvements important to the state's economy in suitable locations; and ensure that coastal dependent development such as harbor and ports, energy facilities, and visitor facilities, are located, designed, and constructed to minimize adverse impacts in the coastal zone area.

- Coastal Hazards. To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

- Managing Development. To improve the development review process, communication, and public participation in the management of coastal resources and hazards.

- Public Participation. To stimulate public awareness, education, and participation in coastal management; and maintain a public advisory body to identify coastal management problems and provide policy advice and assistance to the CZM program.

- Beach Protection. To protect beaches for public use and recreation; locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion.

- Marine Resources. To implement the state's ocean resources management plan.

Other key areas of the CZM program include: a permit system to control development within a Special Management Area (SMA) managed by the Counties and the Office of Planning; a Shoreline Setback Area which serves as a buffer against coastal hazards and erosion, and protects view-planes; and the Marine and Coastal Affairs. Finally, a Federal Consistency provision requires that federal activities, permits and financial

assistance be consistent with the Hawaii CZM program.

The proposed facility is located several miles from the coastline and is not within the County's SMA. It does not involve the placement, erection, or removal of materials near the coastline. The type and scale of the activities that it involves typically do not have the potential to affect coastal resources. Finally, it is consistent with the CZM objectives that are relevant to a project of this sort.

A copy of this Draft EA is being sent to the Office of Coastal Zone Management at the State of Hawaii Department of Business, Economic Development, and Tourism. The Department's response is expected to confirm the consistency of the project with the CZM Act.

2.4.6.4 *Endangered Species Act (16 U.S.C. § 1536(A)(2)and (4))*

The Endangered Species Act (16 U.S.C. §§ 1531-1544, December 28, 1973, as amended 1976-1982, 1984 and 1988) provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the U.S. or elsewhere. The Act mandates that federal agencies seek to conserve endangered and threatened species and use their authorities in furtherance of the Act's purposes. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize list4ed species, and contains exceptions and exemptions.

As discussed in Section 2.1.6, there are no known rare or endangered species on or immediately around the site of the proposed project at Kunia Wells II. Copies of the Draft EA were provided to the U.S. Fish and Wildlife Service and to the State Department of Land and Natural Resources (DLNR) for review and comment.

2.4.6.5 Farmland Protection Policy Act (7 U.S.C. § 4202 (8))

The U.S. Congress adopted the Farmland Protection Policy Act (FPPA) (Public Law 97-98 on December 22, 1981). The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has national leadership for administering the FPPA. The effective date of the FPPA rule (part 658 of Title 7 of the Code of Federal Regulations) is August 6, 1984.

The stated purposes of the FPPA are to:

- Minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversions of farmland to nonagricultural uses.
- Assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland.

"Farmland", as used in the FPPA, includes prime farmland, unique farmland, and land of

statewide or local importance. "Farmland" subject to FPPA requirements does not have to be currently used for cropland. Because the installation of the proposed facility will result in the use of 2 acres of prime agricultural land and might use funding assistance from a Federal agency, the proposed action is subject to the FPPA.

The area that would be affected is a very small fraction of the agricultural land in the area. In addition, the proposed facility will not interfered with any future agricultural use of the remainder of the parcel of other nearby areas. Consequently, the project is in substantial compliance with the FPPA. A copy of the Draft EA was sent to the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS).

2.4.6.6 Fish and Wildlife Coordination Act (16 U.S.C. § 662 (A))

The Fish and Wildlife Coordination Act, as amended, authorizes the Secretaries of Agriculture and Commerce to require consultation with the Fish and Wildlife Service and the fish and wildlife agencies of States where the "*waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted...or otherwise controlled or modified*" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "*preventing loss of and damage to wildlife resources.*"

As documented in this report, the proposed nitrate treatment facility will not result in the diversion of any water body and will not result in impacts on fish or wildlife resources. The U.S. Fish and Wildlife Service and the State Department of Land and Natural Resources were asked to comment on the Draft EA.

2.4.6.7 Floodplain Management (42 U.S.C. § 4321)

Based on the latest available Flood Insurance Rate Map for the area, the site proposed for the proposed facility lies outside a defined flood plain. The project does not involve property acquisition, management, or construction within a 100-year flood plain (Zones A or V), and it does not involved a "critical action" within a 500-year flood plain. Consequently, it is consistent with applicable regulations and guidance relating to food plain management.

2.4.6.8 Safe Drinking Water Act (42 U.S.C. § 300H-3 (E))

The Safe Drinking Water Act (SDWA) is the principal federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The Safe Drinking Water Act requires that all public water systems meet stringent water quality standards. These standards cover a long list of potential chemical, radiological and biological contaminants.

As discussed in Section 1.1, the primary purpose of the proposed nitrate treatment facility is to eliminate potential health hazards of nitrate in the drinking water from the Kunia Wells II by removing the nitrate. Consequently, the installation of the proposed

facility is in substantial agreement with the Safe Drinking Water Act.

2.4.6.9 Protection of Wetland (42 U.S.C. § 4321)

As noted in Section 2.1.9, there are no wetlands on the proposed project site. The only wetland and/or sensitive riparian habiatats near the proposed facility site is within the Kunia Gulch. The U.S. Fish and Wildlife Services's National Wetland Inventory Map identifies Kunia Gulch as an PEM1Cx habitat or *Palustrine, Emergent, Persistent, Seasonal, Excavated.* The construction or the operation of the proposed facility will not have any impact on the existing wetland ecosysyem. A copy of the Draft EA was sent to the U.S. Fish & Wildlife Service. Also, The Regulatory Branch of the Department of the Army, U.S. Army Engineer District, Honolulu, was consulted and determined that the proposed facility will not include any work in the waters of United States, including adjacent wetlands. In addition, a copy of this report is being sent to the State Department of Land and Natural Resources, Aquatic Resources Division for their review and comment.

2.4.6.10 Wild and Scenic Rivers Act (16 U.S.C. 1271-1287)

The purpose of this act, as stated in Section (b) of its preamble is as follows:

It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fi sh and wildlife,historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

The proposed facility will not have any potential to affect the hydrology, water quality, or aquatic resources in any these streams and therefore is consistent with the provisions of the Wild and Scenic Rivers Act.

2.4.6.11 Wilderness Act (16 U.S.C. § 1131)

The purpose of this legislation is stated in Section 2(a) of the Act as follows:

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this

purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designed by Congress as "wilderness areas", and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness; and no Federal lands shall be designated as "wilderness areas" except as provided for in this chapter or by a subsequent Act.

The nearest designated Wilderness Area to the proposed project site is the Honouliuli Forest Reserve. The proposed facility will have no impact on the wilderness area and the project is consistent with the provisions of the Act. A copy of the Draft EA was sent to the Division of Forestry and Wildlife of the the State of Hawaii Department of Land and Natural Resources for their review and comment.

SECTION 3

ENVIRONMENTAL CONSEQUENCES DURING CONSTRUCTION

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SECTION 3

ENVIRONMENTAL CONSEQUENCES DURING CONSTRUCTION

In general, construction of the proposed denitrification facility will include grading of the site to accommodate the nitrate removal system facility structures and drainage needs, as well as the actual construction of the denitrification facility. Construction activities at the proposed site will alter existing conditions and will have an impact on the surrounding topography, drainage, flora and fauna. In the following paragraphs, potential impacts of the proposed action on the physical environment are discussed. During construction, utmost efforts will be made to minimize the potential impacts. For instance, Best Management Practices will be utilized to minimize soil erosion and to mitigate the tracking of mud/dirt onto City and State streets. At the completion of the project all disturbed areas will be grassed, the entrance to the site paved and screening trees will be planted in order to veil the denitrification facility from public view.

3.1 Impacts on The Physical Environment

3.1.1 Grading and Drainage

The existing topography of the proposed denitrification facility site will require some grading and excavation in order to provide a finished floor elevation of about 422.65 feet. In the north, the existing elevations range from 425 to 427 feet, whereas the center and south of the parcel are approximately 419 feet and 423 feet above MSL, respectively. The lot has a southwardly slope of approximately 3.13 percent. The depth of excavation along the northern half will range between zero to three feet. The final design grading for the site will be based on soil data and recommendations for grading and maximum slopes.

3.1.2 Erosion and Dewatering Control

Erosion due to site preparation for and construction of the denitrification facility is anticipated to be minimal and well within acceptable limits due to the clay-like composition of the soils found at the site. Best Management Practices, such as the installation of silt fences at the base of all slopes and the immediate grassing of all graded areas, will be utilized. It is anticipated that the construction activities will not adversely affect the adjacent properties and resources.

Because construction will occur above an elevation of 418 feet above MSL, no ground water will be encountered and therefore no adverse dewatering issues will exist during construction.

3.1.3 Water Quality

The construction of the proposed denitrification facility is not anticipated to adversely affect water quality in the area. Pearl Harbor is the nearest open body of water, which is approximately 2.5 miles to the south of the proposed site. The Kunia Gulch Stream is the nearest waterway in the area running in a southwesterly direction about 880 feet west of the project site. Construction activities are not anticipated to erode the stream. As previously stated, appropriate Best Management Practices will be used during construction to impede the transport of silt and debris that may carry into the gulch. After construction, when the proposed facility is in operation, it will produce 5 MGD of product water. With the exception of concentration of nitrates, sulfates and chlorides, the quality of the product water is identical to that of the feed water produced by the existing GAC treatment system. The concentration of nitrates and sulfates will be reduced by the denitrification process to 0.25 mg/L and 0.14 mg/L respectively. Concentration of chlorides in the product water will be about 113 mg/L. As a result of ion exchange process, the facility will have a 38 gpm waste stream containing nitrates, sulfates, silica and bicarbonates with the concentrations of 2,492 ppm, 2,982 ppm, 60 ppm, and 710 ppm respectively. The waste stream will be discharged into the City and County of Honolulu sewer system under an industrial discharge permit. The contaminant levels in the waste stream are not expected to either cause any problem with the treatment process at the Honouliuli waste water treatment plant or violate the discharge levels set by the NPDES permit for the facility's outfall. Note that the required Industrial Wastewater Discharge Permit has already been issued for the proposed facility.

3.1.4 Flora and Fauna

As discussed earlier in Section Two of this report, the project site is located in Kunia on the northern edge of the Waipahu District on the leeward side of Oahu in the Ewa ahupua'a. The proposed project site affected by the construction activities is currently fallow and void of significant vegetation. The area surrounding the project site has no outstanding vegetative features and no proposed or listed threatened or endangered species. Historically, the proposed project site and the surrounding land have been used for growing sugar cane up through the early nineteen eighties. The surrounding lands are currently used for agricultural purposes. During several walk-throughs it was observed that the proposed denitrification facility site is free of any significant and/or endangered species as set forth in the Endangered Species Act of 1973. Similarly, no tracks or signs of wild pigs or animals were observed during these site visits. Very few birds were seen as well due to the fact that the site is fallow and there is neither mature seed bearing crops upon which many seed eating birds depend, nor any open water sources. Generically, the most abundant birds found in the general area is the Zebra Dove (Geopelia striata). During the site visits, a few House Sparrows or Feathered Mice (Passer domesticus) were observed in the area.

The day-to-day operation of the denitrification facility is not anticipated to adversely

affect the local flora or fauna. Furthermore, it is not expected that new species of flora and fauna will migrate to the area as a result of this project. The trees that will be planted for screening and landscaping may provide additional habitat for birds and other fauna. The design consultant will consult with the Nature Conservancy of Hawaii on the use of native plants to revegetate the area near the proposed denitrification facility.

Considering the above factors, it is believed that the construction and the operations of the proposed facility would not result in any significant adverse impact on the flora and fauna in the Ewa ahupua'a.

3.1.5 Historical / Archaeological Features

According to the State Historic Preservation Division (SHPD), no archaeological or historical sites are known to exist at the proposed denitrification facility site (Appendix B). The proposed site is located on a parcel which has been extensively disturbed and it is unlikely subsurface sites will be found. Should any artifact and or burial site be encountered during construction on-site, all activities will be ceased and the SHPD officer and the Oahu Island Burial Council will be notified. Construction activities will resume only after the consultation and approval from both agencies and the implementation of a monitoring program, as required.

3.1.6 Cultural Resources

As discussed in Section Two of this report, in assessing possible impacts of the proposed project on the cultural sources, the traditional Hawaiian ahupua'a approach was used. Various inquiries, phone or personal conversations with knowledgeable people, and communications with Hawaiian organizations were undertaken. Based on the results of these research activities one may conclude that the construction and the daily operation of the proposed facility would not adversely impact the cultural resources inside the Ewa ahupua'a neither directly or indirectly.

3.1.7 Noise

Construction activities will unavoidably increase the ambient noise levels. Construction equipment such as trenchers, backhoes, dump trucks and trailers will be the dominant noise producers during the construction period. Impact tools such as hammers may also be a major source of noise. Noise levels will comply with the State Department of Health noise control requirements or a variance will be sought. Contractors will implement mitigative measures through the proper and vigilant use of muffling devices and machinery maintenance in order to minimize noise impacts from the project activities.

3.1.8 Air Pollution

Ambient air quality is expected to be affected due to the dust generated by short-term construction related activities. Grading activities will generate air-borne particulates. Construction activities will be required to comply with the provisions of Hawaii Administrative Rules, Chapter 11-60.I, "Air Pollution Control," regarding fugitive dust. The contractor will be responsible for utilizing dust control measures such as regular watering and sprinkling to minimize wind-blown particles. Ambient air quality may also be adversely affected by emissions from construction equipment and other motor vehicles. The contractor will be required to minimize emissions through proper vehicle maintenance. Once the project is completed, no adverse impact on local and regional ambient air quality conditions is anticipated.

3.1.9 Public Health and Safety

The contractor shall take appropriate measures to ensure public health and safety during construction. All construction activities shall conform to city, state and federal standards for safety. As indicated earlier in this Section, Best Management Practices shall be used to mitigate the tracking of mud/dirt onto city streets. In addition, roads to the denitrification facility site will be graveled by the Contractor to ensure that all vehicles leaving the site will be free of mud. Access for fire apparatus will need to be maintained throughout the construction site for the duration of the construction activity. Additionally, portable toilets and potable water tanks shall be maintained at the site for the use of all personnel.

3.2 Impacts on the Community Setting

3.2.1 Local Economy

The construction of the proposed denitrification facility will provide short-term additional opportunities for local construction workers. It will also benefit local material suppliers in both retail and service sectors.

The project site is located within the northern portion of the Ewa Plains, which has been cultivated by Oahu Sugar Co., Ltd. for the better part of the 20th century. Because of the relatively high sugar cane yields and low farming costs, the central portion of the Ewa Plains was referred to as the "golden triangle." In 1995 the Oahu Sugar Co., Ltd. ceased operations thereby making available about 10,500 acres of land on Oahu for other uses.

There are four classification systems commonly used in Hawaii for the rating of land and soils. The proposed site receives exceptional ratings for each of the classification systems, which are described as follows:

(1) *Land Capability Grouping*, by the USDA's Natural Resources Conservation Service (NRCS), classifies the soil at the proposed site as Level I. This rating refers to the highest ratings for soil for agricultural use.

(2) *Agricultural Lands of Importance to the State of Hawaii* (ALISH), by the SCS, University of Hawaii College of Tropical Agriculture and Human Resources (UH-CTAHR), and State of Hawaii Department of Agriculture, classifies the land as "Prime Agricultural Land," defined as land best suited for the production of food, feed, forage, and fiber crops. Prime agricultural land produces the highest yields with the lowest inputs of energy or money and with the least damage to the environment.

(3) *Overall Productivity Rating* by the UH Land Study Bureau classifies the land with a rating of A (with ratings ranging from A to E), the highest rating for overall crop production.

(4) *Proposed Land Evaluation and Site Assessment (LESA) System*, by the State of Hawaii Land Evaluation and Site Assessment Commission, assigns the land a rating of 95 out of a total possible 100 points. All lands with a rating of 66 or above are termed "important agricultural lands".

The current zoning for the proposed site is designated as AG-1 (Restricted Agricultural District). Although it is not necessary to change the zoning in order to construct the proposed denitrification facility, the site will no longer be available for agricultural purposes. This loss will be permanent. However, the proposed denitrification facility will not have any significant impact on existing agricultural operations in the immediate vicinity of the site.

A 1995 study evaluating impacts of a residential development encompassing 793 acres in the central section of the Ewa Plains on the growth of diversified agriculture concludes that ample land is available elsewhere on Oahu to easily accommodate the projected growth of diversified agriculture. In other words, such developments would have little or no impact on the agricultural activities since it is the size of the market and not the availability of land which defines the limits to the growth of diversified agriculture. Construction of the proposed denitrification facility will therefore not have any adverse affects on the agricultural industry in the area.

3.2.2 Other Community Services

Requirements for community services generated from the project construction are expected to be minimal since relatively few workers are required for the completion of the job. Therefore, there are no project associated impacts on community service needs such as police and fire protection, medical facilities, recreational facilities, schools and refuse collection and disposal.

3.2.3 Local Traffic

The site is currently accessed by Kunia Road which runs perpendicular to the H-1 Freeway and serves as the access road to the existing Kunia Wells II GAC Treatment Plant and Reservoirs.

Prior to the construction activities, the area residents and the roadway users will be notified of the pending activities. During the construction period, transporting the construction equipment and material and hauling away excess dirt will lead to temporary inconveniences on both Kunia Road and possibly H-1. Best Management Practices will be utilized to mitigate the tracking of mud/dirt onto City and State streets. In addition, all ingresses and egresses to the denitrification facility site will be graveled by the Contractor to ensure that all vehicles leaving the site are free of mud. A traffic control plan will be prepared during the design phase of the project to minimize disruptions and inconveniences to the public using Kunia Road. This impact, although not significant, will be properly mitigated by limiting the hauling and transportation of construction equipment and materials to off-peak traffic hours between 10:30 a.m. to 3:00 p.m., as well as utilizing flagmen (and off-duty police officers, if necessary) to ensure smooth traffic flow along Kunia Road. A noise variance would be required for night and weekend work.

3.2.4 Night and Weekend Work

To alleviate potential traffic problems in the area and to reduce construction time, night and weekend work may be considered. The proposed denitrification facility site is in an agricultural area where the nearest residential area is located about 700 feet east of the construction site, along Kunia Road. The negative impact that night and weekend work entails is that the noise generated may disrupt these residential areas. In addition, an approximate increase in construction cost of 25 percent would be applicable due to additional overtime pay. A noise variance will be required for night and weekend work.

3.3 Impacts on the Infrastructure

With proper planning and design, construction of the proposed denitrification facility will not adversely affect the existing water and/or electrical systems. Presently, an existing 12kV overhead HECO line currently runs along Kunia Road, east of the proposed site. This transmission line should not be affected by construction in the project area. An 8-inch sewer line will be installed and will connect the waste storage tanks at the denitrification facility to an existing 8-inch sewer line along Anonui Road, about 1586 linear feet south of the proposed site. This will cause an increase in sewer water flow into the Honouliuli Waste Water Treatment Plant. The proposed nitrate removal technology will be equipped with telemetry devices.

SECTION 4

ENVIRONMENTAL CONSEQUENCES AFTER PROJECT COMPLETION

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SECTION 4

ENVIRONMENTAL CONSEQUENCES AFTER PROJECT COMPLETION

4.1 Impacts on the Physical Environment

4.1.1 Water System Improvement

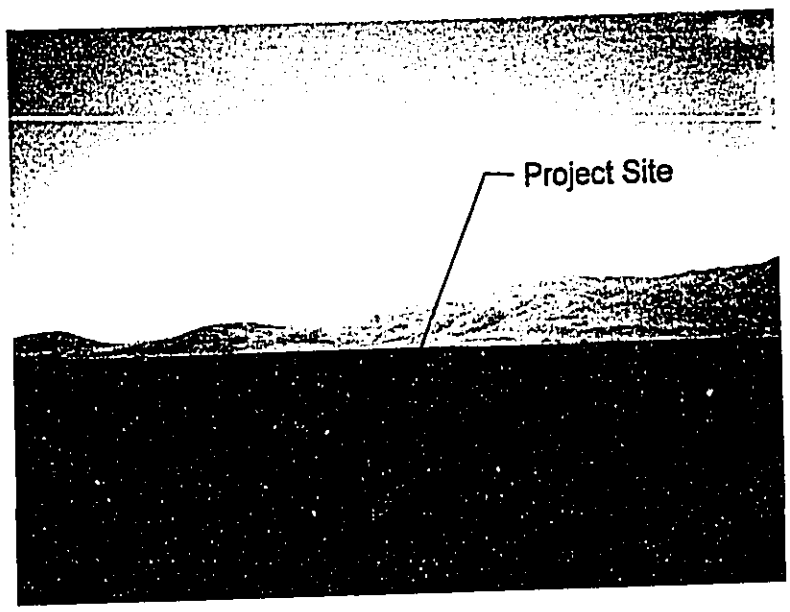
When completed, the proposed denitrification facility will decrease the potential hazards of elevated nitrate concentrations that are anticipated in Kunia Wells II well water. As a result of this project, the Honolulu Board of Water Supply's capability to provide safe drinking water to the Waipahu and Ewa areas will be enhanced.

4.1.2 Flora and Fauna

As can be seen in Figure 4-1, the proposed project site affected by the construction activities is currently fallow and void of significant vegetation. The area surrounding the project site has no outstanding vegetative features and no proposed or listed threatened or endangered species. As a result, there is no need for a botanical survey for the project site prior to construction of the dentrification facility. Historically, the proposed project site and the surrounding land have been used for growing sugar cane up through the early nineteen eighties. The surrounding lands are currently used for agricultural purposes. During several walk-throughs it was observed that the proposed denitrification facility site is free of any significant and/or endangered species as set forth in the Endangered Species Act of 1973. Similarly, no tracks or signs of wild pigs or animals were observed during these site visits. Very few birds were seen as well due to the fact that the site is fallow and there is neither mature seed bearing crops upon which many seed eating birds depend, nor any open water sources. Generically, the most abundant birds found in the general area is the Zebra Dove (Geopelia striata). During the site visits, a few House Sparrows or Feathered Mice (Passer domesticus) were observed in the area.

The day-to-day operation of the denitrification facility is not anticipated to adversely affect the local flora or fauna and the species of flora and fauna that currently inhabit the area will return after construction. Furthermore, it is not expected that new species of flora and fauna will migrate to the area as a result of this project. The trees that will be planted for screening and landscaping may provide additional habitat for birds and other fauna. The design consultant will consult with the Nature Conservancy of Hawaii on the use of native plants to revegetate the area near the proposed denitrification facility.

Considering the above factors, it is believed that the construction and the operations of the proposed facility would not result in any significant adverse impact on the flora and fauna in the Ewa ahupua'a.



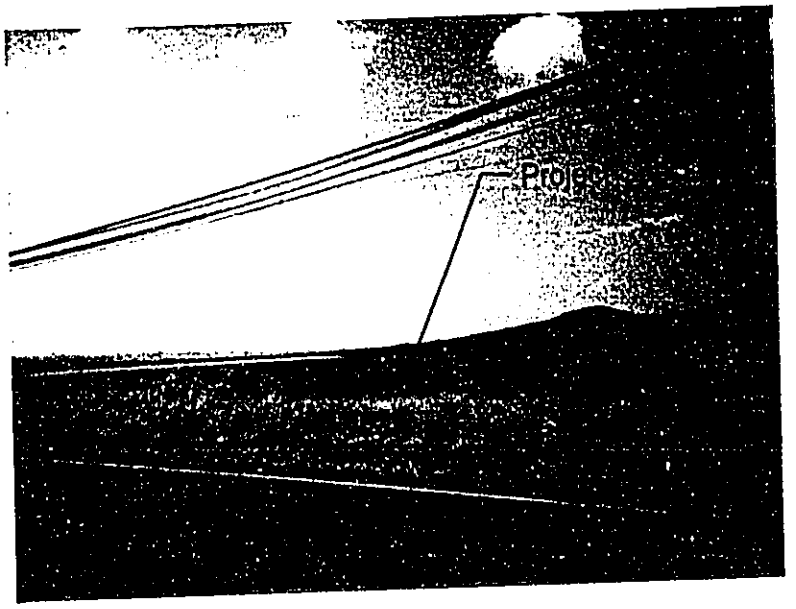


Figure 4–1 Proposed Project Site

4.1.3 Grading

The final grade of the project site after the completion of construction is estimated to vary 0 to 3 feet below or 0 to 3 feet above existing slopes. The final design grading for the site will be based on soil data and recommendations for grading and maximum slopes.

4.1.4 Drainage

The Kunia Gulch, which lies approximately 880 feet west of the proposed site, is the closest natural drainage pathway to the proposed denitrification facility site. The Kunia Gulch is part of the Honouliuli watershed, which encompasses approximately 6,900 acres of agricultural land, mostly located mauka of the H-1 Freeway and west of Kunia Road. The site will be graded in a manner that allows all on-site runoff to be collected and disposed of either through a pounding basin or piped into the storm drain system along the eastern side of Kunia Road.

4.1.5 Visual Resources and Other Physical Environment

The finished floor elevation of the proposed denitrification facility will be slightly above the existing grade levels. The denitrification facility will include a 28-ft high process building. The building will be designed as reinforced concrete structures with CMU in-fill walls. In addition to the process building, the proposed denitrification facility will include a brine maker concrete lixator structure and two 20-ft high waste storage tanks. These structures and tanks will be laid out in a fashion to minimize impacts on view plains in the area. The lixator structure is buried in ground and the 20-ft high storage tanks will be screened by the taller process building when viewed from the Kunia Road.

The visual impact from Kunia Road will be minimized by implementing mitigating measures to screen the denitrification facility from view. The mitigating measures will include planting a row of screening trees along the perimeter of the site. A series of trees such as Geranium-leafed Aralia or Wiliwili (both of which can grow up to a 20-foot height) may be planted on the side of the denitrification facility facing Kunia Road. Alternatively, any of the columnar coral tree family trees such as *Erythrina Variegata*, which grows to considerable heights, may be used to accomplish this screening. The design consultant will consider the use of native plants and consult with the Nature Conservancy of Hawaii for input on visual screening of the denitrification facility. Furthermore, all areas to be cut away during construction will be grassed to mitigate impacts on visual resources.

Figure 4-2 and Figure 4-3 depict the proposed site as may be viewed from Kunia Road before and after the construction of the proposed nitrate removal facility.

The proposed project is not expected to have any adverse historical or archaeological impacts, as stated in Appendix B. Furthermore, the improvement will not have a significant impact on the physical environment during and after project construction. Noise and air pollution impacts associated with the project will be eliminated after the completion of the project.

4.2 Impacts on Community Setting

No long term impacts on the community setting are foreseen. The main benefit of the project is to provide safe and potable water to the Waipahu and Ewa areas.

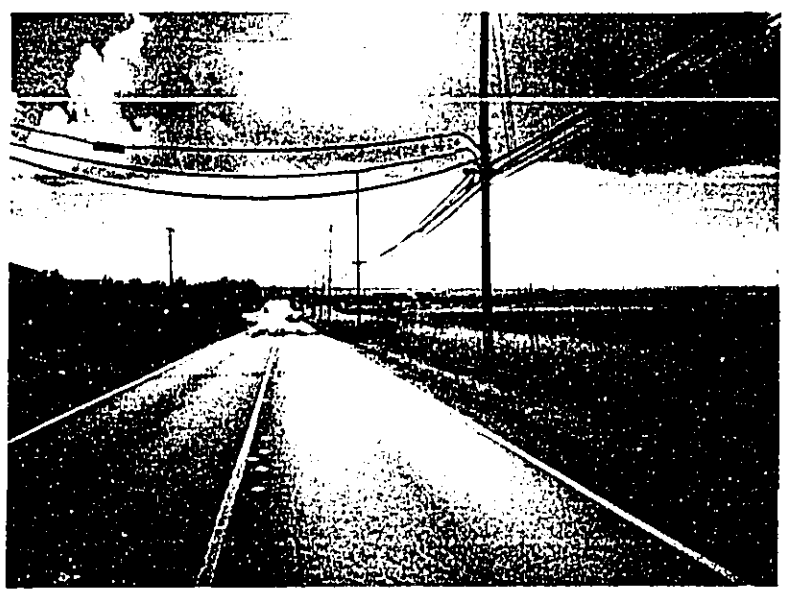
4.3 Impacts on Infrastructure

The proposed construction has no short-term or long-term adverse impacts on the infrastructure in the area.

Before Construction

After Construction

Figure 4-2 Proposed Nitrate Treatment Facility Site Viewed From Kunia Road (North Bound)



Before Construction

After Construction

Figure 4-3 Proposed Nitrate Treatment Facility Site Viewed From Kunia Road (South Bound)

SECTION 5

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES AND UNRESOLVED ISSUES

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SECTION 5

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES AND UNRESOLVED ISSUES

The proposed denitrification facility construction project involves irreversible and irretrievable uses of energy, labor, materials, and capital funds by the City and County of Honolulu Board of Water Supply. Construction of the Hungerford & Terry 5-MGD Nitrate Removal Ionic Exchange System will decrease nitrate quantities in water supply provided to the residents of the Waipahu and Ewa areas.

There are no unresolved issues for the proposed water denitrification facility project at the present time.

SECTION 6

LIST OF NECESSARY PERMITS AND APPROVALS

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SECTION 6

LIST OF NECESSARY PERMITS AND APPROVALS

Permits required in order to install the nitrate removal system are listed as follows:

Permit	Approving Agencies	Approximate Processing Time
Industrial Wastewater Discharge Permit	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Industrial Wastewater Overflow Discharge Permit	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Sewer Connection Application	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Building Permit	Department of Planning and Permitting City and County of Honolulu	30 - 45 days
Grading Permit	Department of Planning and Permitting City and County of Honolulu	15 - 30 days
Trenching Permit	Department of Transportation 727 Kakoi Street Honolulu, HI 96819	1 - 5 days
Noise Variance Permit	Department of Planning and Permitting City and County of Honolulu	90 -150 days
Height Variance Permit	Department of Planning and Permitting City and County of Honolulu	90 -150 days
NPDES: Strom Water Runoff Permit Hydrotesting Water Permit	Department of Health State of Hawaii Clean Water Branch	60-90 days

SECTION 7

ALTERNATIVES TO THE PROPOSED ACTION

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SECTION 7

ALTERNATIVES TO THE PROPOSED ACTION

The alternatives for the proposed project are "No Action", "Delayed Action" and "Alternative Sites", which are described in the following sections.

7.1 No Action

The "No Action" alternative means that no denitrification facility will be constructed and, as the population in the area increases, the water supply will remain contaminated and unreliable for residential consumption. This alternative is unacceptable to the community since water supply issues would remain unresolved.

7.2 Delayed Action

The "Delayed Action" alternative means that the denitrification facility construction takes place at some time in the future. This alternative will postpone the resolution of increasing nitrate contamination concerns in the area, causing continued potential water supply shortages in the event water supply from Kunia Wells II would have to be halted. Furthermore, the delay of the denitrification facility construction will result in higher construction costs in the future due to inflation.

7.3 Alternative Technologies

"Alternative Technologies" means that treatment technologies other than Hungerford & Terry's Nitrate Removal Ionic Exchange System will be used. In a preliminary engineering study prepared by Marc M. Siah & Associates, Inc. for the Honolulu Board of Water Supply entitled *"Preliminary Engineering Study for Evaluation of Nitrate Treatment System at Kunia Wells II"* (Reference No. 8), alternative technologies were evaluated for optimum feasibility. The purpose of the study was to find the most feasible nitrate removal technology by assessing each of the alternative technologies on various criteria.

In the preliminary engineering study described above, five other alternate technologies were identified for nitrate removal from well water at Kunia Wells II. The feasibility of each technology was evaluated based on Life Cycle Costs, Land Requirements, Effluent and Influent Water Quality, Discharge Method, Permitting, EPA Rating and Environmental Factors.

7.3.1 Alternative Technologies Identification

Initially, alternative technologies were identified based on the following minimum conditions:

1. The land requirements of the proposed technology is within a feasible area.
2. The proposed technology is the least expensive out of all alternatives.
3. The proposed technology is included in the list of the Best AvailableTechnologies (BAT) identified by the EPA for nitrate removal.
4. The proposed technology ranks the most feasible when compared to other alternatives.

Other than the proposed ionic exchange nitrate removal system, five alternative technologies were evaluated. Table 7-1 lists the alternative technologies, designated A through E, and their corresponding vendor, technology type, and life cycle costs.

Table 7-1 List of Alternative Technologies

Alternative Technology	Vendor	Technology	Life Cycle Cost ($)
A	Water & Power Technologies	Reverse Osmosis	10,638,973
B	Osmonics	Reverse Osmosis	10,702,546
C	Ionics	Electrodialysis Reversal	12,112,228
D	Calgon	Ionic Exchange	6,502,610
E	Nitrate Removal Systems	Biological Denitrification	13,059,405

Alternative Technologies A and B would require approximately 25,780 and 43,800 square footage of land, respectively, to be built which includes the nitrate removal system as well as appurtenant and ancillary facilities. In addition to the process building, landscaping and open space, an administration building, electrical room, and a waste storage tank would be built on the parcel of land. Besides the facilities listed, Alternative Technology B would require a chemical storage room. The estimated life cycle cost for these alternative reverse osmosis systems would be about $6M more than the proposed system. With regards to EPA rating on Best Available Technology (BAT), reverse osmosis is less favorable than ionic exchange.

Alternative Technology C would require approximately 43,264 square footage of land to be built, which includes the nitrate removal system as well as appurtenant and ancillary

facilities. In addition to the process building, landscaping and open space, an administration building and a waste storage tank would be built on the parcel of land. The estimated life cycle cost for this alternate electrodialysis reversal system would be about $7.5M more than the proposed system. With regards to EPA rating on BATs, electrodialysis reversal is less favorable than ionic exchange.

Alternative Technology D would require approximately 26,390 square footage of land to be built, which includes the nitrate removal system as well as appurtenant and ancillary facilities. In addition to the process building, landscaping and open space, a brine storage tank, a chemical storage room, an administration building, an electrical room and a waste storage tank would be built on the parcel of land. The estimated life cycle cost for this alternative ionic exchange system would be about $2M more than the proposed system. With regards to EPA rating, Calgon's Ionic Exchange System would be just as favorable as the proposed system.

Alternative Technology E would require approximately 80,800 square footage of land to be built, which includes the nitrate removal system as well as appurtenant and ancillary facilities. In addition to the process building, landscaping and open space, a clearwell system, an administration building, an electrical room and a waste storage tank would be built on the parcel of land. The estimated life cycle cost for this alternative biological denitrification system would be about $8.5M more than the proposed system. With regards to EPA rating on BATs, biological denitrification is not considered a BAT for nitrate treatment and is, thus, less favorable than ionic exchange.

7.3.2 Alternative Technologies Summary

Based on an evaluation of the proposed ionic exchange nitrate removal system from Hungerford & Terry and alternative technologies A through E, the "Alternative Technologies" would utilize a technology for the 5-MGD nitrate removal system that would be less favorable than the proposed system in many ways. In general, an alternative technology would lead to higher construction costs, higher maintenance requirements and more disruptive grading and drainage impacts to the area. The complete study of the proposed technology and its alternatives can be found in the *"Preliminary Engineering Study for Evaluation of Nitrate Treatment System at Kunia Wells II"* (Reference No. 8), dated June 2001.

SECTION 8

FINDINGS AND NOTICE OF ANTICIPATED DETERMINATION

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SECTION 8

FINDINGS AND NOTICE OF ANTICIPATED DETERMINATION

8.1 Significance Criteria

The proposed denitrification facility construction project described in this environmental assessment involves the construction of a 5-million gallon per day (5-MGD) ionic exchange nitrate treatment system in the Kunia area of the Ewa Plains. The denitrification facility will be located on a 2-acre portion of a lot identified by TMK: 9-2-001:001, mauka of the H-1 Freeway and owned by the Estate of James Campbell. The construction of this 5-MGD denitrification facility will decrease nitrate concentrations in existing and future well water supplies from Kunia Wells II and will enhance the Honolulu Board of Water Supply's (BWS) capability to provide safe drinking water to the Waipahu and Ewa districts.

The proposed denitrification facility construction project would not have a significant impact on the environment. Therefore, an Environmental Impact Statement is not required for the project. Based on the "Significant Criteria" listed in Section 12 of the Hawaii Administrative Rules, Title 11, Chapter 200, an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long term impacts. In making the determination, the "Significant Criteria" Rules are established as the basis for identifying whether the proposed project has significant environmental impacts. Based on the analysis, the following conclusions are reached:

1. ***The denitrification facility construction would not result in irrevocable commitment to loss or destruction of any natural or cultural resources.*** The proposed improvement would be on a site that has been determined to have no outstanding vegetative features and no proposed or listed, threatened or endangered species. Furthermore, the State of Hawaii Department of Land and Natural Resources, Historic Preservation Division reported that no known historic sites are in the area of the proposed denitrification facility site, nor is it likely that any will be found (see Appendix B).

2. ***The proposed project would not curtail the range of beneficial uses of the environment.*** The proposed site will no longer be available for agricultural purposes. This loss will be permanent. However, ample land is available elsewhere on Oahu to easily accommodate any projected growth of diversified agriculture. Thus, this project will have little or no impact on agricultural activities in the State of Hawaii.

3. ***The proposed project does not conflict with the state's long term environmental policies or goals and guidelines.*** These policies, as set forth in Chapter 344, Hawaii Revised Statutes, espouse conservation of natural resources and enhancement of the quality of life. The proposed project would not significantly impact natural resources due to the relatively small amount of land being used. Additionally, by improving water quality, it would promote general welfare and would enhance the Honolulu BWS's

capability to provide safe drinking water to the Waipahu and Ewa districts.

4. ***The economic or social welfare of the community or state would not be affected.*** The proposed denitrification facility construction project would have a positive long-term affect on the social welfare of the community and state. Construction of the proposed denitrification facility would result in temporary economic benefits to the construction industry and, indirectly, to other economic sectors as well. It would also provide a valuable resource for future economic and social use. Short-term negative impacts would occur during construction including an increase in traffic and noise to the area.

5. ***The proposed project would not substantially affect public health.*** The project is intended to improve the quality of the existing water system and would ensure safe drinking water supplies for public consumption.

6. ***No substantial secondary impacts, such as population change or effects, on public facilities are anticipated.*** The proposed improvements are necessary to establish a reliable potable water supply system for the community. Due to its nature, the project would not cause relocation of and/or any changes in the population of the area. The proposed denitrification facility construction would aid in reducing anticipated increases of nitrate content in water supply to the Waipahu and Ewa areas.

7. ***No substantial degradation of environmental quality is anticipated.*** The project area is unremarkable in terms of environmental resources. Standard mitigation measures would suffice in protecting the ambient environmental quality. The project is not expected to result in concentrations of air or water pollutants exceeding state or federal standards at any time.

8. ***The proposed action does not involve a commitment to larger actions, nor would its cumulative impacts result in considerable effects on the environment.*** The proposed improvement is supplemental to the existing public water supply system and in no way requires a commitment for further upgrades or additions to the system. The project would help to provide a reliable and safe water supply system to the community.

9. ***No rare, threatened or endangered species or their habitats would be affected.*** No known endangered, threatened or candidate floral species are present at the site or may be affected by the project.

10. ***Air quality, water quality or ambient noise levels would not be detrimentally affected.*** There are no significant air quality impacts anticipated from this project. Construction activities are not expected to have any short-term adverse impacts on the water quality in the area. Following completion of the denitrification facility, the nitrate levels currently found in the water from Kunia Well II will be drastically reduced. Short-term impacts from construction activity include increased noise levels, dust and exhaust from construction machinery. Implementation of proper mitigative measures, such as mufflers and proper maintenance of heavy machinery, would ensure all compliance

requirements.

11. ***The project would not affect environmentally sensitive areas, such as flood plains, tsunami inundation zones, erosion-prone areas, geologically hazardous lands, fresh waters or coastal waters.*** No environmentally sensitive areas would be affected by the proposed project. The proposed project site is located well inland of the coast and outside of tsunami inundation zones, flood plains and geologically hazardous lands. Seismic risks and volcanic hazards are also minimal.

12. ***The proposed project would not substantially affect scenic vistas and view planes identified in county or state plans or studies.*** Construction will result in a slight impact on the visual characteristics in the vicinity of the project site. In order to mitigate this impact on the visual resources of the area, a series of trees, such as Geranium-leafed Aralia or Wiliwili (both of which can grow up to a 20-foot height), will be planted along the perimeter of the denitrification facility site, including the side facing Kunia Road. These trees will partially screen the denitrification facility from view. Alternatively, any of the columnar coral tree family trees such as *Erythrina Variegata*, which grow to considerable heights, can be used to accomplish this screening. Furthermore, all areas to be cut away during construction will be grassed to mitigate impacts on visual resources.

13. ***The proposed project would not require substantial energy consumption.*** Construction of the denitrification facility would not require substantial energy consumption. Operating and maintaining the facility will require approximately 4 hours per week of labor to maintain the system. The proposed facility is expected to consume approximately 12,000 kWh per week, which is not considered to be a significant or unreasonable amount of electrical energy use. Energy consumed during construction will be from on-site diesel generators provided by the contractor.

8.2 Notice of Anticipated Determination

On the basis of the foregoing information, it is anticipated that the proposed denitrification facility construction would not have significant impacts on the environment. As such, a notice of anticipated determination of *Findings of No Significant Impacts* for the proposed project is appropriate.

8.3 Reasons Supporting The Anticipated Determination

The nature and scale of the proposed project is such that no significant environmental impacts are anticipated. Potential impacts, if any, can be mitigated or minimized through sensitive site planning and engineering design, implementation of careful construction methods and compliance with all governmental requirements including those stated by the State Department of Health, the City and County of Honolulu's Department of Design and Construction and the City and County of Honolulu's Department of Planning and Permitting.

SECTION 9

CONSULTED AGENCIES AND BOARDS

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SECTION 9

CONSULTED AGENCIES AND BOARDS

9.1 Federal Agencies

U.S. Fish and Wildlife Service
United States Department of the Interior
Pacific Islands Ecoregion
P.O. Box 50088
Honolulu, HI 96850

National Resources Conservation Service
Department of Agriculture
P.O. Box 50004
300 Ala Moana Blvd.
Honolulu, HI 96850

9.2 State Agencies

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 621
Honolulu, Hawaii 96809

State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources
1151 Punchbowl Street, Room 330
Honolulu, Hawaii 96813

State Historic Preservation Division
Department of Land and Natural Resources
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

Hawaii State Department of Health - Clean Water Branch
NPDES Permitting, Room 301
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

Hawaii State Department of Health
Safe Drinking Water Branch - Room 308
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

Office of Hawaiian Affairs
711 Kapiolani Blvd., Suite 500
Honolulu, HI 96813

University of Hawaii - Manoa Campus
Environmental Center
2550 Campus Road, Crawford 317
Honolulu, HI 96822

Hawaii State Department of Business, Economic Development, and Tourism
Office of Planning, Coastal Zone Management Program
P.O. Box 2359
Honolulu, Hawaii 96804

9.3 City and County Agencies

Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Department of Planning and Permitting
Zoning Division, Land Use
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Department of Design and Construction
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street
Honolulu, Hawaii 96707

Honolulu Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite H-425
Honolulu, Hawaii 96819

Honolulu Police Department
City and County of Honolulu
801 S. Beretania Street
Honolulu, Hawaii 96813

9.4 Other Agencies

Senator Brian Kanno, District 20
State Capitol
Room 202
415 South Beretania Street
Honolulu, Hawaii 96813

Representative Mark Moses, District 42
State Capitol
Room 310
415 South Beretania Street
Honolulu, Hawaii 96813

Councilmember Rene Mansho
City Hall
Room 202
530 South King Street
Honolulu, Hawaii 96813

Waipahu Neighborhood Board
c/o Neighborhood Commission
City Hall, Room 400
530 South King Street
Honolulu, Hawaii 96813

Verizon Hawaii
1177 Bishop Street
Honolulu, Hawaii 96841

The Gas Company
515 Kamakee Street
Honolulu, Hawaii 96814

Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840

Hawaii's 1000 Friends
305 Hahani Street
P.M. Box 282
Kailua, HI 96734

Historic Hawaii Foundation
680 Iwilei Road, Suite 690
Honolulu, Hawaii 96817

The Nature Conservancy
923 Nuuanu Avenue
Honolulu, Hawaii 96817

Oceanic Cable
200 Akamainui Street
Mililani, Hawaii 96789

The Outdoor Circle
1314 South King Street, Suite 306
Honolulu, Hawaii 96814

The Sierra Club
Hawaii Chapter
P.O. Box 2577
Honolulu, Hawaii 96803

Waipahu Public Library
94-275 Mokauola Street
Waipahu, HI 96797

The Estate of James Campbell
1001 Kamaokila Boulevard
Kapolei, Hawaii 96707

REFERENCES

Marc M. Siah & Associates, Inc.
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REFERENCES

1. University of Hawaii, Department of Geography. *Atlas of Hawaii*, Second Edition. University of Hawaii Press. 1983.

2. State Department of Business, Economics Development & Tourism. *The State of Hawaii Data Book 1995.* State of Hawaii. 1995.

3. State Department of Business, Economic Development & Tourism. *State Land Use District Boundary Review.* State of Hawaii. 1992.

4. State Department of Business, Economic Development & Tourism. *State Land Use District Boundary Review. Executive Summary.* State of Hawaii. 1992.

5. U.S. Department of Agriculture, Soil Conservation Service. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* August 1972.

6. State Department of Land and Natural Resources, Division of Water and Land Development. *Rainfall Atlas of Hawaii, R76.* State of Hawaii. June 1986.

7. Macdonald, Gordon A., Abbott, Agatin T., and Peterson, Frank L. *Volcanoes in the Sea.* University of Hawaii Press. 1983.

8. Marc M. Siah & Associates, Inc. *Preliminary Engineering Study for Evaluation of Nitrate Removal System at Kunia Wells II.* Marc M. Siah & Associates, Inc. June 2001.

9. Marc M. Siah & Associates, Inc. *Final Environmental Assessment / Finding of No Significant Impact (FONSI) for the Honouliuli 228' Reservoir No. 3.* Marc M. Siah & Associates, Inc. February 2000.

10. City and County of Honolulu, Neighborhood Commission. *Oahu's Neighborhood Board System Informational Boundary Maps.* City and County of Honolulu. June 1993.

11. Hawaii Cooperative Park Service Unit, Western Region National Resources and Research Division, National Park Service. *Hawaii Stream Assessment, A Preliminary Appraisal of Hawaii's Stream Resources, Report R84.* National Park Service. 1990.

12. Marc M. Siah & Associates, Inc. *Hydrologic Investigation - Drainage Study for Honouliuli Watershed, Oahu.* Marc M. Siah & Associates, Inc. February 2000.

13. PBR Hawaii. *East Kapolei Master Plan - Final Environmental Impact Statement.* PBR Hawaii. July 1998.

APPENDICES

Marc M. Siah & Associates, Inc.
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Appendix A

Construction Cost Estimate

Marc M. Siah & Associates, Inc.
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Construction Cost Estimate

ITEM	COST
SITE WORK:	
CLEANING AND GRUBBING	$ 16,340.00
GRADING	$ 60,000.00
ROADWAY, ENTRANCE, GATE, PERIMETER FENCE	$ 163,275.00
8" SEWER LINE	$ 350,000.00
24" INFLUENT LINE	$ 240,000.00
24" EFFLUENT LINE	$ 250,000.00
VAULTS AND MANHOLES	$ 350,000.00
PROCESS BUILDING	$ 568,500.00
BRINE MAKER LIXATOR STRUCTURE	$ 231,000.00
PROCESS EQUIPMENT	$ 2,100,000.00
WASTE STORAGE TANKS	$ 506,600.00
	$ 4,329,115.00
20% CONTINGENCY	$ 900,000.00
	$ 5,229,115.00

Appendix B

Historic Preservation Review

Marc M. Siah & Associates, Inc.
Consulting Civil • Structural • Environmental & Ocean Engineers
810 Richards Street, Suite 888, Honolulu, Hawaii 96813

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNEL NISHIOKA

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

March 21, 2002

Kiumars Siah, Ph. D., P. E.
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 819
Honolulu, Hawaii 96813

LOG NO: 29437
DOC NO: 0203EJ14

Dear Mr. Siah:

SUBJECT: Chapter 6E-8 Historic Preservation Review – Draft Environmental Assessment for the Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Waipio, `Ewa, O`ahu, TMK: (1) 9-2-001:001

Thank you for the opportunity to provide comment on the DEA for the proposed Kunia Wells II Nitrate Treatment System. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas.

The DEA includes our comments on the request for information on known historic sites at the existing Kunia Wells II parcel, TMK: (1) 9-4-157:099, and not for the proposed development of parcel (1) 9-2-001:001. However, our comments remain the same for the subject parcel. Prior to urban development, these lands were under sugar cane cultivation for many years. Consequently, it is highly unlikely that significant historic sites are still present at this location.. Thus, if development of the subject parcel, including ground disturbance, is proposed, we believe that such actions would have "no effect" on significant historic sites.

Should you have any questions about archaeology, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

EJ:amk

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

GILBERT COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
JANET E. KAWELO
LINNEL NISHIOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

January 23, 2001

Leslie Recaido
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 819
Honolulu, Hawaii 96813

LOG NO: 26854
DOC NO: 0101EJ09

Dear Ms. Recaido:

SUBJECT: Chapter 6E-8 Historic Preservation Review – City & County of Honolulu, Board of Water Supply Kunia Wells II
Waipio, `Ewa, O`ahu
TMK: 9-4-157:099

Thank you for the opportunity to provide comment on the Kunia Wells II parcel. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas.

The Kunia II wells site is situated within an urban area. Prior to urban development, these lands were under sugar cane cultivation for many years. Consequently, it is highly unlikely that significant historic sites are still present at this site. Thus, if further development of the subject parcel, including ground disturbance, is proposed, we believe that such actions would have "no effect" on significant historic sites.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

Appendix C

Correspondence with the Estate of James Campbell

Marc M. Siah & Associates, Inc.
Consulting Civil • Structural • Environmental & Ocean Engineers
810 Richards Street, Suite 888, Honolulu, Hawaii 96813

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

September 4, 2001

The Estate of James Campbell
1001 Kamokila Boulevard
Kapolei, Hawaii 96707

ATTENTION Mr. BERT HATTON
Manager, Agricultural lands

RE: HONOLULU BOARD OF WATER SUPPLY'S PROPOSED DENITRIFICATION FACILITY ALONG KUNIA ROAD

Dear Mr. Hatton:

As I mentioned in our telephone conversation late last week, the Honolulu BWS is proposing to construct a denitrification facility along Kunia Road opposite its existing Kunia Wells II Reservoir and GAC facility. As a design consultant for the project, Marc M. Siah & Associates, Inc., has completed an engineering study for the project in which the exact location and the extent of land requirements are identified. The proposed facility will be located on a two-acre portion of land parcel identified by TMK:9-2-001:001 and owned by the Estate of James Campbell. We have enclosed a location map as well as a site map for the proposed facility for your reference.

On behave of the BWS, we are inquiring the availability of land at this site for the proposed facility. We appreciate your assistance in this matter. Should you have any questions and/or need additional information and/or clarifications, please call me at 538-7180.

Sincerely,
Marc M. Siah & Associates, Inc.

Marc M. Siah, Ph.D., P.E., D.E.E.
President

Encl.: Location Map & Site Map

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL

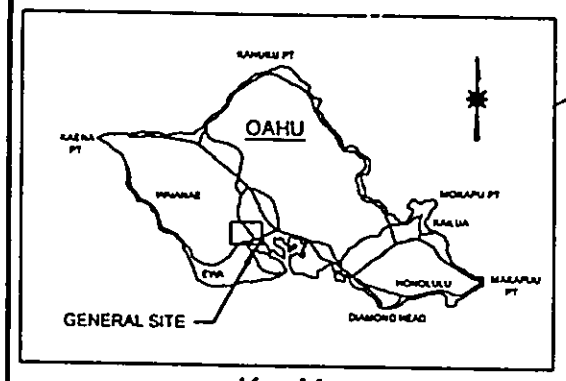
810 Richards Street • City Center Building • Suite 888 • Honolulu HI 96813 • Phone (808) 538-7180 • Fax (808) 528-4352 • Email: msiah@mmsengineering.com

Appendix D

Groundwater Nitrate Concentrations Data

Marc M. Siah & Associates, Inc.
Consulting Civil • Structural • Environmental & Ocean Engineers
810 Richards Street, Suite 888, Honolulu, Hawaii 96813

Nitrate Concentrations in Groundwater

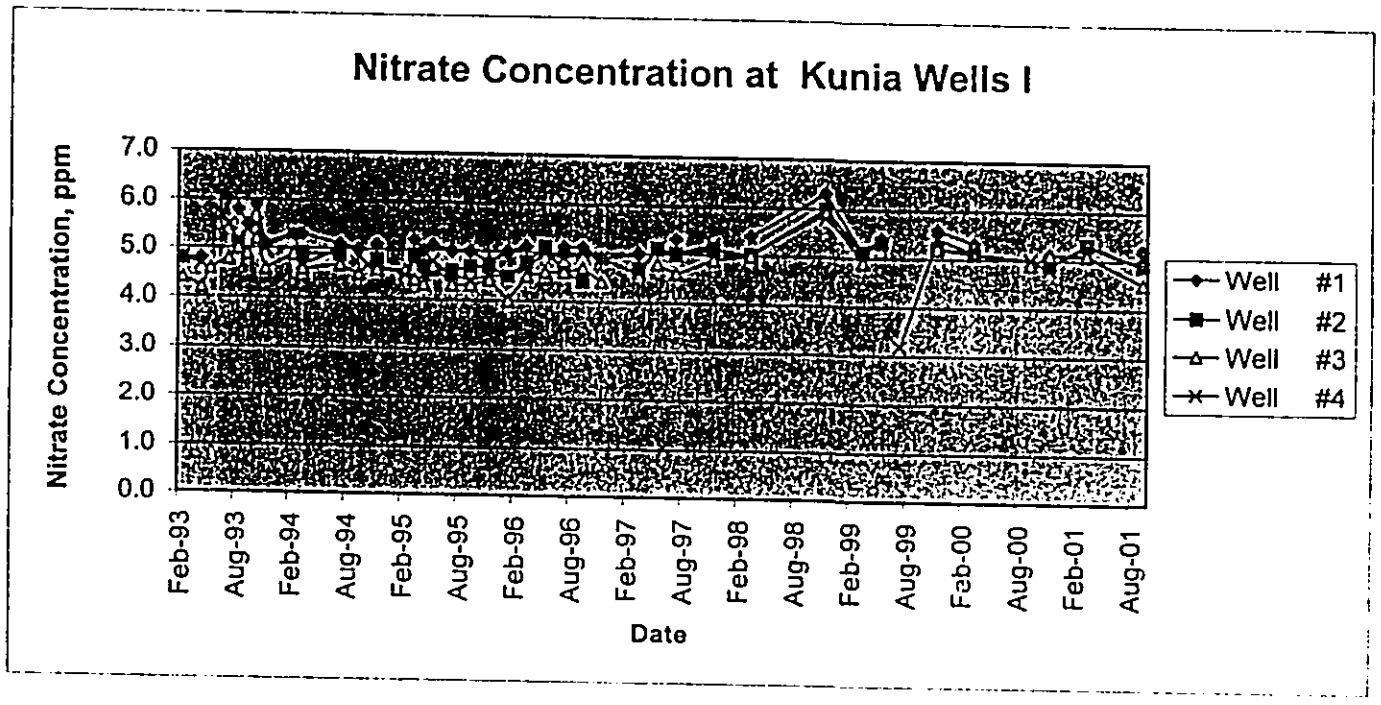


Key Map

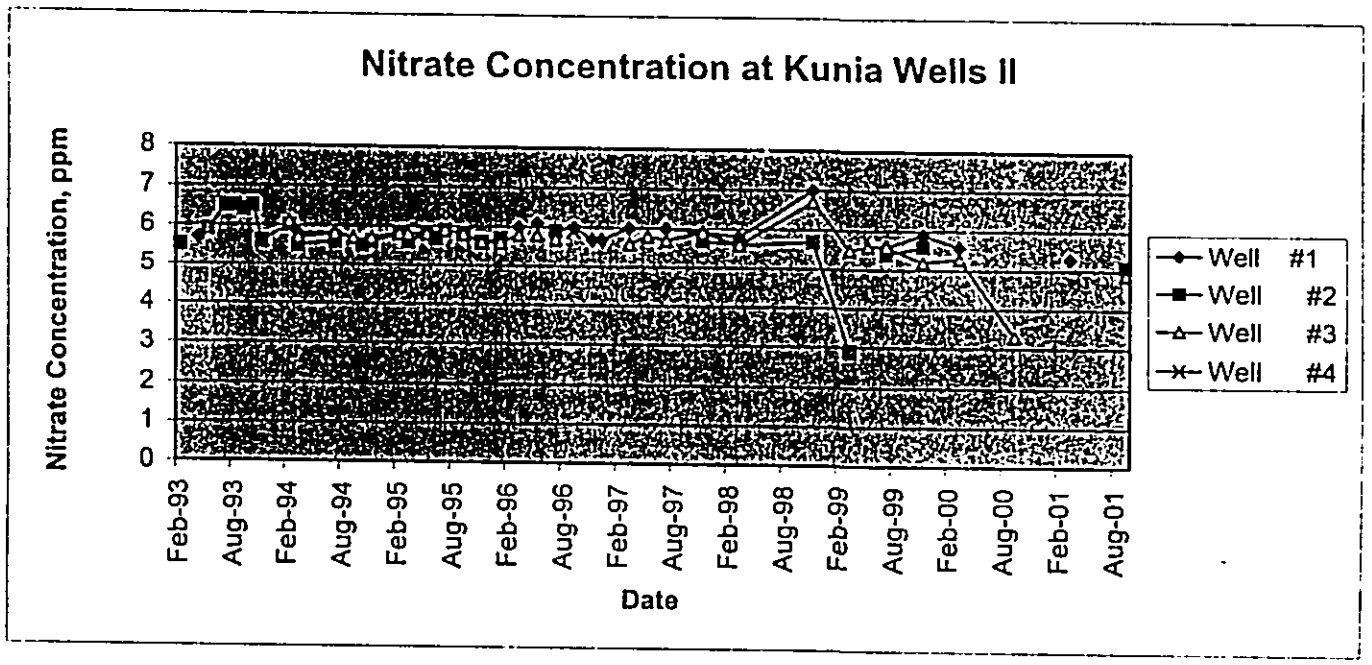
Marc M. Siah & Associates, Inc.
Consulting Civil . Structural . Environmental & Ocean Engineers
810 Richards Street, Suite 888, Honolulu, Hawaii 96813

1162wells.dwg 06/05/02 09:19

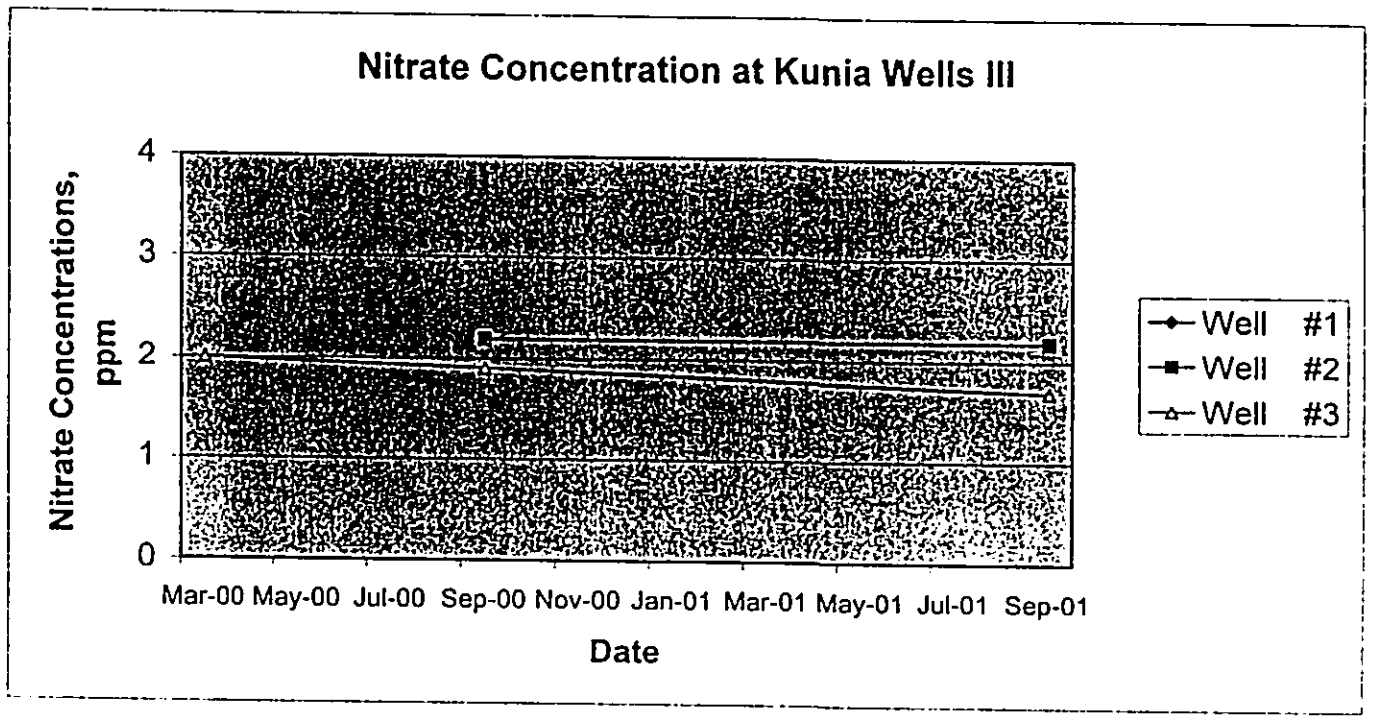
Date	Well #1	Well #2	Well #3	Well #4
Sep-01	5.2	4.9	4.5	5.1
Mar-01		5.3	5.1	
Nov-00	5.1	4.9	5.1	4.8
Sep-00			4.9	5.0
Mar-00	5.3	5.1		5.1
Nov-99	5.6	5.2	5.2	5.4
Jul-99				3.2
May-99	5.4	5.3		
Mar-99	5.1	5.1	4.9	5.1
Nov-98	6.3	6.0	5.9	5.8
Mar-98	5.4	5.0	5.0	
Nov-97		5.1	4.9	5.2
Jul-97	5.3	5.0	4.6	5.0
May-97		5.1	4.8	5.1
Mar-97	5.0	4.7		4.6
Nov-96	4.9		4.4	4.9
Sep-96	5.1	4.4	4.7	5.0
Jul-96	5.1	4.6	4.6	4.9
May-96		5.1	4.6	5.0
Mar-96	5.1	4.8	4.5	4.7
Jan-96	5.0	4.5	4.0	4.5
Nov-95	4.8	4.7	4.4	4.5
Sep-95	5.0	4.7	4.3	4.4
Jul-95	5.0	4.6	4.3	4.5
May-95	5.1	4.6	4.7	4.8
Apr-95	5.0	4.7	4.3	4.5
Mar-95	5.2	4.9	4.4	4.8
Feb-95			4.6	4.5
Nov-94	5.1	4.8	4.6	4.7
Oct-94				4.7
Sep-94	5.0		4.5	
Jul-94	5.1	4.9	4.7	5.0
Mar-94	5.3	4.9	4.6	4.7
Feb-94	5.3		4.9	5.3
Nov-93	5.1		4.6	5.0
Oct-93	5.9		5.2	5.5
Sep-93	5.5		4.9	5.4
Aug-93	5.8	5.1	5.0	5.1
Jul-93			4.8	5.5
May-93			4.6	
Apr-93	4.8		4.2	4.7
Feb-93	4.8		4.4	4.8
Average	5.2	4.9	4.7	4.9
Max	6.3	6.0	5.9	5.8
Min	4.8	4.4	4.0	3.2



Date I	Well #1	Well #2	Well #3	Well #4
Sep-01		5.1	4.9	
Mar-01	5.3			
Sep-00			3.3	
Mar-00	5.6		5.3	
Nov-99	5.9	5.6	5.2	
Jul-99	5.6	5.4	5.6	
Mar-99		2.9	5.5	
Nov-98	7	5.7	6.7	
May-99			5.6	
Mar-98	5.8	5.6	5.6	
May-97			5.8	
Jul-97	6		5.7	
Nov-97	5.9	5.7	5.9	
Mar-97	6		5.6	
Dec-96	5.7			
Jan-96		5.7	5.6	
Mar-96	6		5.8	
Apr-96				
May-96	6.1		5.8	
Jun-96				
Jul-96	5.9	5.9	5.7	
Sep-96	6			5.9
Nov-96	5.7			
Feb-95		5.8	5.8	
Mar-95		5.6	5.8	
May-95		5.8	5.8	
Jun-95		5.7		
Jul-95		5.9	5.9	
Sep-95		5.8	5.8	
Nov-95		5.6	5.6	
Nov-94		5.6	5.7	
Oct-94		5.5		
Sep-94			5.7	
Jul-94	5.8	5.6	5.8	
Mar-94	5.8	5.5	5.7	
Feb-94		6	6.1	
Nov-93		5.6		
Oct-93		6.5		
Aug-93		6.5		
Sep-93		6.4		
Jul-93		6.5		
May-93		5.9		
Apr-93	5.7			
Feb-93		5.5		
Average	5.9	5.7	5.6	5.9
Max	7.0	6.5	6.7	5.9
Min	5.3	2.9	3.3	5.9

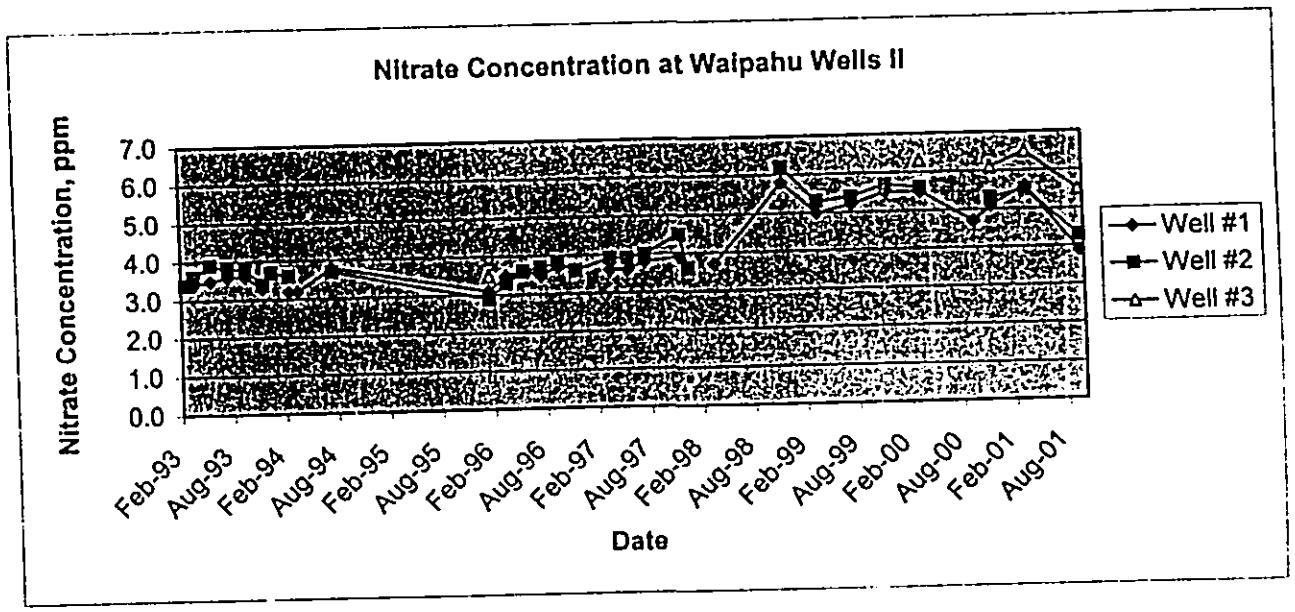


Date	Well #1	Well #2	Well #3
Sep-01	2.2	2.2	1.7
Sep-00		2.2	1.9
Mar-00			2.0
	4.3	4.4	5.6
Average	2.2	2.2	1.9
Max	2.2	2.2	1.9
Min	2.1	2.2	1.7



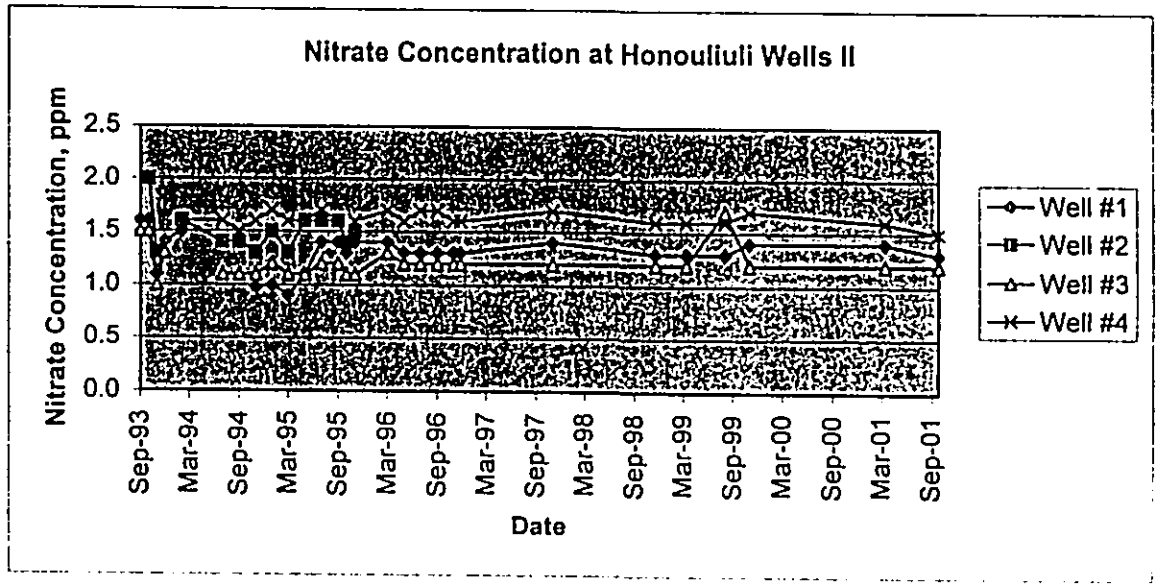
Nitrate Concentrations in Waipahu Wells II

Date	Well #1	Well #2	Well #3
Sep-01	3.9	4.3	5.5
Mar-01	5.6	5.5	6.5
Nov-00	5.1	5.3	6.1
Sep-00	4.7		
Mar-00	5.5	5.6	6.3
Nov-99	5.5	5.7	
Jul-99	5.2	5.4	
Mar-99	5.0	5.3	
Nov-98	5.8	6.2	
Mar-98	3.7		
Nov-97	3.9	4.5	
Jul-97	3.8	4.0	
May-97	3.6	3.9	
Mar-97	3.6	3.9	
Dec-97		3.6	
Jan-96	3.1	2.9	3.5
Mar-96	3.5	3.3	
May-96	3.6	3.6	
Jul-96	3.5	3.7	
Sep-96	3.7	3.8	
Nov-96		3.6	
Jul-94	3.8	3.7	
Mar-94	3.2		
Feb-94	3.2	3.6	
Dec-93		3.7	
Nov-93	3.3	3.4	
Sep-93	3.6	3.8	
Feb-93	3.4	3.4	
Mar-93	3.4	3.6	
May-93	3.5	3.9	
Jul-93	3.6	3.8	
Average	4.0	4.2	5.6
Max	5.8	6.2	6.5
Min	3.1	2.9	3.5



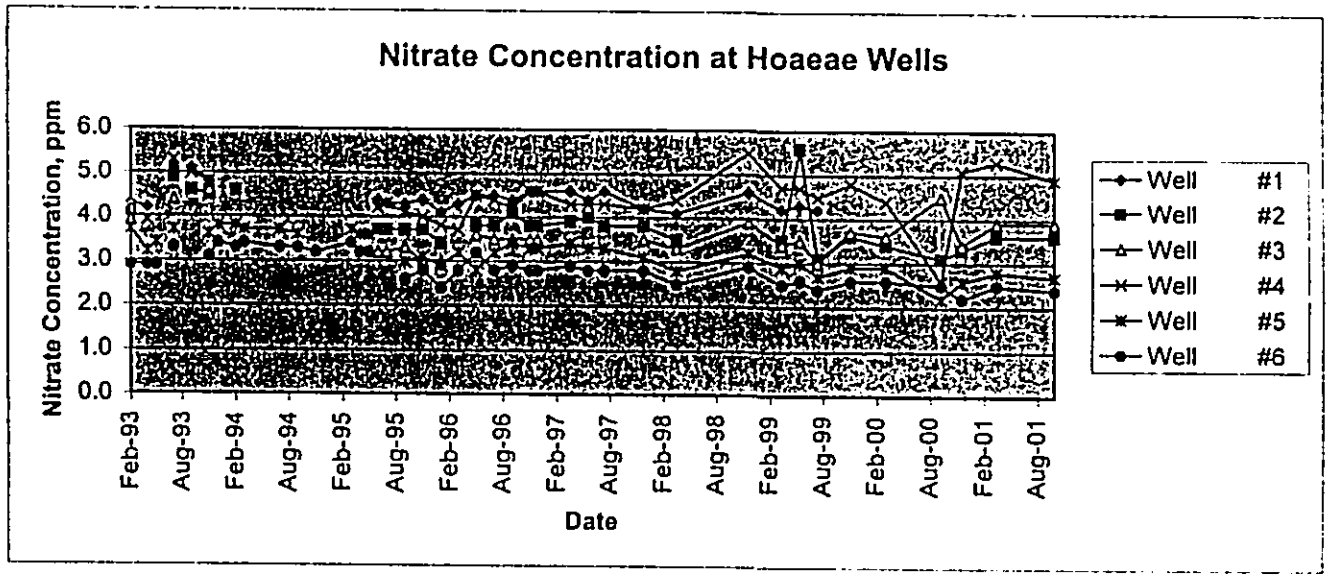
Nitrate Concentrations in Honouliuli Wells II

Date	Well #1	Well #2	Well #3	Well #4
Sep-01	1.3		1.2	1.5
Mar-01	1.4		1.2	1.6
Nov-99	1.4		1.2	1.7
Aug-99	1.3		1.7	1.6
Mar-99	1.3		1.2	1.6
Nov-98	1.3		1.2	1.6
Nov-97	1.4		1.2	1.7
Nov-96	1.3		1.2	1.6
Mar-96	1.4		1.3	1.7
May-96	1.3		1.2	1.6
Jul-96	1.3		1.2	1.7
Sep-96	1.3		1.2	1.7
Nov-96	1.3		1.2	1.6
Jan-95	1.0	1.5	1.2	1.7
Mar-95	0.9	1.3	1.1	1.6
May-95	1.1	1.6	1.1	1.6
Jul-95	1.4	1.6	1.2	1.7
Sep-95	1.4	1.6	1.2	1.6
Oct-95	1.3	1.4	1.1	1.4
Nov-95	1.4	1.5	1.1	1.6
Nov-94	1.0	1.3	1.1	1.6
Sep-94		1.4	1.1	1.5
Jul-94		1.4	1.1	1.6
Feb-94	1.5	1.6		1.6
Dec-93	1.4		1.3	
Nov-93	1.1	1.3	1.0	
Oct-93	1.6	2.0	1.5	
Sep-93	1.6		1.5	
Average	1.3	1.5	1.2	1.6
Max	1.6	2.0	1.7	1.7
Min	0.9	1.3	1.0	1.4



Nitrate Concentrations in Hoaeae Wells

Date	Well #1	Well #2	Well #3	Well #4	Well #5	Well #6
Sep-01		3.6	3.9	4.9	2.7	2.4
Mar-01		3.6	3.9	5.3	2.8	2.5
Nov-00		3.3	3.4	5.1	2.6	2.2
Sep-00		3.1	4.5	2.6	2.2	2.5
Mar-00		3.4	3.6	4.4	2.9	2.6
Nov-99		3.6	3.7	4.8	2.9	2.6
Jul-99	4.2	3.1	3.0	4.5	2.7	2.4
Mar-99	4.2	3.5	3.4	4.7	2.9	2.5
Nov-98	4.6		3.9	5.5	3.2	2.9
May-99	4.3	5.6	3.5	4.7	3.0	2.6
Mar-98	4.1	3.5	3.3	4.4	2.8	2.5
May-97	4.4	4.0		4.3	3.3	2.8
Jul-97	4.6	3.8		4.3	3.3	2.8
Nov-97	4.2	3.8	3.5	4.2	3.1	2.8
Mar-97	4.6	3.9		4.3	3.4	2.9
Nov-96	4.6	3.8	3.5	4.6	3.3	2.8
Jan-96	4.1	3.4	3.0	3.8	2.9	2.4
Mar-96	4.3			3.7	3.2	2.8
May-96	4.5	3.8	3.6	4.5	2.8	3.2
Jul-96	4.5	3.8	3.5	4.4	3.2	2.8
Sep-96	4.4	4.1	3.5	4.2	3.4	2.9
Nov-96	4.6	3.8	3.5	4.6	3.3	2.8
Mar-95					3.7	3.4
Apr-95					3.6	3.2
May-95					3.6	3.2
Jun-95	4.4	3.7	3.2	4.2		
Jul-95	4.3	3.7	3.2	4.3		
Sep-95	4.3	3.7	3.3	4.1	3.0	2.6
Nov-95	4.4	3.7	3.0	4.0	3.1	2.8
Nov-94						3.2
Sep-94					3.6	3.3
Jul-94					3.7	3.3
Mar-94					3.7	3.4
Feb-94		4.6			3.8	3.3
Dec-93					3.8	3.4
Nov-93	4.8	4.5	4.6	4.8	3.6	3.1
Jul-93	5.1	4.9	4.4	5.3		
Sep-93	5.1	4.6		5.0		
Jul-93					3.7	3.3
May-93					3.4	2.9
Apr-93	4.2			3.9	3.2	2.9
Feb-93	4.3	4.1	3.9		3.7	2.9
Average	4.4	3.9	3.6	4.4	3.2	2.9
Max	5.1	5.6	4.6	5.5	3.8	3.4
Min	4.1	3.1	3.0	2.6	2.2	2.2



Appendix E

Correspondence, Comments & Responses

Marc M. Siah & Associates, Inc.
Consulting Civil • Structural • Environmental & Ocean Engineers
810 Richards Street, Suite 888, Honolulu, Hawaii 96813

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED MAR 20 2003

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, Hawaii 96813
Telephone (808) 586-4185
Facsimile (808) 586-4186
Email: oeqc@oeqc.state.hi.us

March 19, 2003

Mr. Clifford Jamile, Manager and Chief Engineer
Mr. Scot Muraoka
Board of Water Supply
630 South Beretania Street
Honolulu, Hawai'i 96843

Mr. Kiumars Siah
March M. Siah & Associates, Inc.
810 Richards Street, Suite 888
Honolulu, Hawai'i 96813

Dear Messrs. Jamile, Muraoka and Siah:

Having reviewed the revised draft environmental assessment (DEA) for the Nitrate Treatment System for the Kunia Wells II, Tax Map Key 9-2-01, parcel 01, on land owned by the Estate of James Campbell in the judicial district of 'Ewa, the Office of Environmental Quality Control offers the following comments for your consideration.

1. **SPATIAL EXTENT OF NITRATE CONTAMINATION:**: The Office thanks you for including the data in Appendix D in response to OEQC's April 22, 2002, letter.
2. **LAND LEASE:** The land is owned by the Estate of James Campbell; please disclose under what instrument the City is using (or plans to use) the faciility.
3. **GUIDELINES FOR SUSTAINABLE BUILDING DESIGN IN HAWAI'I, AND THE USE OF RECYCLED GLASS:** Thank you for considering the the sustainable building design criteria and use of recycled glass in your design of the facility.
4. **INDIGENOUS AND POLYNESIAN INTRODUCED PLANTS FOR USE IN PUBLIC LANDSCAPING:** Please consider the use of native, indigenous and polynesian introduced plants in your landscaping.

If you have any questions concerning this letter, please call Leslie Segundo, Environmental Health Specialist, at (808) 586-4185; alternatively, you may send electronic mail to him at lsegund@mail.health.state.hi.us. Thank you for the opportunity to comment.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON
Director

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

March 31, 2003

RECEIVED APR 4 2003

JEREMY HARRIS, Mayor

EDDIE FLORES, JR., Chairman
CHARLES A. STED, Vice-Chairman
JAN M.L.Y. AMI
HERBERT S.K. KAOPUA, SR.
DAROLYN H. LENDIO

LARRY J. LEOPARDI, Ex-Officio

CLIFFORD S. JAMILE
Manager and Chief Engineer

DONNA FAY K. KIYOSAKI
Deputy Manager and Chief Engineer

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Your Letter of March 19, 2003 Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment – TMK: 9-2-001: 001

Thank you for your letter regarding the Draft Environmental Assessment for the proposed Kunia Wells II Nitrate Treatment System.

We have the following response to your concerns:

1. **LAND LEASE:** The Honolulu Board of Water Supply is currently in the process of negotiating with the Estate of James Campbell to buy the proposed land for the nitrate treatment system facility for the Kunia Wells II.

2. **INDIGENOUS AND POLYNESIAN INTRODUCED PLANTS FOR USE IN PUBLIC LANDSCAPING:** As recommended, the use of native, indigenous and Polynesian introduced plants has been considered in landscape design for the proposed project.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa
for CLIFFORD S. JAMILE
Manager and Chief Engineer

dc: Marc M. Siah & Associates, Inc.

RECEIVED APR 2 2003

LINDA LINGLE
GOVERNOR OF HAWAII

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

In reply, please refer to
EMD/SDWB

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

March 28, 2003

Mr. Kiumars Siah, Project Manager
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 888
Honolulu, Hawaii 96813

Dear Mr. Siah:

SUBJECT: COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE NITRATE TREATMENT SYSTEM FOR KUNIA WELLS II EWA, OAHU, TAX MAP KEY (TMK):9-2-001:001

We have reviewed the Draft Environmental Assessment (EA) for the Nitrate Treatment System for Kunia Wells II, Ewa, Oahu, Hawaii, dated February 2003; and the Honolulu Board of Water Supply has expressed interest in funding this project through the Drinking Water State Revolving Fund (DWSRF) program.

The Draft EA does adequately address the environmental review items that are required for DWSRF projects. This includes an appropriate review of the Federal Cross Cutters, consultation with applicable agencies, and adequate notice in the document and in the Environmental Notice that federal monies may be used for public participation purposes.

If you have any questions or comments please contact Denise Dang of the Safe Drinking Water Branch at 586-4258.

Sincerely,

WILLIAM WONG, P.E., CHIEF
Safe Drinking Water Branch
Environmental Management Division

DD:gm

c: Wastewater Branch

PROJECTS(KUNIA1.WPD)

Consulting Engineers

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment

March 12, 2003

Hawaii State Department of Health
Safe Drinking Water Branch - Room 308
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

RE: **Nitrate Treatment System for Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed copy of the Draft Environmental Assessment Report for the project. Also, please find the enclosed completed Environmental Assessment Checklist and Certification From for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: A copy of the DEA report for the nitrate treatment system for Kunia Wells II
Completed EA Checklist and Certification Form for the project

UNIVERSITY OF HAWAI'I AT MĀNOA
Environmental Center

March 27, 2003
BA: 0298

Mr. Scot Muraoka, P.E.
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Muraoka:

Draft Environmental Assessment
Kunia Wells II Nitrate Treatment System
Ewa, Hawaii

The City and County of Honolulu Board of Water Supply (BWS) proposes to construct a Nitrate Treatment System for Kunia Wells II. The construction of this facility will enable the BWS to decrease the nitrate concentrations present in well water at Kunia Wells II and comply with Maximum Contaminant Level requirements established by the U.S. Environmental Protection Agency. In an engineering study six de-nitrification technologies were identified for nitrate removal at Kunia Wells II. Based on the results of this study, the blending option with Ionic Exchange System was selected as the best choice. The proposed de-nitrification facility site is situated on a 2-acre portion of a parcel of land identified by Tax Map Key: 9-2-001:001. The project is expected to begin in April 2003 and last about 15 months. The estimated cost of the project is $5,229,115.

This review was prepared with the assistance of Kevin Polloi of the Environmental Center.

General Comments

The Environmental Center reviewed the earlier draft environmental assessment for this project that was submitted in March 2002. Our comment letter is found in Appendix E: Correspondence, Comments & Responses of this document. Our review identified several concerns; however the majority of our concerns raised in our first letter have still not been adequately addressed. Please address and integrate your response to our earlier comments into this document.

2500 Dole Street, Krauss Annex 16, Honolulu, Hawai'i 96822-2313
Telephone: (808) 956-7361 • Facsimile: (808) 956-3980

Specific Comments

Executive Summary

The executive summary stated incorrectly that this document is a final environmental assessment.

Section 1.4 Technical Description

There is a typographical error in the second sentence in the third paragraph. There should be a space between "30" and "feet". Also the following sentence in the same paragraph should have an "in" inserted between "housed" and "the process building".

Section 1.5 Project Cost

The first environmental assessment submitted in March 2002 had a construction cost estimate of $3,993,720. This document gives a construction cost estimate of $5,229,115. What is the reason for the $1,235,395 increase?

Thank you for the opportunity to review this Draft Environmental Assessment.

Sincerely,

Jacquelin M. Miller

Jacquelin Miller, Ph.D.
Associate Environmental Coordinator

Cc: OEQC
Marc M. Siah & Associates, Inc.
James Moncur
Kevin Polloi

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

April 28, 2003

Jacquelin N. Miller, Ph.D.
Associate Environmental Coordinator
University of Hawaii at Manoa
Environmental Center, Krauss Annex 19
2500 Dole Street
Honolulu, Hawaii 96822

Dear Dr. Miller:

Subject: Your Letter of March 27, 2003 Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment, Tax Map Key: 9-2-001: 001

Thank you for your letter regarding the revised Draft Environmental Assessment (EA) for the proposed Nitrate Treatment System at Kunia Wells II project.

We have the following response to your concerns:

1. General Comments

For responses to your previous letter dated April 22, 2002, please refer to our enclosed letter dated January 7, 2003. We feel we have addressed you previous concerns adequately. In the absence of specific points, we are not able to provide specific clarification. We would, however, like to clarify a few comments to three questions on page 2 of our previous response.

c. Have time series monitoring data been collected to show this increasing trend?

Time series monitoring data has not been collected to show this increasing trend because of its complexity. Although a more comprehensive time-series analysis may be a relevant academic tool, such an analysis requires a large collection of data obtained over a sufficiently long time so that the statistical conclusions for a time-series analysis may be applicable. Nevertheless, the Board of Water Supply believes the existing data provide adequate basis for its proactive decision on source treatment.

d. How long does it take for nitrates to percolate into the groundwater? If the nitrate level does increase, how long will it be before it drops again to acceptable levels?

It is very difficult to determine the time it takes for nitrates to percolate into the groundwater. Numerous factors might contribute to the nitrate concentration as well as its percolation into the groundwater. Consequently, any conclusion regarding the time it takes for nitrate to percolate into the groundwater is subject to some uncertainties. The gathered data indicates a level trend and this level while under the MCL, is approximately three times the background nitrate levels of Oahu's wells.

e. Are the preferred alternatives and the others evaluated, the only options available?

Yes, the draft EA report states that during a preliminary engineering study for the evaluation of nitrate treatment system at Kunia Wells II, all denitrification technologies recognized by the United States Environmental Protection Agency as "Best Available Technologies" (BAT) or "Emerging Technologies" were identified and evaluated. These technologies include: (a) Reverse Osmosis (b) Electrodialysis; (c) Ionic Exchange; and (d) Biodenitrification. Section 1.3 of the Draft EA, discusses the technology selection criteria.

2. Specific Comments

a. Executive Summary

The word "final" was included by mistake and will be removed.

b. Section 1.4 Technical Description

The typographical and grammatical errors will be corrected.

c. Section 1.5 Project Cost

The previous construction cost was based on the preliminary estimates prior to performing detailed engineering calculations and before the exact requirements for the design and operations of the facility were finalized. The revised cost reflects the actual requirements based on final detailed design and functional requirements for the facility. In addition, the previous cost was based on the construction cost estimates whereas the revised cost was obtained from the actual construction bid tabulations for the project.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa

for CLIFFORD S. JAMILE
Manager and Chief Engineer

Enclosure

cc: Marc M. Siah & Associates, Inc.

SM:rk
cc: S. Muraoka

03-0247

RECEIVED APR 2 4 2002

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

1162-00

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

April 22, 2002

Mr. Clifford Jamile
Board of Water Supply, City and County of Honolulu
630 South Beretania Street
Honolulu, Hawai'i 96843

Mr. Marc M. Siah
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 888
Honolulu, Hawai'i 96813

Dear Messrs. Jamile and Siah:

We have reviewed the draft environmental assessment (DEA) entitled: "Nitrate Treatment System at Kunia Wells II," Tax map key number 9-2-001:001 in the 'Ewa District on the island of O'ahu and offer the following comments for your consideration and response.

1. NITRATE LEVELS IN KUNIA WELL WATER: Please provide data showing typical background concentrations of nitrates in groundwater alongside Kunia well water concentrations. Please indicate the spatial extent of elevated nitrate levels.
2. USE OF RECYCLED GLASS: To promote the use of recycled materials in-state as found in section 103D-407, Hawai'i Revised Statutes, we ask that you consider using materials with minimum recycled glass content in the design.
3. INDIGENOUS AND POLYNESIAN INTRODUCED PLANTS FOR USE IN PUBLIC LANDSCAPING: As provided for by State law, we ask that you consider the use of native, indigenous and polynesian introduced plants in your landscaping.

If there are any questions, please call Leslie Segundo of my staff at (808) 586-4185. Thank you for the opportunity to comment.

Sincerely,

for GENEVIEVE SALMONSON
Director

Enclosures

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

JEREMY HARRIS, Mayor

EDDIE FLORES, JR., Chairman
CHARLES A. STED, Vice Chairman
JAN K.L.Y. AHU
HERBERT S.K. KAOPUA, SR.
DAROLYN H. LEHOKO

BRIAN K. MINAAI, Ex-Officio
ROSS S. SASAMURA, Ex-Officio

CLIFFORD S. JAMILE
Manager and Chief Engineer

DONNA FAY K. KIYOSAKI
Deputy Manager and Chief Engineer

July 24, 2002

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Your Letter of April 22, 2002 Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment - TMK: 9-2-001: 001

Thank you for your letter regarding the Draft Environmental Assessment (EA) for the Kunia Wells II Nitrate Treatment System.

We have the following response to your concerns:

1. Nitrate Levels In Kunia Well Water

   The enclosed information regarding the concentrations of nitrate in groundwater at Kunia well fields and the corresponding spatial extent will be presented as Appendix D in the Final EA.

2. Use of Recycled Glass

   Materials with minimum recycled glass content will be considered during the design phase for the proposed project.

3. Indigenous and Polynesian Introduced Plants for Use in Public Landscaping

   The use of native, indigenous and polynesian introduced plants will be considered during the design phase for the proposed project.

If you have any questions, please contact Scot Mursoka at 527-5221.

Very truly yours,

for CLIFFORD S. JAMILE
Manager and Chief Engineer

Enclosure

cc: Marc M. Siah & Associates, Inc.

Pure Water . . . our greatest need - use it wisely

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Natural Resources Conservation Service
Department of Agriculture
P.O. Box 50004
300 Ala Moana Blvd.
Honolulu, HI 96850

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 668 • Honolulu HI 96813 • Phone (808) 538-7180 • Fax (808) 528-4332 • Email msiah@mmsengineering.com

NRCS Natural Resources Conservation Service

United States Department of Agriculture

P.O. Box 50004
Honolulu, HI 96850
Phone: 808-541-2600
FAX: 808-541-1335

Our People...Our Islands...In Harmony

RECEIVED APR 1 3 2002

April 11, 2002

Mr. Kiumars Siah, P.E.
Project Manager
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 888
Honolulu, Hawaii 96813

Dear Mr. Siah:

Subject: Draft Environmental Assessment (DEA) – Nitrate Treatment System at Kunia Wells II, Ewa, Oahu

We have reviewed the above mentioned document and have no comments to offer at this time.

Thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

State Historic Preservation Division
Department of Land and Natural Resources
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
[illegible]

RECEIVED APR 3 [illegible]

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

March 21, 2002

Kiumars Siah, Ph. D., P. E.
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 819
Honolulu, Hawaii 96813

LOG NO: 29437
DOC NO: 0203EJ14

Dear Mr. Siah:

SUBJECT: Chapter 6E-8 Historic Preservation Review – Draft Environmental Assessment for the Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Waipio, 'Ewa, O'ahu, TMK: (1) 9-2-001:001

Thank you for the opportunity to provide comment on the DEA for the proposed Kunia Wells II Nitrate Treatment System. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas.

The DEA includes our comments on the request for information on known historic sites at the existing Kunia Wells II parcel, TMK: (1) 9-4-157:099, and not for the proposed development of parcel (1) 9-2-001:001. However, our comments remain the same for the subject parcel. Prior to urban development, these lands were under sugar cane cultivation for many years. Consequently, it is highly unlikely that significant historic sites are still present at this location.. Thus, if development of the subject parcel, including ground disturbance, is proposed, we believe that such actions would have "no effect" on significant historic sites.

Should you have any questions about archaeology, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

EJ:amk

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Hawaii State Department of Health - Clean Water Branch
NPDES Permitting, Room 301
919 Ala Moana Boulevard
Honolulu, Hawaii 96814

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

BENJAMIN J. CAYETANO
GOVERNOR

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to
File / Log:
03066PKP.02

April 1, 2002

Dr. Kiumars Siah, Ph.D., P.E.
Project Manager
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 888
Honolulu, Hawaii 96813

Dear Dr. Siah:

Subject: Draft Environmental Assessment
Nitrate Treatment System at Kunia Wells II
Ewa, Oahu, Hawaii

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and has the following comments:

1. Section 2.1.11, Water Quality (page 2-10) states that "...the Kunia Gulch Stream has a Class A water quality classification as is designated as a Class 2 inland water." However, Class A strictly refers to marine waters, i.e. the Pacific Ocean. This section should be revised to reflect that Kunia Gulch is classified as a Class 2 inland water.

2. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for any future project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification would also be required from our office.

3. If the construction project involves any of the following discharges into State waters, a National Pollutant Discharge Elimination System (NPDES) permit coverage is required for each type of discharge:

   a. Storm water runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than five acres 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.

Note: After March 10, 2003, an NPDES permit will be required for discharges of storm water associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one acre or more.

b. Hydrotesting water; and

c. Construction dewatering effluent.

Notices of Intent (NOI) for NPDES general permit coverages should be submitted at least 30 days before the discharge is to occur. NOI forms can be downloaded from the CWB website at http://www.state.hi.us/doh/eh/cwb/forms/index.html.

Should you have any questions, please contact Ms. Kris Poentis of the Engineering Section, CWB, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:nk

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

1/6 2.00
1.1

September 20, 2002

RECEIVED SEP 2 1 2002

Mr. Denis R. Lau, P.E., Chief
Clean Water Branch
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Lau:

Subject: Your Letter of April 1, 2002 to Marc Siah and Associates, Inc., Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment

Thank you for your letter regarding the Draft Environmental Assessment (EA) for the Kunia Wells II Nitrate Treatment System.

We have the following response to your concerns:

1. Section 2.1.11, Water Quality of the Final EA will be revised to state:

   According to the State Department of Health (DOH), the Kunia Gulch Stream is classified as a Class 2 inland water. According to DOH guidelines regarding Class 2 waters, storm water discharges associated with industrial activities which meet the basic water quality criteria applicable to all waters specifies in DOH 11-54-04 (a) and all applicable requirements of Chapter 11-15 of Hawaii Administrative Rules, titled "Water Pollution Control" are permitted.

2. The Army Corps of Engineer has determined that the referenced project will not include any work in waters of the United States and that a Department of the Army permit is not required.

3. The Final EA will indicate the requirement for the National Pollutant Discharge Elimination System (NPDES) permits for hydrotesting water and storm water runoff.

We acknowledge that Notices of Intent for NPDES general permit coverages should be submitted at least 30 days before the discharge is to occur.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa

for CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Marc M. Siah & Associates, Inc.

Pure Water ... our greatest need ... now it needs

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Office of Hawaiian Affairs
711 Kapiolani Blvd., Suite 500
Honolulu, HI 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

PHONE (808) 594-1888
FAX (808) 594-1865
STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD 02-530

April 22, 2002

Kiumars Siah, Ph.D., P.E.
Marc M. Siah & Associates, Inc.
810 Richards Street
City Center Building, Suite 888
Honolulu, HI 96813

Subject: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

Dear Ms. Siah,

Thank you for the opportunity to comment on the draft environmental assessment (EA) for the above-referenced project.

Cultural Resources
The draft EA's assessment of cultural impacts fails to meet the following OEQC requisites for cultural impact assessments.

- Cultural impact assessments must include consultation with Native Hawaiians. The draft EA indicates that the landowner has been contacted to identify organizations but more effort must be put into identifying knowledgeable Hawaiian individuals or organizations. You should contact OHA, Queen Lili'uokalani Children's Center, and other Native Hawaiian organizations for references to individuals or organizations who reside or work in the area.

- The applicant should use the ahupua'a as the geographical unit for assessing cultural impacts. This approach addresses cultural practices which may not occur within the boundaries of the project area, but which may be affected. The draft EA merely looks at the subject property rather than examining the effects of the treatment plant on practices that may exist off-site. For instance, the EA should address the impact of the facility's waste stream on the health of aquatic animals and plants that may be used in traditional and customary practices. An analysis of how

increased nitrates or salinity could affect coral reefs, contribute to algae blooms, migrate to nearshore areas, or otherwise adversely impact the ecosystem, should be provided.

Flora and Fauna
The botanical survey should be incorporated into the EA review process. The document indicates that the survey will not be conducted until construction begins. Instead, OHA requests that you complete the survey and include its findings in the final EA.

If you have any questions, please contact Sharla Manley, Policy Analyst at 594-1944 or email her at sharlam@oha.org.

Sincerely,

Jalna S. Keala
Acting Director, Hawaiian Rights Division

cc: OHA Board of Trustees
Clyde W. Namu'o, Administrator

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

January 7, 2003

John T. Harrison, Ph.D.
Environmental Coordinator
Environmental Center
Water Resources Research Center
University of Hawaii at Manoa
Krauss Annex 19
2500 Dole Street
Honolulu, Hawaii 96822

Dear Dr. Harrison:

Subject: Your Letter of April 22, 2002 Regarding the Draft Environmental Assessment for the Kunia Wells II Nitrate Treatment System Project, Ewa, Oahu

Thank you for your letter of April 22, 2002 regarding the Draft Environmental Assessment (EA) for the Board of Water Supply's (BWS) Kunia Wells II Nitrate Treatment System project.

We have the following response to your comments:

1. General Comments

   a. With regard to your comment on the rise in nitrate levels in the groundwater, as you have recognized, identifying the agricultural source of the rise in nitrate levels is problematic. At this time, the BWS does not plan to seek compensation.

   b. What data were used to determine that nitrate levels are going to increase, even though large-scale agribusinesses have ceased to exist in the area?

      Systematic water source sample collection and analysis by the BWS between February 1993 and August 2001 have provided relevant information on the nitrate concentration in the drinking water. Based on the collected data for the said period, the concentration of nitrate in the Kunia Wells II water has varied from 2.9 ppm to as high as 7.0 ppm. Due to the complexity of health effects from a variety of water quality constituents, BWS implements a policy of providing treatment when levels reach half of the EPA maximum contaminant levels. This action maintains public confidence in the municipal water system. The proposed system will ensure that nitrate levels are reduced to naturally occurring background levels.

In addition, we disagree that large-scale agriculture has ceased in the area. The lands remain zoned for agriculture and we expect agriculture operations to increase in the future.

c. Have time series monitoring data been collected to show this increasing trend?

   Although a more comprehensive time-series analysis may be a relevant academic tool, such an analysis requires a large collection of data obtained over a sufficiently long time so that the statistical conclusions for a time-series analysis may be applicable. Nevertheless, the BWS believes the existing data provide adequate basis for its proactive decision on source treatment.

d. How long does it take for nitrates to percolate into the groundwater? If the nitrate level does increase, how long will it be before it drops again to acceptable levels?

   Numerous factors might contribute to the nitrate concentration as well as its percolation into the groundwater. Consequently, any conclusion regarding the time it takes for nitrate to percolate into the groundwater is subject to some uncertainties. The gathered data indicates a level trend and this level while under the MCL, is approximately three times the background nitrate levels of Oahu's wells.

e. Using speculative information and making numerous assumptions are hardly enough to justify building a four million dollar facility.

   Health hazards attributed to sustained and elevated concentrations of nitrate are accepted facts by the scientific bodies, rather than "speculation". The board's proactive decision will eliminate public health risks and maintain public confidence in the drinking water system.

f. Are the preferred alternatives and the others evaluated, the only options available?

   The Draft EA report states that during a preliminary engineering study for the evaluation of nitrate treatment system at Kunia Wells II, all denitrification technologies recognized by the United States Environmental Protection Agency as "Best Available Technologies" (BAT) or "Emerging Technologies" were identified and evaluated. These technologies include: (a) Reverse Osmosis; (b) Electrodialysis; (c) Ionic Exchange; and (d) Biodenitrification. Section 1.3 of the Draft EA, discusses the technology selection criteria.

Pure Water ... our greatest need - use it wisely

g. What about blending water from Kunia wells with water pumped from other wells or reservoirs?

The State DOH does not allow blending as a primary treatment process because of the potential for the dilution source to be disrupted. Kunia Wells II is the only source serving the Kunia 440' and 665' systems. While water from the 228' system can be pumped up during emergencies, this is not a normal operation and because the existing distribution system must be used, water cannot be readily blended at the Kunia Wells II source.

2. Specific Comments

a. Section 4.1.3 Grading

What is the volume of soil to be graded? Where will excavated soil be disposed?

The total area to be graded is about 0.80 acres and the total volume of excavation is estimated to be about 1,100 cubic yards. 310 cubic yards will be re-used for the embankment. The 790 cubic yards of the excavation that is not used as embankment inside the nitrate facility will be dispersed on the remaining portion of the 2-acre parcel of land that BWS will acquire.

b. Section 7.1 No action

Did the BWS actually consult with the community on this issue?

Representatives of the BWS and the design consultant attended the Waipahu Neighborhood Board meeting on March 16, 2002 during which all aspects of the project were discussed. Numerous meetings were held with BWS, DOH and Royal Kunia and Village Park residents to discuss water quality and BWS water treatment options.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa

for CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Mare M. Siah & Associates, Inc.

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Department of Design and Construction
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 888 • Honolulu HI 96813 • Phone: (808) 538-7180 • Fax: (808) 526-4552 • Email: msiah@mmsiahassoc.com

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4384 • Fax: (808) 523-4567
Web site: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

RAE M. LOUI, P.E.
DIRECTOR

ERIC D. CRISPIN, AIA
DEPUTY DIRECTOR

GEORGE T. TAMASHIRO, P.E.
ASSISTANT DIRECTOR

WW.P 02-108

March 25, 2002

Mr. Kiumars Siah, Ph.D., P.E.
Marc M. Siah & Associates, Inc.
810 Richards Street
City Center Building, Suite 888
Honolulu, Hawaii 96813

Dear Dr. Siah:

Subject: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu

The following comments are provided to your Draft Environmental Assessment, dated March 2002, on subject project:

1. Page 1-6: The correct acronym for the Department of Environmental Services, City and County of Honolulu, is ENV.

2. Page 2-17, Section 2.3.2 Wastewater System: Question the statement: "The project area is not currently serviced by the Ewa sewer system".
COMMENT: "Area" is too general. The proposed project will dispose of the waste effluent to an existing sewer manhole located on Anonui Street (Figure 1-4, Proposed Denitrification Facility Plan), which is within the area. Suggest calling it the project site.

3. Page 3-2, Section 3.1.3 Water Quality: If ENV has been consulted and has confirmed that the waste stream will not adversely impact the collection system nor the treatment plant, it should be so stated. If that has not been done, comments on impacts to the existing sewer and treatment system should be obtained from ENV.

4. Page 9-2, Section 9-3 City and County Agencies: Add

   Department of Environmental Services
   City and County of Honolulu
   1000 Uluohia Street
   Kapolei, Hawaii 96707

If there are any questions, please contact Richard Leong of our Wastewater Division, Planning Branch, at 527-5863.

Very truly yours,

RAE M. LOUI, P.E.
Director

Attachment

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

September 19, 2002

1102-00
1.1

TO: MS. RAE M. LOUI, P.E., DIRECTOR
DEPARTMENT OF DESIGN AND CONSTRUCTION

FROM: BU for CLIFFORD S. JAMILE, MANAGER AND CHIEF ENGINEER

SUBJECT: YOUR LETTER OF MARCH 25, 2002 TO MARC SIAH AND ASSOCIATES, INC., REGARDING THE KUNIA WELLS II NITRATE TREATMENT SYSTEM DRAFT ENVIRONMENTAL ASSESSMENT

Thank you for your letter regarding the Draft Environmental Assessment (EA) for the proposed Kunia Wells II Nitrate Treatment System project.

We have the following response to your concerns:

1. The Final EA will indicate the correct acronym, ENV, for the Department of Environmental Services.

2. The word "area" will be replaced by "site" in the Final EA, Section 2.3.2.

3. Regarding Section 3.1.3 of the Draft EA report, we have consulted with the Department of Environmental Services (ENV) and submitted the required Industrial Wastewater Discharge Permit Survey/Application. Currently, ENV is processing the permit application.

4. The Department of Environmental Services will be added to the list of the City and County Agencies enumerated in Section 9-3 of the Final EA.

If you have any questions, please contact Scot Muraoka at 527-5221.

cc: Marc M. Siah & Associates, Inc.

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Honolulu Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite H-425
Honolulu, Hawaii 96819

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425
HONOLULU, HAWAII 96819-1869

RECEIVED APR 1 1 2002

JEREMY HARRIS
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

April 9, 2002

Mr. Kiumars Siah, Ph.D., P.E.
Project Manager
Marc M. Siah & Associates, Inc.
City Center Building, Suite 888
810 Richards Street
Honolulu, Hawaii 96813

Dear Mr. Siah:

Subject: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key: 9-2-001: 001

We received your letter dated March 14, 2002, regarding the above-mentioned project.

The Honolulu Fire Department requests that the following be complied with:

1. Maintain fire apparatus access throughout the construction site for the duration of the project.

2. Notify the Fire Communication Center at 523-4411 regarding any interruption in the existing fire hydrant system during the project.

Should you have any questions, please call Battalion Chief Kenneth Silva of our Fire Prevention Bureau at 831-7778.

Sincerely,

ATTILIO K. LEONARDI
Fire Chief

AKL/SK:bh

1162-02

1.1

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

RECEIVED SEP 2 1 2002

September 19, 2002

TO: ATTILIO K. LEONARDI, FIRE CHIEF
FIRE DEPARTMENT

FROM: BU for CLIFFORD S. JAMILE, MANAGER AND CHIEF ENGINEER

SUBJECT: YOUR LETTER OF APRIL 9, 2002 TO MARC SIAH AND ASSOCIATES, INC. REGARDING THE KUNIA WELLS II NITRATE TREATMENT SYSTEM DRAFT ENVIRONMENTAL ASSESSMENT

Thank you for your letter regarding the Draft Environmental Assessment for the Kunia Wells II Nitrate Treatment System.

During the duration of the project, fire apparatus access will be maintained throughout the construction site. In case of interruption in the existing fire hydrant system, we will notify the Fire Commission Center at 523-4411.

If you have any questions, please contact Scot Muraoka at 527-5221.

cc: Marc M. Siah & Associates, Inc.

Consulting Engineers

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment

March 14, 2002

The Gas Company
515 Kamakee Street
Honolulu, Hawaii 96814

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 888 • Honolulu HI 96813 • Phone: (808) 538-7180 • Fax: (808) 526-4352 • Email: msiah@mmsengineering.com

515 Kamakee Street Honolulu, Hawaii 96814
P.O. Box 3000 Honolulu, Hawaii 96802-3000
Telephone 808.535.5900 Facsimile 808.594.5630 Sales

RECEIVED MAR 2 0 2002

THE GAS COMPANY
Citizens Energy Services

March 18, 2002

Marc M. Siah & Associates, Inc.
810 Richards Street
City Center Building, Suite 888
Honolulu, Hawaii 96813

Attention: Mr. Kiumars Siah, Ph.D., P.E.
Project Manager

Gentlemen:

Subject: Draft Environmental Assessment for
Nitrate Treatment System at Kunia Wells II

Please be advised that The Gas Company maintains underground utility gas mains in the project vicinity, which serves commercial and residential customers in the area and is interconnected with the utility network in Kunia. We would appreciate your consideration during the project planning and design process to minimize any potential conflicts with the existing gas facilities in the project area.

Thank you for the opportunity to comment on the Draft Environmental Assessment. Should there be any questions, or if additional information is desired, please call Chris Anderson at 594-5564.

Sincerely,

Charles E. Calvet, P.E.
Manager, Engineering

CEC:krs
02-152

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

RECEIVED JAN 8 2003

January 3, 2003

Mr. Charles E. Calvet, P.E.
Manager, Engineering
The Gas Company
P. O. Box 3000
Honolulu, Hawaii 96802-3000

Dear Mr. Calvet:

Subject: Your Letter of March 18, 2002 to Marc M. Siah and Associates, Inc., Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment

Thank you for your letter regarding the Draft Environmental Assessment for the Kunia Wells II Nitrate Treatment System.

The project's planning and design process will include measures to minimize potential conflicts with the existing gas facilities in the project area.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa

for CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Marc M. Siah & Associates, Inc.

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

December 4, 2002

Ms. Jalna S. Keala
Acting Director
Hawaiian Rights Division
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Ms. Keala:

Subject: Your Letter of April 22, 2002 to Marc Siah and Associates, Inc. Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment

Thank you for your letter of April 22, 2002 regarding the Board of Water Supply's proposed Kunia Wells II Nitrate Treatment System project.

We have the following response to your comments:

1. Cultural Resources

   a. We have consulted with various Hawaiian organizations, including those mentioned in your letter, and solicited their comments on possible impacts of the proposed project on cultural resources. The Final EA will include a discussion on cultural impacts.

   b. The construction of the proposed facility will not result in exploitation, pollution, extinction of any rare, endangered, or in any other way significant plants or animals with regard to traditional and customary practices in the ahupua'a. There are no plants or animals in these categories at the project site. Similarly, the construction or the operation of the proposed facility will not affect rare, endangered, or in any other way significant plants or animals with regard to traditional and customary practices beyond the project site in the Ewa ahupua'a.

As for the marine ecology, the wastewater resulting from the proposed treatment facility will be discharged into the sewer system which is conveyed to the Honouliuli Wastewater Treatment Plant (WWTP). The volume of the wastewater from the proposed facility is estimated to be less than 50,000 gallons per day. The Honouliuli WWTP treats a total volume of 26 million gallons per day (mgd) and up to 12 mgd is recycled for golf course irrigation and industrial process water.

2. Flora and Fauna

The Final EA will include a discussion on the existing flora in the project area. Based on our site inspection, the proposed project site is fallow and void of significant vegetation. The area surrounding the project site has no outstanding vegetative features and no proposed or listed threatened or endangered species. Historically, the proposed project site and the surrounding land have been used for growing sugar cane up through the early 1980's. The surrounding land is currently used for agricultural purposes. The day-to-day operation of the denitrification facility is not anticipated to adversely affect the local flora or fauna. Furthermore, it is not expected that new species of flora and fauna will migrate to the area as a result of this project. The trees that will be planted for screening and landscaping may provide additional habitat for birds and other fauna. The enclosed pictures taken recently show the existing condition of the proposed project site.

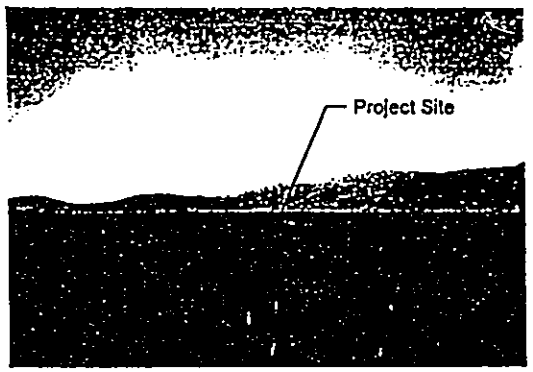
We appreciate the Office of Hawaiian Affair's input into our environmental assessment process. If you have any questions, please contact Scot Muraoka at 527-5221.

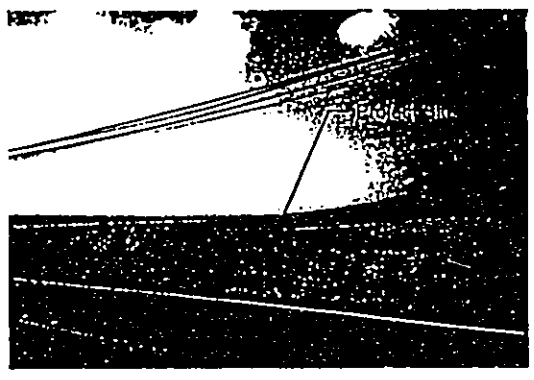
Very truly yours,

Barry Usagawa
for CLIFFORD S. JAMILE
Manager and Chief Engineer

Enclosure

cc: Marc M. Siah & Associates, Inc.





Views of the Land Parcel Site of the Proposed Facility

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

University of Hawaii - Manoa Campus
Environmental Center
2550 Campus Road, Crawford 317
Honolulu, HI 96822

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 868 • Honolulu HI 96813 • Phone: (808) 538-7180 • Fax (808) 576-4352 • Email: msiah@mmsengineering.com

University of Hawai'i at Mānoa
Environmental Center
A Unit of Water Resources Research Center
Krauss Annex 19 • 2500 Dole Street • Honolulu, Hawai'i 96822
Telephone: (808) 956-7361 • Facsimile: (808) 956-3980

April 22, 2002
BA: 0283

Ms. JoAnn Yasuda, P.E.
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Ms. Yasuda:

Draft Environmental Assessment
Kunia Wells II Nitrate Treatment System
Ewa, Hawaii

The City and County of Honolulu Board of Water Supply (BWS) proposes to construct a Nitrate Treatment System for Kunia Wells II. The construction of this facility will enable the BWS to decrease the nitrate concentrations present in well water at Kunia Wells II and comply with Maximum Contaminant Level requirements established by the U.S. Environmental Protection Agency. In an engineering study six de-nitrification technologies were identified for nitrate removal at Kunia Wells II. Based on the results of this study, the blending option with Ionic Exchange System was selected as the best choice. The proposed de-nitrification facility site is situated on a 2-acre portion of a parcel of land identified by Tax Map Key: 9-2-001:001. The project is expected to begin in April 2003 and last about 15 months. The estimated cost of the project is $3,993,720.

This review was prepared with the assistance of Philip Moravcik, Water Resources Research Center; Carol Ferguson, Natural Resources and Environmental Management; and Kevin Polloi of the Environmental Center.

General Comments

Our review has identified several concerns. First, we note that the rise in nitrate level in the groundwater can be attributed to the intensive agribusinesses in the recent past, as stated in the document. However, we suggest that having the taxpayers foot the bill for this facility raises equity issues. While we acknowledge the problematic nature of source identification, compensation should be sought.

Secondly, what data were used to determine that nitrate levels are going to increase, even though large-scale agribusinesses have ceased to exist in the area? Have time series monitoring data been collected to show this increasing trend? How long does it take for nitrates to percolate into the groundwater? If the nitrate level does increase, how long will it be before it drops again to acceptable levels? Using speculative information and making numerous assumptions are hardly enough to justify building a four million dollar facility.

Finally, are the preferred alternative and the others evaluated, the only options available? What about blending water from the Kunia wells with water pumped from other wells or reservoirs?

Specific Comments

Section 4.1.3 Grading

What is the volume of soil to be graded? Where will excavated soil be disposed? Assuming that the soil will be dumped in a landfill site, what are the impacts to the landfill as well as the overall solid waste problem on the island?

Section 7.1 No Action

This section states that the no action alternative is unacceptable to the community. Did the BWS actually consult with the community on this issue?

Thank you for the opportunity to review this Draft Environmental Assessment.

Sincerely,

John T. Harrison, Ph.D.
Environmental Coordinator

Cc: OEQC
Mano M. Siah & Associates, Inc.
James Moncur
Carol Ferguson
Phillip Moravcik
Kevin Polloi

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 888 • Honolulu HI 96813 • Phone: (808) 536-7180 • Fax: (808) 526-4332 • Email: msiah@mmsengineering.com

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-00(

GEN-6 (EIS)

RECEIVED APR 3 0 200(

April 29, 2002

Marc M. Siah & Associates, Inc.
810 Richards Street
City Center Building, Suite 888
Honolulu, HI 96813

Attention: Kiumars Siah, Ph.D, P.E.

Subject: Nitrate Treatment System at Kunia Wells II

Thank you for the opportunity to comment on your March 2002 Draft EA for the Nitrate Treatment System at Kunia Wells II as proposed by the Board of Water Supply. We have reviewed the subject document and would just like to mention that HECO will need information regarding the electrical load requirements for the project. We suggest that we are contacted as soon as the requirements are known so there is sufficient time to plan for the electrical service.

Our point of contact for these types of project is Francis Hirakami (543-7536), principal engineer. I suggest your staff and consultants deal directly with Francis to coordinate HECO's continuing input on this project.

Sincerely,

Kirk Tomita
Senior Environmental Scientist
Hawaiian Electric Company

cc: OEQC

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

RECEIVED SEP 2 1 2002 September 20, 2002

Mr. Kirk Tomita
Senior Environmental Scientist
Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Mr. Tomita:

Subject: Your Letter of April 29, 2002 to Marc Siah and Associates, Inc. Regarding the Kunia Wells II Nitrate Treatment System Draft Environmental Assessment

Thank you for your letter regarding the Draft Environmental Assessment for the Kunia Well II Nitrate Treatment System.

We anticipate determining the electrical load requirements during the design phase of the proposed project, during which time we will consult with your department.

We note that Mr. Francis Hirakami will be Hawaiian Electric Company's point of contact for this project.

If you have any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

Barry Usagawa

for CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Marc M. Siah & Associates, Inc.

RECEIVED APR 2 3 2002

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

April 19, 2002

Regulatory Branch

Dr. Kiumars Siah
Marc M. Siah & Associates, Inc.
810 Richards Street, Suite 888
Honolulu, Hawaii 96813

Dear Dr. Siah:

This responds to your written request for determination of Department of the Army (DA) permit requirements for construction of the proposed Nitrate Treatment System at Kunia Wells II, Ewa, Oahu (TMK 9-2-001:001). We have reviewed the project information you provided with respect to the Corps' authority to issue DA permits under Section 10 of the River and Harbor Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344).

Based on the information you provided, I have determined that your proposed activity will not include any work in waters of the United States, including adjacent wetlands; therefore, a DA permit is not required..

File number 200200143 has been assigned to this project. Should you have questions regarding this determination, please contact Mr. Peter Galloway of my staff at 438-8416 (fax 438-4060). Inquiries should be addressed to: Regulatory Branch (CEPOH-EC-R/P. Galloway); U.S. Army Engineer District, Honolulu; Building 230; Fort Shafter, Hawaii 96858-5440. Thank you for working with the U.S. Army Corps of Engineers in protecting the aquatic resources of Hawaii.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

U.S. Fish and Wildlife Service
United States Department of the Interior
Pacific Islands Ecoregion
P.O. Box 50088
Honolulu, HI 96850

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 868 • Honolulu HI 96813 • Phone (808) 536-7180 • Fax (808) 528-4332 • Email msiah@mmsengineering.com

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 621
Honolulu, Hawaii 96809

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

We appreciate your assistance with this project and welcome your questions and/or comments. We look forward to receiving your comments as expeditiously as possible.

Sincerely,
Marc M. Siah & Associates, Inc.

Kiumars Siah, Ph.D., P.E.
Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
810 Richards Street • City Center Building • Suite 868 • Honolulu HI 96813 • Phone (808) 536-7180 • Fax (808) 528-4332 • Email msiah@mmsengineering.com

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Department of Planning and Permitting
Zoning Division, Land Use
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Honolulu Police Department
City and County of Honolulu
801 S. Beretania Street
Honolulu, Hawaii 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Senator Brian Kanno, District 20
State Capitol
Room 202
415 South Beretania Street
Honolulu, Hawaii 96813

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

Dear Senator Kanno:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

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Project Manager

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Representative Mark Moses, District 42
State Capitol
Room 310
415 South Beretania Street
Honolulu, Hawaii 96813

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

Dear Representative Moses:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Councilmember Rene Mansho
City Hall
Room 202
530 South King Street
Honolulu, Hawaii 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

Dear Councilmember Rene Mansho:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

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Kiumars Siah, Ph.D., P.E.
Project Manager

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Waipahu Neighborhood Board
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

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Consulting Engineers

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment

March 14, 2002

Hawaii's 1000 Friends
305 Hahani Street
PMB 282
Kailua, HI 96734

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

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Project Manager

Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

Consulting Engineers

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment

March 14, 2002

Verizon Hawaii
161 Kinoole
Honolulu, Hawaii 96813

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

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Enclosure: One copy of the DEA report for the nitrate treatment system at Kunia Wells II

CIVIL • STRUCTURAL • ENVIRONMENTAL • WATER RESOURCES • COASTAL
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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Historic Hawaii Foundation
860 Iwilei Road, Suite 690
Honolulu, Hawaii 96817

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

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Project Manager

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

The Nature Conservancy
923 Nuuanu Avenue
Honolulu, Hawaii 96817

RE: **Nitrate Treatment System at Kunia Wells II, Ewa, Oahu**
Tax Map Key (TMK) : 9-2-001:001

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

The Outdoor Circle
1314 South King Street, Suite 306
Honolulu, Hawaii 96814

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

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810 Richards Street • City Center Building • Suite 888 • Honolulu HI 96813 • Phone: (808) 536-7180 • Fax: (808) 528-4352 • Email: msiah@mmsengineering.com

Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Oceanic Cable
200 Akamainui Street
Mililani, Hawaii 96789

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

Waipahu Public Library
94-275 Mokauola Street
Waipahu, HI 96797

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

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Marc M. Siah & Associates, Inc.
Consulting Engineers
Engineering & Science of the Environment

March 14, 2002

The Sierra Club
Hawaii Chapter
P.O. Box 2577
Honolulu, Hawaii 96803

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

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Consulting Engineers

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment

March 14, 2002

The Estate of James Campbell
1001 Kamokila Boulevard
Kapolei, Hawaii 96707

RE: Nitrate Treatment System at Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

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1162-00
(1.2)

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment
Consulting Engineers

February 3, 2003

State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources
1151 Punchbowl Street, Room 330
Honolulu, Hawaii 96813

RE: Nitrate Treatment System for Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

To Whom It May Concern:

On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

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1162-00
(1.2)

Marc M. Siah & Associates, Inc.
Engineering & Science of the Environment
Consulting Engineers

February 3, 2003

Hawaii Coastal Zone Management Program
235 South Beretania Street
Leiopapaa kamehameha Building
Suite 600
Honolulu, Hawaii 96813

RE: Nitrate Treatment System for Kunia Wells II, Ewa, Oahu
Tax Map Key (TMK) : 9-2-001:001

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On behalf of the Board of Water Supply, City and County of Honolulu, we are writing this letter to request your comments regarding the referenced subject. The information received will be used in preparing the Final Environmental Assessment for the project. The proposed project involves installation of a nitrate treatment system at Kunia Wells II located at Kunia Road. Installation of the proposed denitrification system will decrease existing and future nitrate concentrations present in water at Kunia Wells II to levels well below the United States Environment Protection Agency's (USEPA) maximum contaminant level requirements. Detailed information about various aspects of the proposed facility may be readily obtained from the enclosed courtesy copy of the Draft Environmental Assessment Report for the project.

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