

*Draft Environmental Assessment*

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# **Waterfront Passive Park & Waipahu Depot Road Improvements**

WAIPAHU, OAHU, STATE OF HAWAII

MARCH 2009

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#### APPENDICIES

Appendix A: Terrestrial and Aquatic Resources Inventory and Impacts Assessment along lower Kapakahi Stream, Waipahu, Oahu, Hawaii (AECOS, Inc. 2007)

Appendix B: The Phase I Environment Site Assessment Waipahu Depot Road, Waipahu, Oahu, Hawaii (Environet, Inc. 2007) – provided under separate cover

Appendix C: Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua’a, ‘Ewa District, Island of Oahu TMK: [1] 9-3-002: por. 009 (Cultural Surveys Hawai‘i, Inc. 2007)

## SUMMARY

### S.1 INTRODUCTION

The Waterfront Passive Park (WPP) project is a combination of the Waipahu Depot Road Improvements and the Waterfront Passive Park projects (**Figure 1**). The site for the proposed Waterfront Passive Park is located at the former Waipahu Ash Landfill (WALF) site, which encompasses about 49 acres of land located at the southern end of Waipahu Depot Road at Waipio Peninsula, Waipahu Oahu, Tax Map Key: 9-3-02: 2, 27, Por. 9, 1, and 28.

Currently, vehicular access to the project site is limited to Waipahu Depot Road. The proposed roadway improvement will involve an approximately .7 mile (3,600 Ln.Ft.) long portion of Waipahu Depot Road Right-of-way (ROW) between Farrington Highway intersection to Waipio Peninsula Soccer Park. The ROW is bisected by a former agricultural railroad track. There is no existing sidewalk along this portion of Waipahu Depot Road. The northern half of the roadway project site does not currently have a TMK number associated with it. However, the southern half of the roadway project site is denoted by TMK No: (1) 9-4-002; Parcel 9.

The proposed roadway improvements not only provide a safer vehicular access to the future park but also function as the secondary access way to Waipio Peninsula Soccer Park.

The proposed project will require use of City and County funds to design and construct the roadway improvements and recreational facilities. The majority of the project site is located within the Special Management Area (SMA) and therefore, subject to compliance with the SMA regulations of Chapter 25, Revised Ordinances of Honolulu (ROH). The preparation of a Chapter 343 HRS Environmental Assessment is required because City and County funds are being expended. The intent of the document is to ensure that systematic consideration is given to the environmental consequences of the proposed action.

### S.2 PURPOSE AND NEED FOR THE PROJECT

The proposed project was initiated under the City and County of Honolulu's Department of Design and Construction (DDC). DDC identified the proposed project as a means to conserve open space for future generations and to protect opportunities for waterfront passive recreation as well as provide a Bicycle/Pedestrian Path to the future Park.

The purposes of Waterfront Passive Park and Waipahu Depot Road improvements are:

1. Provide opportunities for a second entrance to Waipio Peninsula Soccer Park;
2. Provide a more direct access to Waipio Peninsula Soccer Park by providing pedestrian and bikeway improvements along this portion of Waipahu Depot Road;
3. Provide a basis for planning to stabilize Kapakahi Stream erosion, which is impacting Waipahu Depot Road;
4. Provide recreational opportunities for Waipahu and the larger surrounding community; and
5. Take full advantage of the site's waterfront location.

### **S.3 PROJECT DESCRIPTION**

This project is a combination of the Waipahu Depot Road improvements and the Waterfront Passive Park (WPP) projects. The Waipahu Depot Road improvements project would develop an entry roadway to the proposed WPP and provide a potential future secondary access to Waipio Peninsula Soccer Park. The proposed improvements on Waipahu Depot Road extending south from Farrington Highway intersection to include a pedestrian / bicycling promenade between the road and Kapakahi Stream. The proposed promenade will be wide enough to accommodate pedestrian and bicycling with bench seating and landscaping along the way.

The WPP project involves planning and development of a conceptual master plan of the passive park and sports field Park on the 'Ash Pile' landfill site. The site is on land owned by the U.S. Navy and would require the Navy to turn over the land to the City and County.

### **S.4 ALTERNATIVES**

The alternatives considered for the project site were "No Action", "Roadway Development, and Roadway & Park Development."

The No-Action alternative would leave the WALF site as a closed landfill. This alternative would fail to take a full advantage of the site's waterfront location to provide recreational opportunities for Waipahu and the larger surrounding community. Also, the opportunity to provide a second access to the existing Soccer Park would be lost.

The Roadway Development alternative will provide a second access to the existing Soccer Park.

The Roadway and Park Development alternative would provide four (4) large and small comfort stations, four (4) soccer fields, and additional paved parking spaces. However, with the Full Alternative option, part of new facilities, including a comfort station, are located within the Military's Blast Zone.

The blast zone is an area that the Navy has determined would be affected if there should be an explosion at its loading operations at Pearl Harbor. Any aboveground structures built in the blast zone must meet certain extraordinary requirements imposed by the Navy. DDC explored the possibility of building a comfort station within the blast zone, but determined it unfeasible at this time.

### **S.5 IMPACTS AND MITIGATION**

The proposed project is not anticipated to result in substantial environmental impacts because most improvements would occur within previously disturbed areas within the Waipahu Depot Road right-of-way and the former WALF. The proposed project would not increase the roadway capacity of Waipahu Depot Road. The following provides a brief summary of the environmental

impacts of the project. A summary of mitigation measures is also provided for those impacts considered adverse.

### Topography, Geologic Conditions, and Hazardous Materials

The proposed project would not require substantial excavation other than what is needed to provide drainage improvements, nor would it require substantial earthmoving activities. However, excavation activities may uncover soil and/or groundwater contaminated with petroleum from the existing petroleum pipelines identified beneath the central portions of the roadway site.

Before construction, test borings along Waipahu Depot Road site would be taken to assess the likelihood of encountering contaminated media from the pipelines. If it were determined that contaminated soil or groundwater exists within the area affected by excavation, a hazardous waste removal plan would be developed to address the removal and disposal of the contaminated media. Solid waste generated during construction would be properly handled and disposed of in accordance with State of Hawaii Department of Health (DOH) requirements.

Proposed action at the former WALF site would ensure extra protection to the closed landfill by adding more layers of soil over the final cap. The surface would be graded to maintain the positive drainage and prevent ponding. Conversion of the closed landfill to a recreational facility will require that additional design features and precautions be established to prevent any damage to the existing landfill cover "cap". Conversion to a park will also require the NEPA review process and approvals from the DOH, Department of Land and Natural Resources (DLNR) and the Navy.

### Water Resources

Excavation and grading activities have the potential to cause storm water erosion and sedimentation, which could affect the quality of nearby surface waters, such as Kapakahi Stream and Pearl Harbor's West Loch. Best Management Practices (BMPs) would be implemented to prevent degradation of nearby surface waters. The Contractor would be required to obtain a National Pollutant Discharge Elimination System (NPDES) construction storm water permit from the DOH and have site specific BMP plans approved by DOH prior to construction.

### Biological Resources

The Waipahu Depot Road improvement project should not have any adverse impact on the flora or fauna of Kapakahi Stream except for the potential short-term disturbance during the construction activities. Proper best management practices (BMPs) should be employed to prevent soil from eroding into the stream channel. The road improvement project might require the removal of mangrove trees (which may be re-established by the time the project commences) and other trees or vegetation in the project area. Their removal should be viewed as an opportunity to replace essentially weedy vegetation with more desirable trees and shrubs.

The vegetative buffer will be provided to prevent erosion. A vegetative buffer between Kapakahi Stream and Waipahu Depot Road will benefit the occasional endangered waterbird visitor from Po‘uhala Marsh to the stream. The proposed WPP will add larger shade trees which would add opportunities for birds to nest.

#### Air Quality and Noise

Construction would generate fugitive dust emissions and relatively high noise levels. Since most construction activities would not be close to noise sensitive land uses, disruptions of normal activities due to construction-related noise are not anticipated. Standard measures to control dust would be employed during construction, such as watering during dry conditions, limiting areas of disturbance, and installation of windbreaks when appropriate. DOH's community noise control standards would be followed, including the contractor obtaining a noise permit if required. The surrounding land uses are private businesses, the soccer park and government facilities.

Ambient air quality and noise conditions in the project site would continue to be affected by traffic conditions, which are currently free-flowing with very low volumes.

#### Roadway and Traffic System

Construction would require temporary and partial closures of Waipahu Depot Road. Police and flagmen would be stationed to direct traffic around lane closures or other safety hazards and work zones.

During normal weekdays, traffic on Waipahu Depot Road would continue to be free-flowing with very low volumes because traffic generation from the area would not change.

#### Bicycle and Pedestrian Facilities

There is no existing pedestrian facility along Waipahu Depot Road. Bicycle and pedestrian facilities provided by the project would support alternative modes of transportation to and from the soccer park and other land uses within the community, and safety for those using the Old Railroad Bicycle/Pedestrian Path.

The roadway improvement will provide marked parking stalls. Bicycle/Pedestrian Promenade will be located along Kapakahi Stream where no driveway is located. Sidewalks will be provided on the eastern side of the roadway.

#### Utilities

The proposed project would relocate some existing wooden utility poles. The existing water and sewer lines may require adjustment to avoid conflict with the proposed roadway improvements.

The proposed roadway improvements will include drainage and street light improvements. Utility relocations would be coordinated with the government agencies and applicable utility companies. Properties whose services will be disrupted will receive prior notification.

The utility requirements at the WPP will be limited to the lighting system at the sports field and utility services at the comfort stations.

#### Land Use

The proposed project is consistent with the surrounding land use patterns and would not provide the kind of improvements that affect land use decisions, such as increase of vehicular capacity or population. The proposed project would not result in land use displacements nor would cause changes to long term land use patterns.

#### Cultural, Social, and Economic Conditions

Existing cultural, social and economic activities would continue, such as the existing Soccer Park, business operations along Waipahu Depot Road, and Ted Makalena Golf Course.

#### Historic Properties

Past studies indicate that the WPP project site is located in an area formerly occupied by the Ulumoku Fishpond. However, the site has since been modified for use as ashfill land that was operated by the City and County from the early 1960s until November 1991.

A portion of the previously recorded historic property was identified within the project area - an Oahu Railway and Land, Co. railroad bridge and right-of-way (SIHP 50-80-12-9714). The land within the project area has been disturbed by residential and business development as well as grading and grubbing.

Much of the land within the project area is landfill over previous wetlands used for taro and rice cultivation. This area has a long history of agriculture and land modification in more modern times, including the building of Waipahu Depot Road and a number of residences and businesses in the immediate vicinity.

Excavation at that shallow depth to accommodate the proposed roadway improvements will most likely stay within the fill and not extend into natural sediments. It is unlikely that burials exist within the project area or that they will be disturbed by the shallow excavations, but the possibility cannot be ruled out. It also is unlikely that the project will affect significant historic properties.

#### Parks and Recreational Resources

The proposed project would add recreational amenities to the community and service as the secondary access to the Soccer Park.

#### Visual and Aesthetic Resources

The aesthetic quality of Waipahu Depot Road and closed ash landfill would be improved with the addition of street trees and canopy trees.

## **S.6 APPROVALS AND PERMITS**

The following permits or approvals may be required following completion of the environmental review process under Chapter 343 HRS.

Federal

- Department of Army permit pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act

State of Hawaii

- Coastal Zone Management federal consistency determination
- NPDES permit for storm water discharges relating to construction activities
- Water Quality Certification pursuant to CWA Section 401
- Stream Channel Alteration Permit

City and County of Honolulu

- Special Management Area Use Permit
- Grading, Grubbing, Stockpiling and Excavation permit

**S.7 COMMENTS AND COORDINATION**

More than 30 federal, state, and City and County agencies, elected officials and other organizations were contacted by letter, and asked if they were aware of any environmental or social issues associated with the proposed project. Their comments would be used to formulate additional appropriate issues and analyses in the preparation of this Draft EA.

**S.8 FINDING OF NO SIGNIFICANT IMPACT**

The potential effects of the proposed project are evaluated based on the significance criteria in section 11-200-12 (Hawaii Administrative Rules, revised in 1996).

In accordance with the provision set forth in Chapter 343, Hawaii Revised Statutes, this Draft Environmental Assessment has preliminarily determined that the project will not have significant adverse impacts on water quality, air quality, existing utilities, noise, archaeological sites, or wildlife habitat. Therefore, it is recommended that an Environmental Impact Statement (EIS) not be required and a Finding of No Significant Impact (FONSI) be issued for this project.

This anticipated FONSI will be announced in the State's *Environmental Notice* along with an announcement of the availability of this Draft EA.

## CHAPTER 1 PROPOSED ACTION

### 1.1 INTRODUCTION

The City and County of Honolulu, Department of Design & Construction (DDC) is proposing the development of a Waterfront Passive Park (WPP) at the closed Waipahu Ash Land Fill (WALF) site. The proposed project also includes access improvements to Waipahu Depot Road from Farrington Highway intersection to the future park site which would also provide a secondary access to the existing Waipio Peninsula Soccer Park (**Figure 1**).

The goals of the proposed project are to conserve the open space for generations to come and protect opportunities for a waterfront passive recreation as well as providing Bicycle/Pedestrian Path to the existing Waipio Soccer Park and the future WPP.

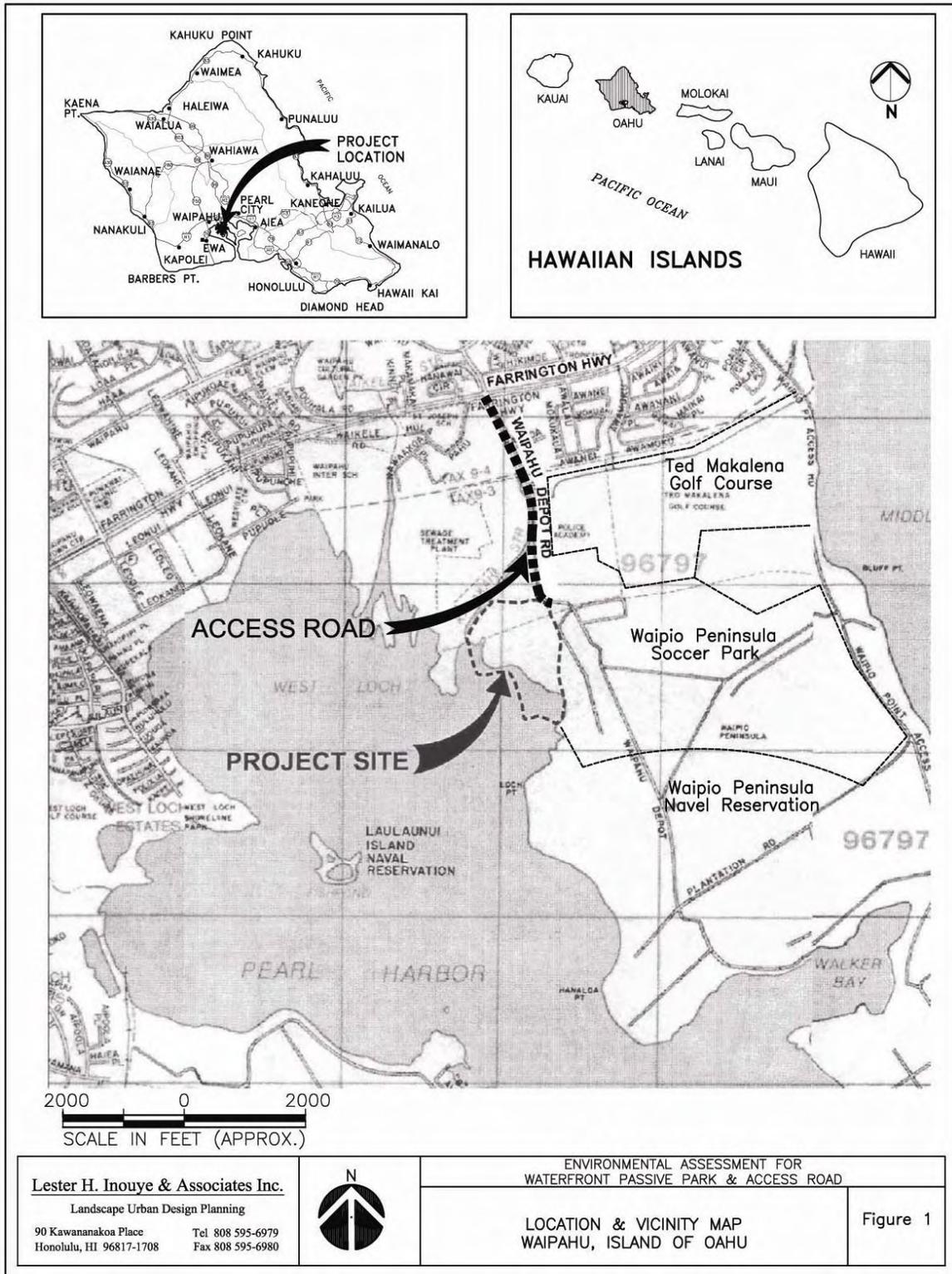
#### 1.1.1 Background and Existing Conditions

The Waipahu Depot Road roadway site encompasses a narrow, two-lane road which begins south of the Farrington Highway/Waipahu Depot Road intersection, extending southward and ending near the former Waipahu incinerator facility (**Figure 1**). There is no existing sidewalk or road curb along this portion of Waipahu Depot Road.

The roadway was bordered to the west by Kapakahi Stream. The banks of Kapakahi Stream are reinforced with boulders and concrete. Many utilities run through this area and are visible in the stream banks and alongside Waipahu Depot Road. The east perimeter of the roadway was characterized by commercial, some residential, industrial, and governmental facilities. The roadway is approximately 12 to 15 feet across with an approximate length of 3,600 linear feet. An abandoned Oahu Sugar Company Old Railroad Track was observed running east to west, bisecting the Site into northern and southern halves. There are no pedestrian or bicycle facilities along this portion of Waipahu Depot Road.

The WPP project site encompasses approximately 49 acre of the WALF site, which consists of United States Navy (U.S. Navy), State of Hawaii, and the City (**Figure 2**).

Past studies indicate that the WALF is located in an area formerly occupied by the Ulumoku Fishpond. The site has since been modified for the use as ashfill land that was operated by the City from the early 1960s until November 1991. Following closure of the WALF, the Waipahu Incinerator was closed in 1994. The United States Navy currently owns approximately two-thirds of the land for the proposed WPP. Roughly the southern half of the land is within the Navy's blast zone.





The City is in the process of completing the final cap for the WALF to close the ash landfill. The City Department of Environmental Services (DES), Refuse Division, prepared an Environmental Assessment (EA) for Waipahu Ash Landfill Closure in August 2004 for the construction of a final landfill cap cover on the existing WALF. The DES has also prepared the Closure/Post-Closure Plan for WALF to address leachate and landfill gas management, and provide recommendations for the final cover system to fulfill State of Hawaii Department of Health (DOH) regulations and guidelines for landfill closures.

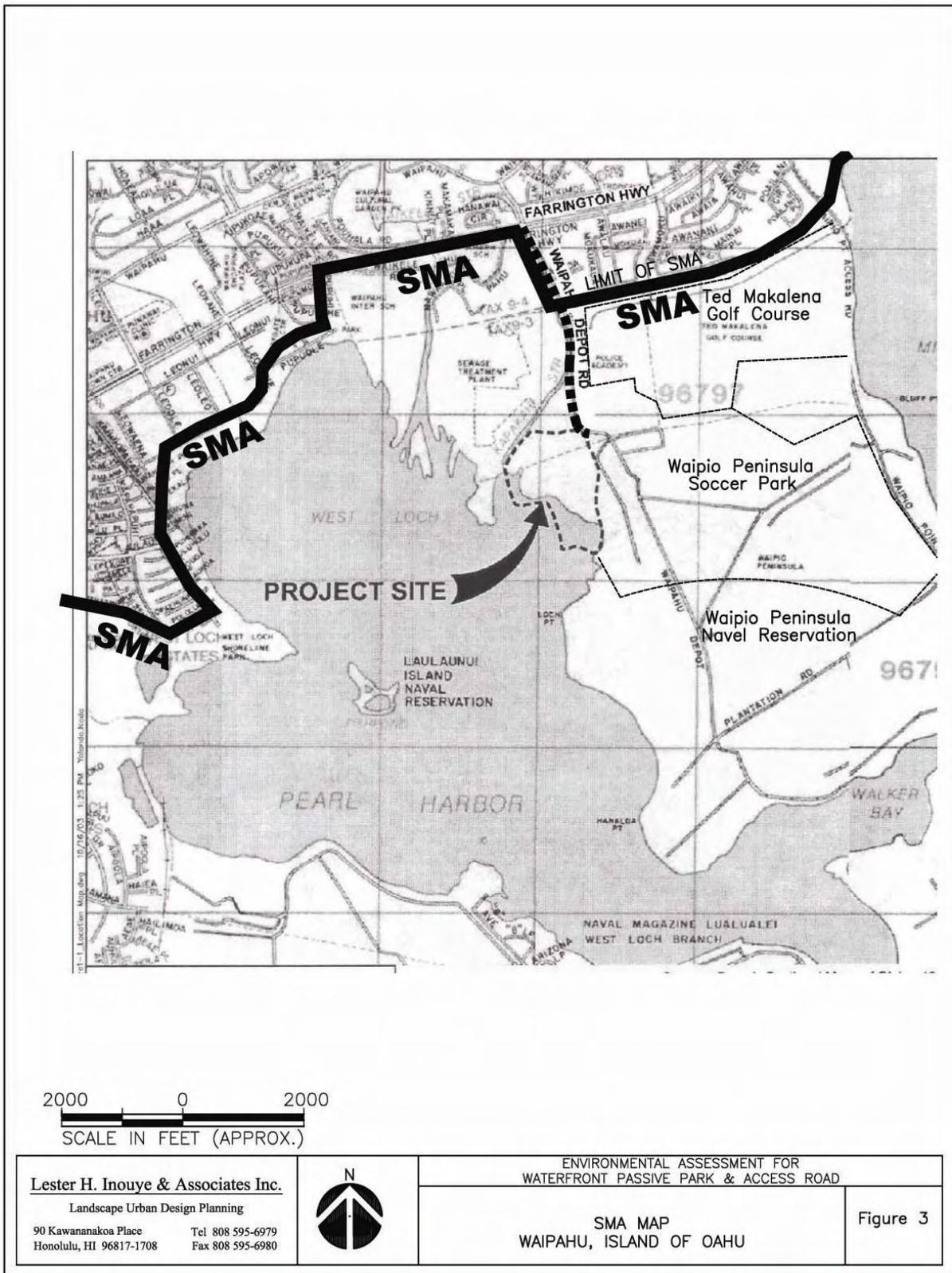
### **1.1.2 Planning Context**

The proposed project will require use of City and County funds to design and construct the proposed roadway improvements and recreational facilities. The WPP site is located within the Special Management Area (SMA) and therefore, subject to compliance with the SMA regulations of Chapter 25, Revised Ordinances of Honolulu (ROH) (**Figure 3**). The preparation of an EA is required with an application for a SMA Use Permit.

Currently the City and County is in process of closing the WALF site by providing the final cap cover over the landfill. The Closure Plan of the WALF was prepared in accordance with requirements of the applicable Resource Conservation and Recovery Act (RCRA) as well as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and National Environmental Policy Act (NEPA) requirements. According to the Final EA for the WALF Closure, once the final cover system over the landfill was completed, the land would be classified as a "closed landfill." Once the landfill is closed and compliance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) is achieved, the City would need to pursue a lease agreement with the Navy to convert the site to a recreational facility.

CERCLA requires protection of human health and the environment, and compliance with applicable or relevant and appropriate requirements. Conversion to a recreational facility will require that additional design features and precautions be established to prevent any damage to the closed ash landfill. Additional design features may include increased soil layer thickness to allow turf and vegetation establishment and accommodate a buried irrigation system. Conversion to a park will also require the NEPA review process and approvals from the Department of Health, Department of Land and Natural Resources, and the Navy. The post-closure plan would need to be modified as necessary to include any changes to the landfill cover.

This document is intended to disclose the environmental and social impacts that could result from the project's implementation and commit to the implementation of specific mitigation measures. It also contains a record of all consultation activities that have been conducted as part of project planning.



## **1.2 PURPOSE AND NEED FOR THE PROJECT**

The proposed project was initiated under the City and County of Honolulu's Department of Design and Construction (DDC). DDC identified the proposed project as a means to preserve the open space for generations to come and protect opportunities for waterfront passive recreation use as well as Bicycle/Pedestrian Path to the Park.

The purposes of Waterfront Passive Park and Waipahu Depot Road improvements are to:

1. Provide opportunities for a second entrance to Waipio Soccer Park;
2. Provide a more direct access to Waipio Soccer Park for the Waipahu community by providing pedestrian and bikeway improvements along Waipahu Depot Road;
3. Provide recreational opportunities for Waipahu and the larger surrounding community; and
4. Take full advantage of the site's waterfront location.

### **1.2.1 Need for secondary access road to the Soccer Park**

"Bike Plan Hawaii, A State of Hawaii Master Plan" (September 2003) (Bike Plan) prepared by the State Department of Transportation (DOT) provides recommendations for improving bike systems statewide. The Bike Plan recommended bikeways from Farrington Highway to Waipio Soccer Field.

The City and County is planning to improve Waipio Point Access Road and provide pedestrian and bicycle access to the Soccer Park along Waipio Point Access Road. The Draft EA for Waipio Point Access Road Improvements was prepared by the City Department of Transportation Services (DTS) in December 2004. The Traffic Evaluation Report included in the EA for Waipio Point Access Improvements (December 2004) indicated Waipahu Depot Road as a desirable alternative access from a system redundancy perspective to improve operations on Waipio Point Access Road.

The proposed roadway improvement will provide opportunities for a secondary entrance to Waipio Soccer Park and provide a more direct access to Waipio Soccer Park for the Waipahu community by including pedestrian and bikeway improvements along Waipahu Depot Road. Improvements along Waipahu Depot Road include street trees and measures to stabilize Kapakahi Stream erosion, which is impacting Waipahu Depot Road in terms of public safety.

### **1.2.2 Need for future park, water's edge**

The WPP project site is on the former WALF, which encompasses approximately 49-acre of the land located at the southern end of Waipahu Depot Road at Waipio Peninsula, Waipahu Oahu. The Waipio Peninsula Soccer Park is situated to the east of the site. The Central Oahu Regional Park is located approximately two (2) miles away from the project site.

The Central Oahu Sustainable Community Plan designates the project vicinity as “Park” and Agriculture & Preservation Areas.” The Central Oahu Sustainable Community Plan also indicates, “A major new shoreline park should be established at Waipio Peninsula, giving access from Waipahu to the Pearl Harbor shoreline on the West Loch and Middle Loch.” The proposed WPP will take full advantage of the sites waterfront location and provide recreation opportunities for Waipahu and the larger surrounding community.

### **1.3 PROJECT DESCRIPTION**

#### **1.3.1 Roadway Improvements**

The proposed Waipahu Depot Road improvements will develop an entry roadway to the future WPP and serve as the secondary access to Waipio Soccer Park. The proposed improvements on Waipahu Depot Road extending south from Farrington Highway intersection to include a pedestrian / bicycling promenade between the road and Kapakahi Stream. It will be wide enough to accommodate pedestrian and bicycling with bench seating and landscaping along the way (**Figures 4 & 5**).

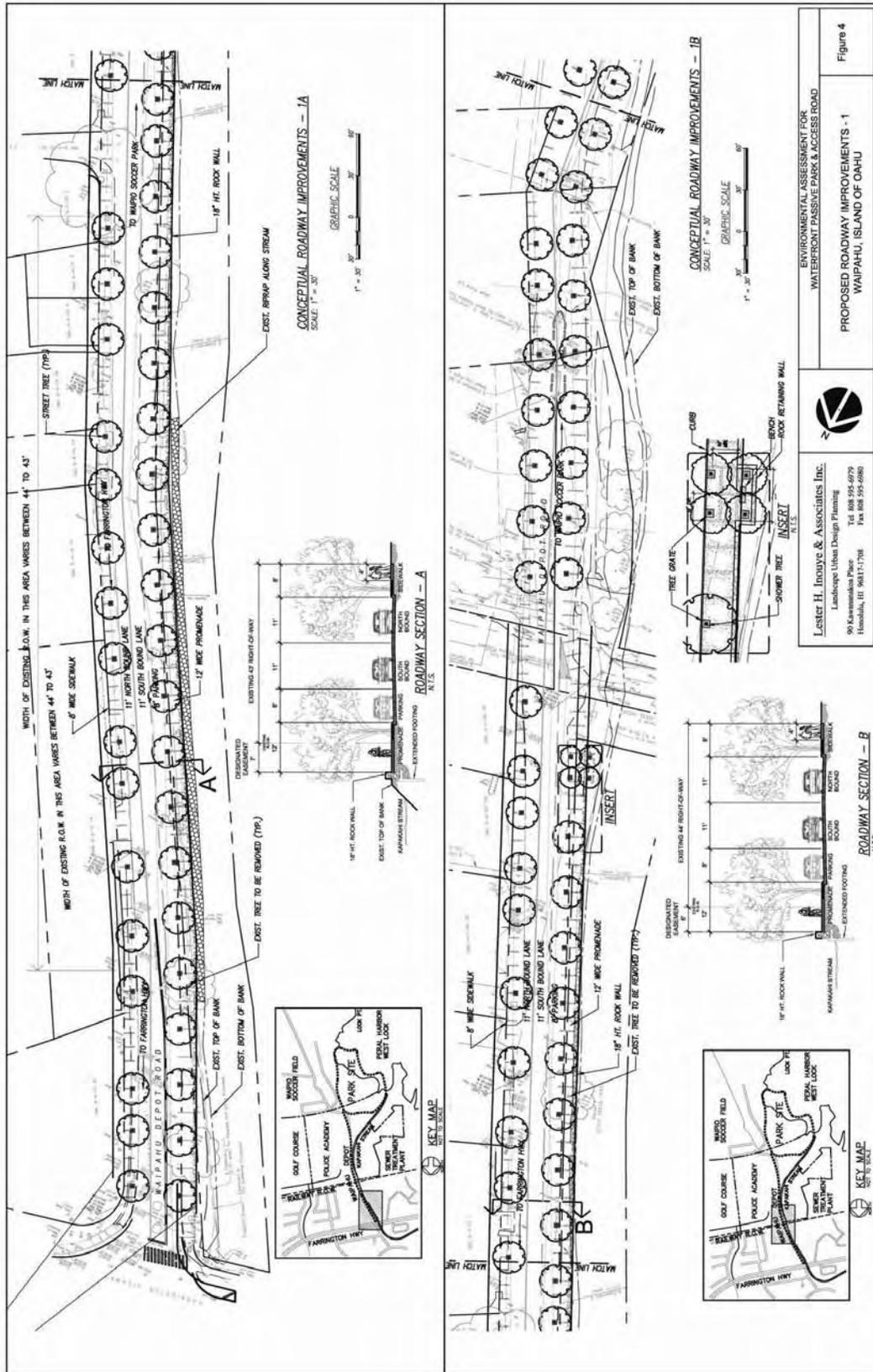
The proposed roadway improvements would increase safety of the roadway by providing drainage improvements, street lights, and marked traffic lanes, curb & gutter, and isolated sidewalk and promenade. The roadway improvements would enhance the aesthetic quality of the area by providing street trees and dedicated Bicycle/Pedestrian Path to and from the community.

#### **1.3.2 Re-Use of Former Ash Pile as a Park**

The United States Navy owns approximately two-thirds of the land for the proposed Waipahu Passive Park. Roughly the southern half of the land is within the Navy’s blast zone (**Figure 2**).

Currently the City and County is in process of closing the WALF by providing the final cover over the landfill per the requirements of the applicable regulations. According to the Final EA for WALF Closure, once the final cover system over the landfill is completed, the land will be classified as a "closed landfill." The EA indicates that the City may plan to pursue a lease agreement with the Navy to convert the site to a recreational facility once the landfill is closed and compliance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) is achieved.

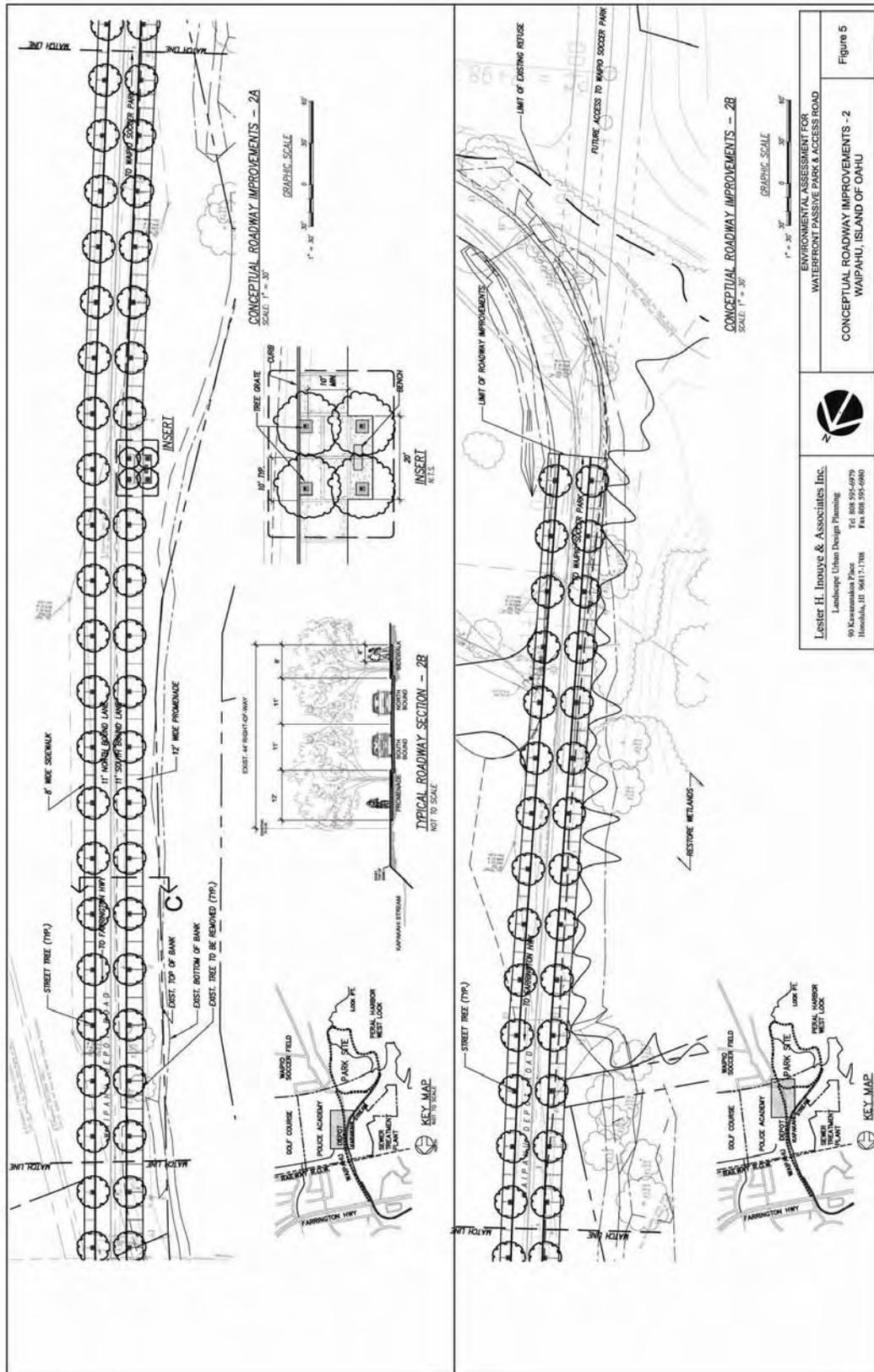
Conversion to a recreational facility will require that additional design features and precautions be established to prevent any damage to the cap. Additional design features may include increased soil layer thickness to allow special turf establishment and accommodate a buried irrigation system. Conversion to a park will also require the City to go through the National Environmental Policy Act (NEPA) review process and gain approvals from the Department of Health, Department of Land and Natural Resources, and the Navy. The post-closure plan would need to be modified as necessary to include any changes to the landfill cap.



ENVIRONMENTAL ASSESSMENT FOR  
 WATERFRONT PASSIVE PARK & ACCESS ROAD  
 PROPOSED ROADWAY IMPROVEMENTS - 1  
 WAIPAHU, ISLAND OF OAHU

**Lester H. Inouye & Associates Inc.**  
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 99 Kamehameha Place  
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Figure 4



Since the entire project site is also located within the SMA as designated by City and County of Honolulu Ordinance, approval of a major SMA use permit is required. Prior to the Department of Planning and Permitting (DPP)'s acceptance of the SMA Use Permit request, the acceptance of a final Environmental Assessment (EA)/Finding of No Significant Impact (FONSI) is required. The project site is partially within the forty (40)-foot shoreline setback area.

In 2000, the City completed Phase 1 of the Waipio Peninsula Soccer Park on approximately 300 acres of land leased from the Navy. The Soccer Park currently consists of 19 soccer fields. The City's long term plans to expand the soccer park include an additional soccer fields, increased parking stalls, free standing concession stands, and restrooms facilities (**Figure 6**).

The future WPP would conserve the open space for future generations and protect opportunities for a waterfront passive recreation to the community.

### **1.3.3 Property Requirements, Estimated Cost and Schedule**

The proposed project would require an easement from the State of Hawaii to accommodate the proposed improvements and vegetative buffer along Kapakahi Stream. Kapakahi Stream is owned by the State. The proposed roadway would require additional right-of-way for about 1,100 linear feet long with varying width up to 10' from Farrington Highway intersection to the Old Railroad Track crossing along Kapakahi Stream.

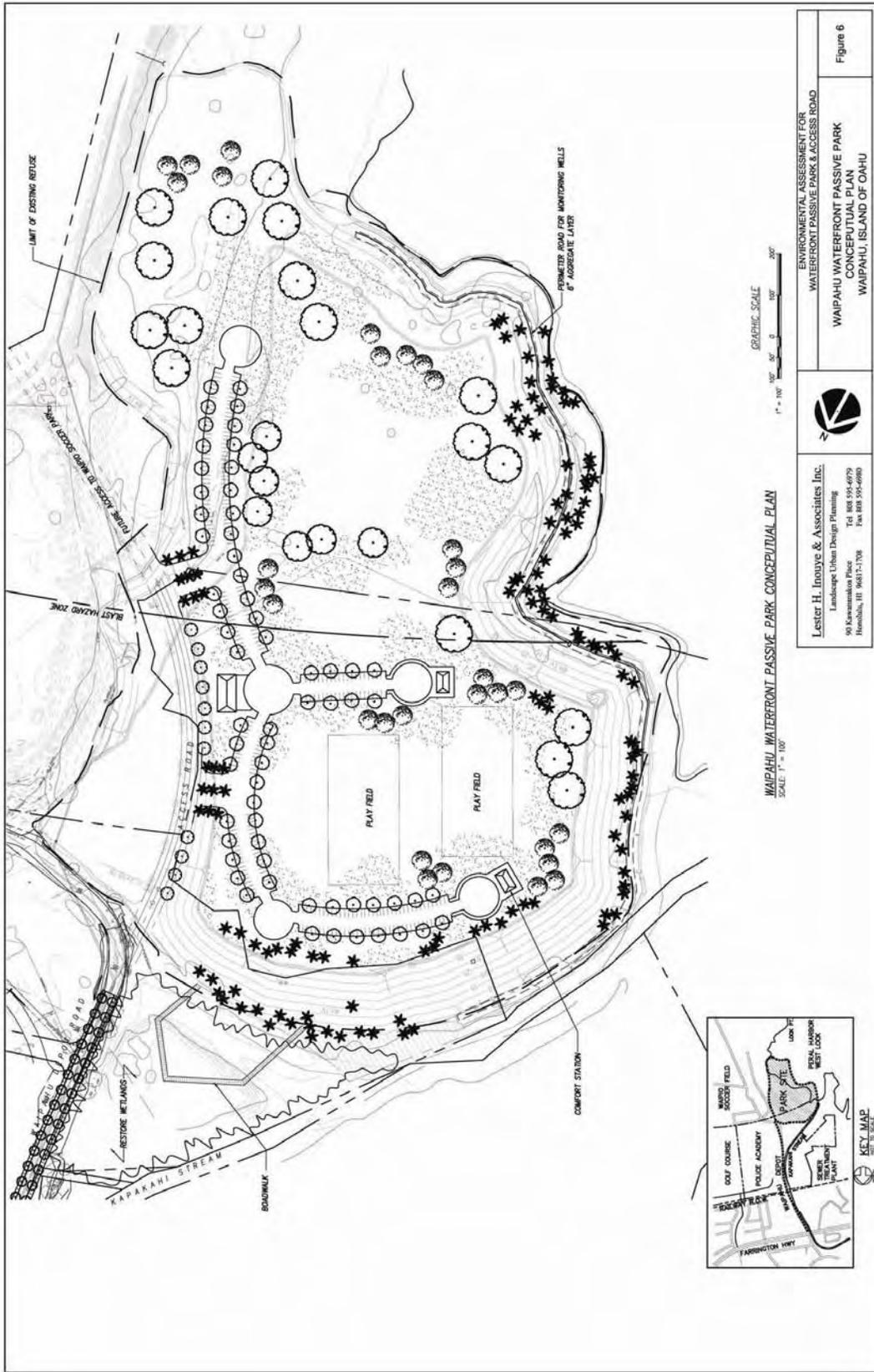
The proposed roadway improvements south of the Old Railroad Track crossing will have no street parking; therefore, additional right-of-way is not required. Also, lands adjacent to Waipahu Depot Road, including Kapakahi Stream, from the Old Railroad Track crossing to the WPP site are owned by the City.

The proposed WPP site encompasses approximately 49 acre of the former WALF site, which consists of United States Navy (U.S. Navy), State of Hawaii, and City and County of Honolulu (City) owned lands. The State owns approximately 8 acres of the land, and the City owns approximately 2.5 acres. The Unites States Navy has the ownership of the remaining area of the WALF site. The proposed use as a passive park and additional sports field would require a lease agreement with the Navy or the Navy would transfer the land to the City and County.

The estimated cost for Waipahu Depot Road Improvements is about \$6 million, and the WPP about \$15 million. The project schedule is dependent upon funding availability for design and construction as well as approvals from the State and the Navy for the use of their property.

## **1.4 ALTERNATIVES**

Two other improvement alternatives to the proposed action were considered, but were deemed not feasible or appropriate. The following provides a description of the alternatives and the basis for the reason why they were deemed not feasible or appropriate.



ENVIRONMENTAL ASSESSMENT FOR  
 WATERFRONT PASSIVE PARK & ACCESS ROAD  
 WAIPAHU WATERFRONT PASSIVE PARK  
 CONCEPTUAL PLAN  
 WAIPAHU, ISLAND OF OAHU

**Lester H. Inouye & Associates Inc.**  
 Landscape Urban Design Planning  
 90 Karamakaha Place  
 Honolulu, HI 96817-1708  
 Tel: 808 594-6979  
 Fax: 808 595-6980

Figure 6

#### **1.4.1 Alternative 1: No Action**

The No-Action alternative would leave the WALF site as a closed landfill. This alternative would fail to take a full advantage of the sites waterfront location and provide recreation opportunities for Waipahu and the larger surrounding community. Also, opportunity to provide the second access to the existing Soccer Park will be lost.

#### **1.4.2 Alternative 2: Roadway Development**

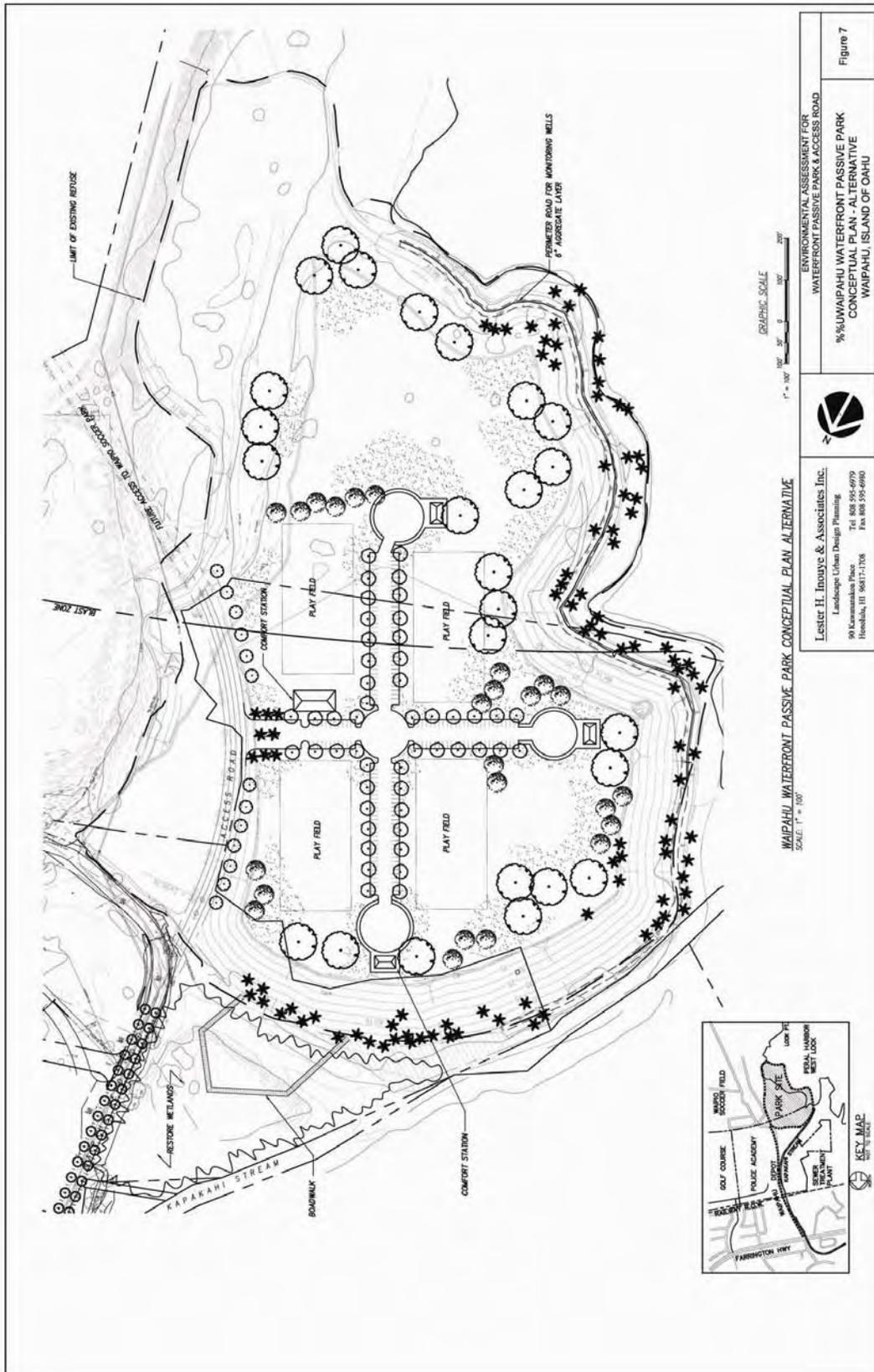
The Roadway Development alternative will provide a second access to the existing Soccer Park. In this alternative the existing closed ash landfill will remain as is, This alternative would fail to take a full advantage of the sites waterfront location and provide recreation opportunities for Waipahu and the larger surrounding community.

#### **1.4.3 Alternative 3: Roadway and Park Development**

In this alternative two (2) different Conceptual Plans have been provided. The preferred Conceptual Plan (Figure 6) would provide three (3) large and small comfort stations, two (2) soccer fields, practice fields, and additional paved parking spaces.

The alternative Conceptual Plan (Figure 7) would be a full development option providing four (4) large and small comfort stations, four (4) soccer fields, and additional paved parking spaces. However, with the full development option, part of new facilities, including a comfort station, are located within the Military's Blast Zone. The blast zone is an area that the U.S. Navy has determined would be affected if there should be an explosion at its loading docks at Pearl Harbor. Any above-ground structures built in the blast zone must meet certain extraordinary requirements imposed by the U.S. Navy. Therefore, the full development option was deemed not feasible at this time since part of the new facilities, including a comfort station, are located within the Military's Blast Zone.

In this alternative, conversion of closed ash landfill to a recreational facility would require precautions be established to protect the integrity of the closed ash landfill. Additional design features may include increased soil layer thickness to allow special turf establishment and accommodate a buried irrigation system. Conversion to a park will also require the City to go through the National Environmental Policy Act (NEPA) review process and gain approvals from the Department of Health, Department of Land and Natural Resources, and the Navy. The post-closure plan would need to be modified as necessary to include any changes to the landfill cap.



ENVIRONMENTAL ASSESSMENT FOR  
 WATERFRONT PASSIVE PARK & ACCESS ROAD  
 %LUWAIPAHA WATERFRONT PASSIVE PARK  
 CONCEPTUAL PLAN - ALTERNATIVE  
 WAIPAHA, ISLAND OF OAHU

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Figure 7

## CHAPTER 2 ENVIRONMENTAL SETTING, IMPACTS AND PROPOSED MITIGATION

### 2.1 PHYSICAL ENVIRONMENT

#### 2.1.1 Geologic Conditions, Topography, and Hazardous Materials

##### 2.1.1.1 Existing Conditions

The project site is located on Waipio Peninsula, which extends into Pearl Harbor on the southern shore of Oahu's large coastal plain. The peninsula was originally a ridge separating river valleys that have since been submerged to become Middle Loch and West Loch. Large portions of the peninsula were originally marshy and/or had been transformed into fishponds by native Hawaiians prior to western contact. These areas were filled for sugar cultivation activities in the late 19<sup>th</sup> century.

According to Stearns (1985), the general roadway site area lies atop marine alluvial sediments overlying Honolulu Volcanic Series rock along the coastal plain at the southwest end of the Koolau Volcano.

The WPP site is located above non-consolidated sediments that overlie older consolidated marine and non-marine sediments. These rocks are a part of the caprock formation. The caprock is composed of unconsolidated noncalcareous sediments, consolidated noncalcareous deposits, consolidated noncalcareous deposits, consolidated calcareous marine sediments, and volcanics of the Honolulu Volcanic Series. The caprock is less permeable than the underlying basalt and serves as a barrier to the seaward movement of fresh water in the Gyben-Herzberg lens. The caprock formation extends below sea level and is very thick, as evidenced by drilling logs and high hydraulic heads in wells completed in the underlying basalt (Chun 1973).

The general topography of the roadway site is flat with a slight gradient towards the south and to the west towards the bordering Kapakahi Stream. According to the Department of Planning and Permitting's website GIS information, the roadway site has flood elevation range between approximately 4 feet to 10 feet above mean sea level (msl). There are no other significant topographic features near the roadway site.

Topographic conditions of the WPP site, based on the WALF Closure Plan, shows relatively flat top plateau and steep side slopes. The elevations of the top area vary from 28 to 40 feet above mean sea level. According to the Ashfill Closure Plan Grading Plan, the top area of the landfill was will be graded to a 1.5 to 2 percent slope. Rip-rap shore protection was to be installed to protect the landfill cap from erosion caused by wave forces from adjacent Pearl Harbor as part of the Closure Plan.

*Phase I Environmental Site Assessment Report* for the roadway site was conducted as part of this Environment Assessment by the Environet, Inc. in June 2007. The purpose of the assessment was to evaluate existing conditions, investigate the environmental history, and identify the presence of recognized environmental conditions (RECs) within and around the site. The

assessment identified the presence of up to three petroleum pipelines beneath the central portions of the roadway site. The pipelines, which originate from Kapolei's Campbell Industrial Park, are believed to run east to west and lie beneath the roadway site in the general area of the abandoned railroad track intersection. The pipelines are located within close proximity of each other and are owned by Hawaiian Electric Company (HECO), Tesoro Gas, and Chevron Corporation. There are currently no records of pipeline release in the vicinity of the project; however, the presence of the three petroleum pipelines beneath the roadway site represents a potential material threat of release of petroleum product that could impact the roadway site.

Given the history of the surrounding land uses and remote location, the roadway site and its vicinity which could be prone to fugitive dumping. Fugitive dumping may be exceptionally problematic in the area due to the site's location next to Kapakahi Stream and Pouhala Marsh, which are undeveloped areas next to the former Waipahu Ash Landfill. Unforeseen incidences of dumping which may have included hazardous material and wastes may have occurred on or near the site in the past.

#### **2.1.1.2 Potential Impacts**

The proposed project does not require substantial excavation other than what is needed to provide drainage systems. In addition, the project would not require substantial earth moving activities other than additional topsoil layers for the former WALF site, or structures beyond bicycle and pedestrian pathways. Therefore, the project would not affect the geologic conditions of the study area, nor would any topographic features be altered.

The proposed roadway will increase visibility of the area and provide street lights, which may discourage fugitive dumping in the area.

Proposed action at the former WALF site will add extra protection to the closed landfill by adding more layers of soil over the final cap. The surface will finely graded to maintain the positive drainage and prevent ponding.

#### **2.1.1.3 Mitigation Measures**

Conversion of the closed landfill to a recreational facility will require that additional design features and precautions be established to prevent any damage to the existing landfill cover "cap". Additional design features may include increased soil layer thickness to allow special turf and vegetative establishment and accommodate a buried irrigation system. Conversion to a park will also require the NEPA review process and approvals from the DOH, DLNR and the Navy.

The final grade of the future WPP prepared to ensure proper drainage of rainwater and irrigation of the surface of the site. This will limit the infiltration into the landfill and prevent water from ponding on the surface. The final grading plan must also take slope stability into consideration to ensure not adversely affecting the long-term integrity of the final cover system of the landfill site.

The geomembrane layer of the landfill cover must also be restored to its original function if disturbed. Where fill is to be placed under the cap, the cap must be cut and folded back, fill placed, and the cap folded back and patched according to the manufacturer's recommendations. If the fill is to be placed over the cap, a section of cap material should be placed over the new fill, and the patch must be welded to the original cap.

Inspection and monitoring of the site as required by the Post-Closure Plan of the WALF will continue to be effective and be modified as necessary to include any changes to the landfill cap.

## **2.1.2 Soils**

### **2.1.2.1 Existing Conditions**

The project site and the vicinity were previously mapped by the U.S. Department of Agriculture Soil Conservation Service as a part of an overall soil survey of the Hawaiian Islands. According to the Soil Survey, the majority of the roadway site is covered with Tropaquepts (TR) and Fill land, mixed (FL).

The Tropaquepts Series, which was indicated on the northern portions of the site, consist of poorly drained soils that are periodically flooded by irrigation in order to grow crops that thrive in water. They occur as nearly level flood plains on the islands of Oahu and Maui. Elevations range from sea level to 200 feet above mean sea level (msl). These soils have been flooded for varying lengths of time, and soil development differs in degree from place to place. Generally, the surface layer, about 10 inches thick, consists of dark-gray, soft, mucky silt loam. This layer overlies firm to compact silty clay loam, 5 to 10 inches thick, that is mottled with gray, yellow, and brown. The mottled layer overlies friable alluvium.

Fill land, mixed (FL) occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from ocean or hauled from nearby areas, garbage, and general material from other sources. Included in mapping were a few areas that have been excavated.

A geotechnical engineering exploration was performed as part of the EA preparation for the WALF Closure Plan (January 2004). The results of the exploration are as follows:

- The field exploration generally encountered loose to medium dense, brown fill to depths of approximately 5-12 feet below the existing grade, underlain by very loose to medium dense, brown to black incinerator ash material to approximately 10-27 feet below the existing grade. The fill and incinerator ash materials were found to consist of generally silty sand material; however, some areas were found to consist of a greater percentage of reddish-brown silty clay or brown to black clayey silt material.
- Below the incinerator ash material, municipal solid waste (MSW) material was encountered to depths of approximately 19 to greater than 42 feet below the existing grade. The MSW was generally found to consist of rubbish mixed with fill or incinerator ash material.

- Below the MSW, loose to medium dense, black incinerator ash material was encountered to depths of approximately 36 to greater than 42 feet below the existing grade. The incinerator ash material was found to consist of generally silty sand material; however, some areas were found to consist of greater percentage of black clayey silt material.
- Below the lower layer of incinerator ash, soft to medium stiff, dark gray, clayey silt (recent alluvium) with organics was encountered to the final depths of the borings. Based on nearby explorations, the alluvial materials grade to stiff sandy silt material at an elevation of approximately -80 to -135 feet msl.
- Groundwater was encountered at approximately 0 to +6 feet msl in the borings at the time of the field exploration. On average, groundwater was encountered at an elevation of approximately +2.7 feet msl.

After the completion of the closure of the landfill, the WALF Closure Plan indicates the top of the WALF to have relatively flat top plateau with grassing.

#### **2.1.2.2 Potential Impacts**

The Proposed Action would result in a positive impact to site soils. The proposed roadway will provide vegetative cover and slope stabilization along the stream banks that are affected by the project to prevent soil erosion. The re-grading to accommodate fields and passive recreation areas and introduction of additional layers of topsoil will provide a medium to establish and maintain a vegetative layer, thereby minimizing erosion. The topsoil layer will be seeded with grass and planted with various vegetative covers. This will promote evapotranspiration of storm water and will stabilize the cover, decreasing the potential for erosion.

#### **2.1.2.3 Mitigation Measures**

Because no adverse impacts are anticipated on the area's soil conditions, no mitigation measures are required.

### **2.1.3 Hydrology/Hydrogeology**

#### **2.1.3.1 Existing Conditions**

Pearl Harbor is a large natural body of water, which is divided into four areas, or lochs, by landmasses. The Waipio Peninsula is the division between West Loch and Middle Loch. Pearl City Peninsula and Ford Island form the division between Middle and East Lochs, while the area south of Ford Island is known as Southeast Loch. Kapakahi Stream runs along western side of Waipahu Depot Road.

The waters of Pearl Harbor were once pristine and were an important fishing and shellfish gathering area. Pollution from urban runoff and from commercial and military activities within

the harbor has lowered water quality in the harbor significantly. Pearl Harbor has been designated Class A under water quality standards formally designated in Chapter 37-A of the Public Health Regulations of the DOH.

According to Mink and Lau (Mink and Lau, Oahu: 1990), two aquifers underlay the roadway site area. The upper aquifer, code 30203116 (12211), is classified as an unconfined (the aquifer is not confined under pressure beneath relatively impermeable rocks or soil), basal (fresh water in contact with seawater), and is a dike/perched-type (indistinguishable) aquifer. This aquifer is ecologically important. The salinity of this irreplaceable aquifer is considered low (250 mg/L to 1000 mg/L CL), and the aquifer is listed as having a high vulnerability to contamination. The lower aquifer, code 30203121 (12212), is unconfined (the aquifer is not confined under pressure beneath relatively impermeable rocks or soil), basal (fresh water in contact with seawater), and is a flank-type (horizontally extensive lavas) aquifer. This aquifer is ecologically important. The salinity of this irreplaceable aquifer is considered low (250 mg/L to 1000 mg/L CL), and the aquifer is listed as having a moderate vulnerability to contamination (Mink and Lau, Oahu: 1990).

Based on the elevation of the roadway site, between approximately 5 and 10 feet above mean sea level, the depth to groundwater at the site is estimated to be approximately two to six feet below ground surface. Generally, groundwater travels downgradient towards the ocean. Therefore, the groundwater gradient in the vicinity of the roadway site is probably to the west and southwest towards Kapakahi Stream and West Loch.

The proposed WPP site is former ash landfill. The Closure Plan for the WALF indicates an infiltration (barrier) layer constructed over the foundation layer. The purpose of the barrier layer is to impede infiltration of moisture into the landfill, thus minimizing leachate production abuts the West Loch of Pearl Harbor. Drainage at the WALF is generally toward Kapakahi Stream and West Lock along the northwest, west, southwest boundaries of the site. The topography of the site and the surrounding area prevents offsite water from traveling onto the site.

The direction of groundwater flow at the site was determined in two studies (GMP Associates 1996; Chun 1973). The results of the two studies are generally in agreement. The Chun (1973) study went into more detail and presented a groundwater contour map for the site. The direction of groundwater flow is southwest.

According to the Flood Insurance Rate Map (FIRM), the roadway site between Farrington Highway and the Old Railroad Track is in Zone AEF "Floodway". The roadway site from the Old Railroad Track to the area near the entry to the proposed WPP is in Zone AE and XS. Zone AE indicates "special flood hazard areas inundated by 100-year flood, base flood elevation is determined." Zone XS represents the 500-year flood plain. The majority of the WPP site is in zone X, which is defined as an "area determined to be outside the 500-year flood plain."

### **2.1.3.2 Potential Impacts**

The proposed roadway improvements will include drainage systems, and the roadway surface will be regraded to alleviate impacts of flooding in the surrounding areas.

The proposed WPP would result in a positive impact to hydrology at the site as it provides drainage improvements necessary to accommodate the field and additional vegetative cover to help prevent erosion. Also, the groundwater monitoring program required throughout the 30-year post-closure period for WALF will be continued.

### **2.1.3.3 Mitigation Measures**

A detailed drainage system will be developed during the design phase. No mitigation measures are required other than the proposed drainage improvements.

## **2.1.4 Climate, Air Quality and Noise**

### **2.1.4.1 Existing Conditions**

The weather station at the Honolulu International Airport is located near the WALF. Both the weather station and the WALF are located a few feet above msl. Therefore, data from the Honolulu International Airport Station have been selected to represent the precipitation at Waipahu. The 30-year average annual precipitation for this station is approximately 18 inches per year. The average temperature is about 78 degrees Fahrenheit (°F) (State of Hawaii Data Book 2005). Winds are dominated by northeasterly trades.

Because the site is no longer in active use as a landfill and because it is somewhat removed from urban activities and roadways normally associated with air emissions, there are generally no long-term air quality concerns.

The WALF Closure Plan includes a passive collection system to allow landfill gas to pass through the cover and safely vent to the atmosphere. Also, monitoring probes are installed around the perimeter of the landfill to monitor for any gas migrating off site. The proposed WPP will protect and maintain the passive collection system.

The WALF site is presently unused and somewhat removed from urban activity area. The main sources of noise in the project area are vehicles traversing Waipahu Depot Road. However, the posted speed limit on Waipahu Depot Road is 25 mph, and there is no through traffic bypassing the project site as the existing roadway ends at the closed Waipahu Incinerator. Therefore, noise quality is not an issue, and the proposed passive park and additional sports field is not expected to create any adverse impact with respect to noise quality.

### **2.1.4.2 Potential Impacts**

The proposed project would not have significant impacts on air quality and noise conditions because the main source of air pollutants and noise from traffic would maintain similar levels of activities.

Short-term negative air quality impacts generated by the Proposed Action are primarily attributed to construction activity. Pollutant concentrations from construction vehicle activity are expected

to increase at the project site and along affected existing streets. Other short-term air quality impacts are anticipated from site preparation and earth moving activities that generate fugitive dust or particulate emissions during the construction period.

### 2.1.4.3 Mitigation Measures

Fugitive dust impacts due to construction activities can be effectively mitigated implementing adequate dust-control measures during the construction period. A recommended method is the frequent watering of unpaved roads and areas of exposed soil. It is also recommended that the landscaping of completed areas be accomplished as soon as possible.

The contractor will be required to obtain a noise permit if noise levels are expected to exceed allowable levels as specified by state and federal regulations. The contractor is responsible for properly maintaining construction equipment to minimize noise levels. All internal combustion engines will be required to have mufflers or other noise suppression devices in proper working order. Heavy vehicles required for construction must comply with DOH regulations for vehicular noise control.

### 2.1.5 Biological Resources

#### 2.1.5.1 Existing Conditions

On January 2, 2007, AECOS biologists conducted a reconnaissance survey of Kapakahi Stream near the Waipahu Depot Road. The purpose of the stream and vicinity survey was to ascertain terrestrial and aquatic resources extant from Farrington Highway to the entrance of the WALF site, to generate a Terrestrial and Aquatic Resources Inventory and Impacts Assessment along lower Kapakahi Stream for this EA. The complete report is appended to this report (**Appendix A**). The findings are summarized as follows:

No threatened or endangered animal species were observed in the stream and no threatened or endangered plant species were observed in the surrounding area. With the exception of one native 'o'opu species (*Eleotris sandwicensis*) that was found to be uncommon in 1998 and not observed in 2007, Kapakahi Stream contains almost no native aquatic stream biota. Several endangered waterbirds may visit Kapakahi Stream on occasion although only because of its proximity to Po'uhala Marsh, not because it provides preferred or quality habitat.

Po'uhala Marsh, located between the estuaries of Waikele and Kapakahi streams, is a saline wetland that provides important habitat for the endangered Hawaiian stilt or *ae'o* (*Himantopus mexicanus knudseni*). It is the largest remaining Pearl Harbor wetland (Ducks Unlimited, 1998). Historically, the marsh may have been flushed with fresh water during high flows from Waikele Stream into Kapakahi Stream (ORCDC, 2006), but a levee now isolates Kapakahi Stream from the marsh (Ducks Unlimited, 1998). The Pouhala Marsh Restoration and Community Development Project aims to restore native wetland ecosystems and provide habitat for endangered waterbirds in the marsh and along Kapakahi Stream (ORCDC, 2006).

In 2006, the mangrove, as well as trees and brush on the banks and levee, were cleared from Kapakahi Stream (ORCDC, 2006). In early 2007, mangroves (except for widely scattered seedlings) were no longer present in the main channel and a side channel leading eastward and its banks had been covered with chipped mulch. The banks of the channel adjacent to Waipahu Depot Road are low but steep and have very little vegetation. Plants observed at Kapakahi Stream in the area of the proposed road improvements project are listed in the report.

Most of the vegetation along the Kapakahi Stream stream banks had been recently cleared or showed evidence that herbicides were being employed to discourage regrowth.

The proposed WPP site is currently undergoing the process of landfill closure, which involves regrading and resurfacing of the WALF. The WALF Closure plan provides temporary grassing to prevent erosion. The proposed WPP will introduce additional layers of topsoil to accommodate more desirable vegetative covers and recreational fields.

### **2.1.5.2 Potential Impacts**

Since much of the existing vegetation on the stream banks along Waipahu Depot Road had already been cleared, the project would not cause adverse impacts on the flora or fauna of Kapakahi Stream except for the potential short term disturbance during the construction activities. Proper best management practices (BMPs) should be employed to prevent soil from eroding into the stream channel. The road improvement project might require the removal of mangrove trees (which may have re-established by the time the project commences) and other trees or vegetation in the project area. Their removal should be viewed as an opportunity to replace essentially weedy vegetation with more desirable trees and shrubs.

The project is not anticipated to cause adverse effects to avian species previously observed in the vicinity of the project site.

### **2.1.5.3 Mitigation Measures**

The proposed roadway improvements would add street trees on both side of the roadway. The vegetative buffer will be provided to prevent erosion. A vegetative buffer between Kapakahi Stream and Waipahu Depot Road will benefit the occasional endangered waterbird visitor from Po‘uhala Marsh to the stream. The proposed WPP will add larger shade trees which would add opportunities for the birds to nest.

## **2.2 PUBLIC SERVICES AND INFRASTRUCTURE SYSTEMS**

### **2.2.1 Roadway and Traffic System**

#### **2.2.1.1 Existing Conditions**

Waipahu Depot Road is an asphalt-paved road with a posted speed limit. No speed limit sign was observed at the project site during our site visit on January 2008; however, the posted speed limit of Waipahu Depot Road outside of the project limit, beyond Farrington Highway

intersection is 25 mph. The roadway was historically used to access sugar plantations formerly occupying southern portions of the peninsula. However, the southern portions of the road were dilapidated with surficial cracking and occasional potholes. The existing asphalt paved roadway ends at the closed Waipahu Incinerator.

At its northern boundary, the roadway intersects with Farrington Highway. The southern boundary of the roadway is near the entrance to the proposed WPP and existing Waipio Peninsula Soccer Park. Farrington Highway, a four-lane divided facility, is a major arterial roadway that runs throughout Waipahu town, and extends further to the Waianae Coast. Farrington Highway connects with H-1 Freeway and Kamehameha Highway at Waiawa Interchange, which is located about a mile and a half east of the Waipahu Depot Road and Farrington Highway. Waipio Point Access Road, which provides a direct access to Waipio Peninsula Soccer Park, also intersects with Farrington Highway about a little less than a mile east of the Waipahu Depot Road intersection. The City Department of Transportation Services (DTS) is currently planning the drainage and parking improvements and new bicycle lanes on Waipio Point Access Road between the Old Railroad Track and the entrance to the Waipio Peninsula Soccer Park

Now that the WALF and the Waipahu Incinerator were closed, traffic is limited and mostly generated by the adjoining businesses and public facilities as well as nearby military and residential. The City Department of Environmental Services (ENV) Waipahu Refuse & Recycling Convenience Center is located at Waipahu Depot Road just before the Honolulu Police Academy by the Old Rail Road Track crossing point. During the site on February 1, 2008, it was observed that the Makai bound lane was block by the traffic going into the Waipahu Refuse & Recycling Convenience Center right before the Honolulu Police Academy.

### **2.2.1.2 Potential Impacts**

The proposed roadway improvements would provide access to future WPP and secondary access to Waipio Peninsula Soccer Park. Road improvements will include paved 2-lane roadway, 12-foot wide promenade between Farrington Highway and the Old Rail Road track along Kapakahi Stream side, 8-foot wide sidewalk on eastern side of the roadway within the project limits, and drainage, stream bank, and lighting improvements.

The proposed future WPP is anticipated to generate small traffic increases during the weekdays. The existing Soccer Park has the main entry on Waipio Point Access Road. Waipahu Depot Road as a secondary access to the existing Soccer Park is anticipated to reduce traffic burden to Waipio Point Access Road but not anticipated to increase traffic to the existing Soccer Park. According to the Environment Assessment for Waipio Point Access Road Improvements (December 2004), the soccer park generates relatively small traffic volumes during the weekdays, except during tournaments, which occur about 15 to 20 times a year (generally less than half of the tournaments occur during weekdays).

The proposed roadway improvements would not increase the vehicular capacity of the Waipahu Depot Road as it retains its current two-lane condition. Although traffic may increase slightly as

it may provide the secondary access to the existing Soccer Park, the increased visibility along the roadway will benefit the surrounding community for increased security.

The land uses along Waipahu Depot Road are not anticipated to change substantially. The proposed use of the WALF site for the passive recreation and additional sports fields is not anticipated to have significant impacts on the areas roadway system. Although the roadway may serve as the secondary access to the existing Waipio Soccer Park, any measurable traffic increase is only anticipated during soccer tournaments which would continue to be relatively infrequent, such as once or twice a month.

Street parking spaces will be accommodated along Kapakahi Stream side of the roadway between Farrington Highway and the Old Railroad Track. In the short term, circulation and traffic near the site may be negatively impacted by increased use of existing roads by construction vehicles. Therefore, current traffic conditions on Waipahu Depot Road are expected to continue on normal weekdays in the future, regardless of whether the proposed WPP is implemented or not.

### **2.2.1.3 Mitigation Measures**

Because traffic conditions on Waipahu Depot Road are not anticipated to change substantially, the project is not anticipated to result in an increase in vehicular capacity of the road. Therefore, no mitigation measures are required. Scheduling of construction activity and use of vehicles entering or leaving the site should be carefully planned by the contractor to minimize negative impacts to traffic and circulation in the surrounding neighborhoods.

## **2.2.2 Bicycle and Pedestrian Facilities**

### **2.2.2.1 Existing Conditions**

There are currently no defined bicycle or pedestrian facilities along Waipahu Depot Road. The Old Railroad Track Bicycle/Pedestrian Path currently crosses the roadway about 1,300 feet south of the Farrington Highway intersection.

### **2.2.2.2 Potential Impacts**

The proposed project will provide 12' wide landscaped promenade for bicycle and pedestrian along Kapakahi Stream side from the Farrington Highway Intersection to the Old Railroad Track crossing and 8' wide sidewalk along eastern side of the roadway throughout the project limit. The proposed improvements will also provide bicycle and pedestrian access to Waipio Peninsula Soccer Park.

The Old Railroad Track crossing as well as entry to ENV's Waipahu Refuse & Recycling Convenience Center would be demarcated and additional signage provided to warn motorists as well as cyclists and pedestrians. These bicycle and pedestrian improvements would support alternative modes of transportation to and from Waipio Soccer Park and other land uses adjacent to Waipahu Depot Road. By making the Old Railroad Track crossing and Refuse & Recycling

Convenience Center more visible, the safety of cyclists and pedestrians using the path to cross the roadway would be improved.

### **2.2.2.3 Mitigation Measures**

The proposed project would improve bicycle access and pedestrian safety on Waipahu Depot Road. Therefore, no mitigation measures are required.

## **2.2.3 Utility Systems: Water, Wastewater, Solid Waste, Drainage, Electrical and Communication**

### **2.2.3.1 Existing Conditions**

The Phase I Environment Site Assessment (June 2007) for the project identified a sign indicating the presence of a Chevron petroleum pipeline posted near the center of the roadway site at the intersection of the former railroad track (**Appendix B**). The pipelines are located within close proximity of each other and are owned by HECO, Tesoro Gas, and Chevron Corporation.

Stormwater surface drains, sewer manholes, fire hydrants, and utility main covers were also located on or near portions of the roadway site.

Sewer and water main runs below the general area of the roadway site. Manholes, fire hydrants, utility main covers, and stormwater surface drains were located along various portions of the road. Areas of fugitive waste disposal (e.g., cans, wrappers, etc.) along the Kapakahi Stream banks were also observed during the site visit. Several pole-mounted transformers were located along the western perimeter of the roadway site between the Farrington Highway/Waipahu Depot Road intersection, and the Old Railroad Track. Power-lines and telephone poles were also located on either side of the Site.

The northern tip of the roadway site, from the Farrington Highway intersection to approximately 900 feet south, is located makai of the Underground Injection Control (UIC) line. The remaining portion of the site is located mauka of the UIC line. The UIC line was established by the State of Hawaii Department of Health (DOH) to protect groundwater resources. Groundwater mauka of the UIC line is considered a potential drinking water source. Groundwater makai of the UIC line is considered as non-potable and saline. Injection wells are prohibited above (mauka of) the UIC line. According to the DOH UIC Program Map (DOH, 1983) there are three drinking water wells, 33 irrigation wells, and one injection well located within approximately one mile of the site.

Based on the relative distance, location, and status of those wells, it is unlikely that these wells would be threatened by the current site use or has an effect on the area's groundwater conditions.

According to the WALF Closure Plan (2004), surface drainage systems at the WALF will consist of surface swales, down drains, and down drain aprons. Subsurface drains along the top and toe of the landfill side slopes will route water to various outlet points. The Plan (2004) also requires

periodic maintenance to clean out excessive vegetation, silt build up, and debris from drainage features.

### **2.2.3.2 Potential Impacts**

There are no plans for new utilities within the right-of-way except for the street lighting system. The proposed project would require relocation of existing electrical and telephone poles within the project limit. Relocation and/or adjustment of the existing water and sewer mains may also be required depending on excavation plans developed during the project's design phase. The proposed project will also include drainage improvements to prevent flooding of the roadway and facilities.

Utility requirements at the WPP are limited to comfort station facilities and some field lights.

### **2.2.3.3 Mitigation Measures**

In design Phase, utility relocations would be coordinated with the applicable utility companies and government agencies. Substantial planning, including coordination with utility providers, would be conducted to minimize interruptions in utility service to customers. Disruption to utility service, if necessary, would be restricted to short-term localized events. Careful scheduling would be implemented to mitigate some of the utility relocation.

Regardless of the proposed project, according to the Closure/Post-Closure Plan for Waipahu Ash Landfill, the City will be in a 30-year maintenance program for the site once the Navy approves the City and County's request to close the ash landfill site. During the 30-year monitoring period the City and County is to monitor the final cover system, surface drainage system, landfill gas control facilities, landfill gas monitoring probes, and groundwater monitoring wells. The required monitoring will continue even with the construction of the proposed project.

## **2.3 SOCIAL ENVIRONMENT**

### **2.3.1 Land Use**

#### **2.3.1.1 Existing Conditions**

The project site is located in Waipahu, one of the Central Oahu's oldest communities. Waipahu is originally built around the Waipahu Sugar Mill and plantation villages. The town has since transformed into a suburban community with residential, commercial, and industrial uses.

The land uses adjacent to the project site include Waipio Peninsula Soccer Park, former Waipahu Incinerator, ENV's Waipahu Refuse & Recycling Convenience Center, Waipahu Police Training Academy, and some residential and business/industrial uses.

The closed Waipahu Incinerator is located to the south end of the roadway and northeast of the WPP site. Kapakahi Stream and the West Loch of Pearl Harbor define the northwestern, western and southern borders of the site. The WPP site has since been modified for the use as Ashfill

land that was operated by the City and County from the early 1960s until November 1991. Following closure of the Waipahu Ash Land Fill, the Waipahu Incinerator was closed in 1994.

The City and County's Waipio Peninsula Soccer Park, east of the project site, currently consists of 19 soccer fields, and the City and County's long term plans to expand the Soccer Park include the portion of the former WALF. Waipio Point Access Road is currently the only access to the Soccer Park.

### **2.3.1.2 Potential Impacts**

The proposed roadway improvements and passive park with additional sports field would be consistent to the areas' land use patterns. Properties along eastern border of Waipahu Depot Road between Farrington Highway intersection and Old Railroad Track crossing are owned by several different private owners and zoned as Community Business and Industrial Districts. The lands adjacent to the project site to the south of the Old Rail Road Track are government properties. There are some undeveloped areas by Kapakahi Stream and Pouhala Marsh next to the former WALF.

The proposed project is consistent with the surrounding land use patterns and would not provide the kind of improvements that affect land use decisions, such as increase of vehicular capacity or population.

### **2.3.1.3 Mitigation Measures**

Because the proposed project would not result in land use displacements nor would cause changes to long term land use patterns, no mitigation measures are required.

## **2.3.2 Historical and Archaeological Resources**

### **2.3.2.1 Existing Conditions**

With the exception of the former Ulumoku Fishpond, no natural or man-made historical or archaeological resources are known to exist on the proposed passive park project site.

The City and County of Honolulu, Department of Environmental Services (ENV), Refuse Division, prepared an Environmental Assessment (EA) for Waipahu Ash Landfill Closure in August 2004 for the construction of landfill cap cover for the existing WALF. The EA for WALF closure concluded that there were no natural or man-made historical or archaeological resources known to exist on the site. A letter from the Department of Land and Natural Resources, State Historic Preservation Division, included in the EA stated "no historic properties present, because previous grubbing/grading has altered the land." The ENV Closure/Post-Closure Plan for Waipahu Ash Landfill was prepared by Earth Tech to address leachate and landfill gas management, and provide recommendations for the final cover system to fulfill State of Hawaii Department of Health (DOH) regulations and guidelines for landfill.

Archaeological and Cultural Study on Waipahu Depot Road and the surrounding area was conducted by Cultural Surveys Hawai'i, Inc (CSH) (**Appendix C**). The study included an archaeological literature review, field inspection, and cultural impact evaluation of 9.2 acres along a portion of the roadway. The study revealed a portion of the previously recorded historic property within the project area - an Oahu Railway and Land, Co. railroad bridge and right-of-way (SIHP 50-80-12-9714). The land within the project area has been disturbed by residential and business development as well as grading and grubbing. A grouping of bricks that form an old pavement may possibly be considered a historic property, however there is not enough information to determine their status at this time. No other historic properties were identified.

Consultation with the SHPD will be conducted during the preparation of the EA to assist in identifying historic properties within the project area.

### **2.3.2.2 Potential Impacts**

Since there are no known historic properties in the project area, the proposed action is not anticipated to cause any adverse effect on the area's archaeological resources.

### **2.3.2.3 Mitigation Measures**

Although impacts to archaeological resources are not expected, if any unidentified cultural remains are uncovered during the course of the project, work in the immediate area will cease and the SHPD will be contacted for further instructions.

## **2.3.3 Cultural and Socio-Economic Characteristics**

### **2.3.3.1 Existing Conditions**

Most social activities in the vicinity of the project area are associated with the two recreational facilities, Ted Makalena Golf Course and Waipio Peninsula Soccer Park. Police, ambulance, and fire protection services are provided from stations in Waipahu and in Pearl City.

Economic activities in the project area include private businesses along Waipahu Depot Road between Farrington Highway intersection and the Old Railroad crossing. The WALF once provided a major solid waste disposal facility for the City and County, but is no longer in operation. Its present unused condition is a waste of valuable land both in social and economic terms.

### **2.3.3.2 Potential Impacts**

Existing cultural, social, and economic activities would not be adversely affected by the proposed action. The proposed project would not alter the existing Old Railroad Track Bicycle/Pedestrian Path. Emergency police, ambulance, and fire response to the area would not be affected because Waipahu Depot Road would remain as a two-lane facility.

The proposed use as passive recreational park and additional sports field to the existing Waipio Soccer Park would have a positive impact on the community by providing jobs for design and construction of the recreational facilities and access improvements and the continual maintenance of the site. Re-use of approximately 49 acres of the closed landfill as a passive recreation and additional sports field would be more productive and desirable to the community.

### **2.3.3.3 Mitigation Measures**

Based on available information, it is unlikely the proposed project will affect ongoing social or economic activities. Because the project would not affect existing cultural, social, and economic activities, no mitigation measures are required.

## **2.3.4 Parks and Recreational Resources**

### **2.3.4.1 Existing Conditions**

Two major recreational resources in the project vicinity are Ted Makalena Golf Course and Waipio Peninsula Soccer Park. The golf course is a 150-acre 18 hole public municipal course owned by the City & County of Honolulu. In 2000, the City completed Phase 1 of the Waipio Peninsula Soccer Park on approximately 300 acres of land leased from the Navy. The Soccer Park currently consists of 19 soccer fields.

### **2.3.4.2 Potential Impacts**

The proposed roadway improvement will provide opportunities for a second entrance to Waipio Soccer Park and provide a more direct access to Waipio Soccer Park for the Waipahu community by providing pedestrian and bikeway improvements along Waipahu Depot Road.

The Waipio Soccer Park was intended to promote Oahu and the state of Hawaii as a sports center destination for regional, national, and international markets. The proposed WPP will provide additional sports field and parking spaces on the former WALF land that is currently closed and vacant. The proposed WPP will be consistent to the City and County's long term goal of Waipio Soccer Park.

### **2.3.4.3 Mitigation Measures**

Because the project would not adversely affect parks or recreational resources, no mitigation measures are required.

## **2.3.5 Visual and Aesthetic Quality**

### **2.3.5.1 Existing Conditions**

From Waipahu Depot Road, scenic views are available in the west direction to the south of the Old Railroad crossing because of the presence of Po'uhalā Marsh, located between the estuaries of Waikele and Kapakahi streams.

The former WALF site is relatively flat and contains no aesthetic features. Views toward Pearl Harbor, Kapakahi Stream, and the distant Waianae mountains should be obtainable once the closure of the former WALF is completed and the area is covered with grass.

### **2.3.5.2 Potential Impacts**

With proposed project, the overall visual and aesthetic quality of the project sites would be improved with the addition of a vegetative buffer and street trees. The proposed WPP will add larger canopy tree to provide shade while maintaining views toward Pearl Harbor, Po‘uhala Marsh, and Waianae mountains.

### **2.3.5.3 Mitigation Measures**

The proposed project would improve the scenic and aesthetic conditions of Waipahu Depot Road and the former WALF site by providing improved landscaping, and would not affect other scenic views. Therefore, no mitigation measures are required.

## **2.4 CONSTRUCTION IMPACTS**

Construction of the proposed project would cause short-term environmental impacts. Since some construction-related impacts are expected, measures to minimize or mitigate these adverse effects are addressed in this section.

### **2.4.1 Maintenance of Traffic**

Construction of the proposed project would require lane closures on Waipahu Depot Road, which would cause motorists to experience some inconvenience. Construction activities would be staged so that no more than one lane is closed at any given time, and access to the adjoining properties would be maintained during all phases of the construction work. However, travel to and from these destinations may be delayed. Pedestrian movements would be maintained, but may be temporarily relocated to provide safe passage through work areas. Flagmen and/or police officers would be posted to direct traffic safely around lane closures and other potential safety hazards.

### **2.4.2 Hazardous Materials**

The project's Phase 1 Environmental Assessment (June 2007) identified the presence of up to three petroleum pipelines beneath the central portions of the roadway site. The pipelines, which originate from Kapolei's Campbell Industrial Park, are believed to run east to west and lie beneath the roadway site in the general area of the abandoned railroad track intersection. There are currently no records of pipeline release in the vicinity of the project; however, the presence of the three petroleum pipelines beneath the roadway site represents a potential material threat of release of petroleum product that could impact the roadway site. Excavation activities may uncover soil and groundwater contaminated by petroleum releases. If contaminated media (soil or groundwater) should be encountered during the construction activities, a hazardous waste

removal plan would be developed to address the removal and disposal of the contaminated media.

During construction, the contractor would be required to practice best management practices, such as ensuring that:

- All waste materials are collected and stored in securely lidded metal dumpsters and not buried on site;
- Materials stored on-site be stored in a neat, orderly manner in appropriate containers (i.e., per manufacturers' recommendations);
- Excavated materials be disposed outside the project site at an approved location;
- All on-site vehicles be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage; and
- A spill prevention and clean-up plan is prepared and implemented if needed.

### **2.4.3 Water/Stream Resources**

Excavation activities would expose areas of un-vegetated soil to the elements (wind and rain). The primary concern would be the potential for erosion by storm water passing through un-vegetated areas, which could result in sedimentation and degradation of water quality in Kapakahi Stream and West Loch. A National Pollutant Discharge Elimination Systems (NPDES) permit is intended to prevent such storm water discharges during construction. The total construction area (Roadway site  $\pm 3$  AC and WPP site  $\pm 49$  AC) would be far exceeding the one-acre threshold in which a construction storms water NPDES permit is required. The NPDES permit will require the implementation of erosion control measures or Best Management Practices (BMP) during construction. The intent of the BMPs is to prevent erosion from the site, thereby maintaining the quality of nearby water bodies. The BMP plan will be reviewed by the DOH, Clean Water Branch, during the review of the project's NPDES permit application or Notice of Intent. Generally accepted BMPs applicable to this project include:

- Erecting silt curtains and silt fences;
- Minimizing areas of disturbance;
- Covering stockpiles;
- Immediate planting of vegetation and/or mulching on highly erodible or critical areas; and
- Constructing dikes or diversions to avoid runoff across erodible areas.

### **2.4.4 Air Quality and Noise**

Air quality impacts related to construction activities generally would consist of fugitive dust and mobile source of emissions from construction equipment.

Fugitive dust is airborne particulate matter, of usually large particle size, such as those generated by construction vehicles operating around construction sites and material blown from uncovered haul trucks, stockpiles, and exposed areas. The contractor would be required to adhere to State rules and regulations governing air quality, such as no visible emissions outside the affected

parcel. To prevent fugitive dust from affecting areas beyond the project site, contractors would be required to minimize land disturbance, and watering would be used during dry conditions. If needed, windscreens would be used if fugitive dust were likely to disturb nearby private properties on the north end of the project. Landscaping would be established as early as possible. To prevent haul trucks from tracking dirt onto paved streets, tire washing or road cleaning may be appropriate. State regulations stipulate that open-bodied trucks must be covered at all times when in motion if they are transporting wind-erodible materials.

Construction vehicles emit engine exhaust that would contribute to air pollutants in the vicinity of the work area. Most of the equipment and vehicles are diesel-powered, and would emit relatively high levels of nitrogen oxide in comparison to gasoline-powered equipment. However, standards for such pollutants are set on a regional basis and would therefore not be violated by short-term construction equipment emissions.

Construction would involve the use of heavy machinery that may cause temporary noise impacts to adjacent noise sensitive land uses. Construction would normally occur during daylight hours when occasional loud noises are more tolerable. In addition, most of the construction site would not be near noise sensitive land uses such as residential. Therefore, extended noise disruptions to normal activities are not anticipated. DOH maintains community noise control standards (HAR Section 11-46) that apply to construction noise. The contractor is likely to apply for a noise permit that would allow construction activities to exceed noise control standards during normal business hours.

#### **2.4.5 Utilities**

In the design phase, utility relocations would be coordinated with applicable government agencies and utility companies. Substantial planning, including coordination with utility providers, would be conducted to minimize interruptions in utility service to customers. Disruptions to utility service, if necessary, would be restricted to short-term localized events. Careful scheduling of these disruptions and prior notification of properties that would be affected would be implemented to mitigate some of the utility relocation impacts.

## **CHAPTER 3 CONSISTENCY WITH GOVERNMENTAL PLANS, POLICIES AND CONTROLS**

### **3.1 HAWAII STATE PLANS AND CONTROLS**

#### **3.1.1 Hawaii State Plan**

The Hawaii State Plan (June 1991) consists of comprehensive goals, objectives, policies and priorities in all areas of government functions. These functions include the protection of the physical environment, the provision of public facilities, and the promotion and assistance of socio-cultural advancement. In accordance with the Plan's economic objectives and policies, the project would facilitate transportation objectives by providing improved service for pedestrians and bicycles. It would also contribute to the economy of the City and County of Honolulu and the State of Hawaii by providing construction jobs. An estimated total construction cost of the project is approximately \$25 million.

#### **3.1.2 Hawaii State Land Use Controls**

According to the City and County of Honolulu, DPP, Interactive GIS Map, the WALF is within the State Conservation District (Protective Subzone).

Waipahu Depot Road and the surrounding areas between Farrington Highway Intersection and Old Railroad ROW are within the State "Urban", and south of the Old Railroad ROW is designated as "Conservation".

#### **3.1.3 Coastal Zone Management Act (CZM)**

The objectives and policies of the Hawaii Coastal Zone Management (CZM) Program are designed to protect and manage Hawaii's valuable coastal areas and resources. The proposed improvements to Waipahu Depot Road and Waterfront Passive Park are located within the State's CZM area.

The following discussion summarizes the project's consistency with the objectives and policies of the State's CZM Program. A more detailed assessment would be submitted for review to the Department of Business, Economic Development and Tourism (DBEDT) Office of Planning, the agency administering the State's CZM program, for review.

#### Recreation Resources

The proposed project would not affect recreational services and facilities provided at Waipio Peninsula Soccer Park and Ted Makalena Golf Course. By providing a future passive park and additional access to the existing soccer fields, and a pedestrian/bicycle promenade and sidewalks to those recreational areas, the project would improve the area's recreational resources.

### Historic Resources

A portion of the previously recorded historic property was identified within the project area - an Oahu Railway and Land, Co. railroad bridge and right-of-way (SIHP 50-80-12-9714). The land within the project area has been disturbed by the ash landfill, residential and business development as well as grading and grubbing.

Much of the land within the project area is landfill over previous wetlands used for taro and rice cultivation. This area has a long history of agriculture and land modification in more modern times, including the building of Waipahu Depot Road and a number of residences and businesses as well as the ash landfill in the immediate vicinity.

Excavation at that shallow depth to accommodate the proposed roadway improvements will most likely stay within the fill and not extend into natural sediments. It is unlikely that burials exist within the project area or that they will be disturbed by the shallow excavations, but the possibility cannot be ruled out. It also is unlikely that the project will affect significant historic properties.

Consultation with the SHPD will be conducted during the preparation of the EA to assist in identifying historic properties within the project area.

### Scenic and Open Space Resources

The proposed project would provide a landscaped promenade and a waterfront passive park, which would improve the visual and aesthetic condition of the area. View planes of the West Loch, Kapakahi Stream, and Waianae mountains would be maintained.

### Coastal Ecosystems

During construction, BMPs would be implemented to prevent sediments in construction site runoff from affecting water quality in Kapakahi Stream and West Loch. The proposed passive park would add more topsoil which would provide increased protection for the surface of the former landfill.

### Economic Uses

The proposed project would not affect business operations of adjoining private business or governmental properties. The proposed roadway improvements will benefit the neighboring properties as it will improve the drainage and add street lights.

### Coastal Hazards

The project site is not located in a tsunami evacuation zone or other coastal hazard areas.

### Managing Development

The proposed project would require State and City and County of Honolulu permits and approvals that include provisions for public participation and ensure protection of coastal resources. The project would not affect the existing zoning of the adjacent land areas. Zoning information is provided in the Section 3.6.

### Public Participation

The public will be provided a 30-day review period to comment on this Draft EA. A presentation to the Waipahu Neighborhood Board will be scheduled after release of the Draft EA.

### Beach Protection

Although both Waipahu Depot Road and WPP are near the West Loch shoreline, there would be no activities near beaches.

### Marine Resources

See Coastal Ecosystems discussion above. No other marine resources will be affected because the project will be land-based.

## **3.1.4 Bike Plan Hawaii**

*Bike Plan Hawaii. A State of Hawaii Master Plan* (September 2003) (Bike Plan) prepared by DOT provides recommendations for improving bikeway systems statewide. It serves as guidance to the DOT and county transportation agencies when new roadway construction or improvements to existing roadways are contemplated. With respect to the Waipahu Depot Road improvements, the Bike Plan recommended bikeways from Waipahu Street to Pearl Harbor Bike Path. The Bike Plan also indicates the Bicycle Lane, which would connect Pearl Harbor Bike Path to the existing soccer park. The project is planned in accordance with this recommendation by providing bicycle path on Kapakahi Stream sides of the roadway where no driveways are located from the Farrington Highway intersection to WPP and Waipio Peninsula Soccer Park.

## **3.2 CITY AND COUNTY OF HONOLULU PLANS AND CONTROLS**

### **3.2.1 General Plan**

The General Plan of the City and County of Honolulu (2006) is a statement of long-range social, economic, environmental, and design objectives for the Island of Oahu, as well as policies necessary to meet these objectives.

The project is consistent with these objectives and policies in these respects:

- Economic activity. The proposed project would generate employment opportunities in engineering, construction, and technical support fields.
- Transportation. The project improves bicycle and pedestrian access to the Waipio Peninsula Soccer Park.
- Recreation. The proposed project will add recreational facilities that are open to all residents of Oahu.

### **3.2.2 Central Oahu Sustainable Communities Plan**

The Central Oahu Development Plan Land Use classification identifies the area as “Parks” Areas. The Central Oahu Sustainable Community Plan also indicates, “A major new shoreline

park should be established at Waipio Peninsula, giving access from Waipahu to the Pearl Harbor shoreline on the West Loch and Middle Loch.” The proposed WPP will take full advantage of the sites waterfront location and provide recreation opportunities for Waipahu and the larger surrounding community.

### **3.2.3 Land Use Ordinance**

The City zoning indicates the surrounding areas of the proposed site for WPP as the mixture of “P-1” Restricted Preservation District and “F-1” Military and Federal.

Waipahu Depot Road site between Farrington Highway Intersection and Old Railroad ROW are zoned as “B-2” Community Business at the intersection and “I-2” Intensive Industrial for majority of the ROW. The area south of the Old Railroad Track is in “P-2” General Preservation.

The part of Kapakahi Stream and properties to the west are zoned as “R-5” Residential and “P-1” Restricted Preservation Districts.

### **3.2.4 Special Management Area**

The City and County of Honolulu has designated the shoreline and certain inland areas of Oahu as being within the Special Management Area (SMA) pursuant to City and County of Honolulu Ordinance Section 25-2.2. The portion of the roadway project site between Farrington Highway intersection and the Old Railroad crossing is outside of the SMA (**Figure 3**). The remainder of the project site is within the SMA. In addition, the WPP project site is partially located within the SMA’s forty (40)-foot shoreline setback area.

## **3.3 PERMITS AND APPROVALS**

The following permits or approvals may be required following completion of the environmental review process for this EA. The agency responsible for the permit or approval is indicated below.

### Federal

- USACE -Department of Army (DA) permit pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act

### State of Hawaii

- DBEDT, Office of Planning -Coastal Zone Management federal consistency determination
- DOH, Clean Water Branch -National Pollutant Discharge Elimination System Permit for storm water discharges relating to construction activities
- DOH, Clean Water Branch -Water Quality Certification pursuant to Section 401 of the Clean Water Act
- State of Hawaii Department of Land and Natural Resources -Stream Channel Alteration Permit

City and County of Honolulu

- DPP -SMA Use Permit
- DPP- Grading, Grubbing, Stockpiling and Excavation permit

## **CHAPTER 4 COMMENTS AND COORDINATION**

This chapter summarizes public and agency consultation and coordination activities associated with this project. Project scoping and coordination activities will include meetings and correspondence with government agencies, adjacent landowners, and neighborhood board.

### **4.1 PRE-ASSESSMENT SCOPING AND AGENCY CONSULTATION**

The following agencies, elected officials, and other organizations will be contacted by letter, and asked if they are aware of any environmental or social issue associated with the project area. Copies of the request letters and responses will be included in Appendix.

#### Federal Agencies

- U.S. Army Corps of Engineers, Pacific Ocean Division
- U.S. Department of Defense, Navy
- U.S. Environmental Protection Agency
- U.S. Fish & Wildlife Services, Department of Interior

#### State Agencies

- Department of Business Economic Development & Tourism, Energy, Resources & Tech. Division
- Department of Health, Environmental Planning Office
- Department of Land and Natural Resources
- State Historic Preservation Division, Department of Land and Natural Resources
- Department of Transportation, Highways Division
- Office of Environmental Quality Control
- Office of Hawaiian Affairs
- Office of Planning

#### City Agencies

- Board of Water Supply
- Department of Design & Construction
- Department of Environmental Services
- Department of Facility Maintenance
- Department of Parks & Recreation
- Department of Planning & Permitting
- Department of Transportation Services
- Honolulu Fire Department
- Honolulu Police Department
- Oahu Civil Defense Agency

#### Business & organizations and Individuals

- Hawaiian Electric Company

- Hawaiian Telcom
- Waipahu Neighborhood Board No. 22

Elected Officials

- Clarence K. Nishihara, State Senator, 18<sup>th</sup> District
- Rida T.R. Cabanilla, State Representative, 42<sup>nd</sup> District
- Gary H. Okino, City Council, District 8

## **CHAPTER 5 FINDING OF NO SIGNIFICANT IMPACT**

This Draft Environmental Assessment, prepared to support the SMA Use Permit application pursuant to Chapter 25 ROH - Shoreline Management, has preliminarily concluded that the potential for impacts associated with the proposed action will be minimal.

The potential effects of the proposed project are evaluated based on the significance criteria in section 11-200-12 (Hawaii Administrative Rules, revised in 1996). The following is a summary of the potential effects of the action.

**(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource:**

The proposed project would not cause the loss or destruction of any natural, historic or cultural resource. Most of the proposed project would be constructed within the former Waipahu Ash Landfill and existing Waipahu Depot Road right-of-way. Although relatively small portions of Kapakahi Stream would be affected due to the widening of the right-of-way, Best Management Practices will be utilized to minimize the impacts to the stream. Stream alteration would be necessary to accommodate the proposed Promenade; however, the impacts of the stream alteration should be evaluated in light of recurring benefits through increased safety, recreational amenities, and aesthetics provided by the proposed roadway improvements and future park.

**(2) Curtails the range of beneficial uses of the environment:**

The project will not curtail the range of beneficial uses of the environment. The proposed project would not affect use of Waipio Peninsula Soccer Park, Ted Makalena Golf Course, and adjoining private businesses. The project will improve access to the existing soccer park and utilize the closed ashfill site as a passive recreational park and provide an opportunity to expand the existing soccer park.

**(3) Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS:**

The project would be in conformance to the Chapter 344, HRS, State Environmental Policy. It is one of the long-term goals of the project to preserve natural features and enhance aesthetics of the area. In addition to the open space atmosphere, the project also intends to provide opportunities for outdoor recreation opportunities.

**(4) Substantially affects the economic or social welfare of the community or State:**

The proposed roadway improvements will provide drainage system and street lights. It is also intended to provide an access to the proposed park as well as the existing soccer park facility. The addition of promenade and sidewalks would provide the public with safer bicycle and

pedestrian access to the Waipio Peninsula Soccer Park, and roadway landscaping would improve the aesthetics of the roadway.

The proposed roadway improvements and passive park development project is not anticipated to have significant effects on the area's economic activities. The proposed passive park will maintain the open space character of Waipio Peninsula and provide increased recreational amenities, which will enhance the quality of living environment of the community.

**(5) Substantially affects public health:**

The proposed project would improve public health by improving drainage along Waipahu Depot Road; providing bicycle/pedestrian path continuous along the roadway within the project limit; demarcating the Old Railroad Track Bicycle/Pedestrian Path crossing the roadway; and converting the closed landfill into recreational use.

**(6) Involves substantial secondary impacts, such as population changes or effects on public facilities:**

The proposed park development and roadway improvements are not anticipated to result in substantial secondary impacts, such as population changes or effects on public facilities. The proposed park and access improvements to the existing soccer park will relieve demands for other roadway and park facilities in the area.

**(7) Involves a substantial degradation of environmental quality:**

The proposed project is not anticipated to involve a substantial degradation of environmental quality. The proposed park site will utilize the closed ash landfill. During construction, BMPs would be used to prevent excess sedimentation from affecting Kapakahi Stream and Pearl Harbor's West Loch. The monitoring program of the closed WALF will be continued as required.

**(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions:**

The proposed project is not anticipated to result in cumulative effects; therefore, it would not involve a commitment to larger actions.

**(9) Substantially affects a rare, threatened, or endangered species, or its habitat:**

The proposed project is not anticipated to have substantial effects on rare, threatened, or endangered species, or their habitats. No rare, threatened, or endangered species, or habitat exist within the project area.

**(10) Detrimentially affects air or water quality or ambient noise levels:**

The proposed park and roadway improvements project is not anticipated to result in significant effects on the area's long-term air or water quality or ambient noise levels.

The proposed project is not anticipated to have significant effect on the number of vehicles using Waipahu Depot Road, which are the major source of air quality, water quality, and noise impacts.

During construction, BMPs would be used to prevent excess sedimentation from affecting Kapakahi Stream and Pearl Harbor's West Loch.

**(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters:**

The proposed roadway site is situated in a flood-prone plain. The widening of Waipahu Depot Road require alternation of the small portion of Kapakahi Stream stream banks. However, the proposed project provides drainage improvements to control the area's flood hazards. Other than the small portion of stream bank is affected, the project is not in an environmentally sensitive area. Although West Loch could be considered an environmentally sensitive area, the project would not affect shoreline or the water body. Also, BMPs would be used to prevent excess sedimentation from affecting the water body.

**(12) Substantially affects scenic vistas and viewplanes identified in county or states plans or studies:**

The proposed project would not block or significantly affect any existing scenic views because the improvements would be at ground level along the existing roadway alignment. One of the project goals is to maintain the open space character of the area. Landscaping will be designed in such ways to enhance the area's visual resources. There would be no structures that would rise substantially above grade.

**(13) Requires substantial energy consumption:**

The proposed project is not anticipated to result in substantial energy consumption. The proposed roadway improvements would not result in substantial increase in the number of vehicles traveling the area.

In accordance with the provision set forth in Chapter 343, Hawaii Revised Statutes, this Draft Environmental Assessment has preliminarily determined that the project will not have significant adverse impacts to water quality, air quality, existing utilities, noise, archaeological sites, or wildlife habitat. Therefore, it is recommended that an Environmental Impact Statement (EIS) not be required and a Finding of No Significant Impact (FONSI) be issued for this project.

## CHAPTER 6 REFERENCES

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# ***APPENDICIES***

## **Appendix A:**

Terrestrial and Aquatic Resources Inventory and Impacts Assessment along lower Kapakahi Stream, Waipahu, Oahu, Hawaii (AECOS, Inc. 2007)

## **Appendix B:**

The Phase I Environment Site Assessment Waipahu Depot Road, Waipahu, Oahu, Hawaii (Environet, Inc. 2007) – provided under separate cover

## **Appendix C:**

Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua'a, 'Ewa District, Island of Oahu TMK: [1] 9-3-002: por. 009 (Cultural Surveys Hawai'i, Inc. 2007)

## *Appendix A:*

Terrestrial and Aquatic Resources Inventory and Impacts Assessment along lower Kapakahi Stream, Waipahu, Oahu, Hawaii (AECOS, Inc. 2007)

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# Terrestrial and aquatic resources inventory and impacts assessment along lower Kapakahi Stream, Waipahu, O'ahu, Hawai'i

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July 16, 2007

**Draft**

AECOS No. 1136

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## Introduction

On January 2, 2007, AECOS biologists conducted a reconnaissance survey of Kapakahi Stream near the Waipahu Depot Road in Waipahu on the leeward side of O'ahu (Fig. 1). The purpose of the stream and vicinity survey was to ascertain terrestrial and aquatic resources extant from Farrington Highway to the entrance of the City and County of Honolulu's ash pile site, to generate this report contributory to an environmental assessment<sup>1</sup> for a road improvement project at Waipahu Depot Road. The environmental assessment will examine alternatives. This report presents findings of the natural resources survey.

## Stream Description

Kapakahi Stream is an eastern outlet of the Waikele Stream Floodway. Waikele Stream (State Perennial Stream ID No. 3-4-10) drains both the Ko'olau and Wai'anae mountains and its watershed is the second largest (12,539 ha or 30,984 ac) on the Island of O'ahu. In recent geological history, the lower reach of Waikele Stream and Kapakahi Stream were likely interconnected, but they have since been channelized and the surrounding floodplain undergone urban development, making them two distinct channels. A historic map from 1935 (Fig. 2), shows only Kapakahi Stream, and not Waikele Stream, as discharging into West Loch Pearl Harbor (Stearns and Vaksvik, 1935, cited by Englund, et al., 2000). Today, Kapakahi Stream originates as a spring north of Farrington Highway and nearly the entire stream course is estuarine. In the project area, the estuary is confined to a narrow channel running

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<sup>1</sup> This report was prepared for use by Environmental Planning Solutions, LLC for an environmental assessment of proposed road improvements to Waipahu Depot Road. As such, it will become part of the public record for a government project.

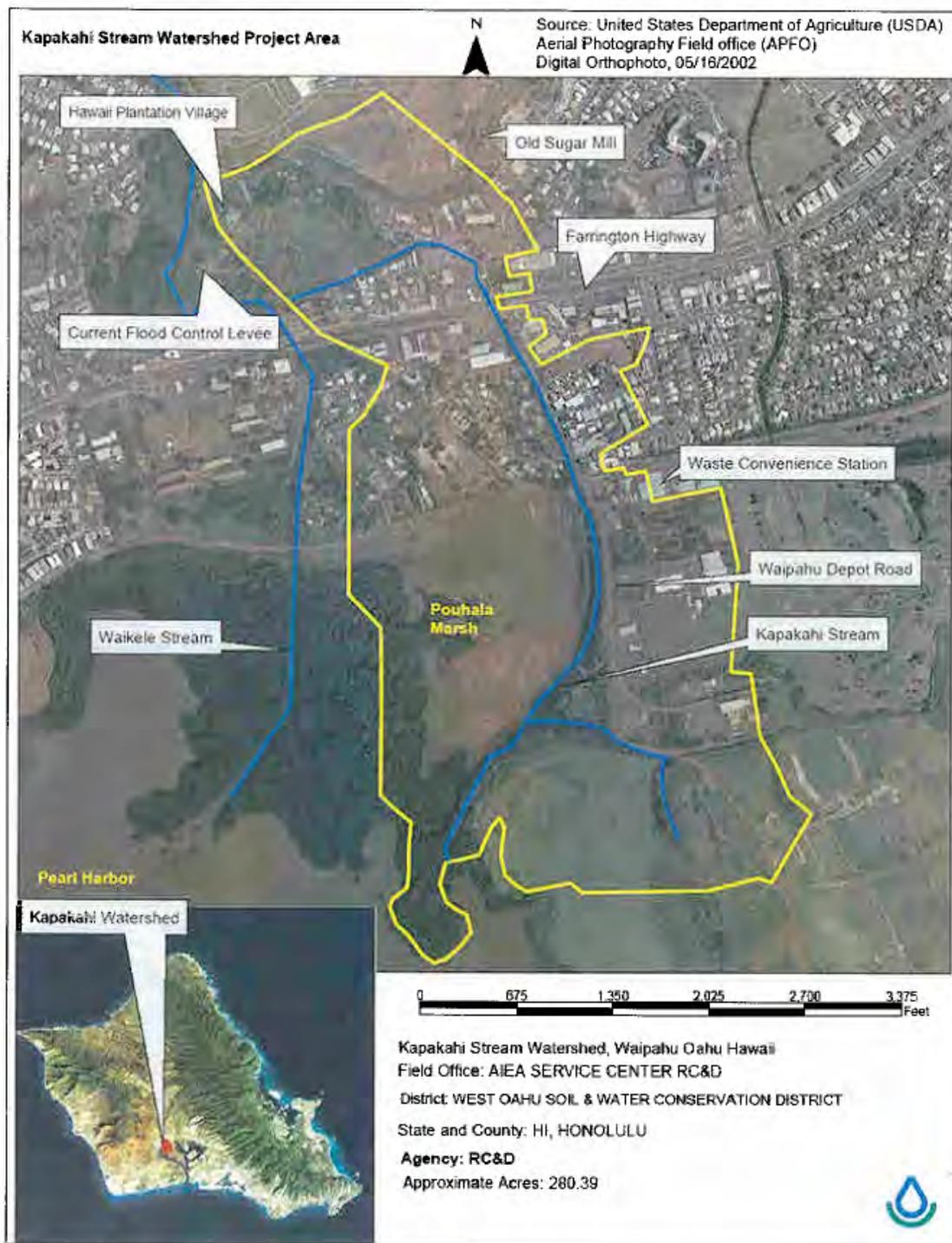


Figure 1. Project location on the Island of O’ahu and the watershed of Kapakahi Stream (from ORCDC, 2006).

along the west side of Waipahu Depot Road until it reaches the City and County Police Academy (Ke Kula Maka’i) where it then curves slightly more westward

through the coastal mangrove forest or mangal. In this area it is joined by a drainage channel coming from the old C & C incinerator site. The stream eventually discharges into West Loch of Pearl Harbor.

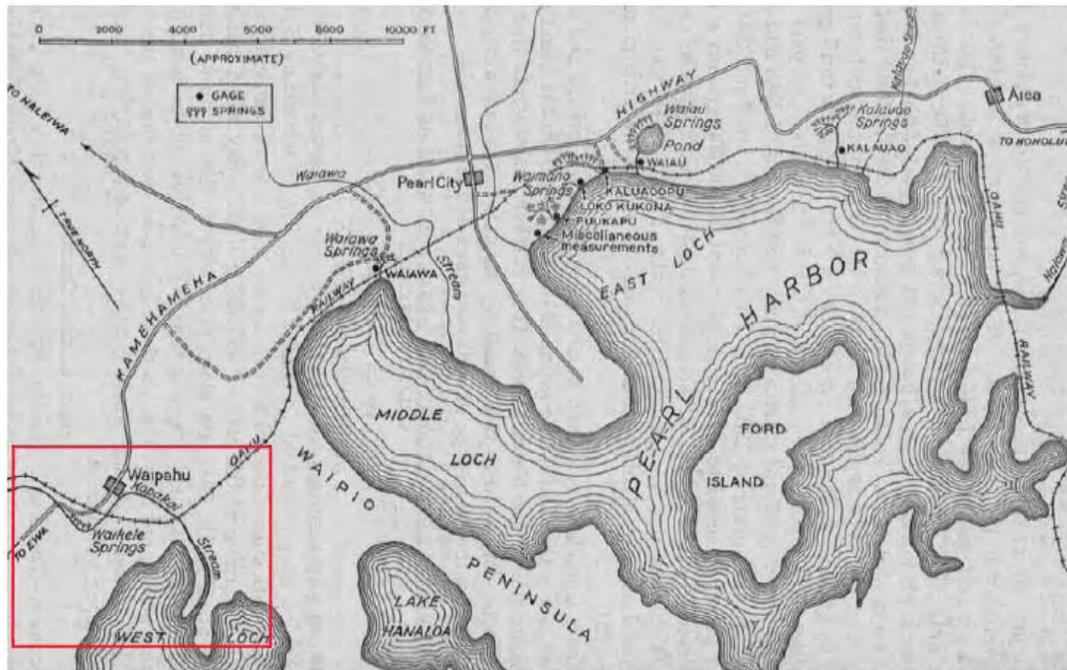


Figure 2. Historic map of the major Pearl Harbor springs in 1935 (Stearns and Vaksvic, 1935, cited by Englund, et al., 2000).

Po'uhala Marsh, located between the estuaries of Waikele and Kapakahi streams, is a saline wetland that provides important habitat for the endangered Hawaiian stilt or *ae'o* (*Himantopus mexicanus knudseni*). It is the largest remaining Pearl Harbor wetland (Ducks Unlimited, 1998). Historically, the marsh may have been flushed with fresh water during high flows from Waikele Stream into Kapakahi Stream (ORCDC, 2006), but a levee now isolates Kapakahi Stream from the marsh (Ducks Unlimited, 1998). The Puhala Marsh Restoration and Community Development Project aims to restore native wetland ecosystems and provide habitat for endangered waterbirds in the marsh and along Kapakahi Stream (ORCDC, 2006).

## Vegetation

Introduced red mangrove (*Rhizophora mangle*) dominates the tidal mudflats, coastal wetlands, and estuaries of Pearl Harbor. A 1998 survey of Kapakahi Stream (Englund, 1998) found that downstream of the state energy corridor (old railroad right-of-way), access to the stream channel was not possible due to mangrove growth. In 2006, the mangrove, as well as trees and brush on the banks and levee,

were cleared from Kapakahi Stream (ORCDC, 2006; Fig. 3). In early 2007, mangroves (except for widely scattered seedlings) were no longer present in the main channel and a side channel leading eastward and its banks had been covered with chipped mulch. The banks of the channel adjacent to Waipahu Depot Road are low but steep and have very little vegetation (Fig. 4).



Figure 3. Kapakahi Stream channel (estuarine reach) downstream from the state energy corridor crossing showing banks recently (January 2007) cleared of trees and brush.

A side branch of Kapakahi Stream draining the road and the old C&C incinerator site (located opposite Ke Kula Maka'i, the City & County Police Academy), supports a variety of wetland plants, including *kaluha* (*Bolboschoenus maritimus*), 'ae'ae (*Bacopa monnieri*), seashore paspalum (*Paspalum vaginatum*), Indian sourbush (*Pluchea indica*), sedge (*Cyperus polystachyos*), and just a few red mangrove (*Rhizophora mangle*) seedlings, all in a very small area. Plants observed at Kapakahi Stream in the area of the proposed road improvements project are listed in Table 1. Most of the vegetation along the banks had been recently cleared or showed evidence that herbicides were being employed to discourage regrowth. The levee (on the left in Fig 3) had supported a strip of kiawe trees (*Prosopis pallida*). Vegetation remaining along Waipahu Depot Road is mostly ornamental plantings, although empty lots across the road from the stream channel support kiawe and mixed, weedy grasses.



Figure 3. Kapakahi Stream (estuarine reach) looking upstream with Waipahu Depot Road on right.

Table 1. Flora listing of plant species observed on January 2, 2007 at Kapakahi Stream, O'ahu.

Species listed by family	Common name	Wetland status	Species status
<b>ASTERACEAE</b>			
<i>Pluchea indica</i> (L.) Less.	sourbush	FAC	Nat
<b>CYPERACEAE</b>			
<i>Bolboschoenus maritimus</i> (L.) Palla	<i>kaluha</i>	OBL	<b>Ind.</b>
<i>Cyperus polystachyos</i> Rottb.	sedge	FACW	<b>Ind.</b>
<b>POACEAE</b>			
<i>Paspalum vaginatum</i> Sw.	seashore paspalum	FACW	Nat.
<b>RHIZOPHORACEAE</b>			
<i>Rhizophora mangle</i> L.	red mangrove	OBL	Nat
<b>SCROPHULARIACEAE</b>			
<i>Bacopa monnieri</i> (L.) Wettst.	'ae'ae	OBL	<b>Ind.</b>

KEY TO SYMBOLS USED IN TABLE 1:

**Status** - distributional status.

**Ind.** - indigenous; native to Hawaii, but not unique to the Hawaiian Islands.

**Nat.** - naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

Table 1 (continued).

**Wetland Indicator Status**

- OBL - Obligate wetland plant. Occur almost always (estimated probability >99%) under natural conditions in wetlands.
- FACW - Facultative wetland plant. Usually occur in wetlands (estimated probability 67% - 99%), but occasionally found in non wetlands.
- FAC - Facultative plant. Equally likely to occur in wetlands or non wetlands (estimated probability 34% - 66%).
- 

## Aquatic Biota

Introduced species dominate the fauna in the estuaries and streams of Pearl Harbor (Englund, et al., 2000) and Kapakahi Stream is no exception. Three introduced fishes are common in the project area: black-chin tilapia (*Sarotherodon melanotheron*), Mexican molly (*Poecilia mexicana*), and convict cichlid (*Cichlisoma nigrotasciatum*). Two dragonflies, one native (*Anax junius*) and one introduced (*Tramea lacerata*), are also present, along with the introduced American bullfrog (*Rana catesbeiana*).

Englund (1998) conducted a comprehensive survey of aquatic biota in Kapakahi Stream in 1997 and 1998 using fine-mesh fish nets, small hand nets, and aquatic dip nets to collect and assess fish and aquatic invertebrates. In 1998, one native goby (*Eleotris sandwicensis* or 'o'opu akupa) was found to be uncommon and several different native invertebrates were observed. Table 2 is a listing with abundance categories given for the animals observed in Kapakahi Stream in 2007 and 1997 - 1998.

No native fishes and no state or federally listed species (DLNR, 1998; Federal Register, 2005; USFWS, 2005, 2006) were observed during the January 2, 2007 survey and only one native fish (*Eleotris sandwicensis*) is reported from Kapakahi Stream. However, nearby Po'uhala Marsh supports numerous waterbirds, including the following endangered species: Hawaiian duck (*Anas wyvilliana*), Hawaiian coot (*Fulica americana alai*), Hawaiian moorhen (*Gallinula chloropus sandwicensis*), and Hawaiian stilt (*Himantopus mexicanus knudseni*). Table 3 lists the known waterbird species of Po'uhala Marsh. These birds may visit Kapakahi Stream on occasion, although only because of proximity to Po'uhala Marsh, not because the stream provides preferred habitat.

## Assessment

Kapakahi Stream is listed on the Hawai'i Department of Health, 2004 List of Impaired Waters in Hawaii (HDOH, 2004a), prepared under Clean Water Act §303(d), which means that the stream does not meet the pertaining water quality standards (HDOH, 2004b). Pollutants for which this stream (estuary) is listed are turbidity, nitrate/nitrite, Total N, Total P, and trash. As a result of this impairment listing, a

study is being conducted to determine total maximum daily load (TMDL) of pollutants that Kapakahi Stream can accommodate without violating Hawai'i's water quality standards. HDOH may require more water quality testing than usual for any Section 401 Water Quality Certification monitoring required if construction occurs within Kapakahi Stream.

Table 2. Checklist of aquatic biota in Kapakahi Stream, O'ahu.

Species	Common name	Status	QC Code	Abundance
<b>INVERTEBRATES</b>				
ANNELIDA, HIRUDINAE	(leeches)			
PISCICOLIDAE				
<i>Myzobdella lugubris</i>	fish leech	Nat	01	P
MOLLUSCA, GASTROPODA	(snails)			
PILIDAE				
<i>Pomacea canaliculata</i>	apple snail	Nat	01	P
THIRIDAE				
unid.	Melanid snail	Nat	01	P
MOLLUSCA, BIVALVIA	(crustaceans)			
<i>Corbicula fluminea</i>	Asiatic clam	Nat	01	P
ARTHROPODA, CRUSTACEA	(crustaceans)			
AMPHIPODA				
<i>?Hyalella azteca</i>	scud	Ind	01	P
ISOPODA				
<i>Armadillidae</i>	sow bug	Unk	01	P
<i>Ligia hawaiiensis</i>	sow bug	End	01	P
DECAPODA, CAMBARIDAE				
<i>Procambarus clarki</i>	American crayfish	Nat	01	P
DECAPODA, PORTUNIDAE				
<i>Thalamita crenata</i>	crenulated blue crab	End	10, 01	U
ARTHROPODA, INSECTA	(insects)			
COLEOPTERA, HYDROPHILIDAE	(water bugs)			
<i>Enochrus sayi</i>		Nat	01	P
<i>Tropisternus salsamentus</i>		Nat	01	P
DIPTERA, CULICIDAE	(mosquitos)			
<i>Aedes albopictus</i>		Nat	01	P
ODONATA, AESHNIDAE	(dragonflies)			
<i>Anax junius</i>	green darner	Ind	10, 01	U
ODONATA, LIBELLULIDAE	(dragonflies)			
<i>Crocothemis servilia</i>	Scarlet skimmer	Nat	01	P
<i>Orthemis ferruginea</i>	Roseate skimmer	Nat	01	P
<i>Pantala flavescens</i>	Wandering glider	Ind	01	P
<i>Tramea lacerata</i>	Black saddlebags	Nat	10	U
ODONATA, COENAGRIONIDAE	(damselflies)			
<i>Ischnura posita</i>	Fragile forktail	Nat	01	P
<i>Ischnura ramburi</i>	Rambur's forktail	Nat	01	P

Table 2 (continued).

Species	Common name	Status	QC Code	Abundance
<b>VERTEBRATES</b>				
VERTEBRATA, AMPHIBIA	(amphibians)			
RANIDAE				
<i>Rana catesbeiana</i>	Amer. bullfrog	Nat	10	R
BUFONIDAE				
<i>Bufo marinus</i>	Giant marine toad	Nat	01	P
VERTEBRATA, PISCES	(fishes)			
CICHLIDAE				
<i>Cichlisoma nigrotasciatum</i>	Convict cichlid	Nat	10	C
<i>Sarotherodon melanotheron</i>	Black-chin tilapia	Nat	10, 01	C
ELEOTRIDAE				
<i>Eleotris sandwicensis</i>	'o'opu akupa	<b>End</b>	01	U
GOBIIDAE				
<i>Mugilogobius cavifrons</i>		Nat	01	P
POECILIIDAE				
<i>Gambusia affinis</i>	mosquitofish	Nat	01	P
<i>Limia vittata</i>	Cuban topminnow	Nat	01	P
<i>Poecilia latipinna</i>	Sailfin molly	Nat	10	P
<i>Poecilia mexicana</i>	Mexican molly	Nat	10, 01	C
<i>Poecilia reticulata</i>	Rainbow guppy	Nat	01	P
<i>Xiphophorus maculatus</i>	swordtail	Nat	01	P

## KEY TO SYMBOLS USED IN TABLE 2:

## Status:

Nat - Naturalized - an introduced or exotic species.

**Ind** - Indigenous - a native species also found elsewhere in the Pacific.**End** - Endemic - a native species found only in the Hawaiian Islands.

## QC Code:

01 - Reported in Englund (1998).

10 - Observed and identified in the field.

## Abundance at survey location:

R - Rare - only one or two individuals observed.

U - Uncommon - several individuals observed.

C - Common - seen everywhere, although generally not in large numbers.

P - Present - noted as occurring, but quantitative information lacking.

No threatened or endangered animal species were observed in the stream and no threatened or endangered plant species were observed in the surrounding area. With the exception of one native 'o'opu species (*Eleotris sandwicensis*) that was found to be uncommon in 1998 and not observed in 2007, Kapakahi Stream contains almost no native aquatic stream biota. Englund (1998) considers it one of the most biologically degraded of O'ahu streams. Several endangered waterbirds may visit Kapakahi Stream on occasion although only because of its proximity to Po'uhalā Marsh, not because it provides preferred or quality habitat.

Table 3. Known waterbird species at Po'uhala Marsh (from Ducks Unlimited, 1998).

Species	Occurrence in Hawai'i		Status on Po'uhala Marsh
<b>Ardeidae</b>			
Black-crowned Night Heron	Indigenous	Resident	Common
Cattle Egret	Introduced	Resident	Common
Little Blue Heron	Accidental		Three records
<b>Anatidae</b>			
Hawaiian Duck	Endemic	Endangered	Very rare - hybrids pose problem
Mallard x Hawaiian Duck	Hybrid species		Rare
Northern Shoveler	Migratory		Uncommon Winter Visitor
Northern Pintail	Migratory		Uncommon Winter Visitor
<b>Rallidae</b>			
Hawaiian Coot	Endemic	Endangered	Hypothetical Occurrence
Hawaiian Moorhen	Endemic	Endangered	Rare breeder
<b>Recurvirostridae</b>			
Hawaiian Stilt	Endemic	Endangered	Common resident, rare breeder
<b>Charadriidae</b>			
Pacific Golden Plover	Migratory		Common Winter Visitor
Black-bellied Plover	Migratory		Rare Winter Visitor
Semipalmated Plover	Migratory		<5 records
<b>Scolopacidae</b>			
Bristle-thighed Curlew	Migratory	Sensitive	Rare Fall Transient
Greater Yellowlegs	Migratory		1 record
Wandering Tattler	Migratory		Uncommon Winter Visitor
Ruddy Turnstone	Migratory		Uncommon Winter Visitor
Sanderling	Migratory		Rare Winter Visitor
Western Sandpiper	Migratory		1 record
Least Sandpiper	Migratory		2 records
Ruff	Migratory		2 records
Long-billed Dowitcher	Migratory		<5 records
Wilson's Phalarope			

Table from Ducks Unlimited (1998): assembled from the following sources: Rare Birds DataBase (Bishop Museum), DOFAW biannual waterbird survey results 1940 - 1996, A. Engilis, Jr. (1998), A.J. McCafferty (pers obs.), and P. Donaldson (pers obs.).

Although the mangrove infestation along the banks of Kapakahi Stream was removed in 2006, the trees will re-establish if seedlings are not continually removed. The bare banks that are present today are only marginally better than the mangroves, although the collection of wetland plants in the small side channel suggest colonization by native wetland species is possible if herbicide treatments are suspended.

The Waipahu Depot Road improvement project should not have any adverse impact on the flora or fauna of Kapakahi Stream if proper best management practices (BMPs) are used during construction. BMPs should be employed to prevent soil from eroding into the stream channel. The road improvement project might require the removal of mangrove trees (which may have re-established by the time the project commences) and other trees or vegetation in the project area. Their removal should be viewed as an opportunity to replace essentially weedy vegetation with more desirable trees and shrubs, such as *naupaka* (*Scaevola sericea*), *kamani* (*Calophyllum inophyllum*), *hala* (*Pandanus tectoris*), and *niu* or coconut. These are indigenous and early Polynesian introductions. However, unless actively maintained, it is likely that mangroves would return and encroach on the new plantings. A vegetative buffer between Kapakahi Stream and Waipahu Depot Road will benefit the occasional endangered waterbird visitor from Po'uhala Marsh to the stream.

As cited by ORCDC, 2006, TTEMI (2005) recommended a variety of structural BMPs designed to improve the quality of storm water runoff in Kapakahi watershed. Many of these BMPs may be appropriate for the Waipahu Depot Road project and include filter strips along the road, vegetated or grassy swales, infiltration/flow-through planters and rain gardens, package treatment facilities at existing manholes, pervious pavement systems, retention/evaporation basins, tree cover, and riparian habitat buffers. Another alternative to be considered for the road improvement project is to somewhat reduce the slope of the steep banks of Kapakahi Stream. This will reduce erosion and encourage the establishment of desirable plants.

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## ***Appendix B:***

The Phase I Environment Site Assessment Waipahu Depot Road, Waipahu, Oahu, Hawaii  
(Environet, Inc. 2007) – provided under separate cover



Environet, Inc.

environmental consulting | planning | engineering

June 20, 2007

EI Project No.: 406-103-001

Lester Inouye

President

Lester H. Inouye & Associates, Inc.

90 Kawanakoa Place

Honolulu, Hawaii 96817

**By Electronic Mail: [lester@linouyelandarchitect.com](mailto:lester@linouyelandarchitect.com)**

**Subject: Phase I Environmental Site Assessment Report  
Waipahu Depot Road  
Waipio Peninsula, Oahu, Hawaii 96797**

Dear Mr. Inouye:

Environet, Inc. (EI) is pleased to provide Lester H. Inouye & Associates, Inc. with the enclosed Phase I ESA report for the above-referenced property. Should you have any questions, please contact me at 808-833-2225.

Sincerely,

ENVIRONET, INC.

Steven Cho

Environmental Scientist II

Enclosure: Report (two copies)

June 2007

*Phase I Environmental Site Assessment*  
*Waipahu Depot Road*  
Waipahu, O'ahu, Hawai'i



*Prepared By:*



*Prepared For:*

*Lester H. Inouye & Associates, Inc.*  
*90 Kawananako Place*  
*Honolulu, Hawai'i 96817*

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# Phase I Environmental Site Assessment Waipahu Depot Road **Waipahu, O‘ahu, Hawai‘i**

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Prepared for:

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June 2007

Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

A Report Prepared for:

Lester H. Inouye & Associates, Inc.  
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**PHASE I ENVIRONMENTAL SITE ASSESSMENT  
WAIPAHAU DEPOT ROAD  
WAIPIO PENINSULA, OAHU, HAWAII 96797**

EI Project No.: 406-103-001

*We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312.*

*We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.*

Prepared By:



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Steven Cho  
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June 20, 2007

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## EXECUTIVE SUMMARY

This report presents the results of Environet, Incorporated's (EI's) Phase I Environmental Site Assessment (ESA) of the Waipahu Depot Road (hereinafter referred to as "the Site"). The Site is partially located on tax map key (TMK) (1) 9-3-002, Parcel 9 which lies on the Waipio Peninsula, Oahu, Hawaii. Our assessment and report has been performed in general accordance with the United State Environmental Protection Agency (EPA) "All Appropriate Inquiry" (40 Code of Federal Regulation (CFR) Part 312), as well as the American Society for Testing and Materials (ASTM) "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM Designation E 1527-05; ASTM, 2005).

Our assessment was conducted to evaluate existing conditions, investigate the environmental history, and identify the presence of recognized environmental conditions (RECs) within and around the Site. A REC is *the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property* (ASTM E 1527-05).

Our research consisted of a review of historical and regulatory records, present conditions, site geology and hydrogeology, and interviews with persons knowledgeable of the Site. EI's research shows that at the time of EI's site reconnaissance activities, the Site consisted of a narrow, north to south directional two-lane thoroughfare, Waipahu Depot Road, which began south of the Farrington Highway/Waipahu Depot Road intersection ending further south near the sites of the former Waipahu Ash Landfill/Waipahu Incinerator. Historical references reviewed by EI indicated that the Site has been a road since at least the 1920s (Section 2.3). The Site is approximately 3,600 linear feet and is zoned for several land uses including Community Business District (B-2), Intensive Industrial District (I-2), General Preservation District (P-2).

EI personnel conducted a reconnaissance of the Site on Saturday, March 31, 2007. Based on responses from interview questions and the Site reconnaissance, the Site is an asphalt-paved road, which was historically used to access sugar plantations formerly occupying southern portions of the peninsula. Kapakahi Stream and Pouhala Marsh are located to the west of the Site. No developments have occurred on the Site other than the current road development; however adjacent properties have been developed to include residential, commercial, and industrial land uses. Beginning in the early 1960s, the Site was also used as a route for landfill-related facilities (Waipahu Open/Ash Landfill and Waipahu Incinerator) both of which are located near the southern end of the Site.

Based on EI's due diligence, this assessment has revealed evidence of current and historic RECs in connection with the Site and off-site current and historic RECs on adjacent and nearby properties. The RECs are summarized below.

### **Current RECs at the Site**

- EI confirmed the presence of up to three petroleum pipelines beneath the central portions of the Site. The pipelines, which originate from Kapolei's Campbell Industrial Park, are believed to run east to west and lie beneath the Site in the general area of the abandoned railroad track intersection. The pipelines are located within close proximity of each other and are owned by Hawaiian Electric Company (HECO), Tesoro Gas, and Chevron Corporation. There are currently no records of pipeline release in the vicinity of the Site; however, the presence of the three petroleum pipelines beneath the Site represents a potential material threat of release of petroleum product that could impact the Site (Section 6.1.3).

### **Historic RECs at the Site**

- The State of Hawaii Department of Health (HDOH) records indicated that fugitive dumping may have occurred on the Site (Section 5.3.1). In November and December of 1990, an unknown number and quantity of old drums and asbestos were left along the banks of Kapakahi Stream, which borders the Site to the west (case nos. 19901120 and 19901205-1). The reports did not detail the exact location or amount of materials that were found; therefore, the fugitive dumping may have possibly included the Site; however, the cases received "No Further Action" (NFA) status from the HDOH. Therefore, these historic RECs do not pose a potential threat to the environmental integrity of the Site.
- In 1992, approximately 10 gallons of an unknown material was discovered leaking from a dumpster on the east adjacent property at 94-055 Waipahu Depot Road (Case no. 19910426). Details of this release were not disclosed by the HDOH; therefore, the fugitive dumping may have possibly included the Site. However, the material and dumpster were reportedly removed from the premises, and the case subsequently received a "No Further Action" (NFA) status. Therefore, this historic REC does not pose a potential threat to the environmental integrity of the Site.
- A sewage related spill was reported 94-065 Waipahu Depot Road on January 24, 1999. The spill involved 90 gallons of raw sewage. Details of this sewage release were not disclosed; therefore, the fugitive dumping may have possibly included the Site. However, the contaminated area was cleaned and disinfected shortly thereafter, and the case received a NFA status. Therefore, this historic REC does not pose a potential threat to the environmental integrity of the Site.

### **Current RECs at Adjacent or Nearby Sites**

#### **Current Adjacent Underground Storage Tank (USTs):**

- **Waipahu Wastewater Pump Station.** 93-065 Waipahu Depot Road, Waipahu; Facility ID No. 9-200148. This site is upgradient and located on the east adjacent property, approximately 600 feet south of the Waipahu Depot Road/abandoned railroad track intersection (EDR, 2006). The EDR database, HDOH records, and EI's

building permits review indicated this site currently maintains one, 10,000-gallon fiberglass reinforced UST which is used to store diesel fuel. The UST was installed in November 2000 and has no reportable incidences associated with it. According to the HDOH database, the owner of the USTs was listed as the City and County of Honolulu – Department of Environmental Services. Therefore, given this site's adjacent location and current operation of a UST, this offsite concern is considered a current offsite REC because the potential for a material release exists.

- **Waipahu Police Training Academy.** 93-043 Waipahu Depot Road, Waipahu; Facility ID No. 9-201871. This site is upgradient and located on the east adjacent property near the southern end of the Site. According to the HDOH database and EI's building permits review, this site is currently operating one, 550-gallon UST to store diesel and one, 6,000-gallon UST to store gasoline. The USTs were both installed on this property in May 1988. HDOH records did not indicate releases or reportable incidences with regard to these USTs. Therefore, given this site's adjacent location and current operation of a UST, this offsite concern is considered a current offsite REC because the potential for a material release exists.
- **Isobe Auto Body.** 94-009 Waipahu Depot Road. During this site investigation, EI identified this operation near the center of the Site on the northwest corner of the abandoned railroad and Waipahu Depot Road intersection. This site was not listed in the EDR report or HDOH databases. EI contacted the owner of the operation, Mr. Masa Isobe for further operational history of this facility. Mr. Isobe that Isobe Auto Maintenance first operated on the property currently occupied by the City and County satellite refuse drop-off yard in the 1920s. Isobe Auto Maintenance then moved operations across to the current site in 1968. He stated that a paint booth was used for auto body repairs, but neither of the Isobe operations had operated USTs, ASTs, or hydraulic lifts. He further stated that no spill-related emergencies involving hazardous wastes or materials or environmental site investigations had occurred on the current and former premises. None of Mr. Isobe's interview responses indicate a REC currently exists at the Site. However, given the long duration and nature of activities conducted by this operation in close proximity to the Site, the potential exists that unforeseen incidences at this facility may have adversely impacted the Site in the past.

## Historic RECs at Adjacent or Nearby Sites

### Landfill and Incinerator:

- The Waipahu Ash Landfill (WALF) is topographically downgradient and located adjacently to the southwest of the Site's southern end (Section 2.4). This landfill was opened in the early 1960s and was initially used for open burn disposal. Items accepted at the landfill reportedly consisted of municipal solid waste, white goods (e.g. appliances), bulky items, demolition material, dead animals, etc. The landfill was converted to an ash landfill in 1972 due to newly imposed Federal clean air standards. This site under the City and County of Honolulu is currently undergoing

landfill closure proceedings, which will include a final cover system, surface drainage system, landfill gas control facilities, landfill gas monitoring probes, and groundwater monitoring wells over the subsequent 30 year monitoring period. Presently, a final cover cap is under consideration for the landfill at which point the landfill will be classified as a “closed landfill.” The City may plan to pursue a lease agreement with the Navy to convert the site to a recreational facility once the landfill is closed in compliance with the Comprehensive Environmental Response and Liability Act (CERCLA).

- The Waipahu Incinerator, 93-071 Waipahu Depot Road, is topographically down to crossgradient and located approximately 320 feet to the east of the Site’s southern end (Section 2.4). The facility was built at the beginning of 1970 to incinerate 600 tons of solid waste which was disposed of at the WALF. The facility has been closed since 1994 and has been used as a baseyard for the City and County Refuse Department and City and County Recreations. In March of 2003, an environmental watchdog group reported that between January and November 2001, several hundred tons of “white goods” (crushed appliances) were illegally buried at this site. As a result, residue chlorofluorocarbons may have been released into the soil and groundwater and therefore poses potential to environmentally impact the Site based upon distance.

HDOH records for Waipahu Incinerator also indicated that a release was discovered during the removal and replacement of its 9,300 gallon UST, which was used to store heating oil. Site cleanup of the LUST was completed, and the USTs located at this site are “Permanently Out of Use. Given that the Waipahu Incinerator was granted a No Further Action (NFA) status and is cross to downgradient relative the Site, it is not considered a REC.

These historic RECs indicate a history of landfill and waste disposal activity in the Waipio Peninsula which suggests the entire peninsula may be impacted to varying degrees by contamination. However, given that the Site has been used as a thoroughfare since the 1920s, it is unlikely that the Site was responsible for the subsurface or groundwater impacts beneath the Site should they exist.

#### **Historic Adjacent Underground Storage Tank (USTs):**

- **Waipahu Auto Company – Division of Servco.** 94-729 Farrington Highway, Waipahu; Facility ID No. 9-200882; LUST ID No. 980210. This adjacent site is located upgradient on the southwest corner of the Farrington Highway/Waipahu Depot Road intersection (EDR, 2006). HDOH records indicate that an unauthorized subsurface release of used oil was discovered during the removal of a 500-gallon steel galvanized UST. Servco reportedly removed the UST in May of 1997. Samples were collected at that time; however, analysis of the samples did not reveal a substantial contamination issue at this site (HDOH, 2004c). The status of “Site Cleanup Completed” was determined for this site by the HDOH. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

- **Waipahu Wastewater Pump Station.** 93-065 Waipahu Depot Road, Waipahu; Facility ID No. 9-200148; LUST ID No. 990160. This site is upgradient and located on the east adjacent property, approximately 600 feet south of the Waipahu Depot Road/abandoned railroad track intersection (EDR, 2006). HDOH records indicated this site historically maintained 2,000 gallon UST which was used to store diesel fuel. Soil samples collected at the time of the tanks' removal were later analyzed and did not reveal a significant soil or groundwater contamination issue existing at this site (HDOH, 2006). Based on these results, this site was granted the status of "Site Cleanup Completed" in a letter from the HDOH, dated July, 19, 1999. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.
- **Jiffy Mart Waipahu.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-202938; Release ID 980183. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). Environet's reconnaissance of the Site area revealed that this operation is actually located on the adjacent property east of the Waipahu Auto Company – Division of Servco. The EDR report indicates that this site currently maintains a status of "Site Cleanup Completed" as of June 20, 2000. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.
- **Tajiro Uranaka.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-201203; Release ID 900066. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). This cited operation previously operated at the same address as the Jiffy Mart Waipahu station. The EDR report indicates that this site currently maintains a status of "Site Cleanup Completed" as of December 15, 1995. (HDOH, 2004c). Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

#### **Sanborn Fire Insurance Maps:**

- The 1981 through 1991 Sanborn maps showed an auto repair facility on an adjacent property approximately 200 feet south of the Farrington Highway/Waipahu Depot Road intersection along Haakoa Street. No storage tanks or containers were notated in the maps; however, these operations indicate a historic REC on these adjacent properties because they suggest the use, storage, and potential for material release of fuel and hazardous materials.

#### **Other Items of Environmental Concern**

- Three Hawaii Electric Company (HECO) pad-mounted electrical transformers (#31970, #31971, and #31973) were located on the western perimeter of the Site near the Farrington Highway/Waipahu Depot Road intersection (Section 6.1.5). The transformers, which were located on the same pole, appeared antiquated and the PCB-

status for this equipment was determined as “No Test Data.” Should the transformer leak or be damaged, HECO should be immediately notified.

The transformers can be tested HECO for a fee. If it is determined that PCB is detected within these units, HECO will have the equipment replaced and will reimburse the testing fee.

- Given the history of the Site, remote location, and various land uses in the immediate Site vicinity, EI believes that the Site is an access way for an area which could be prone to fugitive dumping. Fugitive dumping may be exceptionally problematic in the area due to the Site’s location next to Kapakahi Stream and Pouhala Marsh, which are undeveloped areas next to the former Waipahu Ash Landfill. Unforeseen incidences of dumping which may have included hazardous material and wastes may have occurred on or near the Site in the past.

### **Data Gaps**

- During the interview portions for this investigation, EI was unable to interview the current “owner” or “operator” of the Site. The City and County of Honolulu, who is the proprietor of the Site, did not have personnel who were closely familiar with the history of the Site. Even though the Site has been a roadway since the 1920s, it is EI’s opinion that this still represents a data gap for this investigation due to the possibility of historical or unreported incidences of an environmental concern.
- During the Site history review, it was determined that a TMK number has never been assigned to the Site’s northern half above the Waipahu Depot Road/abandoned railroad track intersection. The southern half of the site lies within the parcel of land identified as TMK (1) 9-3-002, Parcel 9. Plat maps indicate the entire Site being owned by the City and County of Honolulu. This represents a data gap for the Site because EI was unable to perform an ownership chain of custody for the northern half of the Site. It is EI’s opinion that this represents a minor data gap because the Site has been historically used as a road since at least the 1920s.
- Building permit records were also unavailable for the Site. It is EI’s opinion that this represents a minor data gap because the Site has historically been a road since at least the 1920s.

## 1.0 INTRODUCTION

This report presents the results of EI's Phase I ESA of Waipahu Depot Road located on the Waipio Peninsula in Waipahu on the Island of Oahu (hereinafter referred to as "the Site"). The Site consists of a 3,600 linear foot portion of roadway that includes the area south of the Farrington Highway/Waipahu Depot Road intersection and ending near former Waipahu Incinerator. The Site is bisected by a former agricultural railroad track. The northern half of the Site does not currently have a TMK number associated with it. However, the southern half of the Site is denoted by TMK No: (1) 9-4-002; Parcel 9 (Figure 1; Appendix A: Photos 1 through 24).

The purpose of this assessment was to evaluate, on the basis of readily available information, the presence of RECs at and surrounding the Site. EI's assessment of the Site has been performed in general accordance with the EPA "All Appropriate Inquiry" (40 CFR Part 312), as well as ASTM E 1527-05; which defines a REC as *the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property* (ASTM E 1527 - 05). Our ESA included the following six elements:

1. REVIEW OF SITE GEOLOGY AND HYDROGEOLOGY - Includes a review of pertinent, available documents and maps regarding local geology and hydrogeology.
2. REVIEW OF REGULATORY RECORDS - Includes a review of publicly available federal, state, and local databases of known or potential hazardous waste sites, landfills, and sites currently under investigation for environmental violations within the ASTM recommended search distance of the Site.
3. REVIEW OF SITE HISTORY - Includes a review and interpretation of available historical sources, such as Sanborn Fire Insurance maps, archival topographic maps, and aerial photographs. Maps and photographs of the area surrounding the Site were examined to obtain information regarding historical land use that may or could have involved the manufacture, generation, use, storage and/or disposal of hazardous substances. This review also includes the gathering of information regarding past and/or current Site development and/or land use provided by the City and County of Honolulu Building Permits and Land Use Department.
4. SITE RECONNAISSANCE - Includes performing a reconnaissance of the Site and adjoining areas to make visual observations of existing site conditions, improvements, and/or operations; types of land use; and nature of businesses.
5. PERSONNEL INTERVIEWS - Includes interviews with current and historical property representatives, who are familiar with the Site, in order to obtain specialized Site knowledge and evaluate Site land use, Site history, Site operations, and Site maintenance procedures. Potential interviewees include: subject property owner(s),

property manager(s), tenants, maintenance workers, adjacent property owner(s) (for abandoned properties).

6. DATA EVALUATION AND REPORT PREPARATION - Includes a compilation of all the information gathered and preparation of this report. This report describes the research performed, EI's findings, professional opinions, and conclusions.

## 2.0 SITE DESCRIPTION

This section describes the Site location and general environmental characteristics based on record reviews. Detailed descriptions of Site conditions observed during the Site reconnaissance are provided in Section 4.2.

### 2.1 General Site and Vicinity Characteristics and Zoning

The Site is located near the south coast of the Island of Oahu. Topographic map coverage of the Site vicinity is provided by the United States Geological Survey (USGS), Waipahu Hawaii 7.5 Minute Quadrangle (USGS 1998).

The Site is currently improved as a narrow, north-to-south directional, two-lane thoroughfare which begins south of the Farrington Highway/Waipahu Depot Road intersection and continues approximately 3,600 linear feet south ending near the former Waipahu Incinerator facility. The site is located on the western side of the Waipio Peninsula on the Island of Oahu, Hawaii (Figures 1 through 3). Kapakahi Stream, which flows north to south, borders the Site to the west, while residential apartment complexes and commercial buildings border the Site to the east. Pouhala Marsh, which is home to several Hawaiian endangered species, is located just beyond Kapakahi Stream to the west. The Site is mostly asphalt-paved although southern portions of the road were dilapidated with surficial cracking and occasional potholes. Stormwater surface drains, sewer manholes, fire hydrants, and utility main covers were also located on or near portions of the Site. EI did not observe the presence of monitoring wells, fillports, or vent pipes on the Site.

According to the City and County of Honolulu Department of Planning and Permitting, the Site lies in several zoned land uses including Community Business (B-2) District, Intensive Industrial (I-2) District, General Preservation (P-2) District” (City and County of Honolulu, 2004).

Based upon EI’s historical research, the Site has been utilized as a roadway since at least the 1920s. The Waipio Peninsula has been used for a variety of land uses including residential, agricultural, and more recently industrial and commercial land use purposes. The current uses of the properties immediately adjacent to the Site are shown on Figure 3.

### 2.2 Physical Setting

This section presents a summary of the Site’s physical environment based on published information.

#### 2.2.1 Topographic Review

The 1998 USGS Topographic Map of the area (Figure 1) shows the Site has an elevation range between approximately 5 feet to 10 feet above mean sea level (msl) and is relatively flat with a slight gradient towards the west adjacent Kapakahi Stream and West Loch located

approximately 1,500 feet to the west. There are no other significant topographic features near the Site.

### 2.2.2 Geologic Review

EI reviewed published geologic and hydrogeologic reports and maps to obtain available information regarding subsurface conditions in the general area of the Site.

#### *Geology*

The Island of Oahu is comprised of two volcanoes: the Koolau Volcano and the Waianae Volcano. The Waianae Range is the older of the two volcanoes and lies to the west of the younger Koolau Volcano.

The Waianae Volcano is a shield volcano built up by a series of eruptions, which produced the Waianae Volcanic Series. The Waianae Mountains, the eroded remains of the Waianae Volcanic Shield, comprise western Oahu.

The Koolau Volcano is an unusually elongate shield volcano built principally by eruptions along a northwest-southeast trending rift zone. The lavas produced during the shield-building phase of the volcano are known as the Koolau Volcanic Series and consist of tholeiitic and olivine basalts with small amounts of oceanite. The Koolau Mountains, the eroded remains of the Koolau Volcanic Shield, are approximately 37 miles long, trending northwest-southeast, and comprise approximately two-thirds of Oahu (Macdonald et al, 1983).

A long period of volcanic quiescence followed the Koolau shield-building stage, during which erosion occurred and alluvium and marine sediments accumulated along coastal regions. Deep valleys were incised into the bedrock by major streams and subsequently filled with sediments. Following a long period of volcanic quiescence, volcanic activity resumed. These subsequent eruptions, such as Diamond Head, constituted the Honolulu Volcanic Series. Lavas of the Honolulu Volcanic Series include nephelinites, melilite nephelinites, basanites, and alkalic olivine basalts (Macdonald et al, 1983).

According to Stearns (1985), the general Site area lies atop marine alluvial sediments overlying Honolulu Volcanic Series rock along the costal plain at the southwest end of the Koolau Volcano.

#### *Soil*

Soil in the Site area is underlain by three soil types, which include Tropaquepts (TR) and Fill Land (Fd), and Fill land, mixed (FL) (Foote, 1972). The Tropaquepts Series, which was indicated on the northern portions of the Site area, consist of poorly drained soils that are periodically flooded by irrigation in order to grow crops (e.g., taro, rice, etc.) that thrive in water. They occur as nearly level flood plains on the islands of Oahu and Maui. Elevations range from sea level to 200 feet above mean sea level (amsl). These soils have been flooded for varying lengths of time, and soil development differs in degree from place to place. Generally, the surface layer, about 10 inches thick, consists of dark-gray, soft, mucky silt loam. This layer

overlies firm to compact silty clay loam, 5 to 10 inches thick, that is mottled with gray, yellow, and brown. The mottled layer overlies friable alluvium. (Foote, 1972).

The southern half of the Site is underlain predominantly by Fill land, mixed and to a much lesser degree, fill land (fd) (Foote, 1972). This land type consists of areas filled with material from dredging, excavation from adjacent uplands, garbage, and bagasse, and slurry from sugar mills. The areas are on the islands of Kauai, Maui, and Oahu. Fill land (fd) consists mostly of areas filled with bagasse and slurry from sugar mills. A few areas are filled with material from dredging and from soil excavations. Generally, these materials are dumped and spread over marshes, low-lying areas along coastal flats, coral sand, coral limestone, or areas shallow to bedrock.

Fill land, mixed (FL) occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from ocean or hauled from nearby areas, garbage, and general material from other sources. Included in mapping were a few areas that have been excavated.

### *Hydrogeology*

According to Mink and Lau (Mink and Lau, Oahu: 1990), two aquifers underly the Site area. The upper aquifer, code 30203116 (12211), is classified as an unconfined (the aquifer is not confined under pressure beneath relatively impermeable rocks or soil), basal (fresh water in contact with seawater), and is a dike/perched-type (indistinguishable) aquifer. This aquifer is ecologically important. The salinity of this irreplaceable aquifer is considered low (250 mg/L to 1000 mg/L CL), and the aquifer is listed as having a high vulnerability to contamination.

The lower aquifer, code 30203121 (12212), is unconfined (the aquifer is not confined under pressure beneath relatively impermeable rocks or soil), basal (fresh water in contact with seawater), and is a flank-type (horizontally extensive lavas) aquifer. This aquifer is ecologically important. The salinity of this irreplaceable aquifer is considered low (250 mg/L to 1000 mg/L CL), and the aquifer is listed as having a moderate vulnerability to contamination (Mink and Lau, Oahu: 1990).

Based on the elevation of the Site, between approximately 5 and 10 feet above mean sea level, the depth to groundwater at the Site is estimated to be approximately two to six feet below ground surface. Generally, groundwater travels downgradient towards the ocean. Therefore, the groundwater gradient in the vicinity of the Site is probably to the west and southwest towards Kapakahi Stream and West Loch

### 2.2.3 Wells and Drinking Water Sources

The northern tip of the Site, from the Farrington Highway intersection to approximately 900 feet south, is located makai of the Underground Injection Control (UIC) line (Figure 5). The remaining portion of the Site is located mauka of the UIC line (Figure 5). The UIC line was established by the State of Hawaii Department of Health (HDOH) to protect groundwater resources. Groundwater landward (mauka) of the UIC line is considered a potential drinking

water source. Groundwater seaward (makai) of the UIC line is considered as non-potable and saline. Injection wells are prohibited above (mauka of) the UIC line.

According to the HDOH UIC Program Map (HDOH, 1983) there are three drinking water wells, 33 irrigation wells, and one injection well located within approximately 1 mile of the Site. These 37 wells are shown on Figure 1 and page A-10 of the EDR report (Appendix B). The wells illustrated on Figure 1 are from the HDOH UIC program and are based on information from July 6, 1984. The wells illustrated and listed in the EDR report (Appendix B) include information up to approximately 2001. Some wells are illustrated on both Figure 1 and the EDR map.

Of the three drinking water wells, two are located within 0.25 mile of the Site; one well is crossgradient at St. Joseph's School, and the other is upgradient of the Site. According to the Ground Water Index and Summary, both of these nearby drinking water wells are not being used (DLNR, 1997). Based on the status of the drinking water wells, it is unlikely that these wells would be threatened by the current Site use or have an effect on the Site groundwater conditions.

Of the 33 irrigation wells, nine are located within 0.25 mile and upgradient of the Site. According

The injection well is located below the UIC line to the south and nearly ¾-mile away. Based on the relative distance and location of the injection well, it is unlikely that this well would have any effect on the Site groundwater conditions.

## **2.3 Past Land Use of Site and Surrounding Properties**

The following subsections discuss EI's findings regarding the Site and surrounding area history that could be gleaned from historic building permits, aerial photographs, maps, tax records, and tax assessment records.

### **2.3.1 Building Permits**

Building permits for the Site and adjacent properties were examined on the City and County of Honolulu Real Property Assessment Division web site (1977 to present). The permit records were examined in order to identify RECs associated with the Site and adjacent properties.

The northern half of the Site, which consists of the portion of Waipahu Depot Road from the Farrington Highway/Waipahu Depot Road intersection to the area north of the bisecting abandoned railroad track, has never been issued a TMK number, and therefore, no building permits were associated with this portion of the Site.

However, the southern half of the Site, which consists of the Waipahu Depot Road south of the bisecting abandoned railroad track to the southern end near the former Waipahu Incinerator, is included on parcel TMK 9-3-002, Parcel 9. This parcel is owned by the City and County of Honolulu and encompasses an area of approximately 58 acres. Several tenant

occupants are located on the Site parcel and are adjacently located to the Site, including the Waipahu Wastewater Pump Station (93-065 Waipahu Depot Road), Honolulu Police Academy (93-093 Waipahu Depot Road), and the former Waipahu incinerator (93-071 Waipahu Depot Road) (Figure 2). The following summarize information that was available in the building permits for adjacent sites that indicate the presence of a REC or potential REC.

- A permit (Permit No. 389338) filed by Waipahu Wastewater Pump Station on June 5, 1996, indicates a fuel storage tank was removed from this facility's grounds.
- A permit (Permit No. 420380) filed by Waipahu Wastewater Pump Station on July 30, 1998, indicates a fuel storage tank was upgraded on this facility's grounds.
- A permit (Permit No. 421033) filed by the Police Training Facility on August 17, 1998, indicates a fuel storage tank was modified on this facility's grounds.

The presence of fuel storage tanks on the Site parcel is considered RECs because they represent a material threat of release of hazardous materials and petroleum hydrocarbons historically or in the future.

#### *Adjacent Properties*

Historical building permits of eleven adjacent parcels were reviewed. The majority of the adjacent parcel permits consisted of building alterations, electrical, plumbing, and other building improvements. These historical permits are not considered RECs.

#### 2.3.2 Aerial Photographs and Maps

Past land use was evaluated by reviewing historical topographic maps (1928, 1954, 1959, 1968, 1983, and 1998) and aerial photographs (1939-41, 1955, 1962, 1968-69, 2001). EI also reviewed a City and County of Honolulu Department of Planning Development Plan Map (Central Oahu, East Sheet), dated 1987. EI selected representative documents to show the evolution of the Site and the surrounding area, which are summarized below.

The 1928 topographic map depicted the Site as a "cane road" which appeared similar to the current site configuration. Several single-family residential structures were observed along the eastern perimeter of the Site, mostly along the northern end, and a railroad, notated as being owned and operated by the Railway and Land Company, was depicted running east to west and intersecting the central portions of the Site. Farrington Highway was not depicted in this map; however, the north-south flowing Kapakahi Stream was indicated along the western perimeter of the Site. The Waipahu Sugar Mill, which was surrounded by dense residential and commercial development at the time, was depicted over a mile away to the north of the Site. A pipeline, most likely irrigation related, was indicated approximately 800 to 1,000 feet away to the south. Other observations in this map included several small irrigation reservoirs or ponds and other cane roads located further south of Waipahu Depot Road.

The 1939 aerial photograph showed the Site as the current roadway with the eastern adjacent properties being comprised almost entirely of agriculturally cultivated land. Occasional

farm or residential housing was also observed along the Site's eastern perimeter. A newly improved thoroughfare currently identified as Farrington Highway bordered the Site to the north, and an intersecting railroad was visible near the center of the Site. Other notable observations included several fish ponds, which were located approximately 800 feet southwest of the south end of the Site.

The 1951 aerial photograph showed the Site essentially unchanged from the previous 1939 aerial photograph with the exception of increased residential housing development near the north end of the Site, along the eastern perimeter. A moderately dense residential neighborhood appeared located along the western side of Kapakahi Stream less than 90 feet away.

The 1954 and 1959 topographic maps and 1955 aerial photograph showed the Site relatively unchanged from the previous topographic map and aerial photographs with the exception of the east adjacent properties located south of the intersecting railroad. This area appeared to include a large area of land, which was notated in the topographic map as a "Naval Reservation." Additional residential structures were apparent along the eastern perimeter of the Site (closer to the northern end). The 1959 topographic map indicated the intersecting railroad near the center of the Site as "Abandoned."

The 1962, 1968, and 1969 aerial photographs and 1968 and 1983 topographic maps showed the Site unchanged from the 1954 and 1959 topographic maps and 1955 aerial photograph; however, piles of debris and plumes of smoke were observed emanating from a large plot of land located on the southwest adjacent property identified as the Waipahu Ash Landfill (WALF). East adjacent properties located south of the railroad intersection were shown as agricultural land while west adjacent properties south of the railroad intersection appeared as a marsh. West and east adjacent land north of the railroad intersection were shaded to depict dense unspecified development. The aerial photographs showed these areas developed with residential neighborhoods and several commercial structures along the Site. The 1969 aerial photograph also showed the footprint plan of Ted Makalena Golf Course, located approximately 800 to 900 feet away to the east of the Site.

The 1987 City and County of Honolulu Development Map depicted the Site as the current thoroughfare surrounded by various land use zoning designations. The eastern perimeter of the Site, nearest the northern end at Farrington Highway, consisted of commercial and industrial land uses. The east adjacent properties south of the railroad intersection was zoned "Public/Quasi-Public while lands further south were zoned "Industrial" and "Military." The west adjacent properties across Kapakahi Stream were zoned "Preservation" and "Residential." Properties to the north of the Site, across Farrington Highway, consisted of commercial and residential zoned land.

In the 1998 topographic map and 2000 aerial photograph, the Site appeared similar to the conditions observed on EI's December 2006 site visit. The WALF was no longer present on the southwest adjacent property.

In summary, the Site has been used as a thoroughfare since at least 1928 and the historic maps and aerial photographs do not indicate the presence of any RECs associated with the Site.

Based on topographic maps and aerial photographs dated from 1962 to 1983, a landfill (WALF) was shown on the adjacent property to the southwest of the southern end of the Site. Landfills indicate a potential historic REC because they are normally associated with the disposal of wastes, both solid and potentially hazardous.

### 2.3.3 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps dated 1957, 1981, 1987, 1990, and 1991 were supplied by EDR (Appendix B). Only the northern portions of the Site from about the former railroad intersection were covered during these years. The Sanborn maps were examined in order to identify RECs associated with the Site and adjacent properties. The Sanborn maps indicated the following:

- In the 1957, Sanborn map, Kapakahi Stream, which borders the Site to the west, was wrongly notated as Waikele Stream. The majority of adjacently developed properties along the east and west Site perimeters consisted of single-family residential dwellings.

However, a service station, notated as “gas and oil,” was located on the southwest corner of the Farrington Highway/Waipahu Depot Road intersection. A new and used auto sales lot, which was depicted with concrete-paved surfacing, was observed on the southeast corner of the Farrington Highway/Waipahu Depot Road intersection.

- The 1981 and 1987 Sanborn maps properly notated Kapakahi Stream. No significant changes were indicated in these maps from the 1957 Sanborn map. Another east adjacent auto repair facility was indicated approximately 200 feet south of the Farrington Highway/Waipahu Depot Road intersection along Haakoa Street. No storage tanks or containers were notated, however, these operations indicate a historic REC on these adjacent properties because they suggest the use, storage, and possible release of large quantities of fuel and hazardous materials.
- The 1990 and 1991 Sanborn maps did not appear significantly different from the 1981 and 1987 Sanborn maps with the exception of the previously indicated service station located on the southwest corner of the Farrington Highway/Waipahu Depot Road intersection. The parcel was occupied by a used auto sales lot during this year.

No storage tanks or containers were notated on the operations cited above. However, the adjacent operations indicate a historic REC on these properties because they suggest the use, storage, and possible release of large quantities of fuel and hazardous materials.

### 2.3.4 Tax Records

EI attempted to review City & County of Honolulu Real Property tax records for the Site to assess the chain of title for Site uses that may indicate a REC. The Site’s southern half from the abandoned railroad track to the southern end near the former Waipahu incinerator, is located on TMK no. (1) 9-3-002; Parcel 9. This parcel has been owned by the City and County of the Honolulu since 1967, when it was originated from another parcel (TMK no. [1] 9-3-002; Parcel 1). Tax assessor records indicate that TMK no. (1) 9-3-002; Parcel 1 was owned by the U.S.

Naval Reservation in 1967. The earliest record for this parcel showed that prior to this, it was owned by the United States of America from 1944. Records dating before this were not available for this portion of the Site.

The northern part of the road is not currently assigned a TMK number. According to Mr. Jason Flores, City and County of Honolulu Real Property - Mapping Division, historical or current TMK number(s) were never assigned to that portion of the Site because the road was unrecorded as a taxable piece of land. Plat maps reviewed by EI indicated that the Site has been owned by the City and County of Honolulu for several decades. According to Mr. Flores, chain of custody for this portion of the Site could only be accomplished by contracting a title company. Given that the Site has historically been a road since the 1920s, it is EI's opinion that the lack of tax record information does not represent a significant data gap for this historical portion of this investigation.

## 2.4 Previous Environmental Reports

During the course of this Phase I investigation, Environet was provided with the following reports to review

*Research and Analysis: Waterfront Passive Park, Waipahu, Oahu, Hawaii*, dated October 2006, for the City and County of Honolulu, Prepared by Lester H. Inouye and Associates.

The purpose of this report, which was conducted for the City and County of Honolulu-Department of Design and Construction, serves as planning analysis tool for the Waipahu Depot Road and the adjacent 49 acre open field, formerly the Waipahu Ash Landfill site, which will be known as the Waterfront Passive Park (WPP). This research and analysis report included site reconnaissance, site access discussion, limitations and constraints, and possible opportunities with regard to the development of these areas. The report discussed facts and points regarding the Site included the following:

- Waipahu Depot Road has been owned by the City and County of Honolulu and has an existing 44 foot right of way. It is believed that the Site along with the main access route, Waipio Point Access Road, will completely accommodate the expected traffic generated by the soccer park and the WPP.
- No known historical or archaeological resources were known to exist on the Site or the area formerly occupied by the WPP.
- The Site, Waipahu Depot Road, is planned to provide the secondary access to the designed park. These plans call for the re-improvement of the Site, which will include new sidewalks, road curbs, bench seating and professional landscaped areas.
- These improvements, particularly the addition of curbs and sidewalks, will call for an additional six feet of right of way or easement. A 12 foot wide promenade will be added along the western perimeter of the Site. The promenade will also help limit the natural occurrence of erosion, which has been evidenced along the banks of the Kapakahi Stream.

- A permit (Permit No. 420380) filed by Waipahu Wastewater Pump Station on July 30, 1998, indicates a fuel storage tank was upgraded on this facility's grounds.

*“Draft Environmental Assessment for Waipahu Ash Landfill Closure, Waipahu, Oahu, Hawaii, Tax Map Key: 9-3-02, Por. 9, 1, and 28,”* dated January 2004, For the Department of Environmental Services, Division of Refuse Collection and Disposal, Prepared by Earth Tech, Inc.

- The purpose of the closure plan is to satisfy state landfill requirements by addressing leachate and landfill gas management and providing recommendations for the final cover system to fulfill the State of Hawaii Department of Health regulations and guidelines for landfills.
- The WALF was a modified area fill that began operating in the early 1960s until November 1991. It was originally used as an open burn facility where solid wastes were deposited and burned. Open burning activities ceased at this site in 1970. Once the nearby Waipahu Incinerator was completed in 1972, the site was used as an ash landfill. From 1970 to 1972, the site was solely a solid waste landfill and accepted municipal solid waste, white goods (e.g. appliances), bulky items, demolition material, dead animals, etc.
- According to the Closure report for the WALF, the City will be required to monitor the final cover system, surface drainage system, landfill gas control facilities, landfill gas monitoring probes, and groundwater monitoring wells during the subsequent 30 year monitoring period. A permit (Permit No. 420380) filed by Waipahu Wastewater Pump Station on July 30, 1998, indicates a fuel storage tank was upgraded on this facility's grounds.

### 3.0 USER PROVIDED INFORMATION

ASTM E1527-05 outlines the responsibilities of the user in context of completing a Phase I ESA. A user is defined as *the party seeking to use the Phase I ESA to complete an environmental site assessment of a property*. A user may include a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager (ASTM E 1527-05). In line with this definition, EI regards the user as the person/organization (client) hiring EI to conduct this Phase I ESA. As part of completing a Phase I ESA, the user (client) has the following duties:

- Review available documents regarding past and/or current Site development, land use, and operation. Potentially useful documents include: title reports, Site plans, Site surveys or reports, MSDSs, registrations for underground and above ground storage tanks, environmental permits (e.g. wastewater, solid waste disposal, National Pollutant Discharge Elimination System), lists of present and past tenants, previous environmental or geotechnical reports, and agency correspondence pertaining to the Site.
- Assess any specialized knowledge or experience of the user relating to the presence of RECs at the Site.
- Compare the purchase price to the fair market value for the property, if the property was not contaminated.
- Search for recorded environmental cleanup liens for the Site.
- Consider the degree of obviousness of contamination at the Site.

EI interviewed Mr. James Louis with the City and County of Honolulu for information regarding user responsibilities associated with the Phase I ESA. Mr. Louis is a Civil Engineer V with the City and County of Honolulu Planning and Refuse Division of the architectural planning firm which will head the development of the Site, and has been familiar with the Site for seven years. A copy of the completed user (client) interview form is included in Appendix C.

It is EI's opinion that the user (client), Mr. Louis, did not meet all user responsibilities for this Phase I ESA, as described in ASTM E 1527-05.

## **4.0 RECORDS REVIEW**

EI reviewed state and federal regulatory agency records for information on known or potential sources of hazardous waste, petroleum products, or other RECs at or near the Site. The following records and lists were reviewed for sites within the ASTM-specified minimum search distance from the property located at , which, according to EDR, is located at the coordinates 19° 42' 27" N latitude and 155° 3' 13" W longitude.

### **Sites Within One Mile of the Subject Site**

- EPA National Priority List (NPL)
- EPA Resource Conservation and Recovery Act (RCRA) Corrective Action Site (CORRACTS) List
- State of Hawaii Department of Health (HDOH) State Hazardous Waste Sites (SHWS)

### **Sites Within 0.5 Mile of the Subject Site**

- EPA Delisted National Priority List
- Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List
- CERCLIS No Further Remedial Action Planned (NFRAP) List
- EPA RCRA non-CORRACTS, Treatment, Storage, and/or Disposal (TSD) Facilities List
- HDOH Landfill and/or Solid Waste Disposal Site Lists
- HDOH Leaking Underground Storage Tank (LUST) List

### **On the Site and Adjoining Properties**

- HDOH Registered Underground Storage Tank (UST) List
- RCRA Generators List

### **On the Site**

- Federal Emergency Response Notification System (ERNS) List
- EPA Institutional Controls and Engineering Controls Lists
- HDOH Institutional Control and Engineering Control Lists
- HDOH Voluntary Response Program List

- HDOH Brownfields List

Explanations of each federal record or list are provided in Environmental Data Resources, Inc.'s (EDR's) report attached Appendix B. State of Hawaii records are defined within this report, because they are not all included in the EDR report.

#### **4.1 EPA National Priorities List**

There are no NPL sites listed on or within one mile of the Site (EDR, 2006; Appendix B).

#### **4.2 EPA RCRA CORRACTS Facilities List**

There are no RCRA CORRACTS facilities located within one mile of the Site (EDR, 2006; Appendix B).

#### **4.3 HDOH SHWS List**

The SHWS records are the states' equivalent to CERCLIS. These sites may or may not be listed on the federal CERCLIS list. The SHWS list contains information on sites identified by the State of Hawaii as abandoned, inactive, or uncontrolled hazardous waste sites that may require cleanup.

The Site is not listed as a SHWS facility; however, there is one SHWS facility located within one mile of the Site (EDR, 2006; Appendix B). The SHWS facility of concern, Alexander and Baldwin Mill Town Diesel Plume, which is associated with the former Waipahu Sugar Mill, is located over ¼-mile away to the north of the of Farrington Highway/Waipahu Depot Road intersection. According to the EDR report, the diesel plume resulting from past operations at the mill was detected in the groundwater beneath this site. The EDR report indicated this site's case status as "ongoing" as of July 24, 2006.

EI has conducted and reviewed previous investigations of this off-site concern. The reported contamination was the result of numerous activities and USTs historically operated at this site. Based on what is known, the diesel plume in question currently poses the most potential for offsite migration; however, investigations conducted over the years have shown that the plume has been contained and limited to the area of this former operation. While this facility is located upgradient relative to the Site and the case status remains active by the HDOH, it is not expected to represent a potential REC to the subject Site.

#### **4.4 EPA Delisted National Priorities List**

There are no NPL listed facilities located on or within half a mile of the Site (EDR, 2006; Appendix B).

#### **4.5 EPA CERCLIS List**

There are no CERCLIS listed facilities located on the Site or within a half a mile of the Site (EDR, 2006; Appendix B).

#### **4.6 EPA RCRA non-CORRACTS TSD Facilities List**

There are no RCRA non-CORRACTS TSD facilities located on or within half a mile of the Site (EDR, 2006; Appendix B).

#### **4.7 HDOH Landfill and/or Solid Waste Disposal Site Lists**

The Site was not listed as a landfill or Solid Waste Disposal Site. However, there was one HDOH landfill/Solid Waste Disposal Site. The former Waipahu Ash Landfill (WALF) was identified as a CECLIS site and is located southwest and adjacent to the southern end of the Site (Figure 2). At the time of EI's Site reconnaissance activities, the WALF site consisted of undeveloped land with steep grades along the sides with a flattened plateau. The surface area was covered with dense low-lying vegetation and trees.

The WALF site is owned by several entities. The State owns approximately eight acres of land, the City owns 2.5 acres of land, and U.S. Navy owns the remaining 38.5 acres of land. According to a letter from Wil Chee Planning, Inc. to the City and County of Honolulu Department of Planning and Permitting, dated November 21, 2001, the Navy as two thirds owner of the WALF has determined that a categorical exclusion was appropriated to the closure action; therefore, an environmental assessment has not been prepared for the landfill site.

The City of Honolulu is currently in the process of closing the WALF by providing the final cover over the landfill per the requirements of the applicable RCRA, CERCLA, and NPA requirements. The WALF is within the State Conservation District (Protective subzone), and the City is required to prepare a 30 year maintenance program for the site once the Navy approves the City's request to close the ash landfill site.

EI reviewed the latest report for this site entitled "*Draft Environmental Assessment for Waipahu Ash Landfill Closure, Waipahu, Oahu, Hawaii, Tax Map Key: 9-3-02, Por. 9, 1, and 28,*" dated January 2004, for the Department of Environmental Services, Division of Refuse Collection and Disposal, prepared by Earth Tech, Inc. The purpose of the closure plan is to satisfy state landfill requirements by addressing leachate and landfill gas management and providing recommendations for the final cover system to fulfill the State of Hawaii Department of Health regulations and guidelines for landfills. The WALF was a modified area fill that began operating in the early 1960s until November 1991. It was originally used as an open burn facility where solid wastes were deposited and burned. Open burning activities ceased at this site in 1970. Once the nearby Waipahu Incinerator was completed in 1972, the site was used as an ash landfill. From 1970 to 1972, the site was solely a solid waste landfill and accepted municipal solid waste, white goods (e.g. appliances), bulky items, demolition material, dead animals, etc.

According to the Closure report for the WALF, the City will be required to monitor the final cover system, surface drainage system, landfill gas control facilities, landfill gas monitoring probes, and groundwater monitoring wells during the subsequent 30 year monitoring period.

According to the Final EA for WALF Closure, once the final cover system over the landfill is completed, the land will be classified as a “closed landfill.” The EA indicates that the City may plan to pursue a lease agreement with the Navy to convert the site to a recreational facility once the landfill is closed and compliance with the CERCLA is achieved.

CERCLA requires protection of human health and the environment, and compliance with applicable or relevant and appropriate requirements. Conversion to a recreational facility will require that additional design features and precautions be established to prevent any damage to the cap. Additional design features may include increase soil layer thickness to allow special turf establishment and accommodate a buried irrigation system. Conversion to a park will also require the City to go through the NEPA review process and gain approvals from the Department of Health, Department of Land and Natural Resources, and the Navy. The post-closure plan would need to be modified as necessary to include any changes to the land fill cap.

The Waipahu Incinerator, 93-071 Waipahu Depot Road, is topographically down to crossgradient and located approximately 340 feet to the east of the Site’s southern end (Section 2.4). The facility was built at the beginning of 1970 to incinerate 600 tons of solid waste which was disposed of at the WALF. The facility has been closed since 1994 and has been used as a baseyard for the City and County Refuse Department and City and County Parks and Recreation Department. In March of 2003, an environmental watchdog group reported that between January and November 2001, several hundred tons of “white goods” (crushed appliances) were illegally buried at this site. As a result, residue chlorofluorocarbons may have been released into the soil and groundwater.

Based on the proximity of these sites, the size of the facilities, nature and magnitude of disposal activities, and current status, these sites represent a historic offsite RECs to the Site.

#### **4.8 HDOH Leaking UST List**

The Site was not listed as a leaking UST (LUST) site. There are six LUST sites located within half a mile of the Site, three of the listed sites are adjacent to the subject Site (EDR, 2006; Appendix B). The LUST sites with a potential concern to the Site are discussed below.

- **Waipahu Auto Company – Division of Servco.** 94-729 Farrington Highway, Waipahu; Facility ID No. 9-200882; LUST ID No. 980210. This adjacent site is located upgradient and located on the southwest corner of the Farrington Highway/Waipahu Depot Road intersection (EDR, 2006). HDOH records indicate that an unauthorized subsurface release of used oil was discovered at this operation during the removal of a 500-gallon steel galvanized UST. Servco reportedly installed this UST in May of 1974, and the UST was removed in May of 1997. At the time of this UST removal event, work crews noted petroleum odor from the pit. Samples were collected at that time; however, analysis of the samples did not reveal a

substantial contamination issue at this site (HDOH, 2004c). The status of “Site Cleanup Completed” was determined for this site by the HDOH.

Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

**Waipahu Wastewater Pump Station.** 93-065 Waipahu Depot Road, Waipahu; Facility ID No. 9-200148; LUST ID No. 990160. This site is upgradient and located on the east adjacent property, approximately 600 feet south of the Waipahu Depot Road/abandoned railroad track intersection (EDR, 2006). HDOH records indicated this site historically maintained 2,000 gallon UST which was used to store diesel fuel. Soil samples collected at the time of the tanks’ removal were later analyzed and did not reveal a significant soil or groundwater contamination issue existing at this site (HDOH, 2006). Based on these results, this site was granted the status of “Site Cleanup Completed” in a letter from the HDOH, dated July, 19, 1999. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

- **Waipahu Incinerator.** 93-071 Waipahu Depot Road, Waipahu; Facility ID No. 9-202178; LUST ID No. 900076. This site is downgradient and located approximately 90 feet to the east of the Site’s southern end. According to the EDR report, the case for this site was transferred to the HDOH HEER Office on December 26, 1991. HDOH records indicated that an unauthorized subsurface release was discovered during the removal and replacement of its 9,300 gallon UST which was used to store heating oil. Site cleanup of the LUST was completed, and the USTs located at the site are Permanently Out of Use. Given that the Waipahu Incinerator was granted a No Further Action (NFA) status and is cross to downgradient relative the Site, it is not considered a REC.

Based on these investigative results and findings, the release at the Waipahu Wastewater Pump Station site is no longer an environmental concern to the Site and is classified as a Historical REC at an adjacent property.

**Jiffy Mart Waipahu.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-202938; Release ID 980183. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). Environet’s reconnaissance of the Site area revealed that this operation is actually located on the adjacent property east of the Waipahu Auto Company – Division of Servco. The EDR report indicates that this site currently maintains a status of “Site Cleanup Completed” as of June 20, 2000. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

**Tajiro Uranaka.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-201203; Release ID 900066. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). This cited operation previously operated at the same address as the Jiffy Mart Waipahu station. The EDR report indicates that this site currently maintains a status of “Site Cleanup Completed”

as of December 15, 1995. (HDOH, 2004c). Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

#### 4.9 HDOH UST Section Database Listing

The Site is not listed on the UST database. However, there are four UST sites located on adjacent properties (HDOH, 2004b and EDR, 2006; Appendix B). EI reviewed files for the adjacent UST sites:

- **Waipahu Auto Company – Division of Servco.** 94-729 Farrington Highway, Waipahu; Facility ID No. 9-200882. This adjacent site is located upgradient and located on the southwest corner of the Farrington Highway/Waipahu Depot Road intersection (EDR, 2006). The EDR database and HDOH records indicated that this site had previously maintained a 500-gallon galvanized steel UST which was used to store used oil. The tank was installed in May 1974 and removed in May 1997. The UST is listed as “Permanently Out of Use.” This site was also listed concurrently as a LUST site with a status of “Site Cleanup Completed.” Therefore, the Waipahu Auto Company historic UST listing does not currently pose an environmental material threat to the Site.
- **Waipahu Wastewater Pump Station.** 93-065 Waipahu Depot Road, Waipahu; Facility ID No. 9-200148. This site is upgradient and located on the east adjacent property, approximately 600 feet south of the Waipahu Depot Road/abandoned railroad track intersection (EDR, 2006). The EDR database and HDOH records indicated this site currently maintains a 10,000-gallon fiberglass reinforced UST which is used to store diesel. The UST was installed in November 2000 and has no reportable incidences associated with it. According to the HDOH database, the owner of the USTs was listed as the City and County of Honolulu – Department of Environmental Services. Based upon distance, topographic location, and status, the Waipahu Wastewater Pump Station current maintenance of a UST is a current REC because it poses a material threat of release which could impact the Site.

This site historically maintained a 2,000 gallon galvanized steel UST which was used to store diesel fuel. The tank was installed in May 1976 and removed in January 1999. The UST is listed as “Permanently Out of Use.” This site was listed concurrently as a LUST site with a status of “Site Cleanup Completed.” Based on these results, this site was granted the status of “Site Cleanup Completed” in a letter from the HDOH, dated July, 19, 1999. Therefore, the Waipahu Wastewater Pump Station’s historic UST listing is a historic REC which no longer poses an environmental threat of release to the Site.

- **Waipahu Police Training Academy.** 93-043 Waipahu Depot Road, Waipahu; Facility ID No. 9-201871. This site is upgradient and located on the east adjacent property near the southern end of the Site. According to the HDOH database, this site is currently operating one, 550 gallon UST to store diesel and one, 6,000 gallon

UST to store gasoline. The USTs were both installed on this property in May 1988. HDOH records did not indicate releases or reportable incidences with regard to these USTs.

Based upon distance, topographic location, and facility status, the Waipahu Police Training Academy constitutes a current offsite REC to the Site because the potential for a material release which could impact the Site exists.

- **Jiffy Mart Waipahu.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-202938. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). Environet's reconnaissance of the Site area revealed that this operation is actually located on the adjacent property east of the Waipahu Auto Company – Division of Servco. The EDR report indicates that this site currently maintains two, 10,000 gallon UST to store gasoline and one, 10,000 gallon UST to store diesel. All three tanks are composed of double reinforced fiberglass with monitoring and were installed at this site in 1998. There are no reportable incidences or releases associated with these USTs.

This site also historically maintained three, 10,000 gallon USTs to store gasoline and diesel. The USTs were reportedly installed at this facility in April 1983 and removed in July 1998. The site was concurrently listed as a LUST site. The EDR report indicates that this site currently maintains a status of "Site Cleanup Completed" as of June 20, 2000. Because the Jiffy Mart Waipahu release site is located approximately 300 feet away and reportedly maintains an NFA status, it is not considered an offsite REC to the Site.

**Shell Service Station.** 94-709 Farrington Highway, Waipahu; Facility ID No. 9-201015. This site is located crossgradient and approximately 75 feet west of the Site along Farrington Highway (DOH, 2002). Environet's reconnaissance of the Site area revealed that this operation is located on the southern side of Farrington Highway across Kapakahi Stream. The DOH database indicated that a Shell Service Station previously operated on this property and maintained one, 6,000 gallon UST for the purpose of storing gasoline. The tank was removed from this property in 1988 and subsequently received a "permanently out of use" status. Because this site is located crossgradient and reportedly maintains an NFA status, it is not considered an offsite REC to the Site.

#### 4.10 EPA CERCLIS-NFRAP List

There are no CERCLIS-NFRAP sites located on or within half a mile of the Site (EDR, 2006; Appendix B).

#### 4.11 EPA RCRA Generators List

The subject Site is not listed on the RCRA generators list and there were no adjacent RCRA generator sites (EDR, 2006; Appendix B).

#### **4.12 EPA ERNS List**

The subject Site is not listed on the ERNS list. There were no reported incidents on the Site (EDR, 2006; Appendix B).

#### **4.13 EPA Institutional Controls and Engineering Controls Lists**

The subject Site is not listed on the EPA Institutional Controls List. The subject Site is not listed on the EPA Engineering Controls List (EDR, 2006; Appendix B).

#### **4.14 HDOH Institutional Controls and Engineering Controls Lists**

The HDOH Institutional Controls List and Engineering Controls Lists are the states' equivalent to the federal Institutional Controls and Engineering Controls lists maintained by the EPA. These sites are part of the HDOH HEER Office's State Response Program. These sites may or may not be listed on the federal equivalent lists.

The subject Site is not listed on the HDOH Institutional Controls List. The subject Site is not listed on the HDOH Engineering Controls List (EDR, 2006; Appendix B).

#### **4.15 HDOH Voluntary Response Program List**

There are no Voluntary Response Program facilities located on or within a half mile of the Site (EDR, 2006; Appendix B).

#### **4.16 HDOH Brownfields List**

There are no Brownfields located on or within a half mile of the Site (EDR, 2006; Appendix B).

## **5.0 PERSONNEL INTERVIEWS**

EI conducted multiple interviews with persons knowledgeable of the Site, in order to gain information regarding land use, Site history, and Site operations.

### **5.1 Current Personnel Interviews**

#### 5.1.1 Owner(s) Interview

The Site is currently owned by the City and County of Honolulu. EI was unsuccessful in reaching personnel within this agency who had related knowledge of the Site's history.

#### 5.1.2 Site Manager(s)/Property Manager(s) Interview

The Site consists of a road, and no property or site managers exist for the Site.

#### 5.1.3 Occupant(s) Interview

The Site consists of a road. Therefore, no occupants exist at the Site.

### **5.2 Historical Personnel Interviews**

#### 5.2.1 Past Owner(s), Operators(s), and Occupant(s) Interview

On December 4, 2006, EI interviewed Mr. Goro Arakawa by phone, a resident and former store owner who has lived most of his life on Waipahu Depot Road. From the 1920s to the 1960s, Mr. Arakawa's family owned the only clothing supply and general merchandise store in the area, serving the general population and Waipahu Sugar Mill workforce. He reported that the Site was used as an agricultural access road to rice fields and sugarcane plantations which were historically located further south on the peninsula. Mr. Arakawa indicated to the best of his memory that no release-related emergencies or spills involving hazardous materials had occurred on the Site during the years he has spent in the area. However, he did recall that the Waipahu Sugar Mill regularly utilized the bordering Kapakahi Stream as a flue for untreated sewage and exhaust water used as coolant for mill equipment.

Mr. Arakawa stated that the Site has no history of USTs or ASTs installed onsite since it had been used as a road even before the 1920s, but several auto maintenance/repair shops have occupied east adjacent properties over the years. One long-term tenure operation he recalled was Isobe Auto Repair, located at 94-009 Waipahu Depot Road. During EI's site reconnaissance, this adjacent property was observed on the northeast corner of the Waipahu Depot Road/former railroad intersection directly across from the County of Honolulu satellite refuse drop-off yard.

EI interviewed Mr. Masa Isobe on December 11, 2006, who stated that Isobe Auto Maintenance had originally operated on the property currently occupied by the refuse drop-off yard during the 1920s. Isobe Auto Maintenance then moved operations across to the current site

premises in 1968. He stated that a paint booth was used for auto body repairs, but neither of the Isobe operations had operated USTs, ASTs, or hydraulic lifts. He further stated that no spill-related emergencies involving hazardous wastes or materials or environmental site investigations had occurred on the current and former premises. Mr. Isobe was interviewed by phone on December 11, 2006, for information and knowledge regarding RECs associated with the Site. None of Mr. Isobe's interview responses indicate a REC exists at the Site.

### **5.3 Additional Interviews**

The ASTM E 1257-05 standard requires adjacent property owner(s) to be interviewed if the subject property for the Phase I ESA meets the above definition of an abandoned property. The Site is a paved road and is not classified as an abandoned site.

#### **5.3.1 State or Local Official(s) Interview**

EI contacted the State of Hawaii Department of Health on December 6, 2006 to discuss the Site. No agency representatives had relative or significant knowledge of the Site, and no Hazard Evaluation Emergency Response (HEER) reportable incidences were on file for the Site (HEER Database, 2003). However, EI interviewed Ms. Liz Galvez, Department of Health Coordinator who stated that there were no reportable incidences which occurred on the Site. However, she had status information regarding reports of intentional dumping of old drums and asbestos which had occurred on the bordering banks of Kapakahi Stream (case nos. 19901120 and 19901205-1). The incidences were individually reported in November and December of 1990. The reports did not detail the exact location of the incident or amount of dumped materials discovered; however, according to Ms. Galvez, incidences were ranked as a low priority and the old drums and asbestos were removed from the area. Both cases received NFA status.

The HEER database indicated that in September 1992, approximately 10 gallons of an unknown material was discovered leaking from a dumpster on the east adjacent property at 94-055 Waipahu Depot Road (Case no. 19910426). Ms. Galvez stated that material and dumpster were removed from the premises, and the case received a NFA status.

The HEER database revealed that a sewage related spill was reported at 94-065 Waipahu Depot Road on January 24, 1999. The spill involved approximately 90 gallons of sewage. The contaminated area was cleaned and disinfected shortly thereafter and the case received a NFA status.

Based on the NFA status of these incidences, none of Ms. Galvez interview responses indicate a REC exists at the Site.

## 6.0 SITE RECONNAISSANCE

EI conducted a reconnaissance of the Site for visual observations of RECs.

### 6.1 Site Reconnaissance

On Saturday, March 31, 2007, EI personnel conducted a reconnaissance of the Site. All observations are based on the Site's condition at the time of EI's reconnaissance. The Site is a public thoroughfare, and EI was able to access the Site without permission or access restrictions. All accessible areas of the Site are shown in Figure 2 and in Photos 1 through 24 (Appendix A).

The Site encompasses a narrow, two-lane road which begins south of the Farrington Highway/Waipahu Depot Road intersection, extending southward and ending near the former Waipahu incinerator facility (Figure 3). The Site was bordered to the west by Kapakahi Stream, which at the time of the site visit, was observed flowing low with dense tropical vegetation along the banks. The east perimeter of the Site was characterized by mostly residential and commercial development. The roadway is approximately 12 to 15 feet across with an approximate length of 3,600 linear feet. An abandoned Oahu Sugar Company railroad track was observed running east to west, bisecting the Site into northern and southern halves. A sign indicating the presence of a Chevron petroleum pipeline was posted near the center of the Site at the intersection of the former railroad track. EI confirmed the presence of up to three petroleum pipelines beneath the Site. The pipelines, which originate from Kapolei's Campbell Industrial Park, are believed to run east to west lying beneath the Site in the general area of the abandoned railroad track intersection. The pipelines are located within close proximity of each other and are owned by HECO, Tesoro Gas, and Chevron Corporation.

Sewer and water main runs below the general area of the Site, and EI observed manholes, fire hydrants, utility main covers, and stormwater surface drains along various portions of the road. EI observed areas of fugitive waste disposal (e.g., cans, wrappers, etc.) along the Kapakahi Stream banks. Several pole-mounted transformers were located along the western perimeter of the Site between the Farrington Highway/Waipahu Depot Road intersection, and the abandoned railroad track. Power-lines and telephone poles were also located on either side of the Site. Evidence of *de minimus* petroleum-based material staining was observed on limited portions of the Site's asphalt surfacing. The staining, however, did not appear to represent an immediate environmental concern to the Site.

The general topography of the Site is flat with a slight gradient towards the south and to the west towards the bordering Kapakahi Stream.

EI's did not observe monitoring wells or unusual surface anomalies such as vent pipes or UST fill ports on the Site. Furthermore, EI did not detect any strange odors or observe stressed vegetation either on or near the vicinity of the Site.

### 6.1.1 Utilities and Services

The Site is a thoroughfare and is not provided utilities or other services with the exception of street lighting along portions of the Site's east and west perimeters.

### 6.1.2 Hazardous-Chemical-Containing Materials and Waste

There were no known hazardous chemical-containing materials and waste on the Site.

### 6.1.3 USTs, ASTs, Oil/Water Separators, Pipelines

No USTs, ASTs, or oil/water separators were reported or observed during the course of this investigation.

However, a signpost which read "Petroleum Pipeline," indicating the presence of buried petroleum pipeline(s), was observed near the center of the Site at the intersection of Waipahu Depot Road and the abandoned railroad track. EI identified the owners of the pipelines to include Hawaiian Electric Company, Inc. (HECO), Chevron, and Tesoro. The pipelines, which run east to west, are all generally located in the same area in the similar path of the abandoned railroad track. The pipelines are reportedly used to transfer both "White Oil" and "Black Oil."

There were no other potential hazardous material/waste storage receptacles reported or observed on the Site.

### 6.1.4 Drains

EI observed several City and County-owned surface stormwater drains along the Site. The drains were covered with metal grids and are linked to the City and County of Honolulu stormwater system. EI's observed the drains, and no visual evidence of contamination, staining, illegal dumping, or unusual odors were noted in the immediate vicinities of the stormwater drains.

### 6.1.5 Indication of Polychlorinated Biphenyl (PCB)-Containing Materials

A total of 10 pole mounted transformers were observed on poles located along the western perimeter of the Site. Most of these transformers were observed along the northern section of the Site, and all were noted as being owned by the Hawaiian Electric Company (HECO). EI contacted Mr. Andy Keith, Environmental Specialist with HECO on December 4, 2006. The following table indicates the PCB status of the identified transformers:

<b>Pole No.</b>	<b>Transformer No.</b>	<b>Address</b>	<b>Date Purchased/Installed</b>	<b>PCB Status</b>
2/12	6118	94-065 Waipahu Depot Road	11-10-93 / 12-13-93	PCB Free
8	69903	94-144 Waipahu Depot Road	03-05-99 / 05-14-99	PCB Free
9	31970 31971 31973	94-106 Waipahu Depot Road	03-01-73 / 08-31-73	NTD

<b>Pole No.</b>	<b>Transformer No.</b>	<b>Address</b>	<b>Date Purchased/Installed</b>	<b>PCB Status</b>
2/12	6118	94-065 Waipahu Depot Road	11-10-93 / 12-13-93	PCB Free
10	61075 61076 61077	94-108 Waipahu Depot Road	11-09-93 / 11-30-93	PCB Free
13	63589	94-061 Waipahu Depot Road	03-24-95 / 06-22-95	PCB Free
16	63251	94-036 Waipahu Depot Road	01-13-95 / 06-22-95	PCB Free

NTD – No Test Data

According to Mr. Keith, all of the transformers except for three had been previously tested and found to be “PCB Free.”

The three pole mounted transformers (#31970, #31971, and #31973) which were indicated with “No Test Data” (NTD) had no previous test data associated with them, and therefore, have the potential to contain PCBs.

No other potential sources of PCB-containing equipment were observed on the subject property during EI’s site reconnaissance.

#### 6.1.6 Mercury

Potential sources of mercury were not observed at the Site.

#### 6.1.7 Chlorofluorocarbons

Potential sources of Chlorofluorocarbons (CFCs) were not observed at the Site.

#### 6.1.8 Stains and Chemical Odors

EI did not observe any evidence of significant stains or unusual odors in the vicinity of the Site during our visit.

#### 6.1.9 Stressed Vegetation

EI did not observe any stressed vegetation during the Site inspection.

#### 6.1.10 Asbestos and Lead-Based Paint

The Site consists of a thoroughfare. Therefore, asbestos containing materials and lead-based paint are not expected to be an environmental concern at the Site.

## **6.2 Adjacent Properties**

EI did not walk the individual adjacent properties; however, EI performed an offsite visual inspection of the properties located immediately adjacent to the Site to observe visible environmental conditions (Figure 2).

EI did not observe any RECs at any of the adjacent properties.

## 7.0 DATA GAPS

In performing this Phase I ESA, EI identified several data gaps. A data gap is *a lack or inability to obtain information required by ASTM E 1527-05 despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice (ASTM E 1527-05).*

During the interview portion of this investigation, EI was unable to interview an “owner” “operator” or “occupant” of the Site. The City and County of Honolulu, who are the proprietors of the Site, did not have personnel who were closely familiar with the history of the Site. It is EI’s opinion that this represents a moderate data gap for this investigation due to the possibility of historically unreported incidences of an environmental concern.

During the Site history review process, it was determined that no TMK number has not been assigned to the Site’s northern half above the Waipahu Depot Road/abandoned railroad track intersection. The southern half of the site lies within the parcel of land identified as TMK (1) 9-3-002, Parcel 9. Plat maps indicate the entire Site being owned by the City and County of Honolulu. This represents a data gap for the Site because EI was unable to perform an ownership chain of custody for the northern half of the Site. EI does not believe that this data gap will significantly impact our ability to identify the presence of RECs at the Site because it is known that the Site’s improvement as a thoroughfare has not changed since at least the 1920s. It is EI’s opinion that this represents a minor data gap.

Building permit records were also unavailable for the Site. EI does not believe that these data gaps will significantly impact our ability to identify the presence of RECs at the Site because it is known that the Site was improved and used as a road since at least the 1920s. Therefore, it is EI’s opinion that this represents a minor data gap.

## 8.0 CONCLUSIONS

EI has performed this Phase I ESA in conformance with the scope and limitations of ASTM E 1527-05 of Waipahu Depot Road. The Site includes the portion of Waipahu Depot Road which begins south of the Farrington Highway/Waipahu Depot Road intersection and ends further south near the sites of the former Waipahu Ash Landfill/Waipahu Incinerator. The Site is partially located on TMK (1) 9-3-002, Parcel 9 which lies on the Waipio Peninsula, Oahu, Hawaii. Any exceptions to, or deletions from, this practice are described in Section 9.0 of this report.

Our assessment was conducted to evaluate the existing conditions within and around the Site and to investigate the environmental history and identify the presence of recognized environmental conditions (RECs). A REC is *the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property* (ASTM E 1527-05).

Based on EI's due diligence, this assessment has revealed evidence of current and historic RECs in connection with the Site and off-site current and historic RECs on adjacent and nearby properties. The RECs are summarized below.

### Current RECs at the Site

- EI confirmed the presence of up to three petroleum pipelines beneath the central portions of the Site. The pipelines, which originate from Kapolei's Campbell Industrial Park, are believed to run east to west and lie beneath the Site in the general area of the abandoned railroad track intersection. The pipelines are located within close proximity of each other and are owned by Hawaiian Electric Company (HECO), Tesoro Gas, and Chevron Corporation. There are currently no records of pipeline release in the vicinity of the Site; however, the presence of the three petroleum pipelines beneath the Site represents a potential material threat of release of petroleum product that could impact the Site (Section 6.1.3).

### Historic RECs at the Site

- The State of Hawaii Department of Health (HDOH) records indicated that fugitive dumping may have occurred on the Site (Section 5.3.1). In November and December of 1990, an unknown number and quantity of old drums and asbestos were left along the banks of Kapakahi Stream, which borders the Site to the west (case nos. 19901120 and 19901205-1). The reports did not detail the exact location or amount of materials that were found; therefore, the fugitive dumping may have possibly included the Site; however, the cases received "No Further Action" (NFA) status

from the HDOH. Therefore, these historic RECs do not pose a potential threat to the environmental integrity of the Site.

- In 1992, approximately 10 gallons of an unknown material was discovered leaking from a dumpster on the east adjacent property at 94-055 Waipahu Depot Road (Case no. 19910426). Details of this release were not disclosed by the HDOH; therefore, the fugitive dumping may have possibly included the Site. However, the material and dumpster were reportedly removed from the premises, and the case subsequently received a “No Further Action” (NFA) status. Therefore, this historic REC does not pose a potential threat to the environmental integrity of the Site.
- A sewage related spill was reported 94-065 Waipahu Depot Road on January 24, 1999. The spill involved 90 gallons of raw sewage. Details of this sewage release were not disclosed; therefore, the fugitive dumping may have possibly included the Site. However, the contaminated area was cleaned and disinfected shortly thereafter, and the case received a NFA status. Therefore, this historic REC does not pose a potential threat to the environmental integrity of the Site.

#### **Current RECs at Adjacent or Nearby Sites**

##### **Current Adjacent Underground Storage Tank (USTs):**

- **Waipahu Wastewater Pump Station.** 93-065 Waipahu Depot Road, Waipahu; Facility ID No. 9-200148. This site is upgradient and located on the east adjacent property, approximately 600 feet south of the Waipahu Depot Road/abandoned railroad track intersection (EDR, 2006). The EDR database, HDOH records, and EI’s building permits review indicated this site currently maintains one, 10,000-gallon fiberglass reinforced UST which is used to store diesel fuel. The UST was installed in November 2000 and has no reportable incidences associated with it. According to the HDOH database, the owner of the USTs was listed as the City and County of Honolulu – Department of Environmental Services. Therefore, given this site’s adjacent location and current operation of a UST, this offsite concern is considered a current offsite REC because the potential for a material release exists.
- **Waipahu Police Training Academy.** 93-043 Waipahu Depot Road, Waipahu; Facility ID No. 9-201871. This site is upgradient and located on the east adjacent property near the southern end of the Site. According to the HDOH database and EI’s building permits review, this site is currently operating one, 550-gallon UST to store diesel and one, 6,000-gallon UST to store gasoline. The USTs were both installed on this property in May 1988. HDOH records did not indicate releases or reportable incidences with regard to these USTs. Therefore, given this site’s adjacent location and current operation of a UST, this offsite concern is considered a current offsite REC because the potential for a material release exists.
- **Isobe Auto Body.** 94-009 Waipahu Depot Road. During this site investigation, EI identified this operation near the center of the Site on the northwest corner of the abandoned railroad and Waipahu Depot Road intersection. This site was not listed in

the EDR report or HDOH databases. EI contacted the owner of the operation, Mr. Masa Isobe for further operational history of this facility. Mr. Isobe that Isobe Auto Maintenance first operated on the property currently occupied by the City and County satellite refuse drop-off yard in the 1920s. Isobe Auto Maintenance then moved operations across to the current site in 1968. He stated that a paint booth was used for auto body repairs, but neither of the Isobe operations had operated USTs, ASTs, or hydraulic lifts. He further stated that no spill-related emergencies involving hazardous wastes or materials or environmental site investigations had occurred on the current and former premises. None of Mr. Isobe's interview responses indicate a REC currently exists at the Site. However, given the long duration and nature of activities conducted by this operation in close proximity to the Site, the potential exists that unforeseen incidences at this facility may have adversely impacted the Site in the past.

## **Historic RECs at Adjacent or Nearby Sites**

### **Landfill and Incinerator:**

- The Waipahu Ash Landfill (WALF) is topographically downgradient and located adjacently to the southwest of the Site's southern end (Section 2.4). This landfill was opened in the early 1960s and was initially used for open burn disposal. Items accepted at the landfill reportedly consisted of municipal solid waste, white goods (e.g. appliances), bulky items, demolition material, dead animals, etc. The landfill was converted to an ash landfill in 1972 due to newly imposed Federal clean air standards. This site under the City and County of Honolulu is currently undergoing landfill closure proceedings, which will include a final cover system, surface drainage system, landfill gas control facilities, landfill gas monitoring probes, and groundwater monitoring wells over the subsequent 30 year monitoring period. Presently, a final cover cap is under consideration for the landfill at which point the landfill will be classified as a "closed landfill." The City may plan to pursue a lease agreement with the Navy to convert the site to a recreational facility once the landfill is closed in compliance with the Comprehensive Environmental Response and Liability Act (CERCLA).
- The Waipahu Incinerator, 93-071 Waipahu Depot Road, is topographically down to crossgradient and located approximately 320 feet to the east of the Site's southern end (Section 2.4). The facility was built at the beginning of 1970 to incinerate 600 tons of solid waste which was disposed of at the WALF. The facility has been closed since 1994 and has been used as a baseyard for the City and County Refuse Department and City and County Recreations. In March of 2003, an environmental watchdog group reported that between January and November 2001, several hundred tons of "white goods" (crushed appliances) were illegally buried at this site. As a result, residue chlorofluorocarbons may have been released into the soil and groundwater and therefore poses potential to environmentally impact the Site based upon distance.

HDOH records for Waipahu Incinerator also indicated that a release was discovered during the removal and replacement of its 9,300 gallon UST, which was used to store heating oil. Site cleanup of the LUST was completed, and the USTs located at this site are “Permanently Out of Use. Given that the Waipahu Incinerator was granted a No Further Action (NFA) status and is cross to downgradient relative the Site, it is not considered a REC.

These historic RECs indicate a history of landfill and waste disposal activity in the Waipio Peninsula which suggests the entire peninsula may be impacted to varying degrees by contamination. However, given that the Site has been used as a thoroughfare since the 1920s, it is unlikely that the Site was responsible for the subsurface or groundwater impacts beneath the Site should they exist.

**Historic Adjacent Underground Storage Tank (USTs):**

- **Waipahu Auto Company – Division of Servco.** 94-729 Farrington Highway, Waipahu; Facility ID No. 9-200882; LUST ID No. 980210. This adjacent site is located upgradient on the southwest corner of the Farrington Highway/Waipahu Depot Road intersection (EDR, 2006). HDOH records indicate that an unauthorized subsurface release of used oil was discovered during the removal of a 500-gallon steel galvanized UST. Servco reportedly removed the UST in May of 1997. Samples were collected at that time; however, analysis of the samples did not reveal a substantial contamination issue at this site (HDOH, 2004c). The status of “Site Cleanup Completed” was determined for this site by the HDOH. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.
- **Waipahu Wastewater Pump Station.** 93-065 Waipahu Depot Road, Waipahu; Facility ID No. 9-200148; LUST ID No. 990160. This site is upgradient and located on the east adjacent property, approximately 600 feet south of the Waipahu Depot Road/abandoned railroad track intersection (EDR, 2006). HDOH records indicated this site historically maintained 2,000 gallon UST which was used to store diesel fuel. Soil samples collected at the time of the tanks’ removal were later analyzed and did not reveal a significant soil or groundwater contamination issue existing at this site (HDOH, 2006). Based on these results, this site was granted the status of “Site Cleanup Completed” in a letter from the HDOH, dated July, 19, 1999. Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.
- **Jiffy Mart Waipahu.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-202938; Release ID 980183. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). Environet’s reconnaissance of the Site area revealed that this operation is actually located on the adjacent property east of the Waipahu Auto Company – Division of Servco. The EDR report indicates that this site currently maintains a status of “Site Cleanup Completed” as of June 20, 2000. Based upon current facility status, this

historic REC does not pose a potential threat to the environmental integrity of the Site.

- **Tajiro Uranaka.** 94-767 Farrington Highway, Waipahu; Facility ID No. 9-201203; Release ID 900066. This site is located cross to upgradient and approximately 300 feet east of the Site along Farrington Highway (EDR, 2006). This cited operation previously operated at the same address as the Jiffy Mart Waipahu station. The EDR report indicates that this site currently maintains a status of “Site Cleanup Completed” as of December 15, 1995. (HDOH, 2004c). Based upon current facility status, this historic REC does not pose a potential threat to the environmental integrity of the Site.

#### **Sanborn Fire Insurance Maps:**

- The 1981 through 1991 Sanborn maps showed an auto repair facility on an adjacent property approximately 200 feet south of the Farrington Highway/Waipahu Depot Road intersection along Haakoa Street. No storage tanks or containers were notated in the maps; however, these operations indicate a historic REC on these adjacent properties because they suggest the use, storage, and potential for material release of fuel and hazardous materials.

#### **Other Items of Environmental Concern**

- Three Hawaii Electric Company (HECO) pad-mounted electrical transformers (#31970, #31971, and #31973) were located on the western perimeter of the Site near the Farrington Highway/Waipahu Depot Road intersection (Section 6.1.5). The transformers, which were located on the same pole, appeared antiquated and the PCB-status for this equipment was determined as “No Test Data.” Should the transformer leak or be damaged, HECO should be immediately notified.

The transformers can be tested HECO for a fee. If it is determined that PCB is detected within these units, HECO will have the equipment replaced and will reimburse the testing fee.

- Given the history of the Site, remote location, and various land uses in the immediate Site vicinity, EI believes that the Site is an access way for an area which could be prone to fugitive dumping. Fugitive dumping may be exceptionally problematic in the area due to the Site’s location next to Kapakahi Stream and Pouhala Marsh, which are undeveloped areas next to the former Waipahu Ash Landfill. Unforeseen incidences of dumping which may have included hazardous material and wastes may have occurred on or near the Site in the past.

## **9.0 LIMITATIONS**

We have based our conclusions and recommendations on our interpretation of the available historical and regulatory information and documents reviewed and a visual Site inspection performed on Thursday, November 30, 2006 and again on March 31, 2007. We cannot guarantee or warrant that the Site is free of contamination. We do warrant that our services are performed with the usual competence and thoroughness of the consulting profession, in accordance with the standard operating procedures of this time. EI does not provide any other guarantee or warranty.

This Phase I ESA is not a comprehensive site characterization and should not be construed as such. The opinions presented in this report are based on findings derived from a Site reconnaissance and a review of specified regulatory records and historical sources. This Phase I ESA did not include any investigation with respect to lead, asbestos, arsenic, radon, methane, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, or site geotechnical concerns. All information on UST and LUST sites is based on information reported to the HDOH Solid and Hazardous Waste Branch. All information on HEER site and release sites is based on information reported to the HDOH HEER Office.

There are no exceptions or deletions to ASTM practice in this Phase I ESA.

## 10.0 REFERENCES

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Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

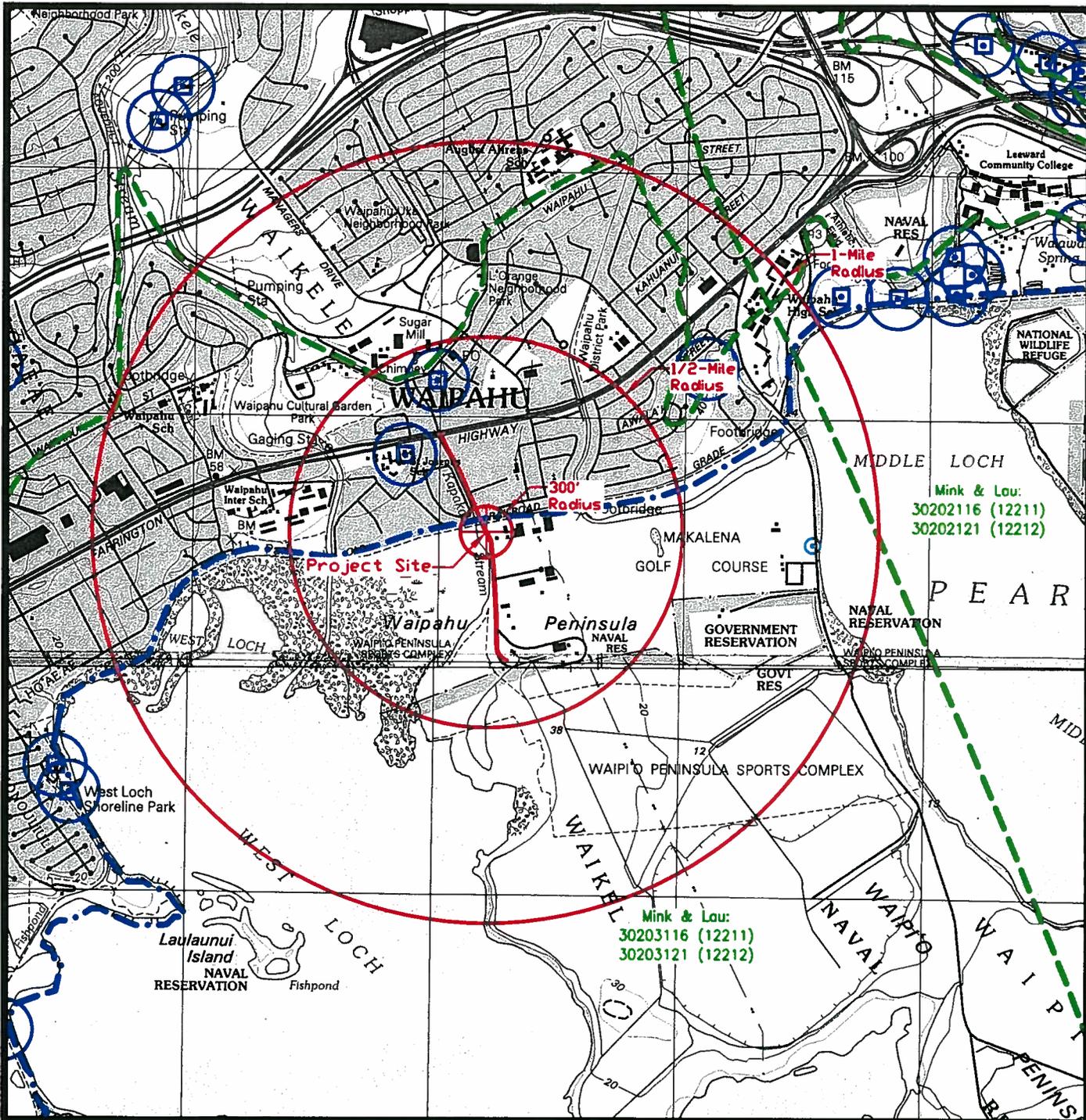
Macdonald, G.; Abbott, A.; and Peterson, F., 1983. *Volcanoes in the Sea*, University of Hawaii Press, Honolulu, Hawaii.

Mink, J. F. and Lau, S., Oahu: 1990. *Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii*. Water Resources Research Center, University of Hawaii, Technical Report 191. February, Oahu: 1990.

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USGS Department of the Interior, Waipahu Quadrangle, Oahu, Hawaii, 7.5 Minute Series, scale: 1:24,000, 1928, 1954, 1959, 1968, 1983, and 1998.

## **FIGURES**



Project Site

UIC Line

Mink & Lau Line (from WRRCC Technical Report 179, February 1990)

Drinking Water Source (i.e. Well, Spring, or Tank) or Cluster of Sources

Zip Code Line

Injection Well

(from HDDH UIC Program 1983 quadrangles - effective July 6, 1984)



Environet, Inc.

## SITE LOCATION MAP

Waipahu Depot Road, Waipahu, Hawaii

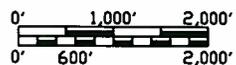
EI Project No. 406-103

Date 15-Dec-06

Figure 1

TRUE NORTH

Base Map Source: Waipahu Quadrangle, 7.5-Minute Series (Topographic), USGS, 1998





## Satellite Imagery Map

Waipahu Depot Road, Waipahu, Hawaii

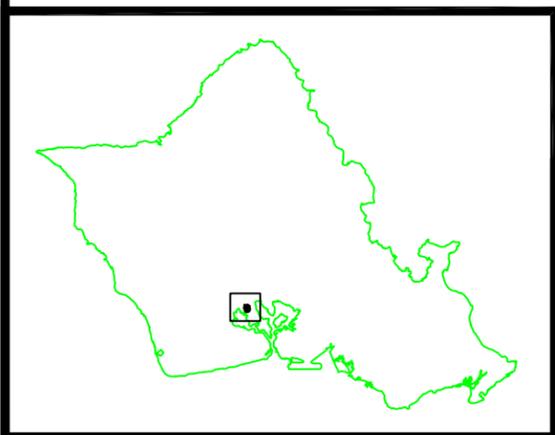
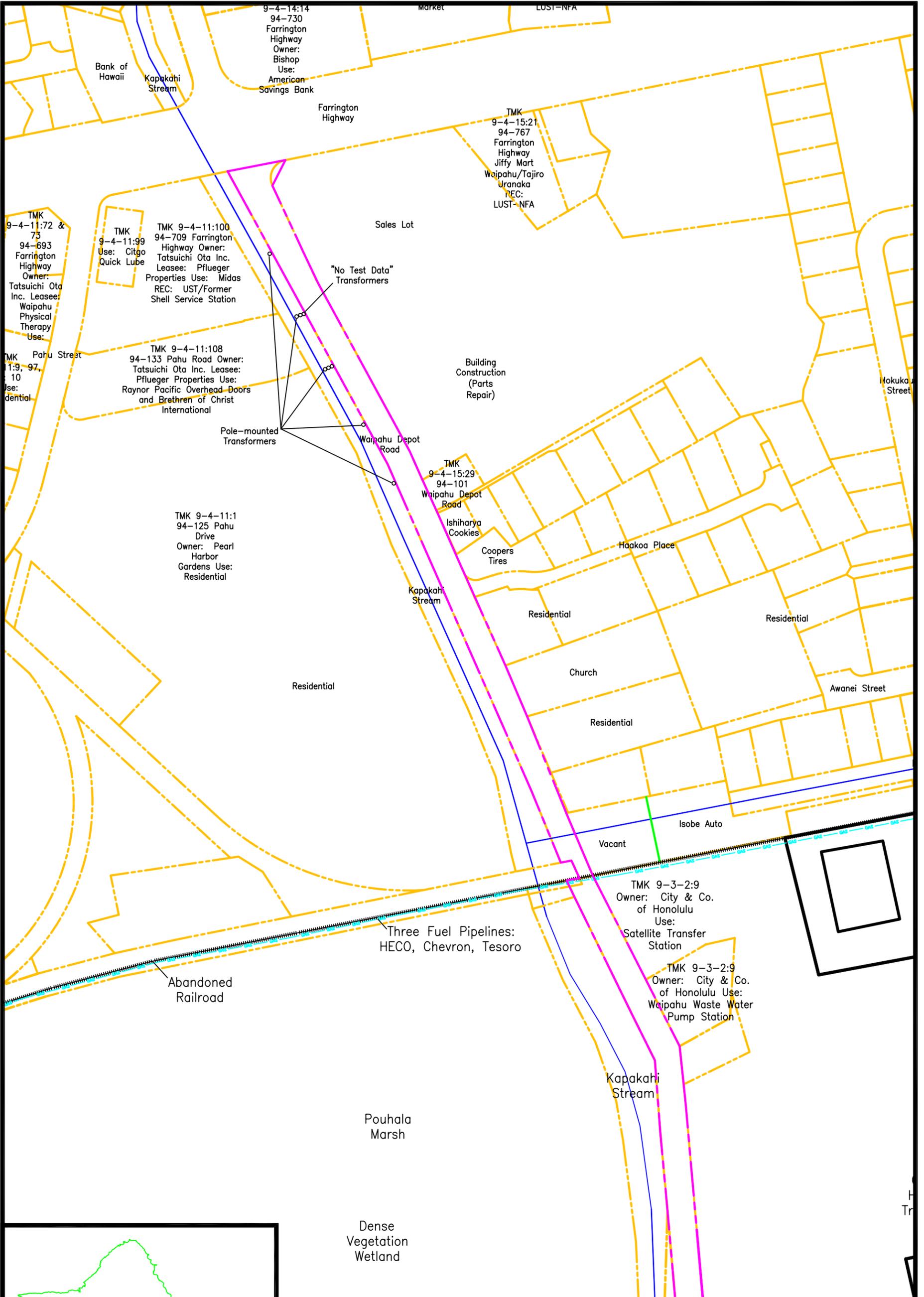
EI Project  
No. 406-103

Date  
18-Dec-06

Figure  
2



Image Source:  
Google Earth



Map not a survey.  
Map data are based on field measurements and available plans, and are approximate.

TRUE NORTH

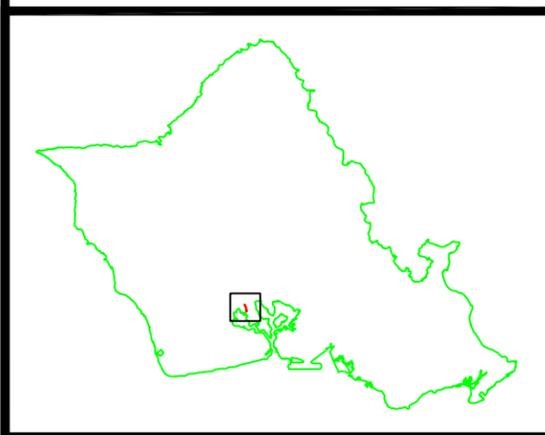
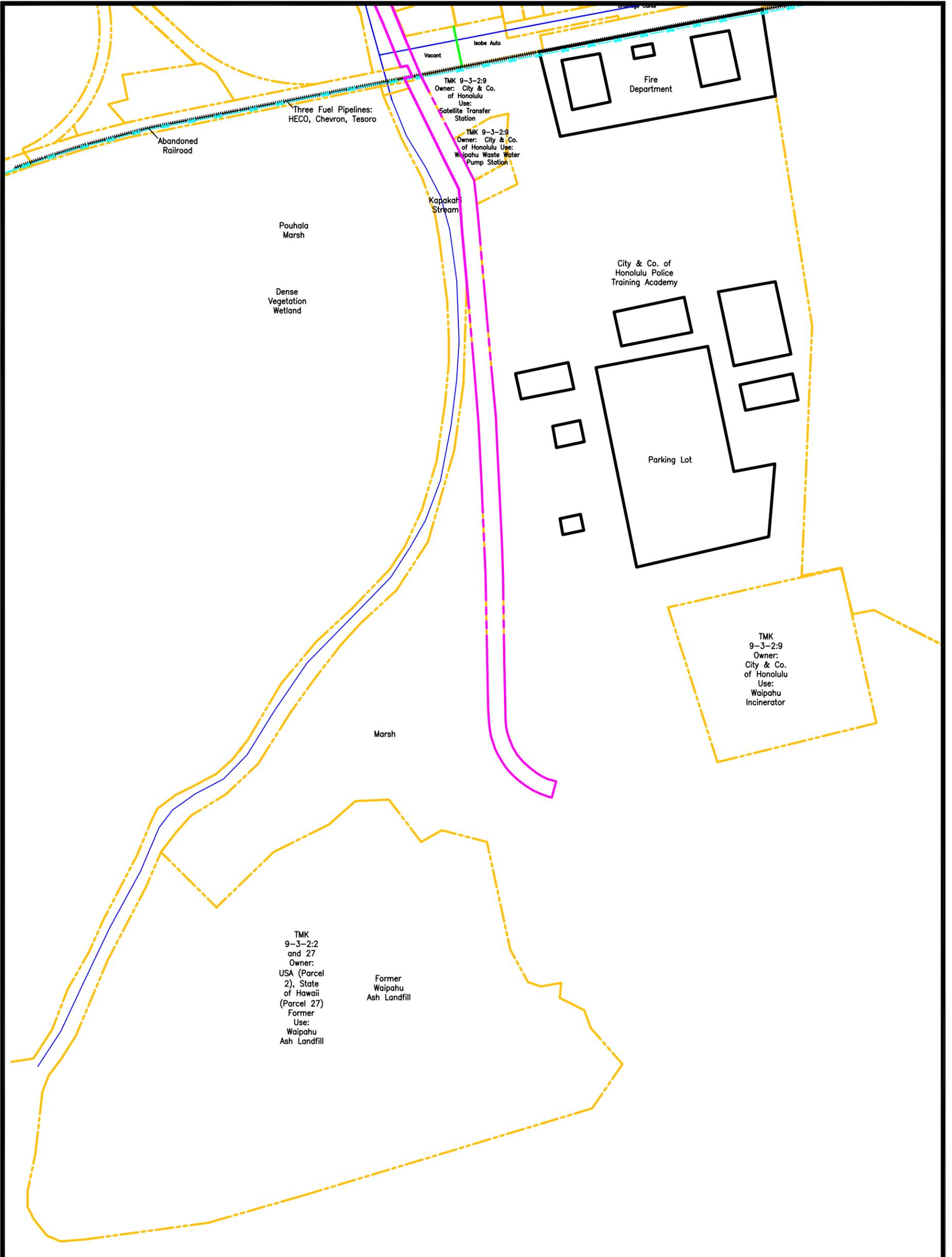
0' 75' 150'  
0' 45' 150'



SITE AREA MAP, NORTHERN PORTION

Waipahu Depot Road, Waipahu, Hawaii

EI Project No. 406-103	Date 15-Dec-06	Figure 3
------------------------	----------------	----------



Map not a survey. Map data are based on field measurements and available plans, and are approximate.

TRUE NORTH



**SITE AREA MAP, SOUTHERN PORTION**

Waipahu Depot Road, Waipahu, Hawaii

EI Project No. 406-103	Date 15-Dec-06	Figure 4
------------------------	----------------	----------

Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

## **APPENDIX A**

### **Photographs**

**Photo Log**



Photo 1: North end of the Site from the Farrington Highway/Waipahu Depot Road intersection.



Photo 2: North side of the Site and adjacent properties looking North towards Farrington Highway/Waipahu Depot Road intersection.



Photo 3: The Site central portions looking North.



Photo 4: Asphalt surface cuts observed along the southern half of the Site.



Photo 5: New construction of an automobile dealership along the east adjacent properties near the north end of the Site.



Photo 6: Example of typical wear and tear surface abnormalities observed more on the southern half of the Site.

**Photo Log**



Photo 7: View of the Site and adjacent residential properties looking North from the central portions of the Site.



Photo 8: View of the Site looking Southeast towards the Police Academy Training grounds



Photo 9: Petroleum pipeline sign located at the intersection of Waipahu Depot Road and the abandoned railroad.



Photo 10: View of the abandoned railroad track located over Kapakahi Stream



Photo 11: View of the Waipahu Wastewater Pump Station located near the southern end of the Site.



Photo 12: View of the Isobe Automobile Maintenance operation located near the intersection of the Site and the abandoned railroad.

**Photo Log**



Photo 13: View looking North of the Site and the Waipahu Wastewater Pump Station.



Photo 14: View of the bordering Kapakahi Stream to the west of the Site, looking North.



Photo 15: View of the Site and adjacent residential apartment complex looking South. The abandoned railroad intersection is located in the background.



Photo 16: View looking North of the Site and east/west adjacent properties.



Photo 17: View of the satellite City and County of Honolulu refuse drop-off center.



Photo 18: View of the Waipahu Auto Company – Division of Servco, located on the east adjacent property at the intersection of Waipahu Depot Road and Farrington Highway.

**Photo Log**



Photo 19: Transformers with “No Test Data,” located near the northern end of the Site.



Photo 20: Alternate view of the City and County of Honolulu satellite refuse drop-off center.



Photo 21: View of the Site from the refuse drop-off center, looking South.



Photo 22: View of outskirts portions of the Waipahu Ash Landfill located on the adjacent property to the southwest.



Photo 23: View of the Police Academy grounds (left) near the southern end of the Site, looking South.



Photo 24: View of the South end of the site, looking North.

Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

## **APPENDIX B**

### **EDR Database Search and Sanborn Fire Insurance Maps**



**EDR**® Environmental  
Data Resources Inc

## **The EDR Radius Map with GeoCheck®**

**Waipahu Depot Street  
Waipahu Depot Street  
Waipahu, HI 96797**

**Inquiry Number: 01812785.1r**

**December 07, 2006**

## **The Standard in Environmental Risk Management Information**

440 Wheelers Farms Road  
Milford, Connecticut 06461

### **Nationwide Customer Service**

Telephone: 1-800-352-0050  
Fax: 1-800-231-6802  
Internet: [www.edrnet.com](http://www.edrnet.com)

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***Thank you for your business.***  
Please contact EDR at 1-800-352-0050  
with any questions or comments.

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## EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

### TARGET PROPERTY INFORMATION

#### ADDRESS

WAIPAHU DEPOT STREET  
WAIPAHU, HI 96797

#### COORDINATES

Latitude (North): 21.379600 - 21° 22' 46.6"  
Longitude (West): 158.005000 - 158° 0' 18.0"  
Universal Transverse Mercator: Zone 4  
UTM X (Meters): 603150.9  
UTM Y (Meters): 2364347.2  
Elevation: 3 ft. above sea level

### USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map: 21158-D1 SCHOFIELD BARRACKS, HI  
Most Recent Revision: Not reported

East Map: 21157-D8 WAIPAHU, HI  
Most Recent Revision: Not reported

Southeast Map: 21157-C8 PEARL HARBOR, HI  
Most Recent Revision: Not reported

South Map: 21158-C1 EWA, HI  
Most Recent Revision: Not reported

### TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 6 of the attached EDR Radius Map report:

<u>Site</u>	<u>Database(s)</u>	<u>EPA ID</u>
WAIPAHU DEPOT ROAD, INTENTIONAL D WAIPAHU DEPOT RD WAIPAHU, HI 96797	SPILLS	N/A
WAIPAHU DEPOT ROAD, DUMPED BARREL WAIPAHU DEPOT RD WAIPAHU, HI 96797	SPILLS	N/A
WAIPAHU WASTE COLLECTION AREA WAIPAHU DEPOT RD WAIPAHU, HI 96797	SPILLS	N/A
WAIPAHU STREAM WAIPAHU DEPOT RD WAIPAHU, HI 96797	SPILLS	N/A

## EXECUTIVE SUMMARY

### DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

### FEDERAL RECORDS

<b>NPL</b>	National Priority List
<b>Proposed NPL</b>	Proposed National Priority List Sites
<b>Delisted NPL</b>	National Priority List Deletions
<b>NPL RECOVERY</b>	Federal Superfund Liens
<b>CERCLIS</b>	Comprehensive Environmental Response, Compensation, and Liability Information System
<b>CERC-NFRAP</b>	CERCLIS No Further Remedial Action Planned
<b>CORRACTS</b>	Corrective Action Report
<b>RCRA-TSDF</b>	Resource Conservation and Recovery Act Information
<b>RCRA-LQG</b>	Resource Conservation and Recovery Act Information
<b>RCRA-SQG</b>	Resource Conservation and Recovery Act Information
<b>ERNS</b>	Emergency Response Notification System
<b>HMIRS</b>	Hazardous Materials Information Reporting System
<b>US ENG CONTROLS</b>	Engineering Controls Sites List
<b>US INST CONTROL</b>	Sites with Institutional Controls
<b>FUDS</b>	Formerly Used Defense Sites
<b>US BROWNFIELDS</b>	A Listing of Brownfields Sites
<b>CONSENT</b>	Superfund (CERCLA) Consent Decrees
<b>ROD</b>	Records Of Decision
<b>UMTRA</b>	Uranium Mill Tailings Sites
<b>ODI</b>	Open Dump Inventory
<b>TRIS</b>	Toxic Chemical Release Inventory System
<b>TSCA</b>	Toxic Substances Control Act
<b>FTTS</b>	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
<b>SSTS</b>	Section 7 Tracking Systems
<b>ICIS</b>	Integrated Compliance Information System
<b>PADS</b>	PCB Activity Database System
<b>MLTS</b>	Material Licensing Tracking System
<b>MINES</b>	Mines Master Index File
<b>FINDS</b>	Facility Index System/Facility Registry System
<b>RAATS</b>	RCRA Administrative Action Tracking System

### STATE AND LOCAL RECORDS

<b>SWF/LF</b>	Permitted Landfills in the State of Hawaii
<b>UST</b>	Underground Storage Tank Database
<b>INST CONTROL</b>	Sites with Institutional Controls
<b>DRYCLEANERS</b>	Permitted Drycleaner Facility Listing
<b>BROWNFIELDS</b>	Brownfields Sites
<b>AIRS</b>	List of Permitted Facilities

### TRIBAL RECORDS

<b>INDIAN RESERV</b>	Indian Reservations
----------------------	---------------------

## EXECUTIVE SUMMARY

**INDIAN LUST**..... Leaking Underground Storage Tanks on Indian Land  
**INDIAN UST**..... Underground Storage Tanks on Indian Land

### EDR PROPRIETARY RECORDS

**Manufactured Gas Plants**... EDR Proprietary Manufactured Gas Plants

### SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

### FEDERAL RECORDS

**DOD:** Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2004 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
	PEARL HARBOR NAVAL STATION	1/2 - 1 E	0	8

### STATE AND LOCAL RECORDS

**SHWS:** The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the SHWS list, as provided by EDR, and dated 07/24/2006 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
	<b><i>ALEXANDER AND BALDWIN MILL TOW</i></b>	<b><i>94-833 MAKAALOHA ST</i></b>	<b><i>1/4 - 1/2NNW D10</i></b>	<b><i>12</i></b>

## EXECUTIVE SUMMARY

**LUST:** The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the LUST list, as provided by EDR, and dated 08/11/2006 has revealed that there are 6 LUST sites within approximately 0.5 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
<b>WAIPAHU AUTO CO. - DIVISION OF</b> Facility Status: Site Cleanup Completed	<b>94-729 FARRINGTON HWY</b>	<b>1/4 - 1/2 NNW</b>	<b>5</b>	<b>8</b>
<b>TAJIRO URANAKA</b> Facility Status: Site Cleanup Completed	<b>94-767 FARRINGTON HWY</b>	<b>1/4 - 1/2 N</b>	<b>B6</b>	<b>9</b>
<b>JIFFY MART WAIPAHU</b> Facility Status: Site Cleanup Completed	<b>94-767 FARRINGTON HWY</b>	<b>1/4 - 1/2 N</b>	<b>B7</b>	<b>9</b>
<b>WAIPAHU INCINERATOR</b> Facility Status: Case Transferred to HEER	<b>93-071 WAIPAHU DEPOT RD</b>	<b>1/4 - 1/2 SSE</b>	<b>C8</b>	<b>11</b>
<b>WAIPAHU WASTEWATER PUMP STATIO</b> Facility Status: Site Cleanup Completed	<b>93-065 WAIPAHU DEPOT RD</b>	<b>1/4 - 1/2 SSE</b>	<b>C9</b>	<b>11</b>
<b>WAIPAHU MECHANICAL EQUIPMENT S</b> Facility Status: Site Cleanup Completed	<b>94-833 MAKAALOHA ST</b>	<b>1/4 - 1/2 NNW</b>	<b>D11</b>	<b>13</b>

**VCP:** Voluntary Response Program Sites.

A review of the VCP list, as provided by EDR, and dated 07/24/2006 has revealed that there is 1 VCP site within approximately 0.5 miles of the target property.

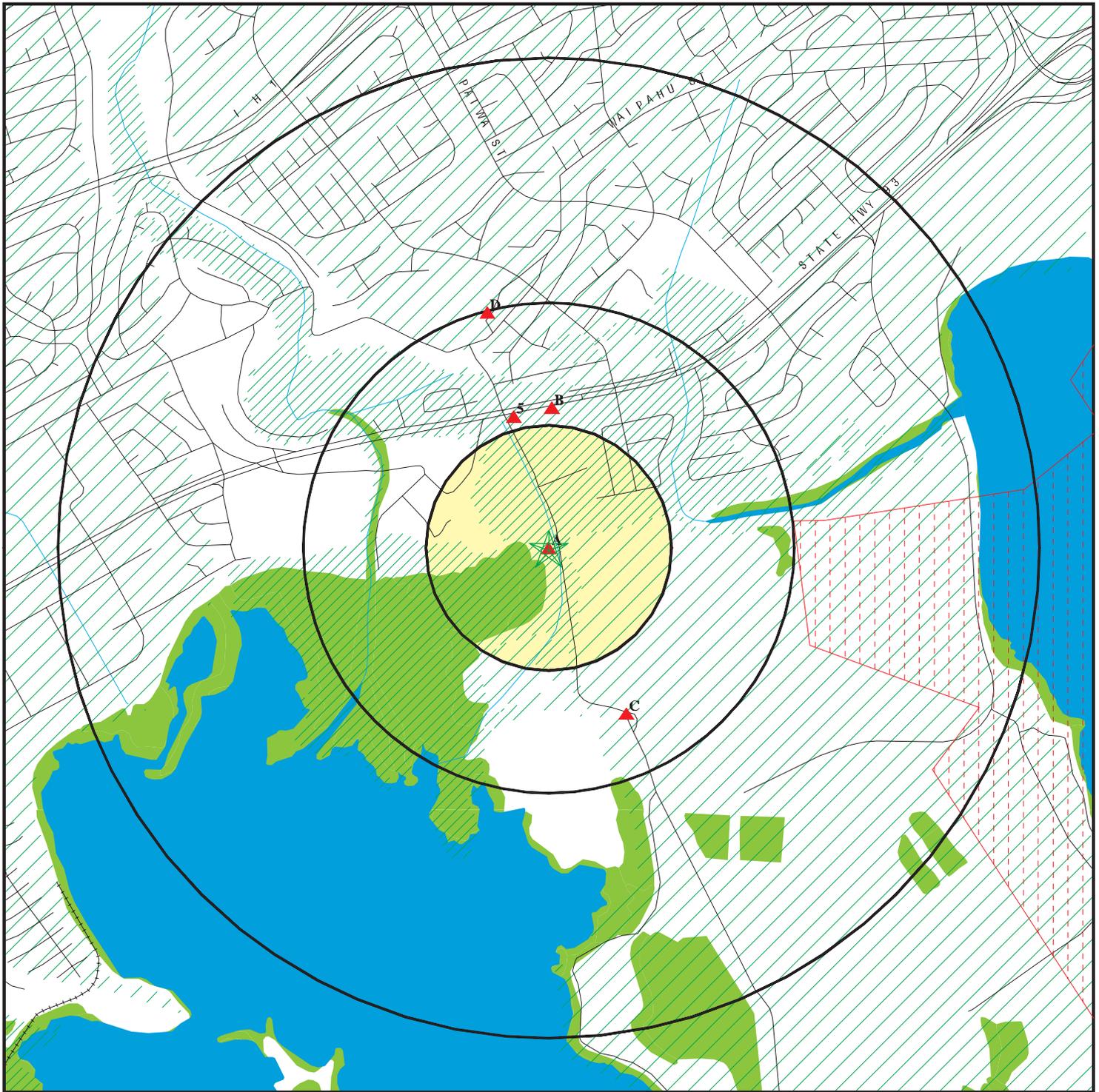
<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
<b>ALEXANDER AND BALDWIN MILL TOW</b>	<b>94-833 MAKAALOHA ST</b>	<b>1/4 - 1/2 NNW</b>	<b>D10</b>	<b>12</b>

## EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

<u>Site Name</u>	<u>Database(s)</u>
PACIFIC CONCRETE & ROCK LDFL	SHWS, FINDS, SPILLS
WAIPAHU AUTO COMPANY	SHWS
GRACE PACIFIC CORPORATION - MAKAKI	SHWS, SPILLS
COMPLETE AUTO REPAIR AND ESTIMATES	SHWS, SPILLS
WAIAWA CORRECTIONAL FACILITY	SHWS, SPILLS
ALEXANDER AND BALDWIN MILLTOWN LEA	SHWS
CASTLE AND COOKE MANAGERS DRIVE	SHWS, FINDS, SPILLS, VCP, INST CONTROL
LOT 32 FORMER WAIPAHU SUGAR MILL D	SHWS
LOT 32 FORMER WAIPAHU SUGAR MILL C	SHWS
LOT 32 FORMER WAIPAHU SUGAR MILL A	SHWS
WAIPAHU UNOCAL SERVICE #5177	SHWS, SPILLS
ABANDONED DRUMS WAIPAHU STREET DUM	SHWS
LOT 32 FORMER WAIPAHU SUGAR MILL A	INST CONTROL
WAIPAHU WELLS	CERCLIS, FINDS
WAIPIO HEIGHTS WELLS II	CERC-NFRAP
A&B PROPERTIES, INC . MILL TOWN SI	LUST
WAIPAHU SHELL SERVICE	LUST, UST
LOT 32 FORMER WAIPAHU SUGAR MILL A	VCP
A&B PROPERTIES, INC . MILL TOWN SI	UST
LONGS DRUG STORE 259	RCRA-SQG, FINDS
CHEVRON 98584	RCRA-SQG
USNAVY CMDR NVY REG HI NAVAL MAG W	RCRA-SQG
SHELL OIL PRODUCTS SAP 139585	RCRA-SQG
PAHU STREET DRUM	FINDS, SPILLS
WAIPAHU FIELD POOL	FINDS
WAIPAHU DRY CLEANERS	DRYCLEANERS

# OVERVIEW MAP - 01812785.1r



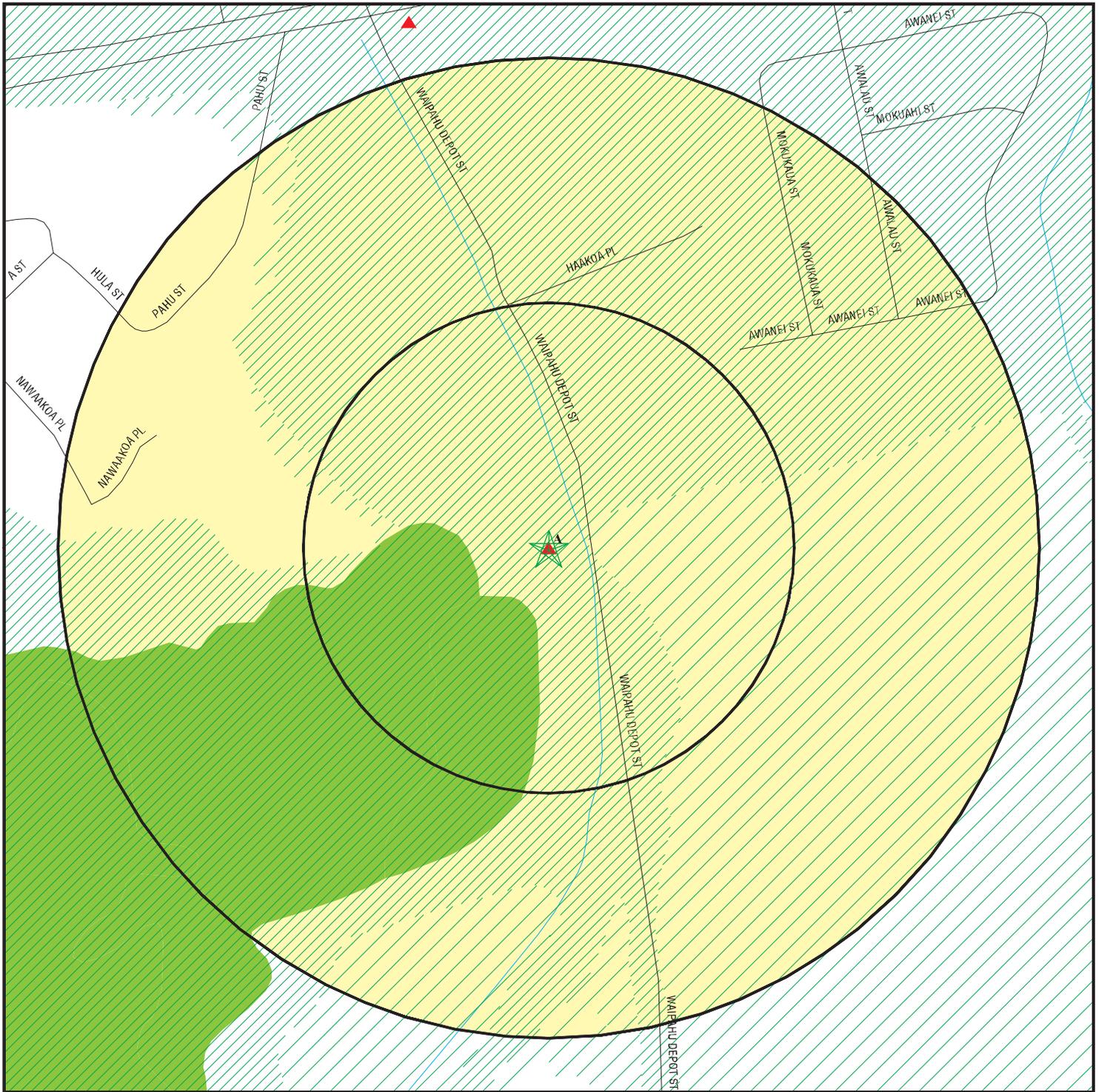
- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ▲ Manufactured Gas Plants
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites

- 0 1/4 1/2 1 Miles
- Indian Reservations BIA
- ▲ Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

SITE NAME: Waipahu Depot Street  
 ADDRESS: Waipahu Depot Street  
 Waipahu HI 96797  
 LAT/LONG: 21.3796 / 158.0050

CLIENT: Environet  
 CONTACT: Steven Cho  
 INQUIRY #: 01812785.1r  
 DATE: December 07, 2006 4:36 pm

# DETAIL MAP - 01812785.1r



- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ⚙ Manufactured Gas Plants
- ⚡ Sensitive Receptors
- 🚚 National Priority List Sites
- 🗑 Landfill Sites
- 🏢 Dept. Defense Sites

- 0 1/16 1/8 1/4 Miles
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

SITE NAME: Waipahu Depot Street  
 ADDRESS: Waipahu Depot Street  
 Waipahu HI 96797  
 LAT/LONG: 21.3796 / 158.0050

CLIENT: Environet  
 CONTACT: Steven Cho  
 INQUIRY #: 01812785.1r  
 DATE: December 07, 2006 4:36 pm

## MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
<b><u>FEDERAL RECORDS</u></b>								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
NPL RECOVERY		TP	NR	NR	NR	NR	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.500	0	0	0	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	1	NR	1
FUDS		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
<b><u>STATE AND LOCAL RECORDS</u></b>								
SHWS		1.000	0	0	1	0	NR	1
State Landfill		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	6	NR	NR	6
UST		0.250	0	0	NR	NR	NR	0
SPILLS	X	TP	NR	NR	NR	NR	NR	0
INST CONTROL		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	1	NR	NR	1
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
BROWNFIELDS		0.500	0	0	0	NR	NR	0
AIRS		TP	NR	NR	NR	NR	NR	0
<b><u>TRIBAL RECORDS</u></b>								
INDIAN RESERV		1.000	0	0	0	0	NR	0

## MAP FINDINGS SUMMARY

<u>Database</u>	<u>Target Property</u>	<u>Search Distance (Miles)</u>	<u>&lt; 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>&gt; 1</u>	<u>Total Plotted</u>
INDIAN LUST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
<b><u>EDR PROPRIETARY RECORDS</u></b>								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0

**NOTES:**

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID  
 Direction  
 Distance  
 Distance (ft.)  
 Elevation

Site

Database(s)

EDR ID Number  
 EPA ID Number

**A1**      **WAIPAHU DEPOT ROAD, INTENTIONAL DUMPING OF ASBESTO**  
**Target**    **WAIPAHU DEPOT RD**  
**Property**   **WAIPAHU, HI 96797**

**SPILLS**    **S107023478**  
                  **N/A**

**Site 1 of 4 in cluster A**

**Actual:**  
**3 ft.**

HI SPILLS:  
 Island:                      Oahu  
 Supplemental Loc. Text: Not reported  
 Case Number:              19901205-1  
 Units:                        Waipahu Depot Road, intentional dumping of asbestos/old drums  
 Substances:                ASBESTOS & OLD DRUMS  
 Less Or Greater Than:    Not reported  
 Numerical Quantity:      Not reported  
 Units:                        Not reported  
 Activity Type:              Response  
 Assignment Date:         Not reported  
 Activity Lead:              Not reported  
 Assignment End Date:    Not reported  
 Result:                      8  
 Incident:                    INTENTIONAL DUMPING OF ASBESTOS & OLD DRUMS  
 Initial:                      R. LOPEZ WENT OUT TOOK PICTURES, SAMPLES OF ASBESTOS  
 Report:                      Not reported

**A2**      **WAIPAHU DEPOT ROAD, DUMPED BARRELS & ASBESTOS BY S**  
**Target**    **WAIPAHU DEPOT RD**  
**Property**   **WAIPAHU, HI 96797**

**SPILLS**    **S107023410**  
                  **N/A**

**Site 2 of 4 in cluster A**

**Actual:**  
**3 ft.**

HI SPILLS:  
 Island:                      Oahu  
 Supplemental Loc. Text: Not reported  
 Case Number:              19901120  
 Units:                        Waipahu Depot Road, dumped barrels & asbestos by stream  
 Substances:                Asbestos  
 Less Or Greater Than:    Not reported  
 Numerical Quantity:      Not reported  
 Units:                        Not reported  
 Activity Type:              Response  
 Assignment Date:         Not reported  
 Activity Lead:              Bryce Hataoka  
 Assignment End Date:    Not reported  
 Result:                      8  
 Incident:                    DUMPED BARRELS AND ASBESTOS BY STREAM  
 Initial:                      Not reported  
 Report:                      Not reported

**A3**      **WAIPAHU WASTE COLLECTION AREA**  
**Target**    **WAIPAHU DEPOT RD**  
**Property**   **WAIPAHU, HI 96797**

**SPILLS**    **S106821085**  
                  **N/A**

**Site 3 of 4 in cluster A**

**Actual:**  
**3 ft.**

HI SPILLS:  
 Island:                      Oahu  
 Supplemental Loc. Text: Diamond Hd at Waipahu Waste Collection Area  
 Case Number:              19931210

Map ID  
 Direction  
 Distance  
 Distance (ft.)  
 Elevation Site

MAP FINDINGS

Database(s) EDR ID Number  
 EPA ID Number

**WAIPAHU WASTE COLLECTION AREA (Continued)**

**S106821085**

Units: Waipahu Waste Collection Area  
 Substances: Batteries  
 Less Or Greater Than: Not reported  
 Numerical Quantity: 12  
 Units: Each  
 Activity Type: Response  
 Assignment Date: Not reported  
 Activity Lead: Not reported  
 Assignment End Date: Not reported  
 Result: 8  
 Incident: UnkUnk  
 Initial: Heer referred to SHWB. None emergency.Heer referred to SHWB. None emergency.  
 Report: Not reported

Island: Oahu  
 Supplemental Loc. Text: Diamond Hd at Waipahu Waste Collection Area  
 Case Number: 19931210  
 Units: Waipahu Waste Collection Area  
 Substances: Paint Cans  
 Less Or Greater Than: Not reported  
 Numerical Quantity: 30  
 Units: Each  
 Activity Type: Response  
 Assignment Date: Not reported  
 Activity Lead: Not reported  
 Assignment End Date: Not reported  
 Result: 8  
 Incident: UnkUnk  
 Initial: Heer referred to SHWB. None emergency.Heer referred to SHWB. None emergency.  
 Report: Not reported

**A4  
 Target  
 Property**

**WAIPAHU STREAM  
 WAIPAHU DEPOT RD  
 WAIPAHU, HI 96797**

**SPILLS S106821083  
 N/A**

**Actual:  
 3 ft.**

**Site 4 of 4 in cluster A**

HI SPILLS:  
 Island: Oahu  
 Supplemental Loc. Text: Near Waipahu Depot Rd  
 Case Number: 19901021-2  
 Units: Waipahu Stream  
 Substances: sugarcane wash water  
 Less Or Greater Than: Not reported  
 Numerical Quantity: 10000  
 Units: Gallons  
 Activity Type: Response  
 Assignment Date: Not reported  
 Activity Lead: Not reported  
 Assignment End Date: Not reported  
 Result: 8  
 Incident: Sugarcane wash water in parking lot at Big Way Supermarket. Mr. Demerous said that state knows where it's coming from, what it is and how much. Talked to BM2 Lowder, recommends that the state DOH take care of problem. Possible violation of NPDES.  
 Initial: Not reported

Map ID  
Direction  
Distance  
Distance (ft.)  
Elevation

MAP FINDINGS

**WAIPAHU STREAM (Continued)**

EDR ID Number  
EPA ID Number

Database(s)

Report: Not reported

**S106821083**

**DOD  
Region  
East  
1/2-1  
2649 ft.**

**PEARL HARBOR NAVAL STATION  
PEARL HARBOR NAVAL STATIO (County), HI**

**DOD CUSA047685  
N/A**

DOD:  
Feature 1: Navy DOD  
Feature 2: Not reported  
Feature 3: Not reported  
URL: Not reported  
Name 1: Pearl Harbor Naval Station  
Name 2: Not reported  
Name 3: Not reported  
State: HI  
DOD Site: Yes  
Tile name: HIHONOLULU

**5  
NNW  
1/4-1/2  
1466 ft.**

**WAIPAHU AUTO CO. - DIVISION OF SERVCO  
94-729 FARRINGTON HWY  
WAIPAHU, HI 96797**

**LUST U003221996  
UST N/A**

**Relative:  
Higher**

LUST:  
Facility ID: 9-200882  
Release ID: 980210  
Facility Status Date: 1998-08-11 00:00:00  
Facility Status: Site Cleanup Completed  
Project Officer: Hodges

**Actual:  
7 ft.**

UST:  
Facility ID: 9-200882  
Owner: SERVCO PACIFIC  
Owner Address: 94-729 FARRINGTON HWY  
Owner City,St,Zip: Waipahu, 96797 96797  
Tank ID: R-1  
Installed: 5/5/1974  
**Tank Status: Permanently Out of Use**  
Date Closed: 5/29/1997  
Tank Capacity: 500  
Substance: Used Oil  
Pipe Material: Galvanized Steel  
Pipe Other Material: Not reported  
Pipe 2nd Construction: None

MAP FINDINGS

Map ID  
 Direction  
 Distance  
 Distance (ft.)  
 Elevation

Site

Database(s)

EDR ID Number  
 EPA ID Number

**B6**  
 North  
 1/4-1/2  
 1512 ft.

**TAJIRO URANAKA**  
**94-767 FARRINGTON HWY**  
**WAIPAHU, HI 96797**

**FINDS** 1006844115  
**LUST** 110014057439

**Site 1 of 2 in cluster B**

**Relative:**  
**Higher**

**FINDS:**  
 Other Pertinent Environmental Activity Identified at Site

**Actual:**  
**7 ft.**

HI-UST (Hawaii - Underground Storage Tank). Hawaii Underground Storage Tank Program regulates underground storage tanks which store petroleum or hazardous substances and offers documents and data products for downloading.

**LUST:**

Facility ID: 9-201203  
 Release ID: 900066  
 Facility Status Date: 1995-12-15 00:00:00  
 Facility Status: Site Cleanup Completed  
 Project Officer: Okoji

**B7**  
 North  
 1/4-1/2  
 1512 ft.

**JIFFY MART WAIPAHU**  
**94-767 FARRINGTON HWY**  
**WAIPAHU, HI 96797**

**LUST** U003222130  
**UST** N/A

**Site 2 of 2 in cluster B**

**Relative:**  
**Higher**

**LUST:**  
 Facility ID: 9-202938  
 Release ID: 980183  
 Facility Status Date: 2000-06-20 00:00:00  
 Facility Status: Site Cleanup Completed  
 Project Officer: Li

**Actual:**  
**7 ft.**

**UST:**

Facility ID: 9-202938  
 Owner: ALOHA PETROLEUM, LTD.  
 Owner Address: 1132 BISHOP STREET, SUITE 1700  
 Owner City,St,Zip: Waipahu, 96797 96797  
 Tank ID: 92  
 Installed: 6/1/1998  
**Tank Status: Currently In Use**  
 Date Closed: Not reported  
 Tank Capacity: 10000  
 Substance: Gasoline  
 Pipe Material: Fiberglass Reinforced Plastic  
 Pipe Other Material: Not reported  
 Pipe 2nd Construction: Double-Walled

Facility ID: 9-202938  
 Owner: ALOHA PETROLEUM, LTD.  
 Owner Address: 1132 BISHOP STREET, SUITE 1700  
 Owner City,St,Zip: Waipahu, 96797 96797  
 Tank ID: R-2  
 Installed: 4/5/1983  
**Tank Status: Permanently Out of Use**  
 Date Closed: 7/18/1998  
 Tank Capacity: 10000

Map ID  
Direction  
Distance  
Distance (ft.)  
Elevation

MAP FINDINGS

Database(s)  
EDR ID Number  
EPA ID Number

JIFFY MART WAIPAHU (Continued)

U003222130

Substance: Diesel  
Pipe Material: Galvanized Steel  
Pipe Other Material: Not reported  
Pipe 2nd Construction: None

Facility ID: 9-202938  
Owner: ALOHA PETROLEUM, LTD.  
Owner Address: 1132 BISHOP STREET, SUITE 1700  
Ownder City,St,Zip: Waipahu, 96797 96797  
Tank ID: R-1  
Installed: 4/5/1983  
**Tank Status: Permanently Out of Use**  
Date Closed: 7/18/1998  
Tank Capacity: 10000  
Substance: Gasoline  
Pipe Material: Galvanized Steel  
Pipe Other Material: Not reported  
Pipe 2nd Construction: None

Facility ID: 9-202938  
Owner: ALOHA PETROLEUM, LTD.  
Owner Address: 1132 BISHOP STREET, SUITE 1700  
Ownder City,St,Zip: Waipahu, 96797 96797  
Tank ID: 3  
Installed: 6/1/1998  
**Tank Status: Currently In Use**  
Date Closed: Not reported  
Tank Capacity: 10000  
Substance: Diesel  
Pipe Material: Fiberglass Reinforced Plastic  
Pipe Other Material: Not reported  
Pipe 2nd Construction: Double-Walled

Facility ID: 9-202938  
Owner: ALOHA PETROLEUM, LTD.  
Owner Address: 1132 BISHOP STREET, SUITE 1700  
Ownder City,St,Zip: Waipahu, 96797 96797  
Tank ID: R-3  
Installed: 4/5/1983  
**Tank Status: Permanently Out of Use**  
Date Closed: 6/17/1998  
Tank Capacity: 10000  
Substance: Gasoline  
Pipe Material: Galvanized Steel  
Pipe Other Material: Not reported  
Pipe 2nd Construction: None

Facility ID: 9-202938  
Owner: ALOHA PETROLEUM, LTD.  
Owner Address: 1132 BISHOP STREET, SUITE 1700  
Ownder City,St,Zip: Waipahu, 96797 96797  
Tank ID: 87  
Installed: 6/1/1998  
**Tank Status: Currently In Use**  
Date Closed: Not reported  
Tank Capacity: 10000  
Substance: Gasoline

Map ID  
 Direction  
 Distance  
 Distance (ft.)  
 Elevation

MAP FINDINGS

**JIFFY MART WAIPAHU (Continued)**

EDR ID Number  
 EPA ID Number

Database(s)

Pipe Material:           Fiberglass Reinforced Plastic  
 Pipe Other Material:   Not reported  
 Pipe 2nd Construction: Double-Walled

**U003222130**

**C8**  
**SSE**  
 1/4-1/2  
 1970 ft.

**WAIPAHU INCINERATOR**  
**93-071 WAIPAHU DEPOT RD**  
**WAIPAHU, HI 96797**

**LUST**   **U001235327**  
**N/A**

**Site 1 of 2 in cluster C**

**Relative:**  
**Higher**

**LUST:**  
 Facility ID:           9-202178  
 Release ID:           900076  
 Facility Status Date: 1991-12-26 00:00:00  
 Facility Status:       Case Transferred to HEER  
 Project Officer:       HEER

**Actual:**  
**20 ft.**

**C9**  
**SSE**  
 1/4-1/2  
 1970 ft.

**WAIPAHU WASTEWATER PUMP STATION**  
**93-065 WAIPAHU DEPOT RD**  
**WAIPAHU, HI 96797**

**LUST**   **U003221956**  
**UST**     **N/A**

**Site 2 of 2 in cluster C**

**Relative:**  
**Higher**

**LUST:**  
 Facility ID:           9-200148  
 Release ID:           990160  
 Facility Status Date: 1999-08-11 00:00:00  
 Facility Status:       Site Cleanup Completed  
 Project Officer:       Ruiz

**Actual:**  
**20 ft.**

**UST:**  
 Facility ID:           9-200148  
 Owner:                C&C HNL - DEPT OF ENVIRONMENTAL SERVICES  
 Owner Address:       1000 ULU'OHIA STREET, SUITE 308  
 Owner City,St,Zip:   Waipahu, 96797 96797  
 Tank ID:               R-M-1  
 Installed:             5/7/1976  
**Tank Status:        Permanently Out of Use**  
 Date Closed:          1/29/1999  
 Tank Capacity:        2000  
 Substance:            Diesel  
 Pipe Material:         Galvanized Steel  
 Pipe Other Material:  Not reported  
 Pipe 2nd Construction: None

Facility ID:           9-200148  
 Owner:                C&C HNL - DEPT OF ENVIRONMENTAL SERVICES  
 Owner Address:       1000 ULU'OHIA STREET, SUITE 308  
 Owner City,St,Zip:   Waipahu, 96797 96797  
 Tank ID:               M-1  
 Installed:             11/8/2000  
**Tank Status:        Currently In Use**  
 Date Closed:          Not reported  
 Tank Capacity:        10000  
 Substance:            Diesel  
 Pipe Material:         Fiberglass Reinforced Plastic

Map ID  
 Direction  
 Distance  
 Distance (ft.)  
 Elevation Site

MAP FINDINGS

Database(s) EDR ID Number  
 EPA ID Number

**WAIPAHU WASTEWATER PUMP STATION (Continued)**

**U003221956**

Pipe Other Material: Not reported  
 Pipe 2nd Construction: Double-Walled

**D10  
 NNW  
 1/4-1/2  
 2622 ft.**

**ALEXANDER AND BALDWIN MILL TOWN DIESEL PLUME  
 94-833 MAKAALOHA ST  
 WAIPAHU, HI 96797**

**SHWS  
 SPILLS  
 VCP**

**U001236230  
 N/A**

**Site 1 of 2 in cluster D**

**Relative:  
 Higher**

**Actual:  
 51 ft.**

**SHWS:**  
 File Under: Alexander & Baldwin, Inc.  
 Supplement: Not reported  
 Restricted Use: Not reported  
 Restricted Use Comm: Not reported  
 Ic Relied On In Remedy: Not reported  
 Unit: Alexander and Baldwin Mill Town Diesel Plume in Groundwater  
 Fed Id: Not reported  
 Funding: ERRF-VRP  
 Agreement/program: VRP  
 Sitelist Name: Alexander and Baldwin Mill Town Diesel Plume in Groundwater  
 Activity Type: Site Assessment  
 Assignment Date: 8/12/2003  
 Activity Lead: John Peard  
 Assignment End Date: Not reported  
 End fill: 7/24/2006  
 Result fill: Ongoing  
 Overall Status: Ongoing

**HI SPILLS:**

Island: Oahu  
 Supplemental Loc. Text: Waipahu Sugar Mill  
 Case Number: 19960513-1420  
 Units: Waipahu Sugar Mill Bunker C Release  
 Substances: Diesel Fuel Bunker  
 Less Or Greater Than: Not reported  
 Numerical Quantity: Not reported  
 Units: Not reported  
 Activity Type: Response  
 Assignment Date: 5/13/1996  
 Activity Lead: Bill Perry  
 Assignment End Date: Not reported  
 Result: 8  
 Incident: Discovered motor oil which was above reportable level in sump soil located in concrete vault. Samples taken for other substances. Vault was destroyed and more oil was found and contained in plastic berm. Soil staining and odor noticed following tank removal.  
 Initial: Will investigate the extent of contamination during a Phase II SI at Waipahu Sugar Mill.  
 Report: This case will be included in the Waipahu Sugar Mill Phase II under SDA. The HEER Office has no record of the initial verbal notification.

Island: Oahu  
 Supplemental Loc. Text: Waipahu Sugar Mill  
 Case Number: 19990319-1623  
 Units: Waipahu Sugar Mill  
 Substances: Not reported  
 Less Or Greater Than: Not reported

Map ID  
 Direction  
 Distance  
 Distance (ft.)  
 Elevation Site

MAP FINDINGS

Database(s) EDR ID Number  
 EPA ID Number

**ALEXANDER AND BALDWIN MILL TOWN DIESEL PLUME (Continued)**

**U001236230**

Numerical Quantity: Not reported  
 Units: Not reported  
 Activity Type: Response  
 Assignment Date: 3/19/1999  
 Activity Lead: Mike Cripps  
 Assignment End Date: Not reported  
 Result: 8  
 Incident: Discovered motor oil which was above reportable level in sump soil located in concrete vault. Samples taken for other substances. Vault was destroyed and more oil was found and contained in plastic berm. Soil staining and odor noticed following tank removal.  
 Initial: Will investigate the extent of contamination during a Phase II SI at Waipahu Sugar Mill.  
 Report: This case will be included in the Waipahu Sugar Mill Phase II under SDA. The HEER Office has no record of the initial verbal notification.

VCP:

Location Address Line 2: Not reported  
 Supplemental Location Text: Not reported  
 Restricted Use: Not reported  
 Comments on Restricted Use: Not reported  
 IC Relied on in Remedy: Not reported  
 FED\_ID: Not reported  
 Activity Type: Site Assessment  
 Assignment Date: 2003-08-12 00:00:00  
 Activity Lead: John Peard  
 Assignment End Date: Not reported  
 Result: 8  
 Agreement/Program: VRP  
 Overall Status: Ongoing  
 File Under: Alexander & Baldwin, Inc.  
 Unit: Alexander and Baldwin Mill Town Diesel Plume in Groundwater  
 Funding: ERRF-VRP  
 Site List: Alexander and Baldwin Mill Town Diesel Plume in Groundwater  
 End Fill: 2006-07-24 00:00:00

**D11  
 NNW  
 1/4-1/2  
 2622 ft.**

**WAIPAHU MECHANICAL EQUIPMENT SHOP  
 94-833 MAKAALOHA ST  
 WAIPAHU, HI 96797**

**FINDS 1006842611  
 LUST 110014040634**

**Site 2 of 2 in cluster D**

**Relative:  
 Higher**

**FINDS:**  
 Other Pertinent Environmental Activity Identified at Site

**Actual:  
 51 ft.**

HI-UST (Hawaii - Underground Storage Tank). Hawaii Underground Storage Tank Program regulates underground storage tanks which store petroleum or hazardous substances and offers documents and data products for downloading.

**LUST:**

Facility ID: 9-200943  
 Release ID: 920025  
 Facility Status Date: 2001-10-19 00:00:00  
 Facility Status: Site Cleanup Completed  
 Project Officer: Li

## ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
EWA BEACH	1006821165	PACIFIC CONCRETE & ROCK LDFL	91-402 FARRINGTON HWY	96706	SHWS, FINDS, SPILLS
HONOLULU	S108008640	WAIPAHU AUTO COMPANY	94-729 FARRINGTON HWY	96797	SHWS
MAKAKILO	S106817192	GRACE PACIFIC CORPORATION - MAKAKI	91-920 FARRINGTON HWY	96706	SHWS, SPILLS
OAHU	1003879142	WAIPAHU WELLS	ON CANE ROAD OFF WAIPAHU STREE	96797	CERCLIS, FINDS
OAHU	1003879141	WAIPIO HEIGHTS WELLS II	COR OF KAM HWY & KA UKA BLVD	96797	CERC-NFRAP
WAIPAHU	S107769079	WAIPAHU DRY CLEANERS	94-668 FARRINGTON HWY.	96797	DRYCLEANERS
WAIPAHU	1004688747	LONGS DRUG STORE 259	94 060 FARRINGTON HWY UNIT D	96797	RCRA-SQG, FINDS
WAIPAHU	1008880424	CHEVRON 98584	94 485 FARRINGTON HWY	96797	RCRA-SQG
WAIPAHU	S106816759	COMPLETE AUTO REPAIR AND ESTIMATES	94-875 FARRINGTON HWY	96797	SHWS, SPILLS
WAIPAHU	1008192306	WAIAWA CORRECTIONAL FACILITY	94-560 KAMEHAMEHA HWY	96797	SHWS, SPILLS
WAIPAHU	S108008476	ALEXANDER AND BALDWIN MILLTOWN LEA	KOAKI ST	96797	SHWS
WAIPAHU	1006820121	CASTLE AND COOKE MANAGERS DRIVE	MANAGERS DR	96797	SHWS, FINDS, SPILLS, VCP, INST CONTROL
WAIPAHU	U003832864	A&B PROPERTIES, INC . MILL TOWN SI	MOKUOLA STREET EXTENSION (FOR	96797	UST
WAIPAHU	S105211962	A&B PROPERTIES, INC . MILL TOWN SI	MOKUOLA STREET EXTENSION (FOR	96797	LUST
WAIPAHU	1006819072	PAHU STREET DRUM	PAHU ST	96797	FINDS, SPILLS
WAIPAHU	1006819642	WAIPAHU FIELD POOL	94-230 PAIWA ST	96797	FINDS
WAIPAHU	U003541831	WAIPAHU SHELL SERVICE	94-380 PUPUPANI ST.	96797	LUST, UST
WAIPAHU	S108008577	LOT 32 FORMER WAIPAHU SUGAR MILL D	WAIPAHU ST	96797	SHWS
WAIPAHU	S108008576	LOT 32 FORMER WAIPAHU SUGAR MILL C	WAIPAHU ST	96797	SHWS
WAIPAHU	S108008575	LOT 32 FORMER WAIPAHU SUGAR MILL A	WAIPAHU ST	96797	SHWS
WAIPAHU	S108008447	LOT 32 FORMER WAIPAHU SUGAR MILL A	WAIPAHU ST	96797	INST CONTROL
WAIPAHU	S106821084	WAIPAHU UNOCAL SERVICE #5177	94-303 WAIPAHU ST	96797	SHWS, SPILLS
WAIPAHU	S106815927	ABANDONED DRUMS WAIPAHU STREET DUM	WAIPAHU ST	96797	SHWS
WAIPAHU	S106708604	LOT 32 FORMER WAIPAHU SUGAR MILL A	WAIPAHU ST	96797	VCP
WAIPAHU	1005415811	USNAVY CMDR NVY REG HI NAVAL MAG W	WAIPAHU ST 1 HALF MI N OF	96797	RCRA-SQG
WAIPAHU	1009398534	SHELL OIL PRODUCTS SAP 139585	94 1037 WAIPAHU ST	96797	RCRA-SQG

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

## **FEDERAL RECORDS**

### **NPL: National Priority List**

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 09/27/2006	Source: EPA
Date Data Arrived at EDR: 11/01/2006	Telephone: N/A
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 11/01/2006
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Quarterly

### **NPL Site Boundaries**

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)  
Telephone: 202-564-7333

EPA Region 1  
Telephone 617-918-1143

EPA Region 6  
Telephone: 214-655-6659

EPA Region 3  
Telephone 215-814-5418

EPA Region 7  
Telephone: 913-551-7247

EPA Region 4  
Telephone 404-562-8033

EPA Region 8  
Telephone: 303-312-6774

EPA Region 5  
Telephone 312-886-6686

EPA Region 9  
Telephone: 415-947-4246

EPA Region 10  
Telephone 206-553-8665

### **Proposed NPL: Proposed National Priority List Sites**

Date of Government Version: 09/27/2006	Source: EPA
Date Data Arrived at EDR: 11/01/2006	Telephone: N/A
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 11/01/2006
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Quarterly

### **DELISTED NPL: National Priority List Deletions**

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 09/27/2006	Source: EPA
Date Data Arrived at EDR: 11/01/2006	Telephone: N/A
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 11/01/2006
Number of Days to Update: 21	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## **NPL RECOVERY:** Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991	Source: EPA
Date Data Arrived at EDR: 02/02/1994	Telephone: 202-564-4267
Date Made Active in Reports: 03/30/1994	Last EDR Contact: 11/17/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: No Update Planned

## **CERCLIS:** Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 08/09/2006	Source: EPA
Date Data Arrived at EDR: 09/21/2006	Telephone: 703-603-8960
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 09/21/2006
Number of Days to Update: 62	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Quarterly

## **CERCLIS-NFRAP:** CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/10/2006	Source: EPA
Date Data Arrived at EDR: 10/25/2006	Telephone: 703-603-8960
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 09/18/2006
Number of Days to Update: 28	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Quarterly

## **CORRACTS:** Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/15/2006	Source: EPA
Date Data Arrived at EDR: 03/17/2006	Telephone: 800-424-9346
Date Made Active in Reports: 04/13/2006	Last EDR Contact: 12/04/2006
Number of Days to Update: 27	Next Scheduled EDR Contact: 03/05/2007
	Data Release Frequency: Quarterly

## **RCRA:** Resource Conservation and Recovery Act Information

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/13/2006	Source: EPA
Date Data Arrived at EDR: 06/28/2006	Telephone: 800-424-9346
Date Made Active in Reports: 08/23/2006	Last EDR Contact: 11/22/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

## **ERNS:** Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2005	Source: National Response Center, United States Coast Guard
Date Data Arrived at EDR: 01/12/2006	Telephone: 202-260-2342
Date Made Active in Reports: 02/21/2006	Last EDR Contact: 10/24/2006
Number of Days to Update: 40	Next Scheduled EDR Contact: 01/22/2007
	Data Release Frequency: Annually

## **HMIRS:** Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 08/01/2006	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 10/18/2006	Telephone: 202-366-4555
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 10/18/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 01/15/2007
	Data Release Frequency: Annually

## **US ENG CONTROLS:** Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/21/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2006	Telephone: 703-603-8905
Date Made Active in Reports: 05/22/2006	Last EDR Contact: 09/07/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 10/02/2006
	Data Release Frequency: Varies

## **US INST CONTROL:** Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/21/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2006	Telephone: 703-603-8905
Date Made Active in Reports: 05/22/2006	Last EDR Contact: 09/07/2006
Number of Days to Update: 56	Next Scheduled EDR Contact: 10/02/2006
	Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## **DOD:** Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2004	Source: USGS
Date Data Arrived at EDR: 02/08/2005	Telephone: 703-692-8801
Date Made Active in Reports: 08/04/2005	Last EDR Contact: 11/10/2006
Number of Days to Update: 177	Next Scheduled EDR Contact: 02/05/2007
	Data Release Frequency: Semi-Annually

## **FUDS:** Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2005	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 09/20/2006	Telephone: 202-528-4285
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 09/18/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 01/01/2007
	Data Release Frequency: Varies

## **US BROWNFIELDS:** A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients--States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 07/10/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 07/13/2006	Telephone: 202-566-2777
Date Made Active in Reports: 09/06/2006	Last EDR Contact: 09/11/2006
Number of Days to Update: 55	Next Scheduled EDR Contact: 12/11/2006
	Data Release Frequency: Semi-Annually

## **CONSENT:** Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/14/2004	Source: Department of Justice, Consent Decree Library
Date Data Arrived at EDR: 02/15/2005	Telephone: Varies
Date Made Active in Reports: 04/25/2005	Last EDR Contact: 11/17/2006
Number of Days to Update: 69	Next Scheduled EDR Contact: 01/22/2007
	Data Release Frequency: Varies

## **ROD:** Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/10/2006	Source: EPA
Date Data Arrived at EDR: 07/21/2006	Telephone: 703-416-0223
Date Made Active in Reports: 09/06/2006	Last EDR Contact: 10/02/2006
Number of Days to Update: 47	Next Scheduled EDR Contact: 01/01/2007
	Data Release Frequency: Annually

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## **UMTRA:** Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 11/04/2005	Source: Department of Energy
Date Data Arrived at EDR: 11/28/2005	Telephone: 505-845-0011
Date Made Active in Reports: 01/30/2006	Last EDR Contact: 09/05/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Varies

## **ODI:** Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/09/2004	Telephone: 800-424-9346
Date Made Active in Reports: 09/17/2004	Last EDR Contact: 06/09/2004
Number of Days to Update: 39	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

## **TRIS:** Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2004	Source: EPA
Date Data Arrived at EDR: 06/22/2006	Telephone: 202-566-0250
Date Made Active in Reports: 08/23/2006	Last EDR Contact: 09/22/2006
Number of Days to Update: 62	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Annually

## **TSCA:** Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002	Source: EPA
Date Data Arrived at EDR: 04/14/2006	Telephone: 202-260-5521
Date Made Active in Reports: 05/30/2006	Last EDR Contact: 10/18/2006
Number of Days to Update: 46	Next Scheduled EDR Contact: 01/15/2007
	Data Release Frequency: Every 4 Years

## **FTTS:** FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/19/2006	Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Date Data Arrived at EDR: 10/27/2006	Telephone: 202-566-1667
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 09/18/2006
Number of Days to Update: 26	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Quarterly

## **FTTS INSP:** FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Date of Government Version: 10/19/2006	Source: EPA
Date Data Arrived at EDR: 10/27/2006	Telephone: 202-566-1667
Date Made Active in Reports: 11/22/2006	Last EDR Contact: 09/18/2006
Number of Days to Update: 26	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## **SSTS:** Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2004	Source: EPA
Date Data Arrived at EDR: 05/11/2006	Telephone: 202-564-4203
Date Made Active in Reports: 05/22/2006	Last EDR Contact: 11/07/2006
Number of Days to Update: 11	Next Scheduled EDR Contact: 01/15/2007
	Data Release Frequency: Annually

## **ICIS:** Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 02/13/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/21/2006	Telephone: 202-564-5088
Date Made Active in Reports: 05/11/2006	Last EDR Contact: 07/17/2006
Number of Days to Update: 20	Next Scheduled EDR Contact: 10/16/2006
	Data Release Frequency: Quarterly

## **PADS:** PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/07/2006	Source: EPA
Date Data Arrived at EDR: 08/09/2006	Telephone: 202-566-0500
Date Made Active in Reports: 09/06/2006	Last EDR Contact: 11/29/2006
Number of Days to Update: 28	Next Scheduled EDR Contact: 02/05/2007
	Data Release Frequency: Annually

## **MLTS:** Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/10/2006	Source: Nuclear Regulatory Commission
Date Data Arrived at EDR: 07/20/2006	Telephone: 301-415-7169
Date Made Active in Reports: 09/06/2006	Last EDR Contact: 10/02/2006
Number of Days to Update: 48	Next Scheduled EDR Contact: 01/01/2007
	Data Release Frequency: Quarterly

## **MINES:** Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/09/2006	Source: Department of Labor, Mine Safety and Health Administration
Date Data Arrived at EDR: 09/27/2006	Telephone: 303-231-5959
Date Made Active in Reports: 11/27/2006	Last EDR Contact: 09/27/2006
Number of Days to Update: 61	Next Scheduled EDR Contact: 12/25/2006
	Data Release Frequency: Semi-Annually

## **FINDS:** Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 07/21/2006  
Date Data Arrived at EDR: 07/25/2006  
Date Made Active in Reports: 09/06/2006  
Number of Days to Update: 43

Source: EPA  
Telephone: N/A  
Last EDR Contact: 10/02/2006  
Next Scheduled EDR Contact: 01/01/2007  
Data Release Frequency: Quarterly

## **RAATS:** RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995  
Date Data Arrived at EDR: 07/03/1995  
Date Made Active in Reports: 08/07/1995  
Number of Days to Update: 35

Source: EPA  
Telephone: 202-564-4104  
Last EDR Contact: 12/04/2006  
Next Scheduled EDR Contact: 03/05/2007  
Data Release Frequency: No Update Planned

## **BRS:** Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2003  
Date Data Arrived at EDR: 06/17/2005  
Date Made Active in Reports: 08/04/2005  
Number of Days to Update: 48

Source: EPA/NTIS  
Telephone: 800-424-9346  
Last EDR Contact: 10/20/2006  
Next Scheduled EDR Contact: 12/11/2006  
Data Release Frequency: Biennially

## **STATE AND LOCAL RECORDS**

### **SHWS:** Sites List

Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 07/24/2006  
Date Data Arrived at EDR: 07/27/2006  
Date Made Active in Reports: 08/30/2006  
Number of Days to Update: 34

Source: Department of Health  
Telephone: 808-586-4249  
Last EDR Contact: 09/22/2006  
Next Scheduled EDR Contact: 12/18/2006  
Data Release Frequency: Semi-Annually

### **SWF/LF:** Permitted Landfills in the State of Hawaii

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/19/2004  
Date Data Arrived at EDR: 05/20/2004  
Date Made Active in Reports: 06/22/2004  
Number of Days to Update: 33

Source: Department of Health  
Telephone: 808-586-4245  
Last EDR Contact: 10/24/2006  
Next Scheduled EDR Contact: 01/22/2007  
Data Release Frequency: Varies

### **LUST:** Leaking Underground Storage Tank Database

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/11/2006  
Date Data Arrived at EDR: 08/14/2006  
Date Made Active in Reports: 08/30/2006  
Number of Days to Update: 16

Source: Department of Health  
Telephone: 808-586-4228  
Last EDR Contact: 09/26/2006  
Next Scheduled EDR Contact: 12/25/2006  
Data Release Frequency: Semi-Annually

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## **UST:** Underground Storage Tank Database

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/11/2006	Source: Department of Health
Date Data Arrived at EDR: 08/14/2006	Telephone: 808-586-4228
Date Made Active in Reports: 09/20/2006	Last EDR Contact: 09/26/2006
Number of Days to Update: 37	Next Scheduled EDR Contact: 12/25/2006
	Data Release Frequency: Semi-Annually

## **SPILLS:** Release Notifications

Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 07/24/2006	Source: Department of Health
Date Data Arrived at EDR: 07/27/2006	Telephone: 808-586-4249
Date Made Active in Reports: 08/30/2006	Last EDR Contact: 09/22/2006
Number of Days to Update: 34	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Varies

## **INST CONTROL:** Sites with Institutional Controls

Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 07/24/2006	Source: Department of Health
Date Data Arrived at EDR: 07/27/2006	Telephone: 808-586-4249
Date Made Active in Reports: 08/30/2006	Last EDR Contact: 09/22/2006
Number of Days to Update: 34	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Varies

## **VCP:** Voluntary Response Program Sites

Date of Government Version: 07/24/2006	Source: Department of Health
Date Data Arrived at EDR: 07/27/2006	Telephone: 808-586-4249
Date Made Active in Reports: 08/30/2006	Last EDR Contact: 09/22/2006
Number of Days to Update: 34	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Varies

## **DRYCLEANERS:** Permitted Drycleaner Facility Listing

A listing of permitted drycleaner facilities in the state.

Date of Government Version: 09/07/2006	Source: Department of Health
Date Data Arrived at EDR: 09/08/2006	Telephone: 808-586-4200
Date Made Active in Reports: 10/13/2006	Last EDR Contact: 10/30/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Varies

## **BROWNFIELDS:** Brownfields Sites

Date of Government Version: 07/24/2006	Source: Department of Health
Date Data Arrived at EDR: 07/27/2006	Telephone: 808-586-4249
Date Made Active in Reports: 08/30/2006	Last EDR Contact: 09/22/2006
Number of Days to Update: 34	Next Scheduled EDR Contact: 12/18/2006
	Data Release Frequency: Varies

## **AIRS:** List of Permitted Facilities

A listing of permitted facilities in the state.

Date of Government Version: 09/07/2006	Source: Department of Health
Date Data Arrived at EDR: 09/08/2006	Telephone: 808-586-4200
Date Made Active in Reports: 10/13/2006	Last EDR Contact: 10/30/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 01/29/2007
	Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## TRIBAL RECORDS

### **INDIAN RESERV:** Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2004	Source: USGS
Date Data Arrived at EDR: 02/08/2005	Telephone: 202-208-3710
Date Made Active in Reports: 08/04/2005	Last EDR Contact: 11/10/2006
Number of Days to Update: 177	Next Scheduled EDR Contact: 02/05/2007
	Data Release Frequency: Semi-Annually

### **INDIAN LUST R1:** Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/07/2006	Source: EPA Region 1
Date Data Arrived at EDR: 09/08/2006	Telephone: 617-918-1313
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 61	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

### **INDIAN LUST R4:** Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Minnesota, Mississippi and North Carolina.

Date of Government Version: 08/24/2006	Source: EPA Region 4
Date Data Arrived at EDR: 09/11/2006	Telephone: 404-562-8677
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Semi-Annually

### **INDIAN LUST R6:** Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/04/2005	Source: EPA Region 6
Date Data Arrived at EDR: 01/21/2005	Telephone: 214-665-6597
Date Made Active in Reports: 02/28/2005	Last EDR Contact: 11/17/2006
Number of Days to Update: 38	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

### **INDIAN LUST R8:** Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/30/2006	Source: EPA Region 8
Date Data Arrived at EDR: 09/06/2006	Telephone: 303-312-6271
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

### **INDIAN LUST R10:** Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 09/11/2006	Source: EPA Region 10
Date Data Arrived at EDR: 09/11/2006	Telephone: 206-553-2857
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

### **INDIAN LUST R9:** Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 09/06/2006	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/04/2006	Telephone: 415-972-3372
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**INDIAN LUST R7:** Leaking Underground Storage Tanks on Indian Land  
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/06/2006	Source: EPA Region 7
Date Data Arrived at EDR: 10/04/2006	Telephone: 913-551-7003
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

**INDIAN UST R4:** Underground Storage Tanks on Indian Land

Date of Government Version: 08/24/2006	Source: EPA Region 4
Date Data Arrived at EDR: 09/11/2006	Telephone: 404-562-9424
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Semi-Annually

**INDIAN UST R9:** Underground Storage Tanks on Indian Land

Date of Government Version: 09/06/2006	Source: EPA Region 9
Date Data Arrived at EDR: 10/04/2006	Telephone: 415-972-3368
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 35	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

**INDIAN UST R10:** Underground Storage Tanks on Indian Land

Date of Government Version: 09/11/2006	Source: EPA Region 10
Date Data Arrived at EDR: 09/11/2006	Telephone: 206-553-2857
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 58	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

**INDIAN UST R5:** Underground Storage Tanks on Indian Land

Date of Government Version: 12/02/2004	Source: EPA Region 5
Date Data Arrived at EDR: 12/29/2004	Telephone: 312-886-6136
Date Made Active in Reports: 02/04/2005	Last EDR Contact: 11/17/2006
Number of Days to Update: 37	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Varies

**INDIAN UST R8:** Underground Storage Tanks on Indian Land

Date of Government Version: 08/30/2006	Source: EPA Region 8
Date Data Arrived at EDR: 09/06/2006	Telephone: 303-312-6137
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 63	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Quarterly

**INDIAN UST R6:** Underground Storage Tanks on Indian Land

Date of Government Version: 08/28/2006	Source: EPA Region 6
Date Data Arrived at EDR: 08/29/2006	Telephone: 214-665-7591
Date Made Active in Reports: 11/08/2006	Last EDR Contact: 11/17/2006
Number of Days to Update: 71	Next Scheduled EDR Contact: 02/19/2007
	Data Release Frequency: Semi-Annually

**INDIAN UST R1:** Underground Storage Tanks on Indian Land

A listing of underground storage tank locations on Indian Land.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 09/07/2006  
Date Data Arrived at EDR: 09/08/2006  
Date Made Active in Reports: 11/08/2006  
Number of Days to Update: 61

Source: EPA, Region 1  
Telephone: 617-918-1313  
Last EDR Contact: 11/17/2006  
Next Scheduled EDR Contact: 02/19/2007  
Data Release Frequency: Varies

## **INDIAN UST R7:** Underground Storage Tanks on Indian Land

Date of Government Version: 09/06/2006  
Date Data Arrived at EDR: 10/04/2006  
Date Made Active in Reports: 11/08/2006  
Number of Days to Update: 35

Source: EPA Region 7  
Telephone: 913-551-7003  
Last EDR Contact: 11/17/2006  
Next Scheduled EDR Contact: 02/19/2007  
Data Release Frequency: Varies

## **EDR PROPRIETARY RECORDS**

### **Manufactured Gas Plants:** EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A  
Date Data Arrived at EDR: N/A  
Date Made Active in Reports: N/A  
Number of Days to Update: N/A

Source: EDR, Inc.  
Telephone: N/A  
Last EDR Contact: N/A  
Next Scheduled EDR Contact: N/A  
Data Release Frequency: No Update Planned

## **OTHER DATABASE(S)**

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

**Oil/Gas Pipelines:** This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

### **Electric Power Transmission Line Data**

Source: PennWell Corporation  
Telephone: (800) 823-6277

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**Sensitive Receptors:** There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

### **AHA Hospitals:**

Source: American Hospital Association, Inc.  
Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

### **Medical Centers: Provider of Services Listing**

Source: Centers for Medicare & Medicaid Services  
Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## **Nursing Homes**

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

## **Public Schools**

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

## **Private Schools**

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

## **STREET AND ADDRESS INFORMATION**

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## GEOCHECK<sup>®</sup> - PHYSICAL SETTING SOURCE ADDENDUM

### TARGET PROPERTY ADDRESS

WAIPAHU DEPOT STREET  
WAIPAHU DEPOT STREET  
WAIPAHU, HI 96797

### TARGET PROPERTY COORDINATES

Latitude (North): 21.37960 - 21° 22' 46.6"  
Longitude (West): 158.005 - 158° 0' 18.0"  
Universal Transverse Mercator: Zone 4  
UTM X (Meters): 603150.9  
UTM Y (Meters): 2364347.2  
Elevation: 3 ft. above sea level

### USGS TOPOGRAPHIC MAP

Target Property Map:	21158-D1 SCHOFIELD BARRACKS, HI
Most Recent Revision:	Not reported
East Map:	21157-D8 WAIPAHU, HI
Most Recent Revision:	Not reported
Southeast Map:	21157-C8 PEARL HARBOR, HI
Most Recent Revision:	Not reported
South Map:	21158-C1 EWA, HI
Most Recent Revision:	Not reported

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

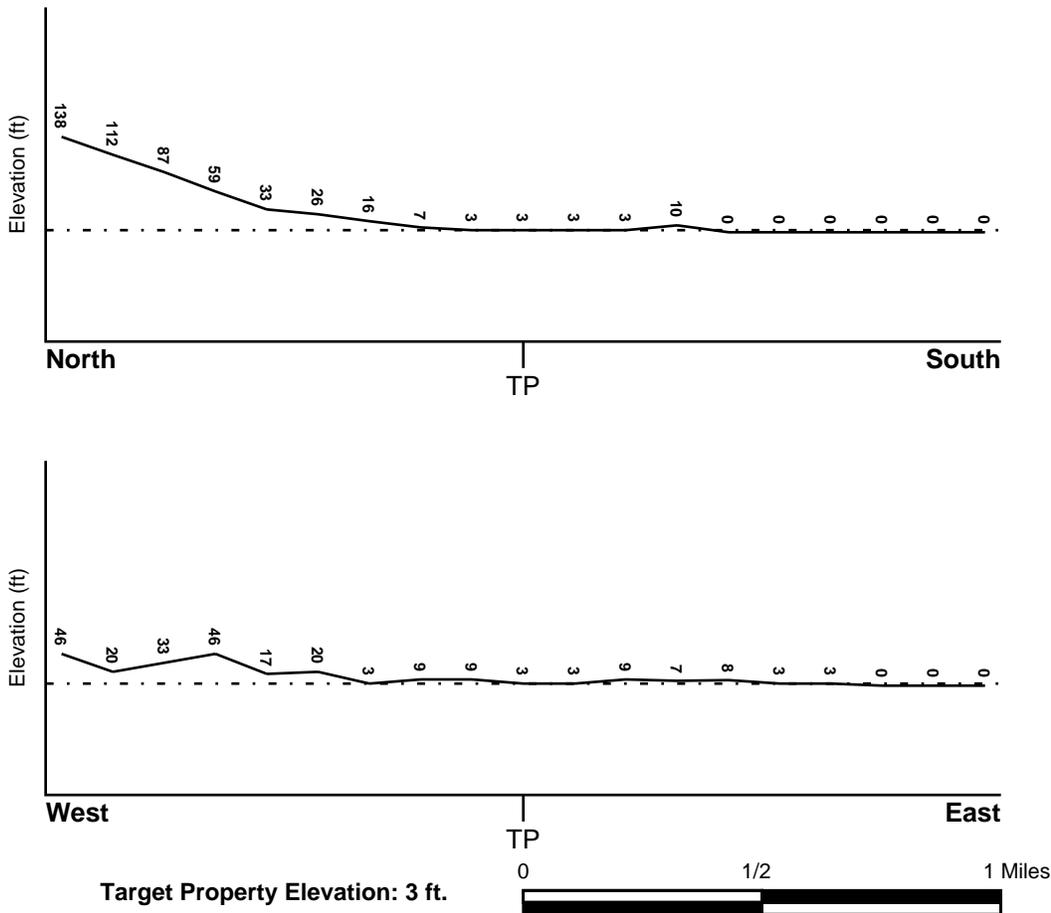
## TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

## TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

## SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## **HYDROLOGIC INFORMATION**

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

## **FEMA FLOOD ZONE**

<u>Target Property County</u> HONOLULU, HI	<u>FEMA Flood Electronic Data</u> YES - refer to the Overview Map and Detail Map
Flood Plain Panel at Target Property:	1500010110D
Additional Panels in search area:	Not Reported

## **NATIONAL WETLAND INVENTORY**

<u>NWI Quad at Target Property</u> NOT AVAILABLE	<u>NWI Electronic Data Coverage</u> YES - refer to the Overview Map and Detail Map
---	---

## **HYDROGEOLOGIC INFORMATION**

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

## **AQUIFLOW®**

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

<u>MAP ID</u>	<u>LOCATION FROM TP</u>	<u>GENERAL DIRECTION GROUNDWATER FLOW</u>
Not Reported		

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

### GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

#### **ROCK STRATIGRAPHIC UNIT**

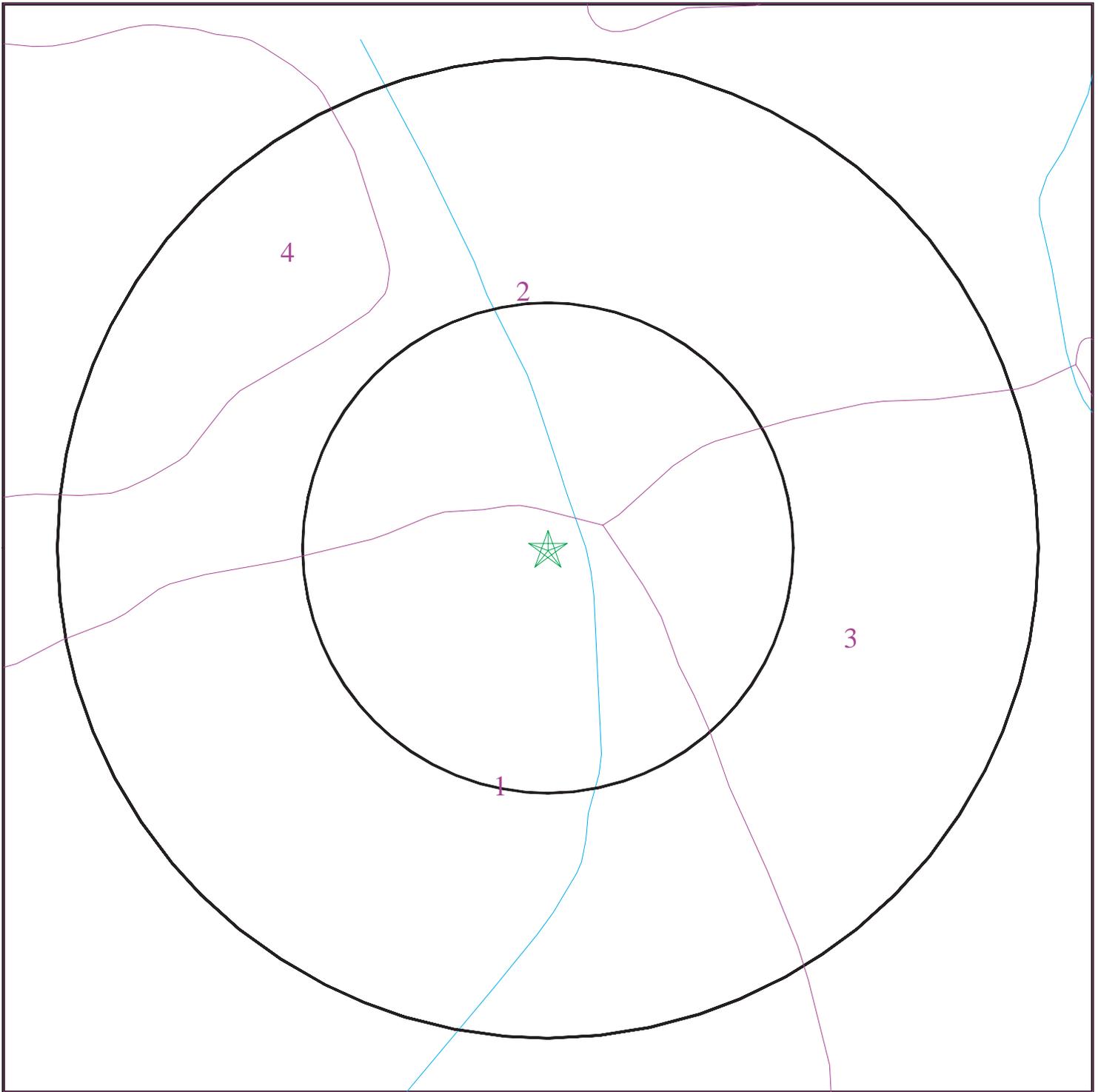
Era: -  
System: -  
Series: -  
Code: N/A (*decoded above as Era, System & Series*)

#### **GEOLOGIC AGE IDENTIFICATION**

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

# SSURGO SOIL MAP - 01812785.1r



- ★ Target Property
- SSURGO Soil
- Water



SITE NAME: Waipahu Depot Street  
ADDRESS: Waipahu Depot Street  
Waipahu HI 96797  
LAT/LONG: 21.3796 / 158.0050

CLIENT: Environet  
CONTACT: Steven Cho  
INQUIRY #: 01812785.1r  
DATE: December 07, 2006 4:36 pm

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

#### Soil Map ID: 1

Soil Component Name: FILL LAND, MIXED

Soil Surface Texture: variable

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 40 inches

Depth to Bedrock Max: > 60 inches

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	6 inches	variable	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.10	Max: 7.30 Min: 6.10
2	6 inches	60 inches	stratified	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.10	Max: 7.30 Min: 6.10
3	60 inches	70 inches	unweathered bedrock	Not reported	Not reported	Max: 2.00 Min: 0.00	Max: 0.00 Min: 0.00

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### Soil Map ID: 2

Soil Component Name: TROPAQUEPTS

Soil Surface Texture: mucky - silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly. Soils may have a saturated zone, a layer of low hydraulic conductivity, or seepage. Depth to water table is less than 1 foot.

Hydric Status: Soil meets the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 0 inches

Depth to Bedrock Max: > 0 inches

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	10 inches	mucky - silt loam	Not reported	Highly organic soils, Peat.	Max: 6.00 Min: 2.00	Max: 6.50 Min: 5.60
2	10 inches	18 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 0.60 Min: 0.10	Max: 6.50 Min: 5.60
3	18 inches	60 inches	stratified	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.60	Max: 6.50 Min: 5.60

### Soil Map ID: 3

Soil Component Name: FILL LAND

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 20 inches

Depth to Bedrock Max: > 40 inches

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	12 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 2.00 Min: 0.60	Max: 7.30 Min: 6.10
2	12 inches	30 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 2.00 Min: 0.60	Max: 7.30 Min: 6.10
3	30 inches	40 inches	unweathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

### Soil Map ID: 4

Soil Component Name: WAIPAHU

Soil Surface Texture: silty clay

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: MODERATE

Depth to Bedrock Min: > 0 inches

Depth to Bedrock Max: > 0 inches

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	12 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.60 Min: 0.10	Max: 6.50 Min: 6.10
2	12 inches	70 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.60 Min: 0.10	Max: 6.50 Min: 6.10

## LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

## WELL SEARCH DISTANCE INFORMATION

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

## **FEDERAL USGS WELL INFORMATION**

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No Wells Found		

## **FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION**

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No PWS System Found		

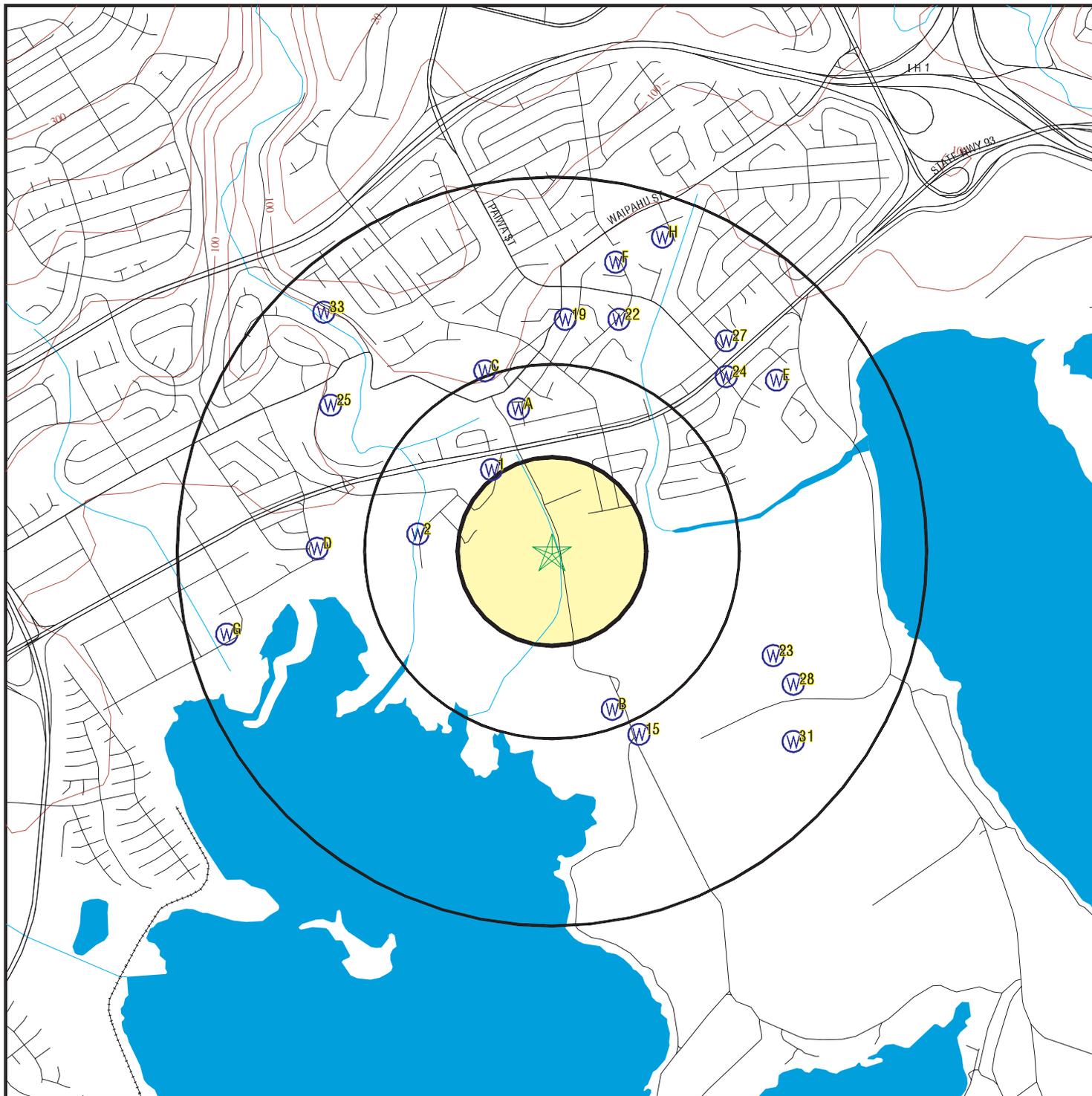
Note: PWS System location is not always the same as well location.

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	HI10002458	1/4 - 1/2 Mile NW
2	HI10002435	1/4 - 1/2 Mile West
A3	HI10002482	1/4 - 1/2 Mile North
A4	HI10002486	1/4 - 1/2 Mile NNW
B5	HI10002386	1/4 - 1/2 Mile SSE
B6	HI10002384	1/4 - 1/2 Mile SSE
C7	HI10002511	1/2 - 1 Mile NNW
C8	HI10002512	1/2 - 1 Mile NNW
C9	HI10002513	1/2 - 1 Mile NNW
C10	HI10002510	1/2 - 1 Mile NNW
C11	HI10002507	1/2 - 1 Mile NNW
C12	HI10002506	1/2 - 1 Mile NNW
C13	HI10002509	1/2 - 1 Mile NNW
C14	HI10002508	1/2 - 1 Mile NNW
15	HI10002371	1/2 - 1 Mile SSE
C16	HI10002524	1/2 - 1 Mile NNW
C17	HI10002525	1/2 - 1 Mile NNW
C18	HI10002526	1/2 - 1 Mile NNW
19	HI10002535	1/2 - 1 Mile North
D20	HI10002428	1/2 - 1 Mile West
D21	HI10002429	1/2 - 1 Mile West
22	HI10002536	1/2 - 1 Mile NNE
23	HI10002397	1/2 - 1 Mile ESE
24	HI10002514	1/2 - 1 Mile NE
25	HI10002485	1/2 - 1 Mile WNW
E26	HI10002500	1/2 - 1 Mile NE
27	HI10002528	1/2 - 1 Mile NE
28	HI10002393	1/2 - 1 Mile ESE
F29	HI10002575	1/2 - 1 Mile NNE
E30	HI10002521	1/2 - 1 Mile NE
31	HI10002370	1/2 - 1 Mile SE
F32	HI10002601	1/2 - 1 Mile North
33	HI10002540	1/2 - 1 Mile NW
G34	HI10002404	1/2 - 1 Mile WSW
H35	HI10002607	1/2 - 1 Mile NNE
H36	HI10002619	1/2 - 1 Mile NNE
G37	HI10002400	1/2 - 1 Mile WSW

# PHYSICAL SETTING SOURCE MAP - 01812785.1r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons



- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location



SITE NAME: Waipahu Depot Street  
 ADDRESS: Waipahu Depot Street  
 Waipahu HI 96797  
 LAT/LONG: 21.3796 / 158.0050

CLIENT: Environet  
 CONTACT: Steven Cho  
 INQUIRY #: 01812785.1r  
 DATE: December 07, 2006 4:36 pm

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database      EDR ID Number

**1**  
**NW**  
**1/4 - 1/2 Mile**  
**Higher**

**HI WELLS      HI10002458**

Wid:	3-2300-019	Island:	3
Well no:	2300-19	Well name:	St Josephs Sch
Old name:	Not Reported	Yr drilled:	1956
Driller:	NAT WHITON	Quad map:	09
Latitude27:	212309	Longitude2:	1580037
Latitude83:	212258	Longitude8:	1580027
Gps:	0	Utm:	1
Owner user:	St Joseph Ch	Old number:	253-1
Well type:	Not Reported	Casing dia:	8
Ground el:	22	Well depth:	131
Solid case:	70	Perf case:	Not Reported
Use:	UNU	Use year:	81
Init water:	20.7		
Init head:	20.74		
Init chlor:	130		
Init cl:	130		
Test date:	Not Reported	Test gpm:	187
Test ddown:	0.8	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	69		
Draft mgy:	Not Reported	Head feet:	20.6
Max chlor:	138	Min chlor:	122
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-109	Bot solid:	-48
Bot perf:	Not Reported	Spec capac:	234
Pump mgd:	.099	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-011:056
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	20.58		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**2**  
**West**  
**1/4 - 1/2 Mile**  
**Higher**

**HI WELLS      HI10002435**

Wid:	3-2300-006	Island:	3
Well no:	2300-06	Well name:	C & C 65
Old name:	Not Reported	Yr drilled:	1898
Driller:	Not Reported	Quad map:	09
Latitude27:	212300	Longitude2:	1580048
Latitude83:	212249	Longitude8:	1580038
Gps:	0	Utm:	1
Owner user:	C&C Faci Maint	Old number:	253-
Well type:	Not Reported	Casing dia:	10
Ground el:	12	Well depth:	241

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	170	Perf case:	Not Reported
Use:	ABNSLD	Use year:	98
Init water:	20.8		
Init head:	20.8		
Init chlor:	230		
Init cl:	230		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	18.3
Max chlor:	300	Min chlor:	190
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	57
Minchl:	Not Reported	Minchl yr:	57
Bot hole:	-229	Bot solid:	-158
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-011:065
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	17.9		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**A3  
North  
1/4 - 1/2 Mile  
Higher**

**HI WELLS      HI10002482**

Wid:	3-2300-010	Island:	3
Well no:	2300-10	Well name:	Waipahu P6
Old name:	Not Reported	Yr drilled:	1909
Driller:	MCCANDLESS	Quad map:	09
Latitude27:	212317	Longitude2:	1580032
Latitude83:	212306	Longitude8:	1580022
Gps:	0	Utm:	1
Owner user:	KS/Bishop Estate	Old number:	244-
Well type:	Not Reported	Casing dia:	1
Ground el:	13	Well depth:	224
Solid case:	194	Perf case:	214
Use:	OBS	Use year:	74
Init water:	21.6		
Init head:	21.6		
Init chlor:	192		
Init cl:	192		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	24.0	Temp unit:	C
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	16.4
Max chlor:	210	Min chlor:	96
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-211	Bot solid:	-181
Bot perf:	-201	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	16.4		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**A4  
NNW  
1/4 - 1/2 Mile  
Higher**

**HI WELLS      HI10002486**

Wid:	3-2300-005	Island:	3
Well no:	2300-05	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212318	Longitude2:	1580034
Latitude83:	212307	Longitude8:	1580024
Gps:	0	Utm:	1
Owner user:	A Chee & Assoc	Old number:	245-
Well type:	Not Reported	Casing dia:	Not Reported
Ground el:	14	Well depth:	197
Solid case:	122	Perf case:	Not Reported
Use:	UNU	Use year:	Not Reported
Init water:	16.9		
Init head:	16.9	Test gpm:	Not Reported
Init chlor:	140	Test chlor:	Not Reported
Init cl:	140	Temp unit:	Not Reported
Test date:	Not Reported		
Test ddown:	Not Reported	Head feet:	16.2
Test temp:	Not Reported	Min chlor:	91
Pump gpm:	0	Pump yr:	Not Reported
Draft mgy:	Not Reported	Head yr:	Not Reported
Max chlor:	238	Maxchl yr:	0
Geology:	Not Reported	Minchl yr:	0
Draft yr:	Not Reported	Bot solid:	-108
Maxchl:	Not Reported	Spec capac:	Not Reported
Minchl:	Not Reported	Draft mgd:	Not Reported
Bot hole:	-183	Tmk:	9-4-013:004
Bot perf:	Not Reported		
Pump mgd:	Not Reported		
Aquifer:	30203		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	16.2		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**B5  
SSE  
1/4 - 1/2 Mile  
Higher**

**HI WELLS      HI10002386**

Wid:	3-2200-003	Island:	3
Well no:	2200-03	Well name:	Waipio Peninsula
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212236	Longitude2:	1580020
Latitude83:	212225	Longitude8:	1580010
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	234-
Well type:	Not Reported	Casing dia:	2
Ground el:	11	Well depth:	362
Solid case:	352	Perf case:	362
Use:	ABNLOS	Use year:	00
Init water:	18.4		
Init head:	18.4		
Init chlor:	1930		
Init cl:	1930		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	23.0	Temp unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	13.6
Max chlor:	2600	Min chlor:	1700
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-351	Bot solid:	-341
Bot perf:	-351	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-3-002:001
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	13.6		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**B6  
SSE  
1/4 - 1/2 Mile  
Higher**

**HI WELLS      HI10002384**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2200-002	Island:	3
Well no:	2200-02	Well name:	Waipio Peninsula
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212235	Longitude2:	1580018
Latitude83:	212224	Longitude8:	1580008
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	233-
Well type:	Not Reported	Casing dia:	Not Reported
Ground el:	20	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNLOS	Use year:	00
Init water:	Not Reported		
Init head:	0		
Init chlor:	2000		
Init cl:	2000		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-3-002:001
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C7  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002511**

Wid:	3-2300-007	Island:	3
Well no:	2300-07	Well name:	Waipahu P7A
Old name:	Not Reported	Yr drilled:	1900
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-A
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	Not Reported

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNSLD	Use year:	99
Init water:	Not Reported		
Init head:	0		
Init chlor:	136		
Init cl:	136		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	4117	Head feet:	Not Reported
Max chlor:	259	Min chlor:	150
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	11.3
Aquifer:	30203	Tmk:	9-4-002:004
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C8  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002512**

Wid:	3-2300-008	Island:	3
Well no:	2300-08	Well name:	Waipahu P7B
Old name:	Not Reported	Yr drilled:	1900
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-B
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNSLD	Use year:	99
Init water:	Not Reported		
Init head:	0		
Init chlor:	136		
Init cl:	136		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	259	Min chlor:	150
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-002:004
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C9  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002513**

Wid:	3-2300-009	Island:	3
Well no:	2300-09	Well name:	Waipahu P7C
Old name:	Not Reported	Yr drilled:	1900
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-C
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNSLD	Use year:	99
Init water:	Not Reported		
Init head:	0	Test gpm:	Not Reported
Init chlor:	136	Test chlor:	Not Reported
Init cl:	136	Temp unit:	Not Reported
Test date:	Not Reported		
Test ddown:	Not Reported	Head feet:	Not Reported
Test temp:	Not Reported	Min chlor:	150
Pump gpm:	0	Pump yr:	Not Reported
Draft mgy:	Not Reported	Head yr:	Not Reported
Max chlor:	259	Maxchl yr:	0
Geology:	Tkb	Minchl yr:	0
Draft yr:	76	Bot solid:	Not Reported
Maxchl:	Not Reported	Spec capac:	Not Reported
Minchl:	Not Reported	Draft mgd:	Not Reported
Bot hole:	Not Reported	Tmk:	9-4-002:004
Bot perf:	Not Reported		
Pump mgd:	Not Reported		
Aquifer:	30203		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C10  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002510**

Wid:	3-2300-017	Island:	3
Well no:	2300-17	Well name:	Waipahu P7H
Old name:	Not Reported	Yr drilled:	1924
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-H
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	430
Solid case:	92	Perf case:	Not Reported
Use:	ABNSLD	Use year:	99
Init water:	Not Reported		
Init head:	0		
Init chlor:	136		
Init cl:	136		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	259	Min chlor:	150
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-370	Bot solid:	-32
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C11  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002507**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2300-013	Island:	3
Well no:	2300-13	Well name:	Waipahu P7E
Old name:	Not Reported	Yr drilled:	1917
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-E
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	400
Solid case:	102	Perf case:	Not Reported
Use:	ABNSLD	Use year:	65
Init water:	Not Reported		
Init head:	0		
Init chlor:	136		
Init cl:	136		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	20.3
Max chlor:	259	Min chlor:	150
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-340	Bot solid:	-42
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	20.3		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C12  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002506**

Wid:	3-2300-012	Island:	3
Well no:	2300-12	Well name:	Waipahu P7D
Old name:	Not Reported	Yr drilled:	1917
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-D
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	400

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	92	Perf case:	Not Reported
Use:	ABNSLD	Use year:	65
Init water:	Not Reported		
Init head:	0		
Init chlor:	136		
Init cl:	136		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	20.3
Max chlor:	259	Min chlor:	150
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-340	Bot solid:	-32
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	20.3		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C13  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002509**

Wid:	3-2300-016	Island:	3
Well no:	2300-16	Well name:	Waipahu P7G
Old name:	Not Reported	Yr drilled:	1924
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-G
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	412
Solid case:	98	Perf case:	Not Reported
Use:	ABNSLD	Use year:	99
Init water:	Not Reported		
Init head:	0		
Init chlor:	136		
Init cl:	136		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	259	Min chlor:	150
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-352	Bot solid:	-38
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C14  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002508**

Wid:	3-2300-014	Island:	3
Well no:	2300-14	Well name:	Waipahu P7F
Old name:	Not Reported	Yr drilled:	1917
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580038
Latitude83:	212311	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	246-F
Well type:	Not Reported	Casing dia:	12
Ground el:	60	Well depth:	402
Solid case:	128	Perf case:	Not Reported
Use:	ABNSLD	Use year:	65
Init water:	Not Reported		
Init head:	0	Test gpm:	Not Reported
Init chlor:	136	Test chlor:	Not Reported
Init cl:	136	Temp unit:	Not Reported
Test date:	Not Reported		
Test ddown:	Not Reported	Head feet:	19.6
Test temp:	Not Reported	Min chlor:	150
Pump gpm:	0	Pump yr:	Not Reported
Draft mgy:	Not Reported	Head yr:	Not Reported
Max chlor:	259	Maxchl yr:	Not Reported
Geology:	Tkb	Minchl yr:	Not Reported
Draft yr:	76	Bot solid:	-68
Maxchl:	Not Reported	Spec capac:	Not Reported
Minchl:	Not Reported	Draft mgd:	Not Reported
Bot hole:	-342	Tmk:	Not Reported
Bot perf:	Not Reported		
Pump mgd:	Not Reported		
Aquifer:	30203		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	19.6		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**15  
SSE  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002371**

Wid:	3-2200-001	Island:	3
Well no:	2200-01	Well name:	Waipio Peninsula
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212232	Longitude2:	1580015
Latitude83:	212221	Longitude8:	1580005
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	232-
Well type:	Not Reported	Casing dia:	Not Reported
Ground el:	20	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNLOS	Use year:	80
Init water:	Not Reported		
Init head:	0		
Init chlor:	2000		
Init cl:	2000		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-3-002:001
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C16  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002524**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2300-021	Island:	3
Well no:	2300-21	Well name:	Waipahu P7A
Old name:	Not Reported	Yr drilled:	1962
Driller:	SAMSON-ZERBE	Quad map:	09
Latitude27:	212325	Longitude2:	1580038
Latitude83:	212314	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Not Reported	Old number:	246-I
Well type:	Not Reported	Casing dia:	20
Ground el:	64	Well depth:	320
Solid case:	101	Perf case:	Not Reported
Use:	UNU	Use year:	94
Init water:	19.9		
Init head:	19.9		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	4450
Test ddown:	16.0	Test chlor:	96
Test temp:	21.6	Temp unit:	C
Pump gpm:	3472		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	180	Min chlor:	88
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	87
Minchl:	Not Reported	Minchl yr:	87
Bot hole:	-256	Bot solid:	-37
Bot perf:	Not Reported	Spec capac:	278
Pump mgd:	4.999	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-002:004
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C17  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002525**

Wid:	3-2300-022	Island:	3
Well no:	2300-22	Well name:	Waipahu P7B
Old name:	Not Reported	Yr drilled:	1962
Driller:	SAMSON-ZERBE	Quad map:	09
Latitude27:	212325	Longitude2:	1580038
Latitude83:	212314	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Not Reported	Old number:	246-J
Well type:	Not Reported	Casing dia:	20
Ground el:	64	Well depth:	364

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	101	Perf case:	Not Reported
Use:	UNU	Use year:	94
Init water:	19.0		
Init head:	19		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	4421
Test ddown:	16.7	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	180	Min chlor:	88
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	87
Minchl:	Not Reported	Minchl yr:	87
Bot hole:	-300	Bot solid:	-37
Bot perf:	Not Reported	Spec capac:	265
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-002:004
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**C18  
NNW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002526**

Wid:	3-2300-023	Island:	3
Well no:	2300-23	Well name:	Waipahu P7C
Old name:	Not Reported	Yr drilled:	1962
Driller:	SAMSON-ZERBE	Quad map:	09
Latitude27:	212325	Longitude2:	1580038
Latitude83:	212314	Longitude8:	1580028
Gps:	0	Utm:	1
Owner user:	Not Reported	Old number:	246-K
Well type:	Not Reported	Casing dia:	20
Ground el:	64	Well depth:	378
Solid case:	102	Perf case:	Not Reported
Use:	UNU	Use year:	94
Init water:	18.8		
Init head:	18.8		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	4500
Test ddown:	14.5	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	180	Min chlor:	88
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	87
Minchl:	Not Reported	Minchl yr:	87
Bot hole:	-314	Bot solid:	-38
Bot perf:	Not Reported	Spec capac:	310
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-002:004
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**19  
North  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002535**

Wid:	3-2300-003	Island:	3
Well no:	2300-03	Well name:	Waipahu P6
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212330	Longitude2:	1580026
Latitude83:	212319	Longitude8:	1580016
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	240-
Well type:	Not Reported	Casing dia:	10
Ground el:	18	Well depth:	188
Solid case:	62	Perf case:	Not Reported
Use:	ABNSLD	Use year:	55
Init water:	25.0		
Init head:	25		
Init chlor:	114		
Init cl:	114		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	11.4
Max chlor:	134	Min chlor:	86
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-170	Bot solid:	-44
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	11.4		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**D20**  
**West**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002428**

Wid:	3-2201-005	Island:	3
Well no:	2201-05	Well name:	Pearl Harbor
Old name:	Not Reported	Yr drilled:	1892
Driller:	MCCANDLESS	Quad map:	09
Latitude27:	212258	Longitude2:	1580103
Latitude83:	212247	Longitude8:	1580053
Gps:	0	Utm:	1
Owner user:	B Mau & Assn	Old number:	254-A
Well type:	Not Reported	Casing dia:	10
Ground el:	11	Well depth:	170
Solid case:	98	Perf case:	Not Reported
Use:	ABNSLD	Use year:	61
Init water:	20.0		
Init head:	20		
Init chlor:	204		
Init cl:	204		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	16.3
Max chlor:	312	Min chlor:	206
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-159	Bot solid:	-87
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	16.3		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**D21**  
**West**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002429**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2201-008	Island:	3
Well no:	2201-08	Well name:	Pearl Harbor B
Old name:	Not Reported	Yr drilled:	1923
Driller:	MCCANDLESS	Quad map:	09
Latitude27:	212258	Longitude2:	1580103
Latitude83:	212247	Longitude8:	1580053
Gps:	0	Utm:	1
Owner user:	B Mau & Assn	Old number:	254-B
Well type:	Not Reported	Casing dia:	12
Ground el:	12	Well depth:	154
Solid case:	60	Perf case:	Not Reported
Use:	ABNSLD	Use year:	61
Init water:	20.0		
Init head:	20		
Init chlor:	204		
Init cl:	204		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	16.3
Max chlor:	312	Min chlor:	206
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-142	Bot solid:	-48
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	16.3		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**22**  
**NNE**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002536**

Wid:	3-2300-004	Island:	3
Well no:	2300-04	Well name:	Waipahu P6
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212330	Longitude2:	1580018
Latitude83:	212319	Longitude8:	1580008
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	243-
Well type:	Not Reported	Casing dia:	10
Ground el:	15	Well depth:	395

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	48	Perf case:	Not Reported
Use:	ABNSLD	Use year:	55
Init water:	24.5		
Init head:	24.5		
Init chlor:	328		
Init cl:	328		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	8.4
Max chlor:	328	Min chlor:	108
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-380	Bot solid:	-33
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	8.4		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**23  
ESE  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002397**

Wid:	3-2259-002	Island:	3
Well no:	2259-02	Well name:	Waipio Pen
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212243	Longitude2:	1575955
Latitude83:	212232	Longitude8:	1575945
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	231-
Well type:	Not Reported	Casing dia:	12
Ground el:	10	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNLOS	Use year:	00
Init water:	Not Reported		
Init head:	0		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	16.9
Max chlor:	1660	Min chlor:	892
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-3-002:001
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	16.9		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**24  
NE  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002514**

Wid:	3-2300-001	Island:	3
Well no:	2300-01	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212322	Longitude2:	1580002
Latitude83:	212311	Longitude8:	1575952
Gps:	0	Utm:	1
Owner user:	li Estate	Old number:	236-
Well type:	Not Reported	Casing dia:	10
Ground el:	14	Well depth:	423
Solid case:	177	Perf case:	Not Reported
Use:	ABNSLD	Use year:	47
Init water:	Not Reported		
Init head:	0	Test gpm:	Not Reported
Init chlor:	Not Reported	Test chlor:	Not Reported
Init cl:	0	Temp unit:	Not Reported
Test date:	Not Reported		
Test ddown:	Not Reported	Head feet:	Not Reported
Test temp:	Not Reported	Min chlor:	460
Pump gpm:	0	Pump yr:	Not Reported
Draft mgy:	Not Reported	Head yr:	Not Reported
Max chlor:	2100	Maxchl yr:	0
Geology:	Tkb	Minchl yr:	0
Draft yr:	Not Reported	Bot solid:	-163
Maxchl:	Not Reported	Spec capac:	Not Reported
Minchl:	Not Reported	Draft mgd:	Not Reported
Bot hole:	-409	Tmk:	Not Reported
Bot perf:	Not Reported		
Pump mgd:	Not Reported		
Aquifer:	30203		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**25**  
**WNW**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002485**

Wid:	3-2301-033	Island:	3
Well no:	2301-33	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212318	Longitude2:	1580101
Latitude83:	212307	Longitude8:	1580051
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	252-
Well type:	Not Reported	Casing dia:	10
Ground el:	16	Well depth:	232
Solid case:	53	Perf case:	Not Reported
Use:	ABNSLD	Use year:	65
Init water:	Not Reported		
Init head:	0		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	17.7
Max chlor:	910	Min chlor:	34
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-216	Bot solid:	-37
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	17.7		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**E26**  
**NE**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002500**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2359-012	Island:	3
Well no:	2359-12	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	1954
Driller:	NAT WHITON	Quad map:	09
Latitude27:	212320	Longitude2:	1575955
Latitude83:	212309	Longitude8:	1575945
Gps:	0	Utm:	1
Owner user:	Brown G I	Old number:	235-1
Well type:	Not Reported	Casing dia:	8
Ground el:	25	Well depth:	276
Solid case:	140	Perf case:	Not Reported
Use:	ABNSLD	Use year:	05
Init water:	16.0		
Init head:	16		
Init chlor:	132		
Init cl:	132		
Test date:	Not Reported	Test gpm:	50
Test ddown:	17.0	Test chlor:	210
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	25		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	427	Min chlor:	132
Geology:	Not Reported	Pump yr:	54
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-251	Bot solid:	-115
Bot perf:	Not Reported	Spec capac:	3
Pump mgd:	.036	Draft mgd:	Not Reported
Aquifer:	30202	Tmk:	9-4-038:083
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**27  
NE  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002528**

Wid:	3-2300-002	Island:	3
Well no:	2300-02	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212327	Longitude2:	1580002
Latitude83:	212316	Longitude8:	1575952
Gps:	0	Utm:	1
Owner user:	li Estate	Old number:	237-
Well type:	Not Reported	Casing dia:	8
Ground el:	10	Well depth:	214

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	133	Perf case:	Not Reported
Use:	ABNSLD	Use year:	47
Init water:	Not Reported		
Init head:	0		
Init chlor:	870		
Init cl:	870		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	1480	Min chlor:	870
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-204	Bot solid:	-123
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-017:001
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**28  
ESE  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002393**

Wid:	3-2259-001	Island:	3
Well no:	2259-01	Well name:	Waipio Pen
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212239	Longitude2:	1575952
Latitude83:	212228	Longitude8:	1575942
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	230-
Well type:	Not Reported	Casing dia:	Not Reported
Ground el:	17	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNLOS	Use year:	00
Init water:	Not Reported		
Init head:	0		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	2130	Min chlor:	896
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-3-002:001
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**F29  
NNE  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002575**

Wid:	3-2300-015	Island:	3
Well no:	2300-15	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	1921
Driller:	MCCANDLESS	Quad map:	09
Latitude27:	212336	Longitude2:	1580018
Latitude83:	212325	Longitude8:	1580008
Gps:	0	Utm:	1
Owner user:	Oahu Sugar	Old number:	242-
Well type:	Not Reported	Casing dia:	8
Ground el:	21	Well depth:	221
Solid case:	59	Perf case:	Not Reported
Use:	ABNSLD	Use year:	55
Init water:	25.0		
Init head:	25		
Init chlor:	240		
Init cl:	240		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	22.1
Max chlor:	240	Min chlor:	79
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-200	Bot solid:	-38
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	22.1		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**E30**  
**NE**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002521**

Wid:	3-2359-001	Island:	3
Well no:	2359-01	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	1899
Driller:	MCCANDLESS	Quad map:	09
Latitude27:	212323	Longitude2:	1575954
Latitude83:	212312	Longitude8:	1575944
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	235-
Well type:	Not Reported	Casing dia:	8
Ground el:	30	Well depth:	339
Solid case:	144	Perf case:	Not Reported
Use:	UNU	Use year:	74
Init water:	14.6		
Init head:	14.6		
Init chlor:	1230		
Init cl:	1230		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	1230	Min chlor:	122
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	Not Reported
Minchl:	Not Reported	Minchl yr:	Not Reported
Bot hole:	-309	Bot solid:	-114
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-038:083
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**31**  
**SE**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002370**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2259-003	Island:	3
Well no:	2259-03	Well name:	Waipio Pen
Old name:	Not Reported	Yr drilled:	1889
Driller:	Not Reported	Quad map:	09
Latitude27:	212231	Longitude2:	1575952
Latitude83:	212220	Longitude8:	1575942
Gps:	0	Utm:	1
Owner user:	U S Navy	Old number:	228-
Well type:	Not Reported	Casing dia:	12
Ground el:	2	Well depth:	510
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNLOS	Use year:	00
Init water:	Not Reported		
Init head:	0		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	17.8
Max chlor:	4440	Min chlor:	748
Geology:	Not Reported	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-508	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	17.8		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**F32  
North  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002601**

Wid:	3-2300-018	Island:	3
Well no:	2300-18	Well name:	Waipahu Deep Monitor
Old name:	Not Reported	Yr drilled:	1980
Driller:	WAT RES INTL	Quad map:	09
Latitude27:	212340	Longitude2:	1580019
Latitude83:	212329	Longitude8:	1580009
Gps:	0	Utm:	1
Owner user:	State Cwrm	Old number:	241-
Well type:	ROT	Casing dia:	12
Ground el:	26	Well depth:	1100

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	38	Perf case:	Not Reported
Use:	OBSDM	Use year:	84
Init water:	26.3		
Init head:	26.3		
Init chlor:	142		
Init cl:	142		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	24.2
Max chlor:	148	Min chlor:	96
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-1074	Bot solid:	-12
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	9-4-009:007
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	18.73		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**33  
NW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002540**

Wid:	3-2301-043	Island:	3
Well no:	2301-43	Well name:	Pump 8
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212331	Longitude2:	1580102
Latitude83:	212320	Longitude8:	1580052
Gps:	0	Utm:	1
Owner user:	Amfac	Old number:	Not Reported
Well type:	TUN	Casing dia:	Not Reported
Ground el:	Not Reported	Well depth:	Not Reported
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABNSLD	Use year:	01
Init water:	Not Reported		
Init head:	0		
Init chlor:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	Not Reported	Bot solid:	Not Reported
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	Not Reported	Tmk:	9-4-002:022
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**G34  
WSW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002404**

Wid:	3-2201-001	Island:	3
Well no:	2201-01	Well name:	Pearl Harbor
Old name:	Not Reported	Yr drilled:	Not Reported
Driller:	Not Reported	Quad map:	09
Latitude27:	212247	Longitude2:	1580116
Latitude83:	212236	Longitude8:	1580106
Gps:	0	Utm:	1
Owner user:	Foster M	Old number:	255-
Well type:	Not Reported	Casing dia:	12
Ground el:	20	Well depth:	175
Solid case:	112	Perf case:	Not Reported
Use:	ABNSLD	Use year:	66
Init water:	20.2		
Init head:	20.2		
Init chlor:	135		
Init cl:	135		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Temp unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	18.9
Max chlor:	116	Min chlor:	78
Geology:	Tkb	Pump yr:	Not Reported
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-155	Bot solid:	-92
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	Not Reported	Draft mgd:	Not Reported
Aquifer:	30203	Tmk:	Not Reported

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	18.9		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**H35**  
**NNE**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002607**

Wid:	3-2300-020	Island:	3
Well no:	2300-20	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	1959
Driller:	NAT WHITON	Quad map:	09
Latitude27:	212341	Longitude2:	1580011
Latitude83:	212330	Longitude8:	1580001
Gps:	0	Utm:	1
Owner user:	Watanabe A	Old number:	238-1
Well type:	Not Reported	Casing dia:	10
Ground el:	13	Well depth:	204
Solid case:	56	Perf case:	Not Reported
Use:	AGRCP	Use year:	74
Init water:	18.9		
Init head:	18.93		
Init chlor:	152		
Init cl:	152		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	22.2	Temp unit:	C
Pump gpm:	400		
Draft mgy:	365	Head feet:	20.2
Max chlor:	160	Min chlor:	135
Geology:	Not Reported	Pump yr:	78
Draft yr:	Not Reported	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-191	Bot solid:	-43
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	.576	Draft mgd:	1.0
Aquifer:	30203	Tmk:	9-4-009:124
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	20.2		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**H36**  
**NNE**  
**1/2 - 1 Mile**  
**Higher**

**HI WELLS      HI10002619**

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Wid:	3-2300-011	Island:	3
Well no:	2300-11	Well name:	Waipahu
Old name:	Not Reported	Yr drilled:	1913
Driller:	MCCANDLESS	Quad map:	09
Latitude27:	212342	Longitude2:	1580012
Latitude83:	212331	Longitude8:	1580002
Gps:	0	Utm:	1
Owner user:	Watanabe A	Old number:	238-
Well type:	Not Reported	Casing dia:	12
Ground el:	18	Well depth:	202
Solid case:	56	Perf case:	Not Reported
Use:	AGRCP	Use year:	81
Init water:	24.6		
Init head:	24.6		
Init chlor:	200		
Init cl:	200		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	23.0	Temp unit:	C
Pump gpm:	600		
Draft mgy:	318	Head feet:	21.5
Max chlor:	210	Min chlor:	147
Geology:	Tkb	Pump yr:	75
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-184	Bot solid:	-38
Bot perf:	Not Reported	Spec capac:	Not Reported
Pump mgd:	.864	Draft mgd:	0.9
Aquifer:	30203	Tmk:	9-4-009:124
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	21.5		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

**G37  
WSW  
1/2 - 1 Mile  
Higher**

**HI WELLS      HI10002400**

Wid:	3-2201-014	Island:	3
Well no:	2201-14	Well name:	Pearl Harbor
Old name:	Not Reported	Yr drilled:	1969
Driller:	ROSCOE MOSS	Quad map:	09
Latitude27:	212245	Longitude2:	1580117
Latitude83:	212234	Longitude8:	1580107
Gps:	0	Utm:	1
Owner user:	Harris Rug Cl	Old number:	255-3
Well type:	PER	Casing dia:	8
Ground el:	18	Well depth:	185

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Solid case:	114	Perf case:	Not Reported
Use:	UNU	Use year:	Not Reported
Init water:	20.0		
Init head:	20		
Init chlor:	94		
Init cl:	94		
Test date:	Not Reported	Test gpm:	236
Test ddown:	5.1	Test chlor:	Not Reported
Test temp:	21.7	Temp unit:	C
Pump gpm:	300		
Draft mgy:	10	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Tkb	Pump yr:	69
Draft yr:	76	Head yr:	Not Reported
Maxchl:	Not Reported	Maxchl yr:	0
Minchl:	Not Reported	Minchl yr:	0
Bot hole:	-167	Bot solid:	-96
Bot perf:	Not Reported	Spec capac:	46
Pump mgd:	.432	Draft mgd:	0.0
Aquifer:	30203	Tmk:	9-4-049:044
Old aqui:	Not Reported	Aqui code:	30203
Latest hd:	0		
Cur head:	Not Reported	Cur cl:	Not Reported
Cur temp:	Not Reported	Wcr:	Not Reported
Pir:	Not Reported	Surveyor:	Not Reported
T:	0		
Pump elev:	Not Reported	Pump depth:	Not Reported

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS RADON

## AREA RADON INFORMATION

Federal EPA Radon Zone for HONOLULU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.  
 : Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.  
 : Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96797

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.200 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.000 pCi/L	100%	0%	0%
Basement	0.100 pCi/L	100%	0%	0%

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

### **USGS 7.5' Digital Elevation Model (DEM)**

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

## HYDROLOGIC INFORMATION

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

## HYDROGEOLOGIC INFORMATION

### **AQUIFLOW<sup>R</sup> Information System**

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

### **Geologic Age and Rock Stratigraphic Unit**

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

### **STATSGO: State Soil Geographic Database**

Source: Department of Agriculture, Natural Resources Conservation Services

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

### **SSURGO: Soil Survey Geographic Database**

Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)

Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

## LOCAL / REGIONAL WATER AGENCY RECORDS

### **FEDERAL WATER WELLS**

#### **PWS: Public Water Systems**

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## **PWS ENF:** Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

## **USGS Water Wells:** USGS National Water Inventory System (NWIS)

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

## **STATE RECORDS**

### **Ground Water Wells**

Source: Department of Land and Natural Resources

Telephone: 808-587-0242

## **OTHER STATE DATABASE INFORMATION**

## **RADON**

### **Area Radon Information**

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

### **EPA Radon Zones**

Source: EPA

Telephone: 703-356-4020

Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

## **OTHER**

### **Airport Landing Facilities:** Private and public use landing facilities

Source: Federal Aviation Administration, 800-457-6656

### **Epicenters:** World earthquake epicenters, Richter 5 or greater

Source: Department of Commerce, National Oceanic and Atmospheric Administration

## **STREET AND ADDRESS INFORMATION**

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"Linking Technology with Tradition"®

## Sanborn® Map Report

**Ship To:** Steven Cho  
Environet  
1100 Alakea  
Honolulu, HI 96813

**Order Date:** 12/5/2006    **Completion Date:** 12/7/2006  
**Inquiry #:** 1810927.1S  
**P.O. #:** na  
**Site Name:** Waipahu Depot Street

**Customer Project:** na  
3012783BRU                      808-239-6803

**Address:** Waipahu Depot Street  
**City/State:** Waipahu, HI 96797  
**Cross Streets:**

Based on client-supplied information, fire insurance maps for the following years were identified

1957 - 1 Map  
1981 - 1 Map  
1987 - 1 Map  
1990 - 1 Map  
1991 - 1 Map

**Limited Permission to Photocopy**

**Total Maps: 5**

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## USER'S GUIDE

This User's Guide provides guidelines for accessing Sanborn Map® images and for transferring them to your Word Processor.

### Reading Sanborn Maps

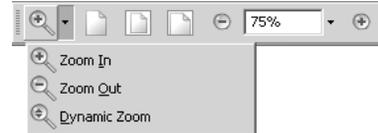
- Sanborn Maps document historical property use by displaying property information through words, abbreviations, and map symbols. The Sanborn Map Key provides information to help interpret the symbols and abbreviations used on Sanborn Maps. The Key is available from EDR's Web Site at: <http://www.edrnet.com/reports/samples/key.pdf>

### Organization of Electronic Sanborn Image File

- Sanborn Map Report, listing years of coverage
- User's Guide
- Oldest Sanborn Map Image
- Most recent Sanborn Map Image

### Navigating the Electronic Sanborn Image File

1. Open file on screen.
2. Identify TP (Target Property) on the most recent map.
3. Find TP on older printed images.
4. Using Acrobat® Reader®, zoom to 250% in order to view more clearly. (200-250% is the approximate equivalent scale of hardcopy Sanborn Maps.)
  - A. On the menu bar, click "View" and then "Zoom to..."
  - B. Or, use the magnifying tool and drag a box around the TP



### Printing a Sanborn Map From the Electronic File

- EDR recommends printing images at 300 dpi (300 dpi prints faster than 600 dpi)
- To print only the TP area, cut and paste from Acrobat to your word processor application.

#### Acrobat Versions 6 and 7

1. Go to the menu bar
2. Click the "Select Tool"
3. Draw a box around the area selected
4. "Right click" on your mouse
5. Select "Copy Image to Clipboard"
6. Go to Word Processor such as Microsoft Word, paste and print.



#### Acrobat Version 5

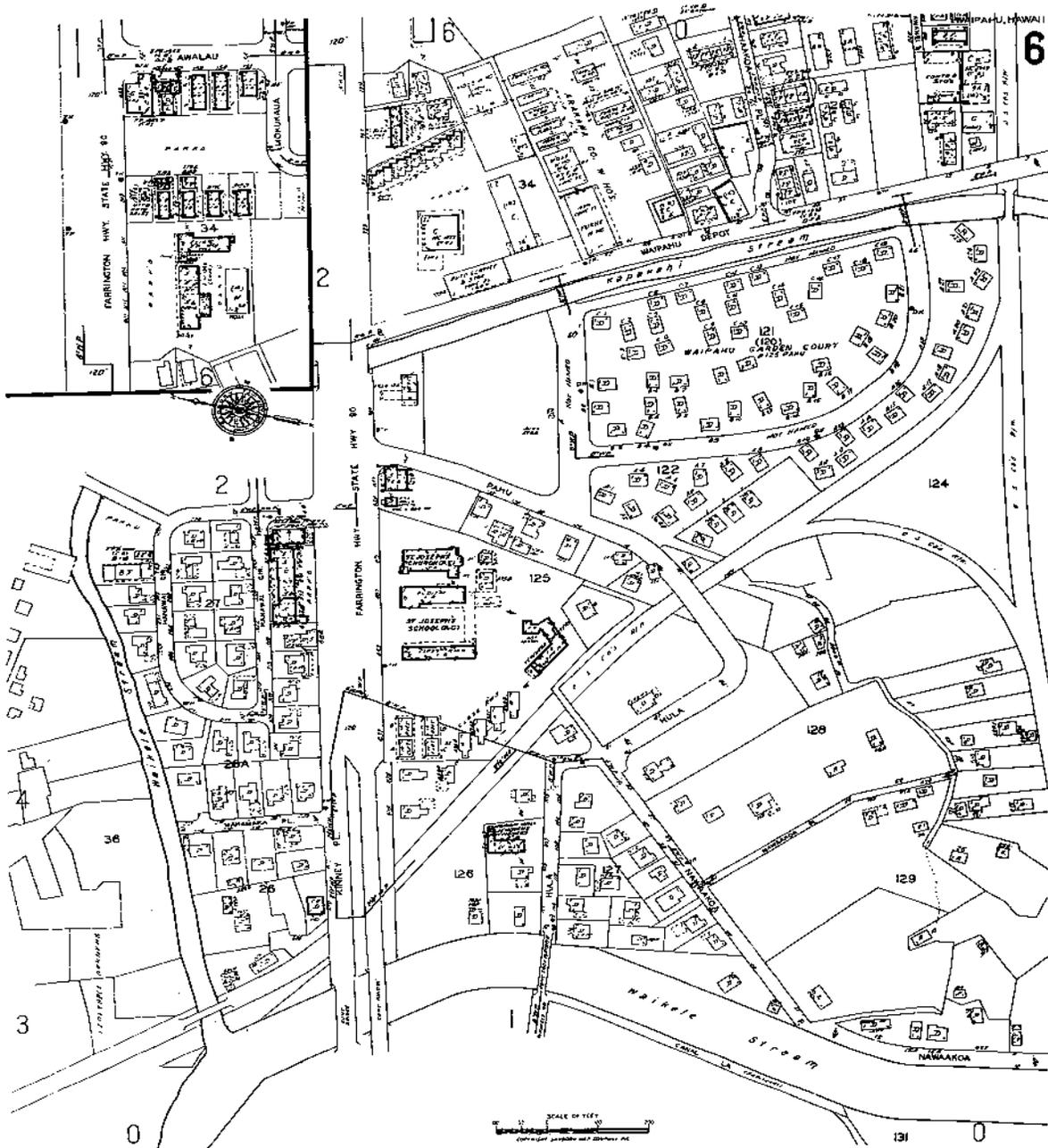
1. Go to the menu bar
2. Click the "Graphics Select Tool"
3. Draw a box around the area selected
4. Go to "Menu"
5. Highlight "Edit"
6. Highlight "Copy"
7. Go to Word Processor such as Microsoft Word, paste and print.



### Important Information about Email Delivery of Electronic Sanborn Map Images

- Images are grouped into one file, up to 2MB.
- In cases where in excess of 6-7 map years are available, the file size typically exceeds 2MB. In these cases, you will receive multiple files, labeled as "1 of 3", "2 of 3", etc. including all available map years.
- Due to file size limitations, certain ISPs, including AOL, may occasionally delay or decline to deliver files. Please contact your ISP to identify their specific file size limitations.

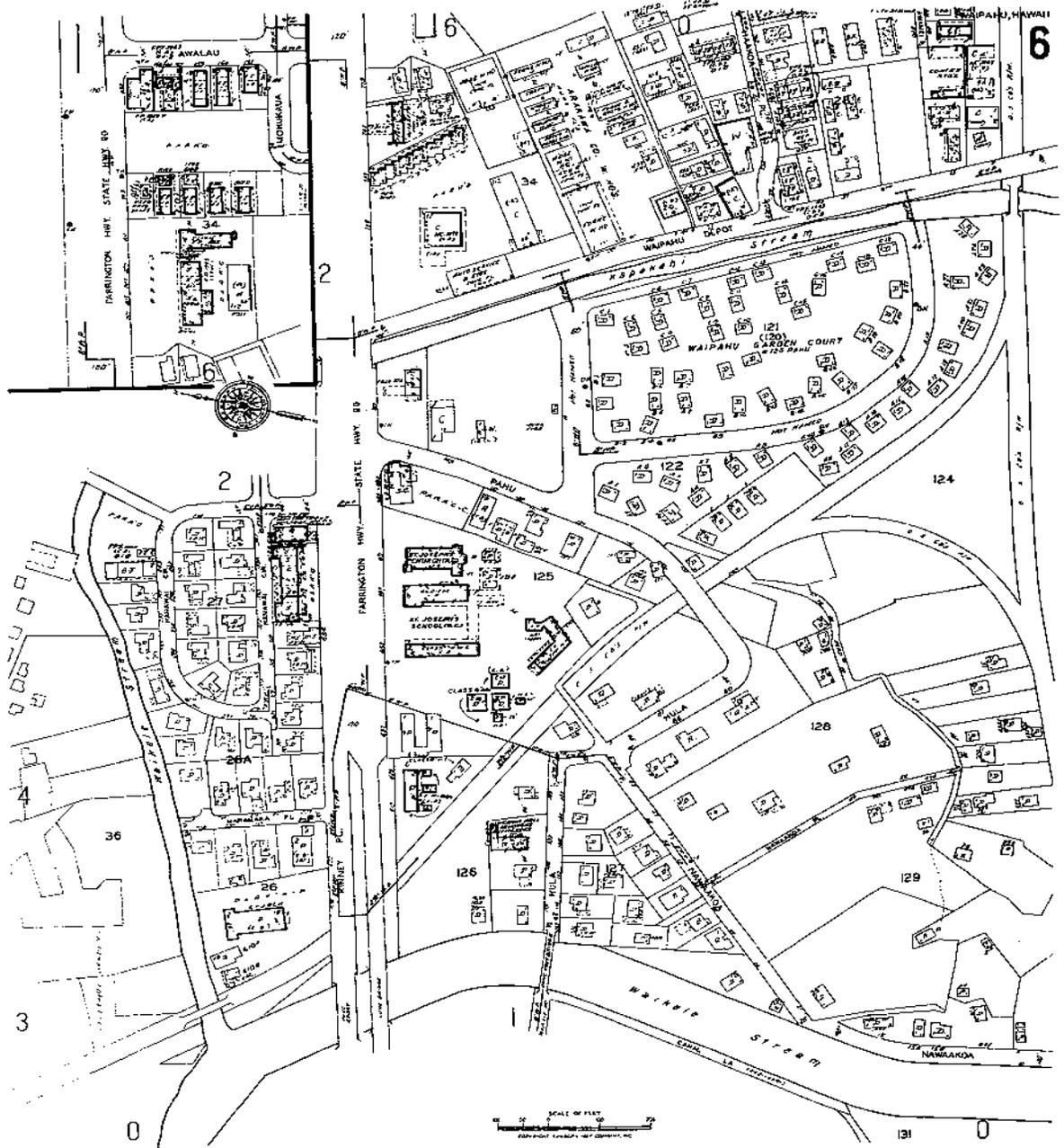




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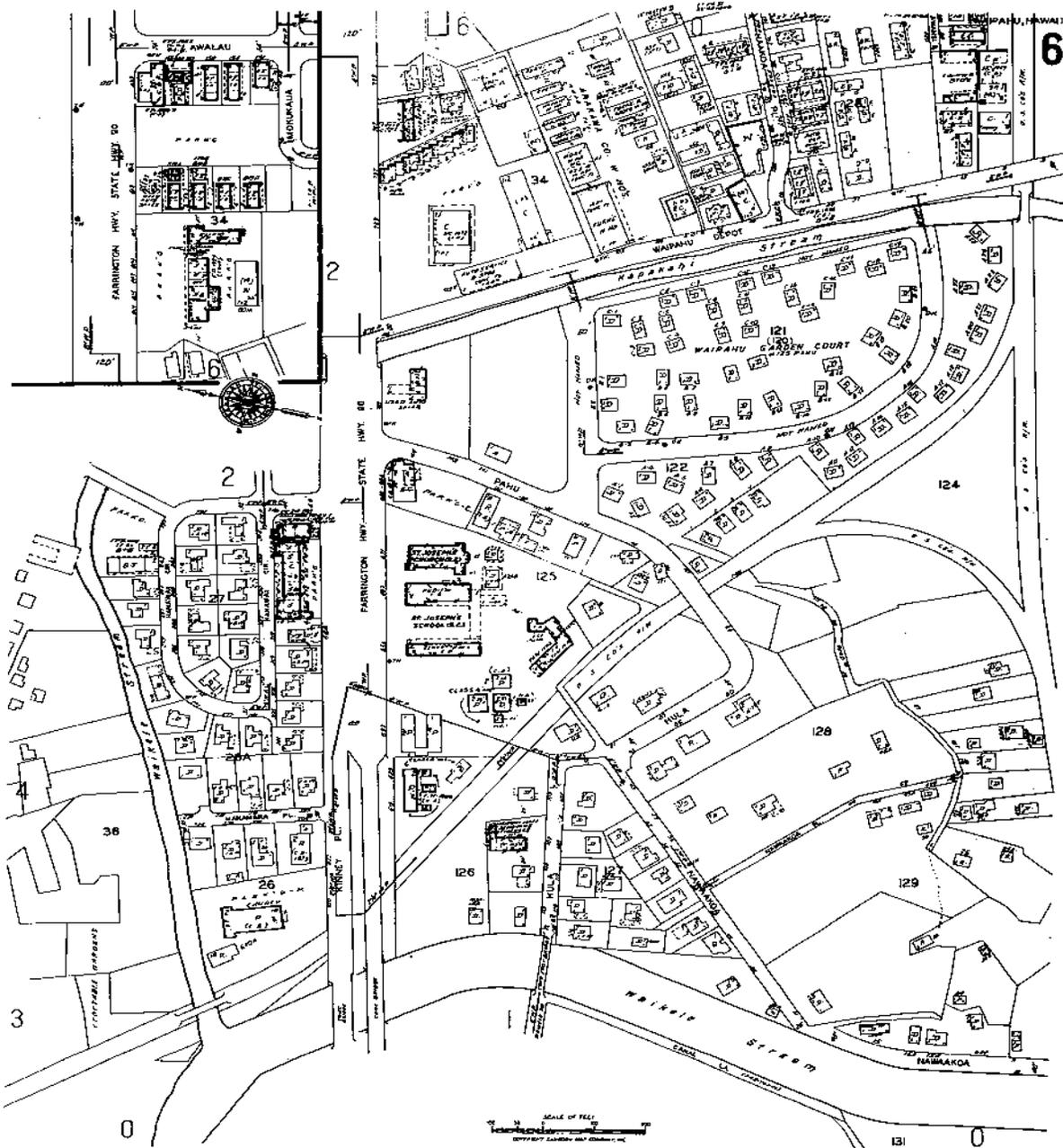
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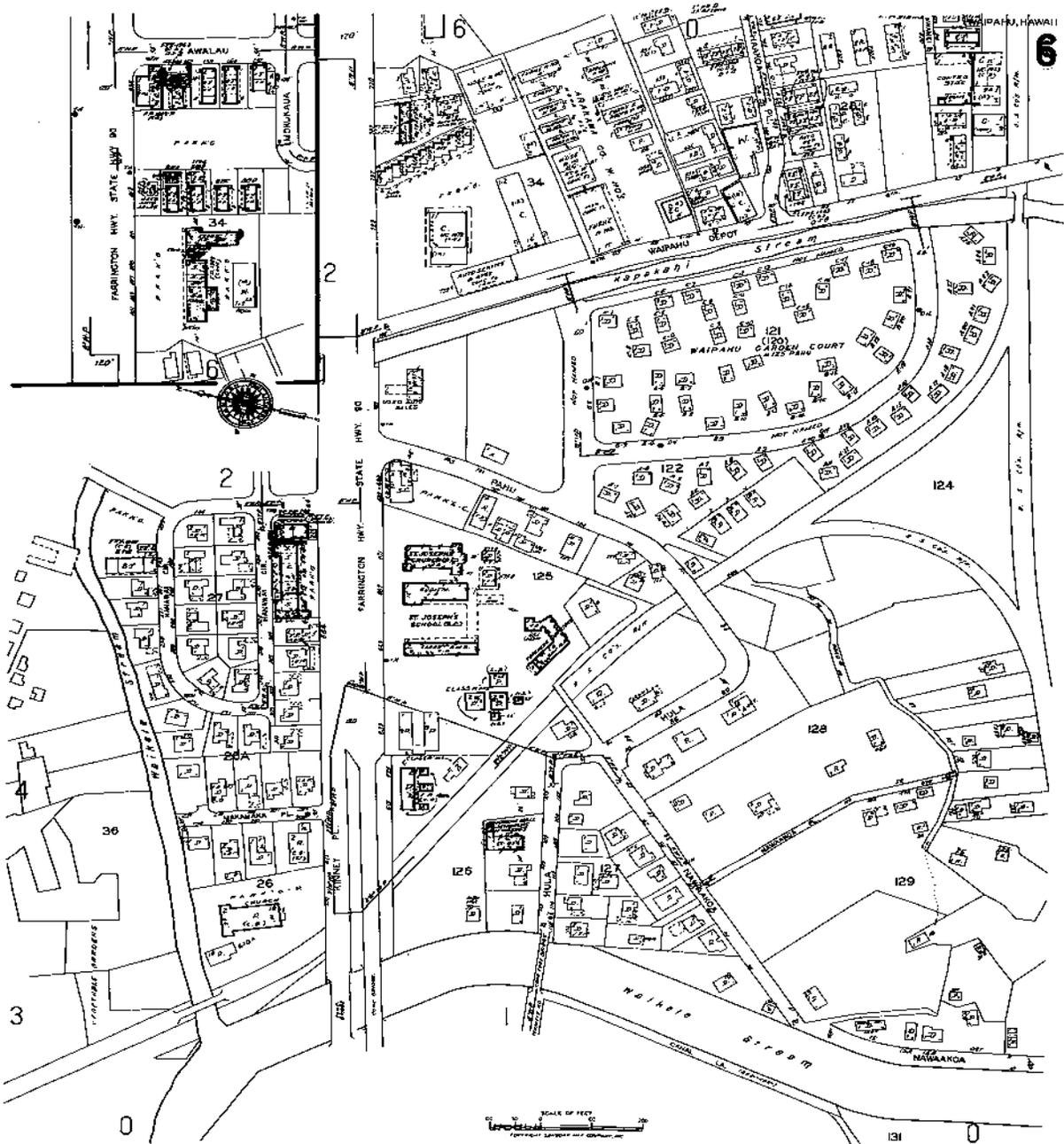
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Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

**APPENDIX C**  
**Interview Documentation**

**ENVIRONET, INC.**  
**ENVIRONMENTAL SITE ASSESSMENT USER QUESTIONNAIRE**

DATE: February 22, 2007

FACILITY NAME AND ADDRESS:

Waipahu Ash Landfill – Waipahu Depot Road

JOB NAME: Waipahu Ash Landfill Closure, TMK: 9-3-02: 2, 27, Por. 9, 1. & 28  
City and County of Honolulu

OWNER: Department of Environmental Services-Refuse Division  
1000 Uluohia Street, Suite 212, Kapolei, Hawaii 96744

JOB NO.: 16396

*NOTE: Failure to provide this information to Environet, Inc. could result in a determination that "all appropriate inquiry" is not complete.*

1. NAME/TITLE/PHONE NUMBER OF PERSON BEING INTERVIEWED  
James Louis – Civil Engineer V, Planning-Refuse Division, 808-692-5832
2. JOB DESCRIPTION/YEARS AT THE SITE  
Civil Engineer, Planning, Engineering, Project Management for Refuse Division, 7 years
3. GENERAL SITE INFORMATION, BACKGROUND, NATURE OF OPERATIONS. HOW LONG HAS THE FACILITY BEEN HERE? WHAT WAS HERE BEFORE?  
Owners are Navy, State and City. Property is a modified fill area (49 acres+). MSW open burn from 1960s-1970. 1972-1991-municipal ash landfill disposal. Prior to 1960, site was a fishpond.
4. ARE YOU AWARE OF ANY ENVIRONMENTAL CLEANUP LIENS THAT HAVE BEEN FILED OR RECORDED FOR YOUR PROPERTY UNDER FEDERAL, TRIBAL, STATE, OR LOCAL LAW?  
No, however, the subject landfill closure will be in accordance with RCRA Subtitle D, HAR Title II Chapter 58, for MSW landfills and CERCLA per Pearl Harbor, Navy and EPA NPL.
5. ARE YOU AWARE OF ANY ACTIVITY AND USE LIMITATIONS, SUCH AS ENGINEERING CONTROLS, LAND USE RESTRICTIONS OR INSTITUTIONAL CONTROLS THAT ARE IN PLACE AT THE SITE? ARE YOU AWARE OF ANY ACTIVITY AND USE LIMITATIONS THAT HAVE BEEN FILED OR RECORDED IN A REGISTRY UNDER FEDERAL, TRIBAL, STATE, OR LOCAL LAW?  
Special Management Area, Shoreline Setback Regulations  
No public access  
Gated entrance  
Vegetative cover  
No development without City Council review/approval

6. AS THE USER OF THIS ENVIRONMENTAL SITE ASSESSMENT DO YOU HAVE ANY SPECIALIZED KNOWLEDGE OR EXPERIENCE RELATED TO THE PROPERTY OR NEARBY PROPERTIES?

No specialized knowledge or experience related to property or nearby properties that is not public information.

7. DOES THE PURCHASE PRICE BEING PAID FOR THIS PROPERTY REASONABLY REFLECT FAIR MARKET VALUE OF THE PROPERTY? IF YOU CONCLUDE THERE IS A DIFFERENCE, DO YOU FEEL THAT THE LOWER PRICE FOR THE PROPERTY IS A RESULT OF KNOWN OR SUSPECTED CONTAMINATION AT THE PROPERTY?

Not Applicable

8. AS THE USER OF THIS ENVIRONMENTAL SITE ASSESSMENT, BASED ON YOUR KNOWLEDGE AND EXPERIENCE RELATED TO THE PROPERTY ARE THERE ANY OBVIOUS INDICATORS THAT POINT TO THE PRESENCE OF LIKELY PRESENCE OF CONTAMINATION AT THE PROPERTY?

MSW ash is special handled waste from former Waipahu MSW Incinerator which contains contaminants generally below threshold levels.

Open burning might have contributed contaminants.

No obvious indicators posing threat to public health and safety.

*The aforementioned statements are true to the best of my available knowledge.*

James Louis

Print Name



Signature

2/27/07

Date

**ENVIRONET, INC.**  
**ENVIRONMENTAL SITE ASSESSMENT SITE CONTACT QUESTIONNAIRE**

DATE: Dec. 04, 2006  
FACILITY NAME AND ADDRESS: Waipahu Depot Road  
NAME: Mr. Goro Arakawa  
OWNER: Long Time Resident  
JOB NO.: 406-103

1. NAME/TITLE/PHONE NUMBER OF PERSON BEING INTERVIEWED

Mr. Goro Arakawa/Long Time Waipahu Depot Road Resident/808-677-4528

2. JOB DESCRIPTION/YEARS AT THE SITE

Owner of Historic store Arakawa's. His store serviced the Waipahu Sugar Mill employees with clothing and general merchandise like food, household goods. He has been a resident in the area since the 1920s.

3. GENERAL SITE INFORMATION, BACKGROUND, NATURE OF OPERATIONS HOW LONG HAS THE FACILITY BEEN HERE? WHAT WAS HERE BEFORE?

Mr. Arakawa indicated that the Site has been a road for as long as he can remember. The road was used as an access path for the sugar plantations which were located on the southern side of the peninsula.

4. DO YOU HAVE ANY ENVIRONMENTAL PERMITS FROM THE COUNTY, STATE OR FEDERAL GOVERNMENT FOR OPERATION OF THE FACILITY (i.e. solid waste disposal, hazardous waste disposal,... )

No knowledge.

5. WHAT IS THE SOURCE OF WATER (county/well/catchment)

The Site is a road. No water sources to the Site.

6. WHAT TYPE OF SEWER SYSTEM DO YOU HAVE (county/cesspool/septic tank/injection well)

The Site is a road. No sewer system connected.

7. DO YOU DISCHARGE WASTEWATER OR STORMWATER? DO YOU HAVE A WASTEWATER DISCHARGE PERMIT OR NPDES PERMIT? (i.e. dewatering)

The Site is a road. No discharge wastewater system. Several stormwater surface drains are located on the Site.

8. ARE THERE ANY FLOOR DRAINS OR SUMPS? WHAT DO THEY DRAIN? WHERE DO THEY DISCHARGE?

No sumps to the best of his knowledge. The stormwater drains located in and around the Site are the property of the City and County and drain directly into the Loch.

9. ARE THERE ANY ELECTRICAL TRANSFORMERS ON THE PROPERTY? (pole-mounted or ground-mounted) WHO OWNS THE TRANSFORMERS? HAVE THEY BEEN TESTED FOR PCBs?

Mr. Arakawa had no knowledge of transformers on the Site.

10. ARE THERE ANY ABOVEGROUND OR UNDERGROUND STORAGE TANKS?

Mr. Arakawa had no knowledge of this directly but stated that the Site is a road and would not have a need for these facilities.

11. ARE THERE OIL/WATER SEPARATORS OR SUMPS? (usually located in the ground, oil with waste water is disposed)

No knowledge

12. ARE THERE ANY CLARIFIERS, PROCESSORS, DISTILLATION OR NEUTRALIZATION UNITS? WHAT SUBSTANCES ARE USED/PRODUCED BY THEM? (usually for photo shop development)

No knowledge

13. IS OR WAS THERE A DRY CLEANER, PHOTO PROCESSING SHOP, GAS STATION, MOTOR REPAIR FACILITY, COMMERCIAL PRINTING FACILITY, JUNKYARD, LANDFILL, WASTE DISPOSAL, OR RECYCLING FACILITY ON THE PROPERTY? (recycled materials: solvents)

Mr. Arakawa stated that no dry cleaning operations, photo processing shops, gas stations, or motor repair facilities, or printing facilities, or junkyards, or landfills, or waste disposal/recycling facilities have operated ON the Site to the best of his knowledge. It has been a roadway since the 1920s at least.

The nearest dry cleaner operations that he can remember operated on Waipahu Depot Road north of Farrington Highway.

Isobe Auto which is located on the corner of Waipahu Depot and the abandoned railroad, has been in operation for a very long time, possibly since the 1950s 60s. The operation originally operated where the current transfer station is across the street. Mr. Arakawa did not think they operated underground storage tanks or ASTs. He did recall that they used to do some autobody work that included paint. No hydraulic lifts were used at this operation either to the best of his knowledge.

14. IS THERE A MAINTENANCE SHOP ON THE PROPERTY? WHAT KIND OF ACTIVITIES TAKE PLACE THERE?

No maintenance shops or anything related to this has operated on the Site.

15. ARE THERE ANY HYDRAULIC LIFTS?

No.

ARE THERE ANY WASTE OR CHEMICAL PIPELINES, PITS, PONDS, OR LAGOONS ON THE PROPERTY?

Mr. Arakawa stated that oil pipelines belonging to Chevron and HECO run underneath the Site, along the railroad track.

No pits or ponds have existed on the Site.

17. DO YOU OR HAVE YOU USED ANY OF THE FOLLOWING MATERIALS? IF SO, HOW MUCH DO YOU GENERATE, STORE, OR DISPOSE? HOW DO YOU DISPOSE OF THEM? HOW DID YOU PREVIOUSLY DISPOSE OF THESE MATERIALS? HOW DO YOU DISPOSE OF THE CONTAINERS USED TO HOLD ANY OF THESE MATERIALS? WHAT ARE THESE CONTAINERS MADE OF? (Plastic/steel/vinyl)

- PESTICIDES/HERBICIDES (Are they EPA-registered herbicides?) N
- FERTILIZERS N
- PCBs N
- OILS/LUBRICANTS (waste oil) N
- RADIOACTIVE MATERIALS N
- SOLVENTS (cleansers, degreasers, paint thinners, coolants) N
- ACIDS/BASES (lead-acid batteries) N
- IGNITABLE OR REACTIVE MATERIALS N
- HEAVY METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag) N
- CYANIDE WASTES N
- ASBESTOS (brake pads, shoes) N

18. DO YOU KNOW OF ANY LEAKS OR SPILLS OF THESE MATERIALS?

No. Mr. Arakawa stated that the Waipahu Sugar Mill, when in operation back in the 40s or 50s, used to discharge hot water from the milling process as well as raw sewage into the bordering Kapakahi Stream to the west.

19. DO YOU HAVE A SPILL PREVENTION COUNTERMEASURE AND CONTROL (SPCC) PLAN?

Does not apply

20. DO YOU GENERATE ANY OTHER WASTES?

The Site is a road. No wastes are generated by the road.

21. DO YOU HAVE MSDSs FOR THE ABOVE MATERIALS / WHERE ARE THEY LOCATED?

Not applicable

22. ARE YOU AWARE OF ANY CONTAMINATION OR WASTE DISPOSAL AREAS ON THE PROPERTY?

Not onsite. Adjacent properties are responsible for their own wastes.

23. IS THERE ANY RUNOFF FROM ADJACENT PROPERTIES ONTO YOUR PROPERTY?

No direct knowledge since it is a long road.

24. HAS FILL DIRT BEEN BROUGHT ONTO YOUR PROPERTY THAT ORIGINATED FROM A CONTAMINATED SITE OR IS FROM AN UNKNOWN LOCATION?

None that he can remember.

25. IS THE PROPERTY LOCATED NEAR ANY ENVIRONMENTALLY SENSITIVE AREAS? (wetlands, coastal barrier areas, floodplains, designated critical habitats)

Pouhala Marsh is located to the west of the Site as is Kapakahi Stream. The wetlands is home to several species of endangered birds.

26. ARE YOU AWARE OF ANY ENVIRONMENTAL CLEANUP LIENS THAT HAVE BEEN FILED OR RECORDED FOR YOUR PROPERTY UNDER FEDERAL, TRIBAL, STATE, OR LOCAL LAW? ARE YOU AWARE OF ANY ENVIRONMENTAL RELATED LAWSUITS FOR YOUR PROPERTY? ARE YOU AWARE OF ANY ENVIRONMENTAL VIOLATIONS WITH RESPECT TO YOUR PROPERTY?

None to the best of his knowledge.

27. DOES THE PURCHASE PRICE BEING PAID FOR THIS PROPERTY REASONABLY REFLECT FAIR MARKET VALUE OF THE PROPERTY? IF YOU CONCLUDE THERE IS A DIFFERENCE, DO YOU FEEL THAT THE LOWER PRICE FOR THE PROPERTY IS A RESULT OF KNOWN OR SUSPECTED CONTAMINATION AT THE PROPERTY?

Not applicable question.

28. HAVE THERE BEEN OTHER ENVIRONMENTAL INVESTIGATIONS OR CLEANUPS PERFORMED ON YOUR PROPERTY? DO YOU HAVE ANY PREVIOUS ENVIRONMENTAL REPORTS FOR THESE INVESTIGATIONS? (report type: lead, asbestos, compliance audits, risk assessments, geotechnical studies, site assessments, remedial investigations; prepared by whom; request available report copy)

No.

29. DO YOU HAVE ANY ADDITIONAL COMMENTS OR CONCERNS?

*I hereby authorize that the aforementioned statements are true to the best of my available knowledge.*

Mr. Goro Arakawa                      Via Telephone Call                      December 4, 2006  
*Print Name*                      *Signature*                      *Date*

## OBSERVATIONS

- ISSUES MENTIONED IN QUESTIONNAIRE
- GARBAGE AND WASTE AREAS
- STORAGE AREAS AND ELECTRICAL EQUIPMENT
- FLUORESCENT LIGHTS
- UNPAVED AREAS (work areas, dead or stressed vegetation, stains on ground, paving structures)
- EQUIPMENT MAINTENANCE (how equipment is cleaned or serviced, cleaning fluids, solvents, lubricants, fuels used)
- HEALTH AND SAFETY EQUIPMENT (fire extinguisher)
- NOTICE IF SURFACE RUNOFF COMES ONTO SITE, SOURCE OF RUNOFF, AND WHERE IT ENDS UP
- ANY ARTIFICIAL FILLS
- ELECTRICAL TRANSFORMERS LOCATION AND NUMBER
- SURROUNDING LAND USE (neighboring properties)
- SITE LAYOUT MAP
- ADJACENT PROPERTIES MAP

Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

## **APPENDIX D**

### **Qualifications**

## **ENVIRONET, INC. STATEMENT OF QUALIFICATIONS**

Environet, Inc. (EI) conducts Phase I Environmental Site Assessments (ESAs) that comply with and exceed the requirements of the American Society of Testing Materials (ASTM E 1527-05) guidelines. In observance to the guidelines, EI's goal in accomplishing ESAs is to "perform all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." EI's personnel are trained to identify recognized environmental conditions on commercial properties. EI has conducted hundreds of ESAs throughout Hawaii and the Pacific. EI has been exposed to a variety of projects including automotive repair shops, power plants, and abandoned sugar mills. Specific project experience and a brief background of EI's trained personnel are provided below:

### **Steven Cho**

Mr. Cho has over five years of experience in the environmental sciences field. He has conducted over 20 ESAs throughout the State of Hawaii and over 200 ESAs on the U.S. mainland working with small private landowners, real estate firms, small business owners, financial and lending institutions, corporations, and industrial facilities to assess their properties for areas of potential environmental concern. Mr. Cho has performed ESAs for a wide variety of facilities, including: mixed-use apartment complexes, auto body and repair shops, resort hotels, industrial operations. Mr. Cho is aware of all current ESA standards and regulations.

### **Kevin Kennedy**

Mr. Kennedy has over 17 years of experience in a wide variety of environmental, geophysical, geological, and hazardous waste projects in Hawaii, Guam, Midway, Wake Island and California. He has performed ESAs ranging from small private property lots to an entire Naval Air Facility at Midway Island. He has conducted site inspections, investigations and remedial investigations at large military installations throughout the Pacific at numerous large and small commercial industrial facilities including steel mills, chemical manufacturing plants, bulk fuel terminals, retail service stations, food processing facilities and abandoned sugar mills. Mr. Kennedy's ESA expertise has been called upon on multiple occasions by attorneys, lenders, and realtors to review other consultants' work and offer professional opinions and recommendations.

### **Patrick Lineberger**

Mr. Lineberger has managed and conducted more than 60 ESAs for the purpose of due diligence according to ASTM E 1527-00. Most of these ESAs were conducted for commercial properties on the islands of Oahu, Maui, Kauai, and Hawaii over a period of 6 years. Duties included communication with potential clients, providing proposals, coordinate scheduling of site visit, researching of historical and government records, interviews, and report writing. He has also conducted several Transaction Screen Processes for private homes.

### **Stephanie Mandina**

Ms. Mandina has over seven years of experience in the environmental sciences field. She has gained a working knowledge of environmental regulations through her experience with the Department of Fish and Wildlife and the National Oceanic and Atmospheric Administration. She has conducted numerous ESAs in Hawaii for commercial and residential buildings, resort hotels, auto body shops, maintenance facilities, and undeveloped land. Ms. Mandina is aware of all current ESA standards and regulations.

### **Vilma C. Dupra**

Ms. Dupra has over 13 years of experience in environmental science. She has conducted many Phase I ESAs in Hawaii for commercial and residential properties, and undeveloped lands. Ms. Dupra is aware of all current ESA standards and regulations.

## **ENVIRONET, INC.**

In addition to ESAs, EI is well qualified to perform numerous other environmental tasks, which include, but are not limited to the following:

### Due Diligence and Property Services

- Phase II investigations and remedial investigations
- Corporate lender, buyer, consultation, and environmental project management
- Litigation support, litigation expert and expert witness, forensic chemical analysis
- Hazardous waste removal

### Subsurface Investigations

- Soil and groundwater contamination delineation and remediation
- Passive and active soil-gas analysis
- Groundwater gradient and tidal studies
- Bioplume, bioscreen, and modflow modeling

### Remediation

- Phase II remedial investigations
- Soil removal actions
- Hazardous waste characterization and removal
- Groundwater treatment and remediation

Phase I Environmental Site Assessment  
Waipahu Depot Road  
Waipahu, Oahu, Hawaii

### Environmental Planning

- Environmental Assessments/Impact Statements
- Water resources planning and surface water quality investigations
- Alien plant mitigation and native plant enhancement
- Coastal resources/natural resources management planning

### Government CERCLA Services

- Preliminary Assessment and Site Investigation (PA/SI)
- Remedial Investigation and Feasibility Study (RI/FS)
- Air monitoring, modeling, and visualization
- Engineering Evaluation and Cost Analysis (EECA)

### Engineering Services

- *In-situ* and *ex-situ* soil remediation
- Landfill/golf course environmental monitoring design and implementation
- Spill Prevention Control and Countermeasure (SPCC) Plans
- Risk management plans

Should you encounter a need for any of these services, please contact EI at 808-536-0860 and we would be happy to work with you.

## *Appendix C:*

Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua'a, 'Ewa District, Island of Oahu TMK: [1] 9-3-002: por. 009 (Cultural Surveys Hawai'i, Inc. 2007)

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**Archaeological Literature Review, Field Inspection,  
and Cultural Impact Evaluation  
for the Proposed Waipahu Depot Street Improvements,  
Waikele Ahupua'a, 'Ewa District, Island of Oahu  
TMK: [1] 9-3-002: por. 009**

**Prepared for  
Environmental Planning Solutions, LLC --- Environet, Inc.**

**Prepared by  
Kathryn Whitman, M.S.,  
Matthew J. Bell,  
and  
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai'i, Inc.  
Kailua, Hawai'i  
(Job Code: WAIKE 1)**

**December 2007**

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## Management Summary

Reference	Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua'a, 'Ewa District, Island of Oahu [TMK: [1] 9-3-002: por. 009] (Whitman, Bell & Hammatt 2007)
Date	December 2007
Project Number (s)	Cultural Surveys Hawai'i Job Code: WAIKE 1
Investigation Permit Number	Fieldwork for this investigation was performed under archaeological fieldwork permit number 07-19, issued by the Hawai'i Department of Land and Natural Resources / State Historic Preservation Division (DLNR / SHPD)
Project Location	The project area is located along Waipahu Depot Street just south of Farrington Highway on Waipio Peninsula, 'Ewa District, Waikele Ahupua'a. Kapakahi Stream defines the western project area boundary. Waipahu Depot Street veers to the east just south of the Honolulu Police Academy, marking the location of the southern boundary of the project area.
Land Jurisdiction	City and County of Honolulu (City)
Agencies	SHPD and City
Project Description	According to the current plans, upgrades along Waipahu Depot Street will include widening of the existing roadway to accommodate new sidewalks and a bike lane. A support wall may be built along the roadway where it is very close to Kapakahi Stream. According to current plans, the deepest excavations, excluding the footing for the support wall (depth not given), will extend 18" below the current ground surface. Other developments potentially include the installation of a boardwalk on the land between Kapakahi Stream and Waipahu Depot Street for bird watching, however, the plans for this are still uncertain at the time of writing this report.
Project Acreage	9.2 Acres
Historic Preservation Regulatory Context	<p>The project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai'i Administrative Rules (HAR) Chapter 13-13-275, respectively]. This investigation does not fulfill the requirements of an archaeological inventory survey investigation (per HAR Chapter 13-13-276); however, through detailed historical, cultural, and archaeological background research, and a field inspection of the project area, this investigation identifies the likelihood that historic properties may be affected by the project.</p> <p>The cultural impact evaluation provides information pertinent to the assessment of the proposed project's cultural impacts [per HRS Chapter 343 and the Office of Environmental Quality Control's</p>

	<p>“Guidelines for Assessing Cultural Impacts”].<sup>1</sup></p> <p>The document is intended to facilitate the project’s planning and support the project’s historic preservation review compliance. Based on findings, cultural resource management recommendations are presented.</p>
Fieldwork Effort	The field inspection was carried out by Matthew J. Bell, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. on January 16, 2007, taking one person day to complete.
Investigation Results	A portion of the previously recorded historic property was identified within the project area - an Oahu Railway and Land, Co. railroad bridge and right-of-way (SIHP 50-80-12-9714). The land within the project area has been disturbed by residential and business development as well as grading and grubbing. A grouping of bricks that form an old pavement may possibly be considered a historic property, however there is not enough information to determine their status at this time. No other historic properties were identified. Based on available information, it is unlikely the proposed project will affect ongoing traditional cultural practices.
Recommendations	Based on the current understanding of the intended construction plans, the historic property (O.R. & L. railroad bridge and raised right-of-way) within the project area will not be affected by construction work. However, it should be emphasized that this recommendation is made <i>based on the current understanding of the current project plans</i> as provided by the client, Environmental Planning Solutions, LLC --- Environet, Inc. The proposed road improvements and the installation of a boardwalk involve shallow excavations and it is unlikely that subsurface cultural deposits will be disturbed, however the possibility cannot be ruled out. It is recommended that the project proponents use this document to facilitate consultation with SHPD regarding appropriate cultural resource management measures for the proposed project.

<sup>1</sup> CSH’s scope of work and methods for cultural impact evaluation studies does not include formal ethnographic interviews and oral histories. Cultural impact evaluation studies are intended as a more time and cost effective means of addressing potential impacts to cultural practices within project areas that have been fully developed for a long time and/or where there is less likelihood of ongoing cultural practices.

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## Section 1 Introduction

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### 1.1 Project Background

Upon the request of Environmental Planning Solutions, LLC --- Environet, Inc., Cultural Surveys Hawai'i, Inc (CSH) carried out an archaeological literature review, field inspection, and cultural impact evaluation of 9.2 acres along a portion of Waipahu Depot Street and the surrounding area located in the Waikele Ahupua'a, Ewa District, Island of Oahu, TMK [1]-9-03-002: 0009 (Figure 1, Figure 2, & Figure 3).

The project area is owned by the City and County of Honolulu and is located along Waipahu Depot Street just south of Farrington Highway on Waipio Peninsula, 'Ewa District, Waikele Ahupua'a. Kapakahi Stream defines the western project area boundary. Waipahu Depot Street veers to the east just south of the Honolulu Police Academy, marking the location of the southern boundary of the project area.

According to the current plans, the proposed upgrades to Waipahu Depot Street will include widening of the existing roadway to accommodate new sidewalks and a bike lane. A support wall may be built along the roadway where it comes very close to Kapakahi Stream. According to current plans, the deepest excavations, excluding the footing for the support wall (depth not given), will extend 18" below the current ground surface. Other developments potentially include the installation of a boardwalk on the land between Kapakahi Stream and Waipahu Depot Street for bird watching, however the plans for this are still uncertain at the time of writing this report.

The project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai'i Administrative Rules (HAR) Chapter 13-13-275, respectively]. This investigation does not fulfill the requirements of an archaeological inventory survey investigation (per HAR Chapter 13-13-276); however, through detailed historical, cultural, and archaeological background research, and a field inspection of the project area, this investigation identifies the likelihood that historic properties may be affected by the project.

The cultural impact evaluation provides information pertinent to the assessment of the proposed project's cultural impacts [per HRS Chapter 343 and the Office of Environmental Quality Control's "Guidelines for Assessing Cultural Impacts"]. CSH's scope of work and methods for cultural impact evaluation studies does not include formal ethnographic interviews and oral histories. Cultural impact evaluation studies are intended as a more time and cost effective means of addressing potential impacts to cultural practices within project areas that have been fully developed for a long time and/or where there is less likelihood of ongoing cultural practices.

The document is intended to facilitate the project's planning and support the project's historic preservation review compliance. Based on findings, cultural resource management recommendations are presented.

The fieldwork took one person-day to complete and consisted of a surface inspection carried out by Matthew J. Bell on January 16, 2007.

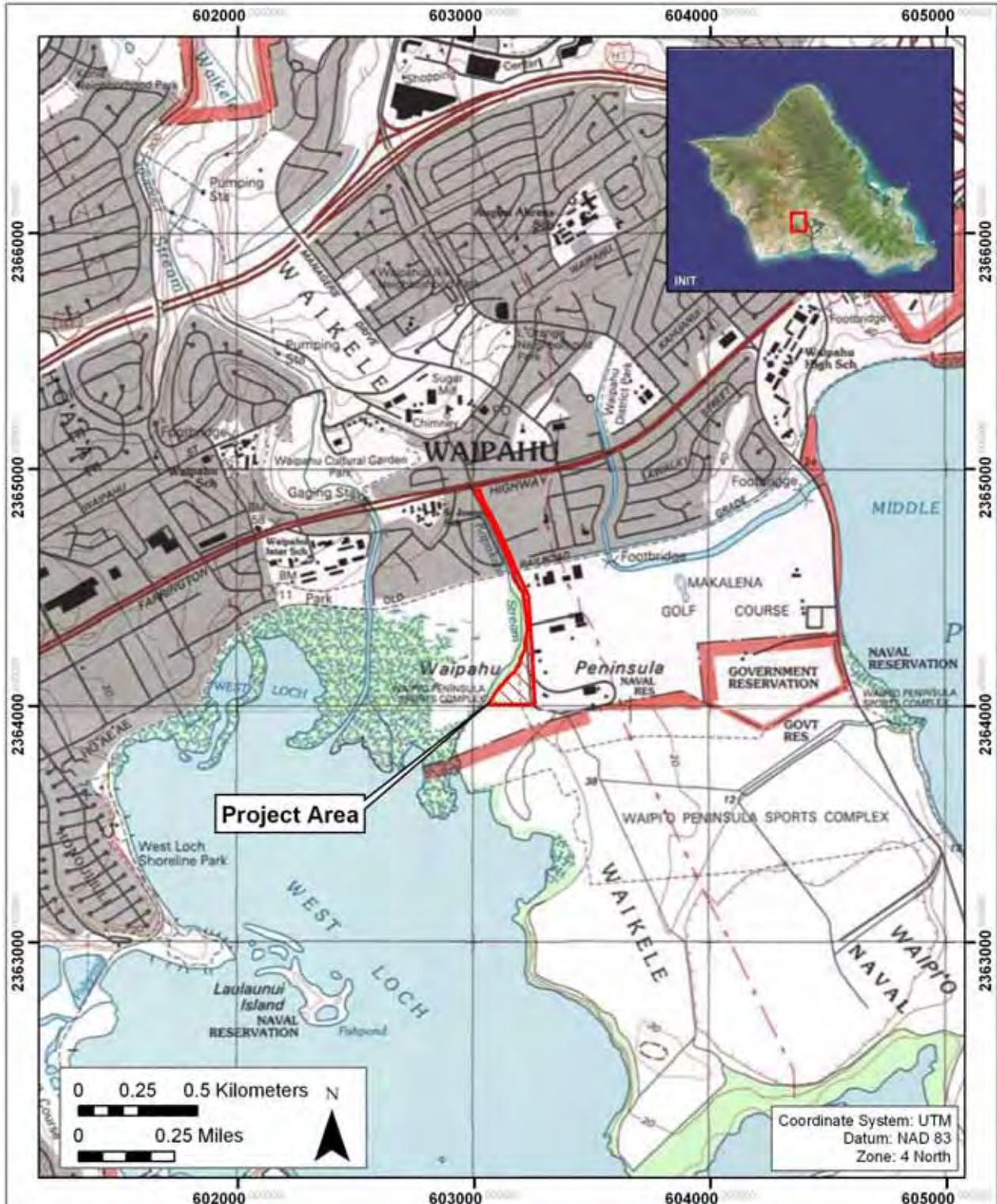


Figure 1. USGS 7.5 Minute Series Topographic Map, Waipahu Quadrangle (1998), showing the location of the project area



Figure 2. Aerial photograph showing the location of the project area (source: USGS Orthoimagery 2005)



Figure 3. Aerial photograph showing a close up of the project area (source: USGS Orthoimagery 2005)

## 1.2 Scope of Work

The following archaeological field investigation does not satisfy SHPD requirements for a full archaeological inventory survey. The scope of work for this field check was designed in accord with the client, Environmental Planning Solutions, LLC --- Environet, Inc. to be sufficient to address site types, locations, and to allow for future work recommendations. A single report was prepared assessing both the potential for significant historic properties (archaeological/historical potential) and potential impacts to cultural practices. The specific work done to complete this report are as follows:

- 1) Background research to include study of archival sources, historic maps, Land Commission Awards, and previous archaeological studies to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
- 2) Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites and any subsurface archaeological resources. This assessment will identify any sensitive areas that may require further investigation or mitigation before future development projects proceed.
- 3) Evaluation of any cultural impact issues such as possible adverse impact to trails, hunting and gathering practices, sacred sites, burials, or other archaeological sites, storied places, etc.
- 4) Preparation of a report to include the results of the background research and the field inspection with an assessment of archaeological and cultural impact potential and including recommendations for further archaeological and/or cultural impact assessment work, if appropriate. This report also provides recommendations if there are archaeologically and/or culturally sensitive areas that need to be taken into consideration.

## 1.3 Environmental Setting

### 1.3.1 Natural Environment

The present study area is located in the portion of Waikele Ahupua`a that extends into the western half of the Waipi`o Peninsula. Waikele Ahupua`a, in the `Ewa District of O`ahu Island, stretches *mauka* (inland) from the West Loch of Pearl Harbor into the Schofield Plateau of central O`ahu. It is bounded to the west by the *ahupua`a* of Ho`ae`ae, to the east by the *ahupua`a* of Waipi`o and, at its *mauka* extent, reaches the boundary of the Wahiawa District. The *ahupua`a* is 1.5 kilometers wide at the coast (West Loch) and tapers to approximately one kilometer wide further inland. Waikele Ahupua`a reaches a maximum width of approximately 6 kilometers at its *mauka* boundary, which forms a narrow panhandle extending to the east.

There are three basic topographic zones in Waikele: the slopes of the Schofield Plateau, the gulches, and the coastal plain at Pearl Harbor. Yearly rainfall in the *ahupua`a* ranges from 30 inches at the coast to 40 inches in the upland sections (Armstrong 1973:56).

The geology of the area is marked prominently by the formation of the Schofield Plateau and its subsequent erosion, the formation of limestone areas of Pearl Harbor, and the deposition of

alluvium at the lower elevations. The Schofield Plateau is the result of the younger Ko`olau volcanic basalt overflowing and banking against the older Wai`anae volcanic basalt. The Ko`olau and Waianae series were unaffected by the later Honolulu Series which is the only other volcanic series to occur on the island (MacDonald and Abbot 1974:352-354).

Pearl Harbor consists of a series of drowned river valleys that have been extensively modified by fluctuations in sea level. The deep bays that exist today were cut down through earlier sedimentary deposits during a stage of much lower sea level. The area around Pearl Harbor is predominantly alluvium and limestone from old reef formations (MacDonald and Abbot 1974:354-356). The protected bays of Pearl Harbor offered easy sea access and canoe landing areas.

The name Waikele literally means "muddy water" (Pukui *et al.* 1983:223) and this appellation likely refers to the two permanent streams that flow through the Schofield Plateau and converge with Waikele Stream. Waikakalaua Stream has tributaries in the Ko`olau and Waianae ranges; Kipapa Stream originates in the Ko`olau range, and Waikele Stream originates in the Waianae range. These streams drain a "large expanse of lateritic soils of fine particle size [and therefore] the water would have appeared muddy in prehistoric times even during periods of normal flow" (Hammatt and Borthwick 1988:9). The permanent streams form steep gulches that cut through layers of interbedded thick basalt flows and thinner layers of weathered alluvium, which consist of loosely consolidated saprolitic pebbles and cobbles with occasional boulders (Riford 1986:18). Within the gulches, the bottom lands along the stream channels consist of deep, well-drained Haleiwa silty clay on nearly level slopes. The walls of the gulches are comprised of rockland which is 25 to 90 percent rock outcrops and well-drained to excessively-drained shallow soils (Foote *et al.* 1972: map sheet nos. 41, 42, 52 & 53).

Foote's (*et al.* 1972) General Soil Map of O`ahu Island shows two soil associations for the Waikele area. From West Loch approximately a kilometer inland, the soils are Lualualei-Fill land-`Ewa associations: deep, nearly level to moderately sloping, fine textured, well drained, usually found on coastal plains. The rest of Waikele, except for the gulches, consists of the Helemano-Wahiawa association: deep, nearly level to moderately sloping, well drained, usually found on uplands. The Helemano-Wahiawa association is an oxisol which possesses "exceptional resistance to physical deterioration under intensive mechanized agriculture" and is one of the "most important agricultural soils of the State" (Armstrong 1973:41).

According to the soil survey of O`ahu, the entire project area comprises "fill land" and "tropicals" (Foote *et al.* 1972: map sheet no. 53) (Figure 4). The soil survey identifies fill land as:

...mostly of areas filled with bagasse and slurry from sugar mills. A few areas are filled with material from dredging and from soil excavations. Generally, these materials are dumped and spread over marshes, low-lying areas along the coastal flats, coral sand, coral limestone, or areas shallow to bedrock. (Foote *et al.* 1972: 31)

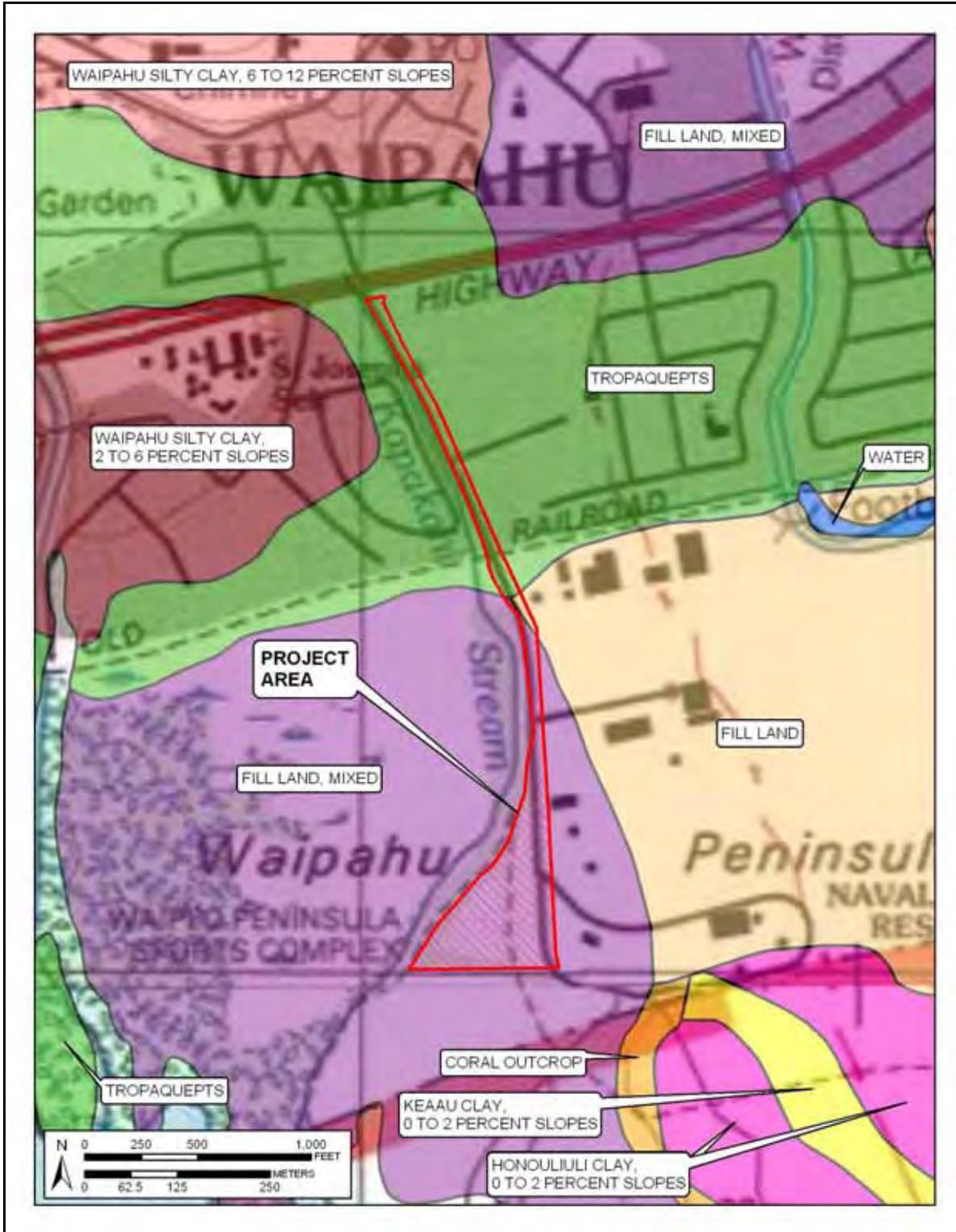


Figure 4. Overlay of Soil Survey of the State of Hawai'i (Foote et al. 1972), indicating soil types within the project area

Tropoquepts are described as follows:

Tropoquepts (TR) are poorly drained soils that are periodically flooded by irrigation in order to grow crops that thrive in water. They occur as nearly level flood plains on the islands of Oahu and Maui. Elevations range from sea level to 200 feet. The annual rainfall amounts to 20 to 150 inches.

These solids have been flooded for varying lengths of time, and soil development differs in degree from place to place. Generally, the surface layer, about 10 inches thick, consists of dark-grey, soft, mucky silt loam. This layer overlies firm to compact silty clay loam, 5 to 10 inches thick, that is mottled with gray, yellow, and brown. The mottled layer overlies friable alluvium.

Tropaquepts are used for production of taro, rice, and watercress on flooded paddies. (Foote et al. 1972, 121)

The project area lies approximately a quarter mile inland of West Loch in Pearl Harbor. Elevations range from 0 to 30 feet and annual rainfall varies between 24 and 31 inches. Kapahaki Stream runs along the western boundary of the project area and outlets into West Loch about a quarter mile from the project area's southern boundary. The vegetation found within the project area includes *kiawe* and *koa haole* trees, grasses, shorter shrubs such as castor beans and plants that typically grow quickly after ground disturbance.

### 1.3.2 Built Environment

The project area was a swampy agricultural area running alongside a stream that was filled, probably in the mid-1900's during World War II. The Kapahaki Stream forms the western boundary of the study area and was very likely dredged to create some of this landfill. The banks of Kapahaki Stream are reinforced with boulders and concrete. Many utilities run through this area and are visible in the stream banks and alongside Waipahu Depot Street which is a paved road that lies within the project area and defines its eastern boundary.

Directly adjacent to the northern portion of the study area are residences and businesses. A number of facilities border the eastern boundary, including the Waipahu Wastewater Pump Station, the Waipahu Refuse Convenience Center, the Honolulu Police Academy (Ke Kula Makai), the Honolulu Fire Department Vehicle Maintenance Facility, and the Waipahu incinerator (no longer in use).

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## Section 2 Methods

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### 2.1 Field Methods

Matthew J. Bell, B.A. carried out the field effort, which required one person-day to complete. Fieldwork took place on January 16, 2007 under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). Fieldwork in this report has been performed under CSH's annual archaeological research permit, No. 07-19, issued by DLNR / SHPD.

#### 2.1.1 Pedestrian Inspection

The fieldwork consisted of a pedestrian and automobile inspection of the entire project area. The archaeologist drove and walked through the project area where appropriate. Visibility was generally good and rarely hampered by vegetation. Surface historic properties were documented, photographed, and described. Locations of interest were recorded with a handheld GPS unit.

### 2.2 Document Review

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources (DLNR); a review of geology and cultural history documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum; and a study of historic maps at the Survey Office of the DLNR. Information on Land Court Awards (LCAs) was accessed through Waihona 'Āina Corporation's Māhele Data Base (<[www.waihona.com](http://www.waihona.com)>).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected type and location of sub-surface pre and post-contact historic properties in the project area.

## Section 3 Background Research

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### 3.1 Traditional and Historical Background

#### 3.1.1 Mythological and Traditional Accounts

There are numerous references to Waikele in the traditional literature. With one exception, all of these references are to areas and events which existed or occurred within two kilometers of Pearl Harbor. There is reference to the Waipahu Spring - designated site 128 by Gilbert McAllister during the 1930s (Figure 5)- where a tapa mallet from Kahuku appeared. This spring is also famous as the location where Kaahupahau (a shark goddess) swam up from the sea to bathe in the fresh water (Sterling and Summers 1978:25). Mary Kawena Pukui (in Sterling and Summers 1978:24) details many legends and traditional places with mythical or cultural meaning in Waikele. There is reference to the Pohaku-pili (a stone) that belonged to the gods Kane and Kanaloa who divided the lands of `Ewa when they came to earth and established the boundaries of Waikele, which have remained the same ever since. The Pohaku-pili is said to be supernatural and lies on the boundary of Waikele and Hoaeae on the edge of a cliff (Sterling and Summers 1978:29).

Samuel M. Kamakau (1992:71, 75, 136 & 137) makes numerous references to Waikele as the abode of chiefs. Battles, sacrifice, and politics were conducted in the *ahupua`a* of Waikele. The great Ka-lani-`opu`u, grandfather of Kamehameha, was born "at the waters of Alelele above Waipahu, at Waikele" (Kamakau 1992:110).

John Papa I`i (1959:32) refers to Kapuna in Waikele as a "good place for dyeing tapa. There, patches of taro were grown, draw nets made, and houses built." He goes on to say that the people of Waikele fished in the sea of Honouliuli. I`i also refers to a sham battle that occurred in Waikele between people from Honolulu and the inhabitants of Waikele. The battle was lead under the direction of the chief of Waikele and a visiting chief from Honolulu (I`i 1959:76), suggesting that Waikele was a well populated locality where chiefly activities were not uncommon.

While most of the activity in traditional stories is concentrated around Pearl Harbor, McAllister's site 132 is in the *mauka* region of Waikele *ahupua`a* in Waikakalaua Gulch. According to Abraham Fornander, the invading chiefs from Hawai`i met Mailikukahi, *mo`i* (king) of O`ahu, in battle. "The fight continued from [Waikakalaua] to Kipapa Gulch. The invaders were thoroughly defeated and the gulch is said to have been literally paved with the corpses of the slain" (Sterling and Summers 1978:31).



Figure 5. 1978 Sterling and Summers map overlaid with McAllister's designated archaeological sites

### 3.1.2 Late Prehistoric/Early Historic Land Use Documentation

Fresh water, good agricultural land, and seafood were plentifully available around Pearl Harbor. Historical accounts indicate that there were abundant resources in Waikele, which had permanent streams and springs and rich soils, allowing for great agricultural productivity. George Vancouver anchored off the entrance to West Loch in 1793 and describes the area as follows: "This tract of land was of some extent but did not seem to be populous nor to possess any great degree of natural fertility; although we were told that, at a little distance from the sea, the soil is rich and all the necessaries of life are abundantly produced" (Sterling and Summers 1978:36).

E.S. Craighill Handy notes that:

In the flatland, where the Kamehameha Highway crosses the lower valley of Waikele Stream, there are the remains of terraces on both sides of the road, now planted in bananas, beans, cane and small gardens. For at least 2 miles upstream there were small terrace areas. (1942:82)

There are also references to the abundant marine resources that Pearl Harbor had to offer. Charles Wilkes, leader of the Wilkes Expedition of 1838 to 1842, recorded: "Pearl-River Harbour affords an abundant supply of fine fish. Two species of clams are procured here, called by the natives okupe and olepe." Gilbert McAllister reports that the entire West Loch of Pearl Harbor was known as Kaihuopalaai and this body of water was renowned for the large schools of mullet which arrived every year between March and April (Sterling and Summers 1978: 49, 52).

Nedbalek attests to the plentiful fresh water in Waipahu, located in the *makai* (ocean side) region of Waikele Ahupua'a, near to the project area:

Waipahu translates as "bursting water" or "water forced up." Many decades ago, natives digging the land are said to have shouted "waipahu!" as water gushed forth from the ground. (Nedbalek 1984: 3)

The numerous fishponds of Waikele are another resource that would have greatly increased the productivity of the area. "At one time at least twenty-seven fish ponds, royal property of the area's kings and chiefs, dotted the shoreline around the Pearl Harbor lochs." (Nedbalek 1984: 4) Survey maps from 1881 (Figure 6) and 1889 (Figure 7) of the *makai* portion of Waikele show the larger *loko* (fishponds) in the area. Apple and Kikuchi (1975:2) discuss the impact that such fishponds had on the general population living there:

Accessibility to these ponds and their products was limited to the elite minority of the native population, the chiefs and priests. Prehistoric ponds and pond products appear to have been taboo to the vast majority of Hawaiians and to have yielded them no direct benefit. However, indirect public benefit came from ownership by the chiefs of exclusive food sources. Royal fishponds...insured less demand on the commoners' food production resources. Every fish taken from a royal fishpond





left its counterpart in the natural habitat available to lesser chiefs and commoners. The fishponds of Waikele, although not necessarily representing beneficial resources for the commoners, can be seen as evidence for a thriving chiefly class in the *ahupua`a*.

The size of the population of Waikele in the late prehistoric/early historic period can only be speculated. Levi Chamberlain, secular agent for the Protestant Mission, visited Waikele in 1828 and estimated that between 300 and 400 persons gathered to hear his presentation (Riford 1986:21). The earliest missionary census, accomplished between 1831 and 1832, counted a total of 723 inhabitants in the Waikele and Hoaeae *ahupua`a*. The counts of men, women, and children break down as follows: 278 adult males, 282 adult females, 73 male children, and 90 female children. Total population counted in the thirteen *ahupua`a* comprising the `Ewa District was 4015 (Schmitt 1973:19,38).

### 3.1.3 Mid- 1800's: Land Commission Awards (LCAs)

The Organic Acts of 1845 and 1846 initiated the process of the *Māhele* - the division of Hawaiian lands - that introduced private property into Hawaiian society. In 1848, the crown and the *ali`i* (royalty) received their land titles. *Kuleana* awards to commoners for individual parcels within the *ahupua`a* were subsequently granted in 1850.

A large number of LCAs were awarded in the *makai* portion of Waikele *ahupua`a*, including many inside the project area itself (see Figure 8, Figure 9, Figure 10, Figure 11, Figure 12). Information in the award records indicates that the region in and around the project area contained agricultural land used most often for growing taro, pasturelands, abundant *loko* (fish ponds), sand dunes, *auwai* (ditches), and *muliwai* (estuary or river mouth), refer to Table 1 and Table 2.

Three large fishponds were also located nearby. Loko Eo, Loko Hanaloa and Ulumoku Fish Pond were also situated on the Waipio Peninsular, but have since been filled for modern purposes. The closest fishpond, Ulumoku, now called Ash Island, was filled in with ash and incinerator waste from the Oahu Sugar Company.

#### 3.1.3.1 LCAs in the Immediate Vicinity of the Project Area

Many LCAs were awarded in the immediate vicinity of the project area and indicate that taro agriculture was most likely the primary land use in the region. *Lo`i* (irrigated terraces) and *auwai* (ditches often used for irrigation purposes) are identified on many of the LCA lots. *Loko* (fish ponds) are abundant and are used to describe the boundaries of many of the LCAs. A number of house lots were awarded, however, these were most likely located in the *kula* (dry lands for agriculture) and pasturelands regions slightly upland from the project area and Kapakahi River.

Specific details of a selection of nearby LCAs are included in Table 1.

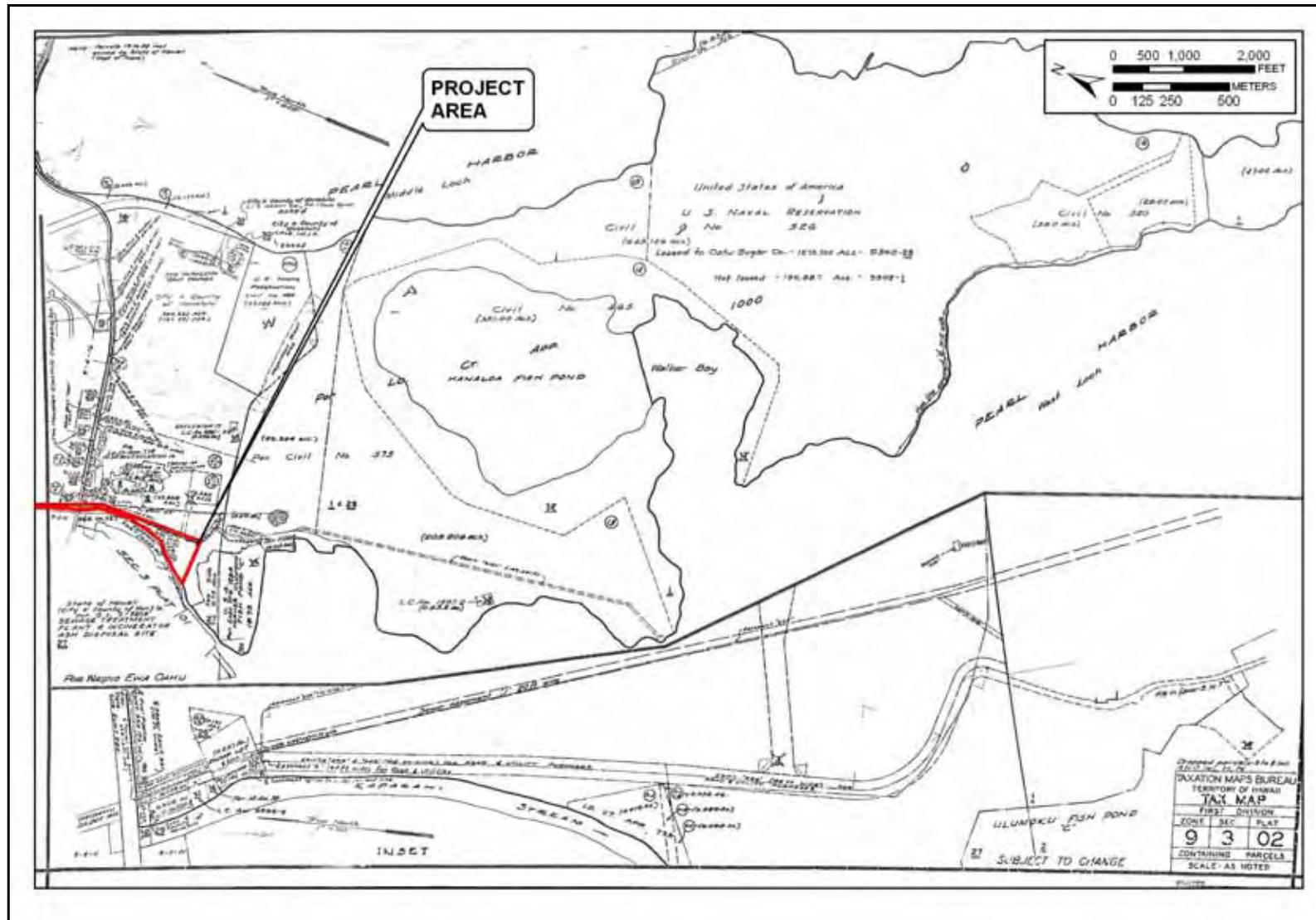


Figure 8. Map of TMK 9-03-02 with project area

Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua'a, 'Ewa District, Island of Oahu

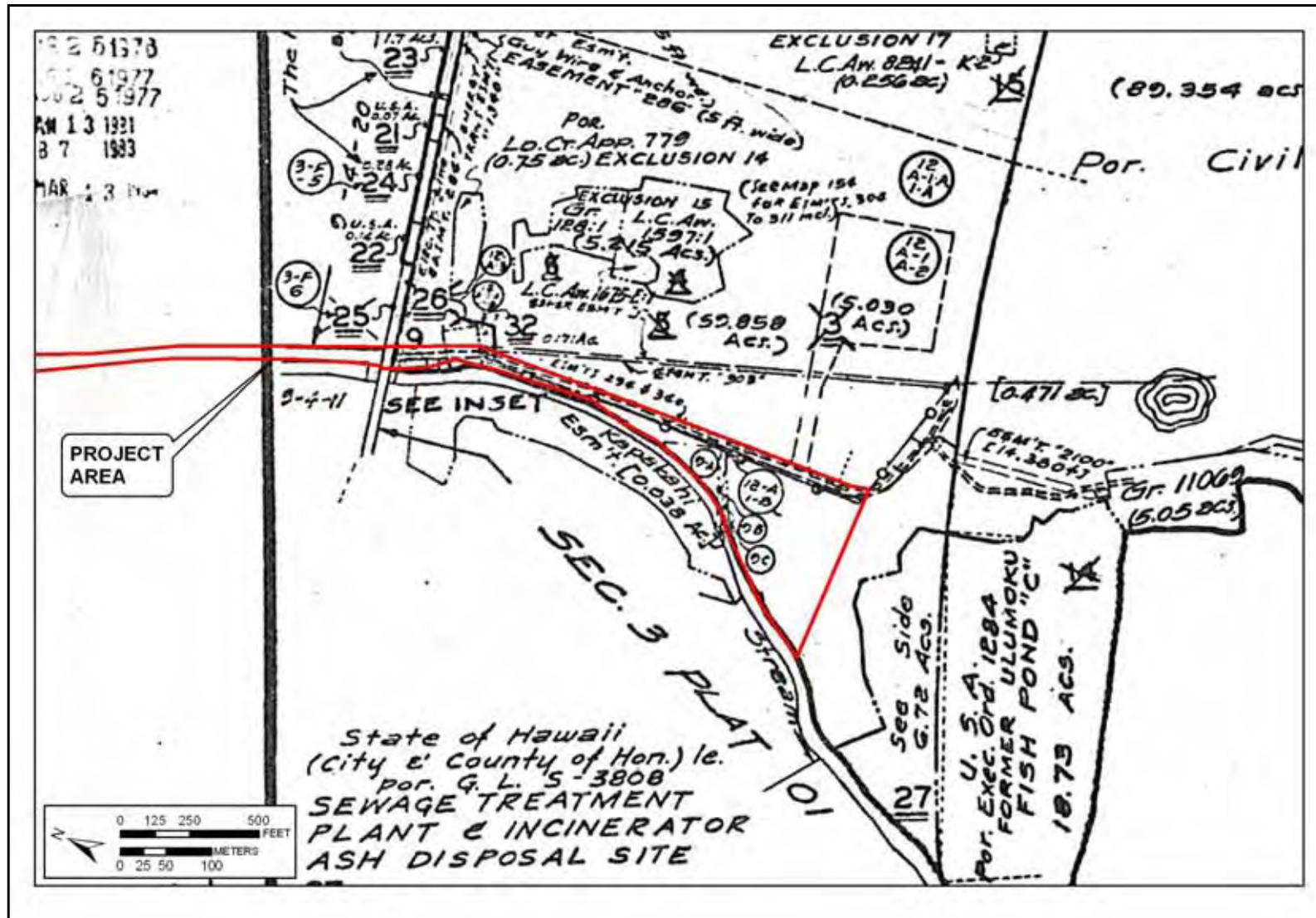


Figure 9. Map of TMK 9-03-02 showing a close up of the vicinity immediately surrounding the project area

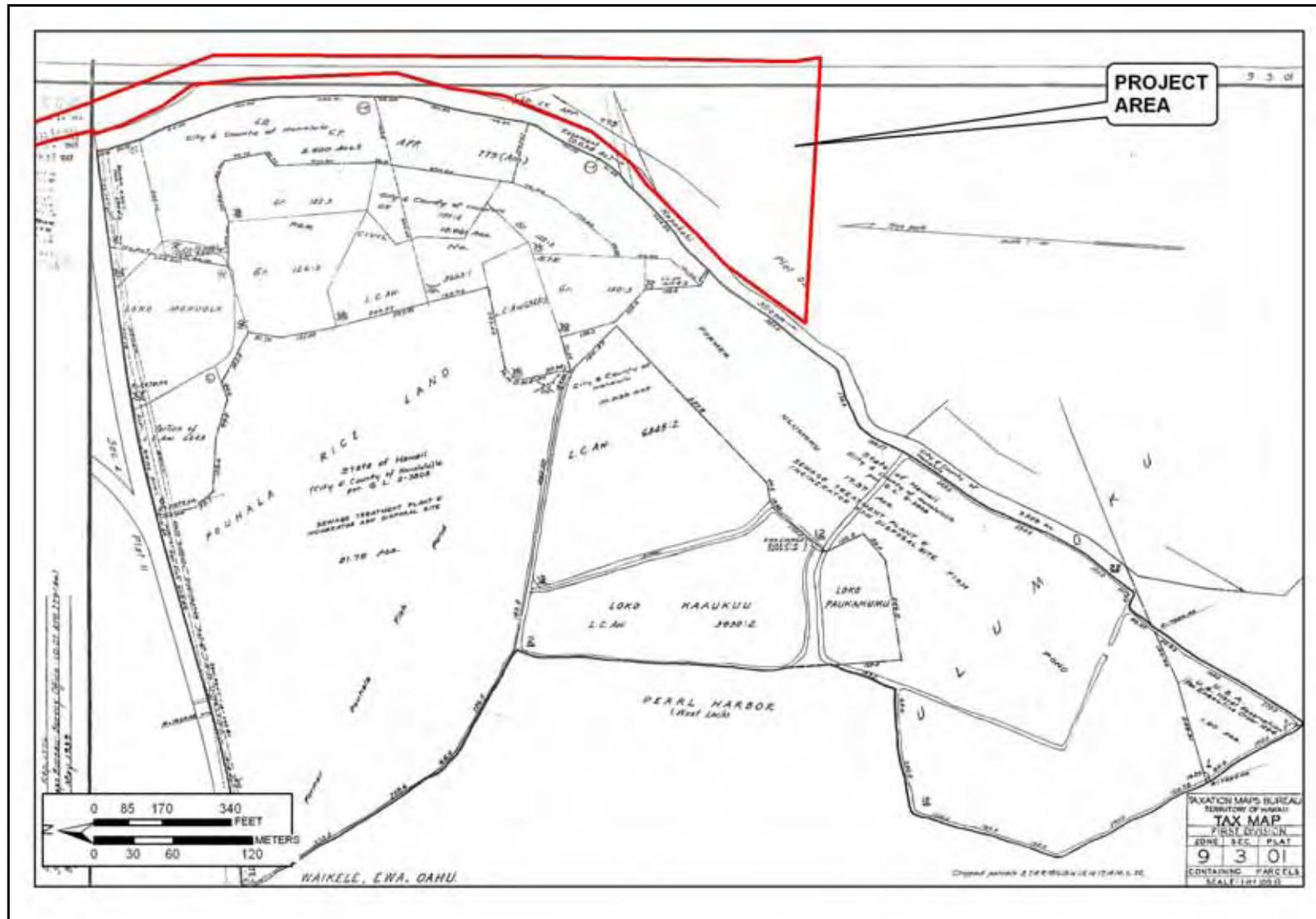


Figure 10. Map of TMK 9-03-01 showing the project area

Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua'a, 'Ewa District, Island of Oahu

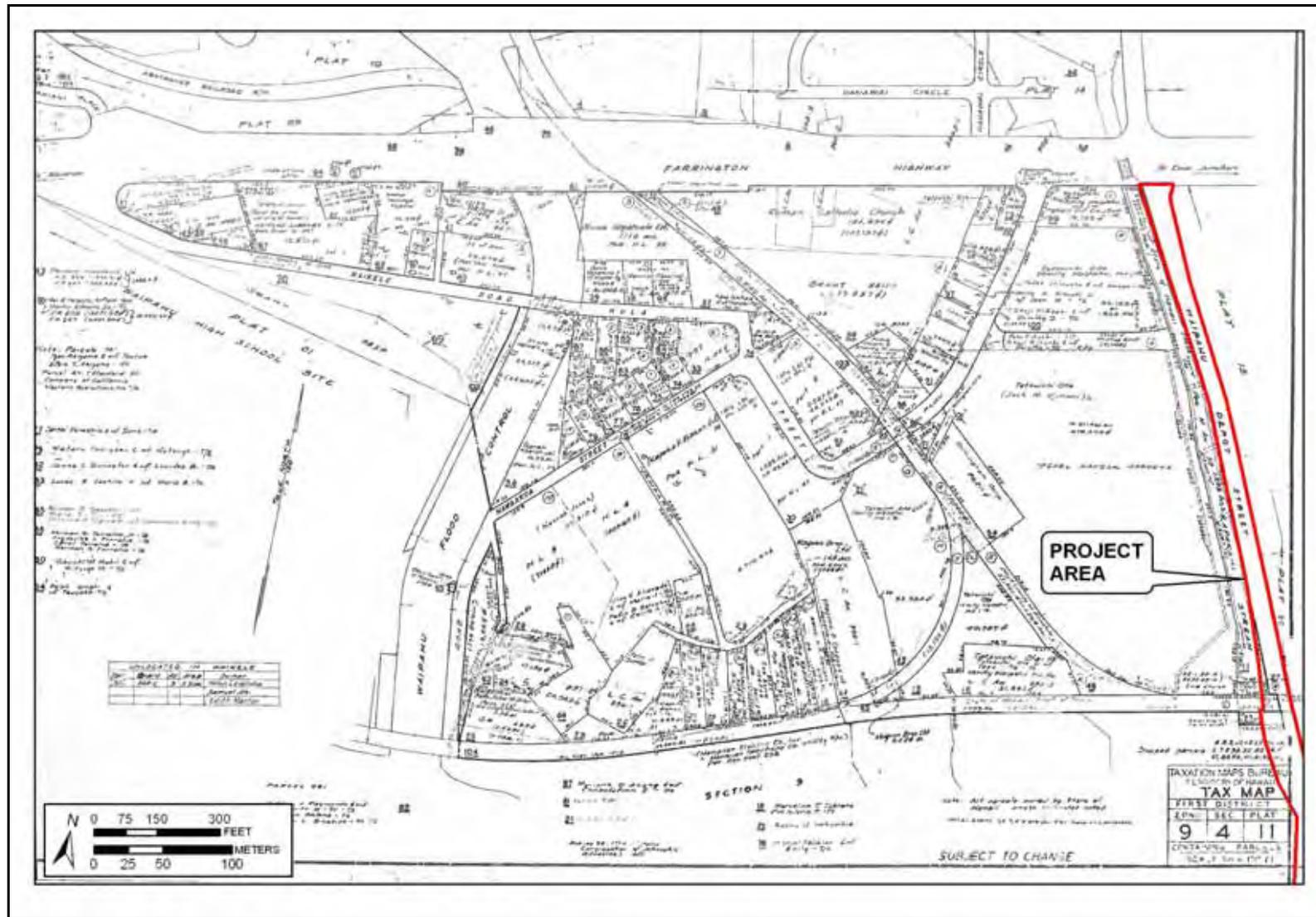


Figure 11. Map of TMK 9-04-11 showing the northern portion of the project area

Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation for the Proposed Waipahu Depot Street Improvements, Waikele Ahupua'a, 'Ewa District, Island of Oahu

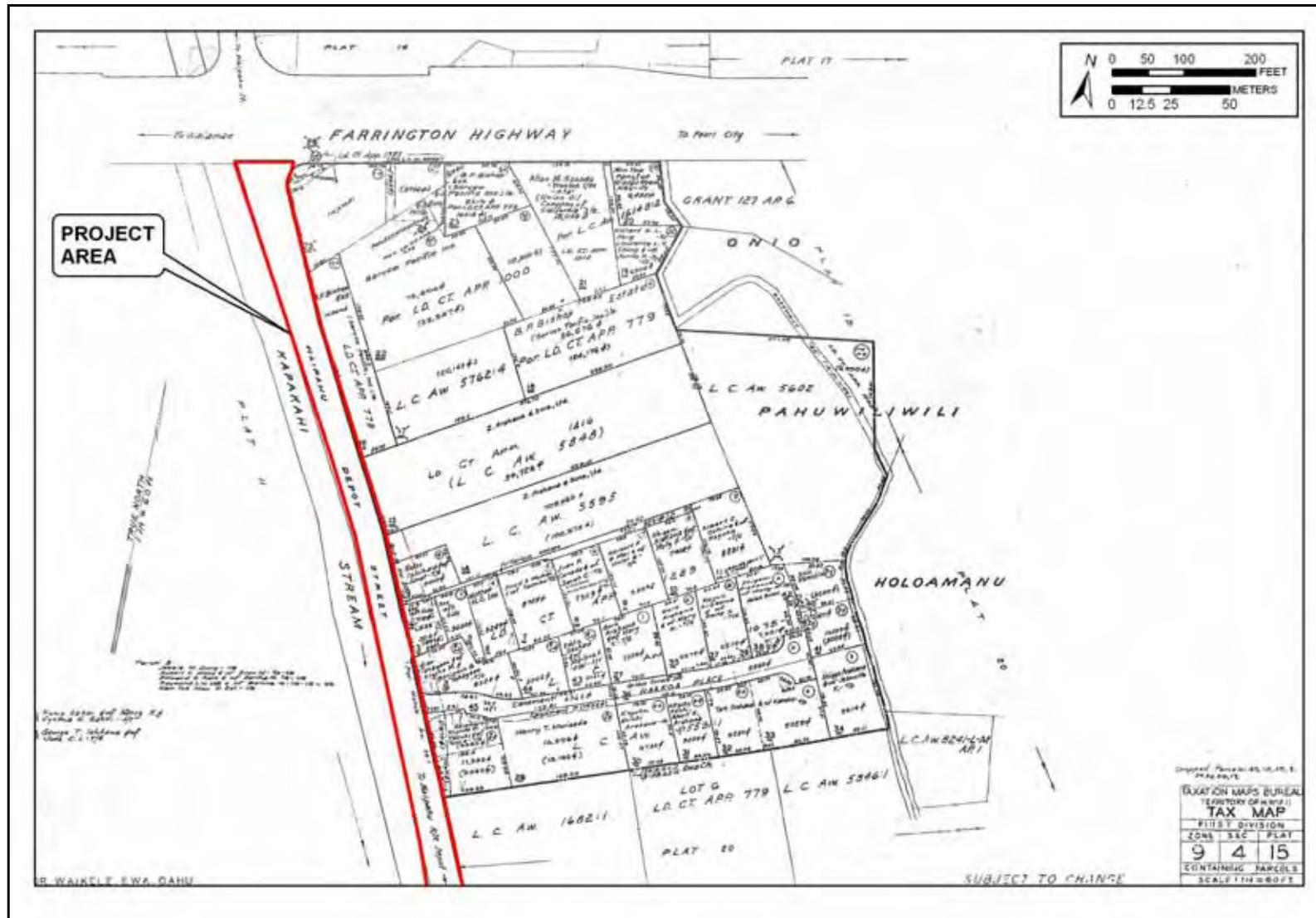


Figure 12. Map of TMK 9-04-15 showing the northern portion of the project area

Table 1. LCAs in the Immediate Vicinity of the Project Area

Claimant	Claim No.	Location wrt Proj Area	Name of Land Claimed	Land Use	Land Awarded
Kaihumana	1597	1 'āp 300 ft to the east; 1 'āp 1.65 miles to the south	Kapuna, Kamapuna, and Auiole <i>il'i</i> in the <i>ahupua'a</i> of Waikele	3 <i>lo'i</i> , 1 house lot, 1 coconut tree, sand dunes; bounded by three ponds	Kapuna Waikele Ewa 2 'āp, 3.832 Acres
Kaheolei	1675E	650 feet to the east	Ulumoku <i>il'i</i> in the <i>ahupua'a</i> of Waikele	½ <i>lo'i</i> and a ditch ( <i>auwai</i> ), 1 house lot; bounded by <i>loko</i> (fish ponds) and <i>pā 'āina</i> (wall)	Ulumoku Waikele Ewa, 2 'āp .41 Acres
Kuhiwahiwa	8241K	.66 miles to the east	Homaikaia, Hanaloa <i>il'i</i> in the <i>ahupua'a</i> of Waikele	5 <i>lo'i</i> , 1 house lot	Hanaloa Waipio Ewa, 1 'āp .256 Acres; Homakaia Waipio Ewa 1 'āp 1.083 Acres.
Puniwai	10831	560 ft north	Kanupoo <i>il'i</i> in the <i>ahupua'a</i> of Waikele and Kawaiahao <i>il'i</i> in the <i>ahupua'a</i> of Honolulu	No details	Kanupoo Waikele Ewa, 1 'āp 1.15 Acres
Hookaamomi	1614B	800 feet north	Ahualii, Mikiokai, Keahupuaa <i>il'i</i> in the <i>ahupua'a</i> of Waikele	4 <i>lo'i</i> , 1 house lot, wall or fence; bounded by <i>kula</i> , <i>lo'i</i> , and pastures	Aualii Waikele Ewa, 1 'āp .598 Acres and Mikiokai Waikele Ewa, 1 'āp 1.405 Acres
Keawe	5531	Western boundary borders project area	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	4 <i>lo'i</i> , 1 <i>kula</i> , 1 house lot, 1 stream; a <i>kula moku</i>	Kapakahi Waikele Ewa, 2 'āp 1.07 Acres

Claimant	Claim No.	Location wrt Proj Area	Name of Land Claimed	Land Use	Land Awarded
Makole & Paulua, brother-in-law; heir	5989:1	50 feet to the east	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	3 <i>lo'i</i> , 1 <i>kula</i> , 1 house lot, 1 <i>koele</i> (land unit farmed for the chief), 1 <i>auwai</i> (ditch), 1 wall, 1 stream, a <i>kula moku</i>	Kapakahi Waikele Ewa, 2 'āp, .66 Acres
Kualii	1682B	50 feet to the east	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	2 <i>lo'i</i> , <i>koele</i> (land unit farmed for the chief)	Kapakahi Waikele Ewa, 1 'āp, 1.102 Acres
Kuaihelani	5762	50 feet to the east	Papaa, Kapakahi, Ohua <i>il'i</i> in the <i>ahupua'a</i> of Waikele	9 <i>lo'i</i> , <i>koele</i> (land unit farmed for the chief), 1 banana tree, 1 coconut tree, wall, stream, <i>pali</i> ; specifically in Kapakahi: "Also at Kapakahi, in Waikele, is a side of a <i>lo'i</i> ."	Papaa Waikele Ewa, 4 'āp, 1.71 Acres

### 3.1.3.2 LCAs Within the Project Area

Eight Land Commission Awards lie within the project area. The LCA descriptions indicate that taro cultivation, not surprisingly, was the primary activity taking place along the Kapakahi Stream. Irrigation ditches and *lo'i*, raised irrigated terraces for growing taro, are present in every parcel of land in multitude. Many of the land boundaries are described as *mo'o*, raised paths between irrigation streamlets. *Loko* (fishponds) are also present. Most LCAs have associated house lots that are probably located in the *kula* and pasturelands upland from the stream.

From the land use descriptions given in the LCAs, it is possible to conclude that the land within the project area was an irrigated wetland used for taro cultivation during the early to mid-1800's and very likely during pre-contact times.

Specific details on land usage, ownership, and size of seven of the LCAs within the project area are shown in Table 2.

Table 2. LCAs Located within the Project Area

Claimant	Claim No.	Name of Land Claimed	Land Use	Land Awarded
Kauliokamoa, Davida	0039MA	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	No description.	Kapakahi Waikele Ewa, 1 <i>'āp</i> . Acreage not specified.
Puhi	1682	Kapakahi, Keahupuaa, Kaohai <i>il'i</i> in the <i>ahupua'a</i> of Waikele	2 <i>lo'i</i> , 1 house lot, <i>koele</i> (land unit farmed for the chief), <i>loko</i> (fishpond), wall	Kapakahi Waikele Ewa, 2 <i>'āp</i> , 1.922 Acres
Namakeha, B	7260*O	Kaalaaluna, Kaolipea <i>il'i</i> in the <i>ahupua'a</i> of Waikele & Honolulu	No description.	Kaalaaluna Honolulu Kona, 1 <i>'āp</i> , 17.28 Acres; Kaolipea Waikele Ewa, 1 <i>'āp</i> , 252.18 Acres; Waikele Ewa, 4 <i>'āp</i> , 39.13 Acres; Waianae-uka, 1 <i>'āp</i>
Makalolohe	1675D	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	5 <i>lo'i</i> , <i>koele</i> (land unit farmed for the chief), <i>auwai</i> (ditch)	Kapakahi Waikele Ewa, 1 <i>'āp</i> , 1.564 Acres
Kookoo	5603	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	3 <i>lo'i</i> , 1 <i>loko</i> (fishpond), stream; bounded by <i>mo'o</i>	Kapakahi Waikele Ewa, 1 <i>'āp</i> , 1 Acres
Kaupuaa	5848	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	4 <i>lo'i</i> , 1 <i>kula</i> , 1 house lot, stream, ditch; bounded by <i>mo'o</i>	Kapakahi Waikele Ewa, 1 <i>'āp</i> , 1.46 Acres

Claimant	Claim No.	Name of Land Claimed	Land Use	Land Awarded
Makole & Paulua, brother-in-law; heir	5989:2	Kapakahi <i>il'i</i> in the <i>ahupua'a</i> of Waikele	3 <i>lo'i</i> , 1 <i>kula</i> , 1 house lot, 1 <i>koele</i> (land unit farmed for the chief), 1 <i>auwai</i> (ditch), 1 wall, 1 stream, a <i>kula moku</i>	Kapakahi Waikele Ewa, 2 'āp .66 Acres

### 3.1.4 Late-1800's to Mid-1900's

The landscape of Waikele has been modified extensively by commercial agriculture, railroads and military activity since the last decades of the nineteenth century. Written records and maps document the changes within the *ahupua'a* which permit an accurate examination of historic land usages within the present study area itself.

As the sugar industry throughout the Hawaiian kingdom expanded in the second half of the 19<sup>th</sup> century, the need for increased numbers of field laborers prompted passage of contract labor laws. In 1852 the first Chinese contract laborers arrived in the islands. Contracts were for five years, and pay was \$3 a month plus room and board. Upon completion of their contracts, a number of the immigrants remained in the islands, many becoming merchants or rice farmers.

As was happening in other locales, in the 1880s, groups of Chinese began leasing and buying — from the Hawaiians of Waikele and Waipi`o Ahupua`a — former taro lands for conversion to rice farming. The taro lands' availability throughout the islands in the late 1800's reflected the declining demand for taro as the native Hawaiian population diminished.

The Hawaiian islands were well-positioned for rice cultivation. A market for rice in California had developed as increasing numbers of Chinese laborers immigrated there since the mid-19th century. Similarly, as Chinese immigration to the islands also accelerated, a domestic market opened.

The primary market for both husked rice and paddy raised in all parts of the Hawaiian islands was in Honolulu. The number of Chinese in the islands created a large home demand.

In 1880 the home market was made more secure by an increase in the duty on rice imported into Hawaii to 1½ cents on paddy and 2½ cents on hulled rice. It resulted in further checking the importation of foreign rice and giving an immense impetus to the home product. (Coulter and Chun, 1937: 13)

A substantial Chinese population developed in the Waipahu area of Waikele:

Some of the new Chinese residents had left their homeland solely to work in Hawaii's rice fields. Others had completed sugar contracts or bought releases with

funds provided by Chinese rice planters. Soon, Waipahu land purchased from taro growers and larger landholders sprouted with grain...(Nedbalek 1984:6)

By 1892 there were 333 acres of land devoted to rice farming in Waikele and Waipi`o Ahupua`a (Coulter and Chun 1937: 21). A map of rice farming areas of O`ahu in 1892 indicates that the present study area was located within an expanse of rice fields that extended from Waikele to Waiiau (Coulter and Chun 1937: 12). In a history of the early Chinese immigrants in Waipahu, Douglas D.L. Chong (1998: 28) indicates that two Chinese rice planters — Goo Lee Yung and Ing Sang — may have been cultivating portions of the present study area. Not much is presently known about Ing Sang (or Ng Sheong) who is reported to have “moved away with his family sometime before 1915 (Chong 1998: 41). More is known about Goo:

Goo Lee Yung came to Hawai`i in 1893 from Say Bui Village, Gook Doo, and first worked for Lin Cheong Wai as a rice planter. In 1897 he sent for his wife, Goo Chong Shee, from China and moved further down to take over his Uncle Goo Chon's rice fields...Before the turn of the century, Goo Chon, also known as G. Achin, was an early rice planter in Waikele and Ha`ae`ae for an additional \$780 a year...

...After Goo Lee Yung retired, his farm was taken over by Mr. and Mrs. Wong Yau, See Yup rice farmers who had moved to Waipahu in the early 1930s from Lanakila...Wong Yau was one of the last rice planters...to actively participate in the rice industry, cultivating crops until World War II. (Chong 1998: 39-41)

Thus, all or a portion of the present study area may have been under cultivation of rice until 1940.

Chong also documents the small Waikele fishponds on the Waipi`o Peninsula:

Ulumoku, the Waikele region where Kapakai Creek opened to the sea, was the site of thirteen small *loko i`a kalo* family ponds still used during Kalakaua's reign. Nine were later drained for rice. Eight of these shallow ponds lined the west of the river while five stood on the east. Interestingly, unlike the round shaped fishponds, these rectangular shaped *lo`i* taro patch ponds were planted with staggered mounds of taro and stocked with fish...

The five ponds east of the river's mouth were Loko Namahana, owned by the Hao family, Loko Kapelo, owned by the Kapahoanua clan, and Loko Kepoe, Loko Kealialia and Loko Kahaku`ahi`a, all of which belonged to William Jones and his family. (Chong 1998: 101)

The sugar plantation that had brought the original Chinese immigrants to Waikele was the Waipahu based Oahu Sugar Company which had incorporated on March 30, 1897. Already in November of that year, 2000 acres had been cleared. By the mid-1920s, the company's fields extended through much of Waipi`o Peninsula but had not reached anywhere near the present study area (Figure 13).

Railroads were constructed to connect the expanding agricultural fields to the mill and market (Riford 1986:27). The railroads ran from the coast through Waikele Gulch with multiple tracks and were supplemented by service roads running alongside (Conde and Best 1973:313). Maps from 1889 (Figure 7), 1927 (Figure 14) and 1943 (Figure 15), as well as the Oahu Sugar Co. map from 1925 (Figure 13), show that Oahu Railway & Land Company (O.R.&L.) railroad tracks ran through the middle of the project area in an east-west direction. The O.R.&L. was started by Benjamin Dillingham. The initial stretch of railroad line was built in 1889 to connect Honolulu to Aiea, out to 'Ewa, and ultimately to Kahuku. During the 1890's, the O.R.&L. line continued to be built, connecting many of Dillingham's holdings and investments, including 'Ewa Sugar Plantation, the Kahuku Plantation, and the Oahu Sugar Company. In 1894, a prospectus for the Oahu Sugar Company discussed the benefits of constructing a railroad line for sugar cane transportation. Two locomotives were completed in March of 1897 for the Oahu Sugar Co. and in May of 1897, a nameplate for the locomotive, *Waipio*, was sent for (Conde and Best 1973:313). The railroad line successfully served the Oahu Sugar Company, almost continually growing (Conde and Best 1973:314-315) until World War II when the U.S. Navy purchased the railroad to haul munitions and supplies to Waipio point (Goodman and Cleghorn 1998: 16).

### 3.1.5 Modern Land Use

When the United States entered World War II in 1941, portions of Waipi'o Peninsula not already developed for military purposes were taken over by the U.S. government and restricted to civilian access. It was also during the war that the large fishponds and portions of the peninsula were filled in [information provided by DeSoto Brown of the Bernice Pauahi Bishop Museum whose family owned Waipi'o Peninsula prior to the war].

After the war, in February 1949, the U.S. government released the present study area to the City and County of Honolulu. In 1976, a state Land Use Commission special permit (SP 76-248) allowed the construction of a fire department facility and a police department training facility on the eastern boundary of the present study area. The special permit was necessary as the land was zoned for agriculture. The study area is also adjacent to Waipahu Wastewater Pump Station, the Waipahu Refuse Convenience Center, the Honolulu Police Academy (Ke Kula Makai), the Honolulu Fire Department Vehicle Maintenance Facility, and the Waipahu incinerator (no longer in use). The study area itself does not contain any major buildings, however it does contain Waipahu Depot Street, which provides access to all of the facilities along the boundary of the project area and to the rest of Waipio Peninsula.

## 3.2 Previous Archaeological Research

A number of previous archaeological studies have taken place in the *makai* portions of the Waikele and Waipio Ahupua'a near to the current project area, as illustrated in Figure 16.

One portion of a previously identified historic property has been documented within the present study area. A railroad bridge spanning Kapahaki Stream is part of the right-of-way (ROW) for the historic Oahu Railway & Land Company railroad. A 13-mile long portion of the O.R.&L. railroad was placed on the National Register of Historic Places in 1975 and assigned SIHP #50-80-12-9714. The portion of the O.R.&L. that runs through the project area was determined ineligible to the National Register (O.R.L. N.R.H.P Nomination Form 1982). The

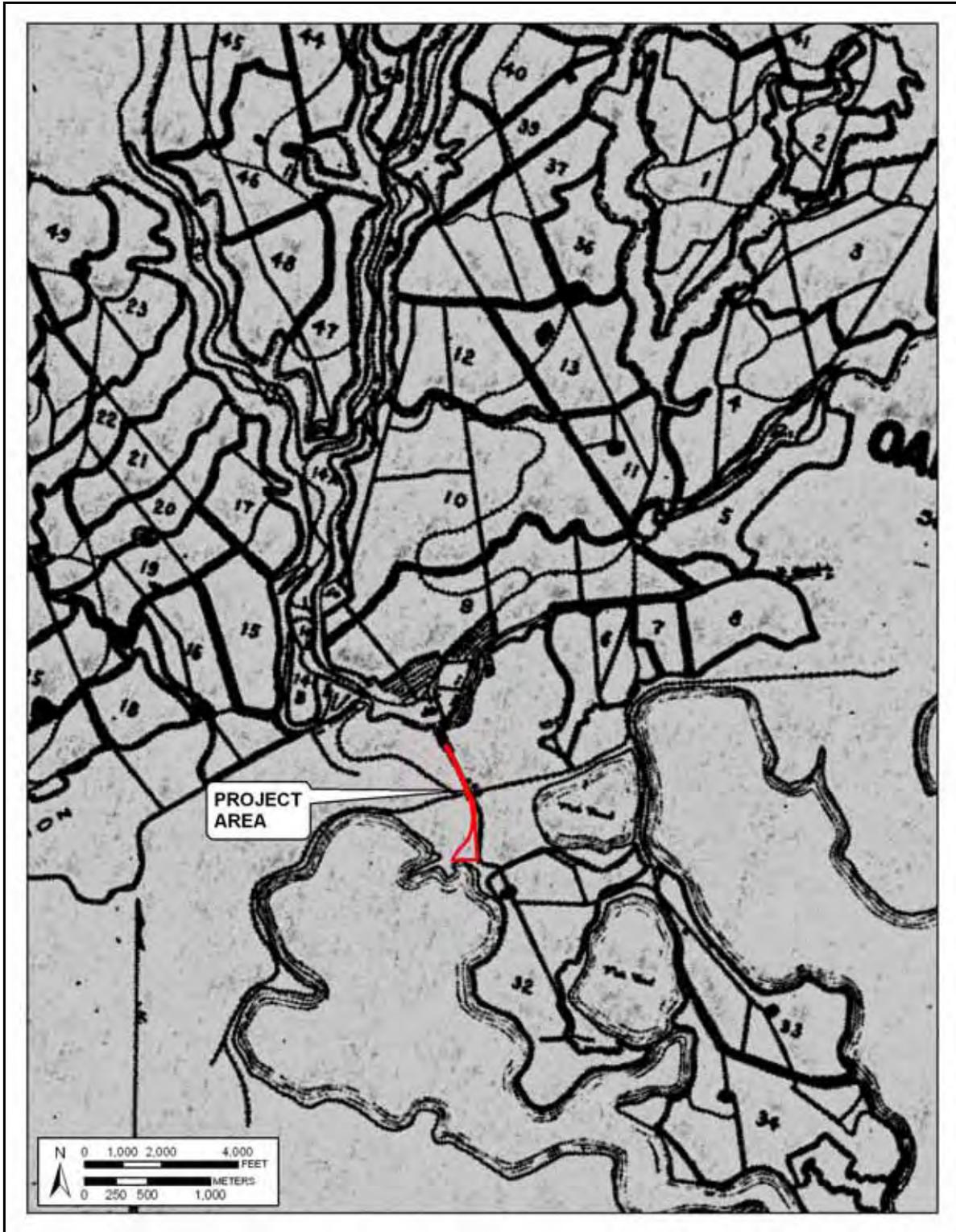


Figure 13. 1925 Oahu Sugar Company map showing the project area in relation to the Oahu Sugar Company's numbered parcels used for agriculture

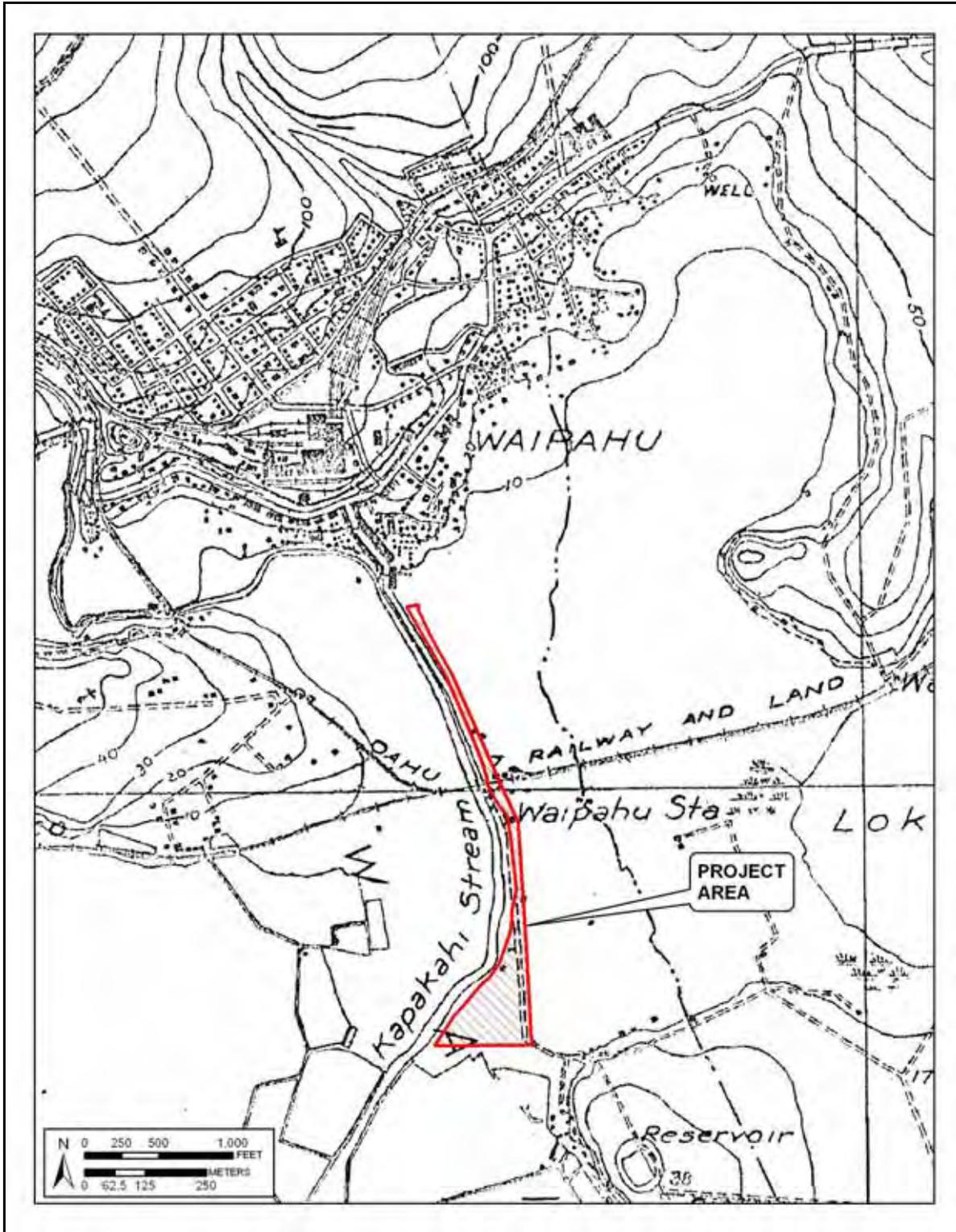


Figure 14. 1927 USGS map of Waipahu showing the project area in relation to the Oahu Railway & Land railroad tracks

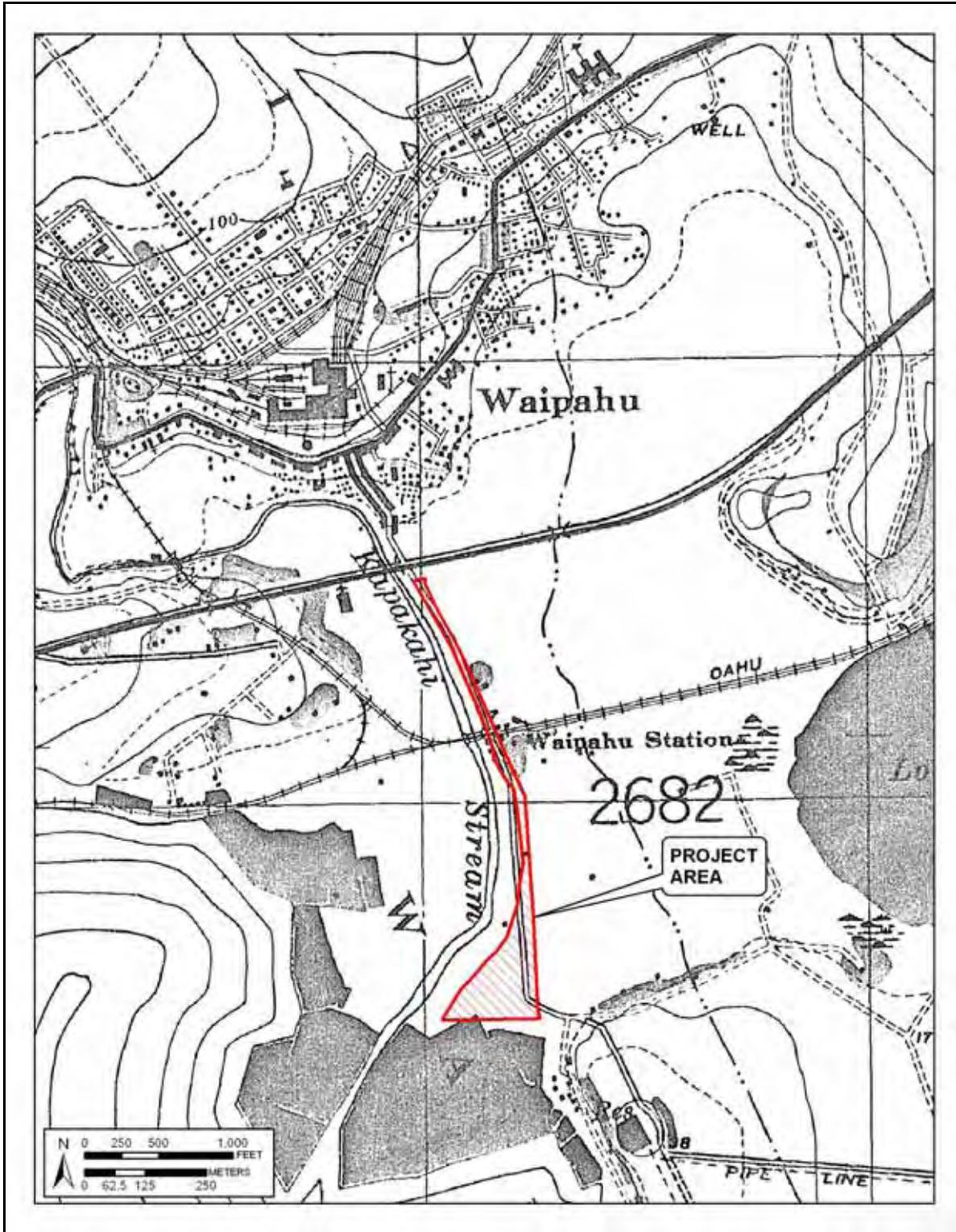


Figure 15. 1943 War map of Waipahu showing the project area in relation to the O.R. & L. railroad tracks

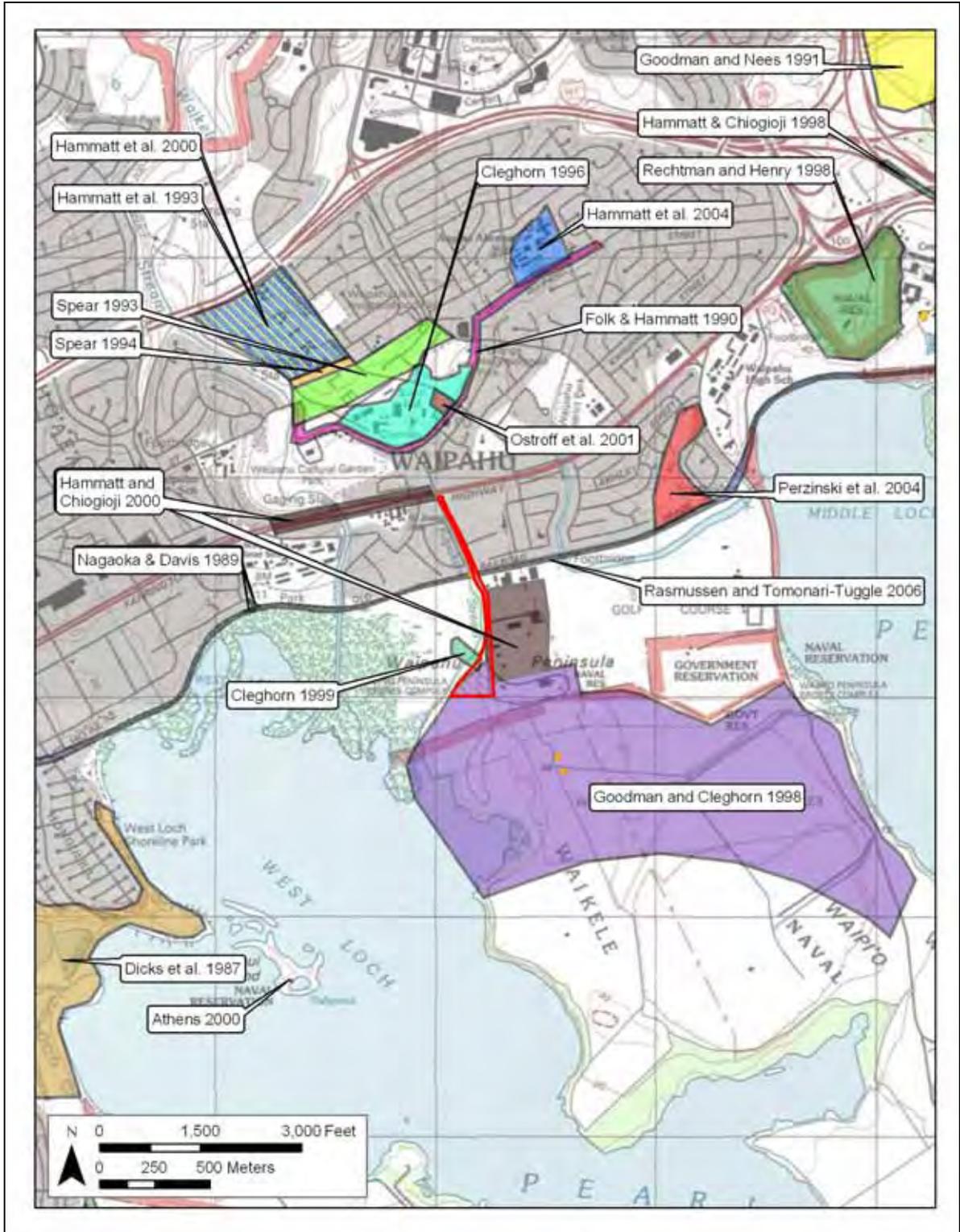


Figure 16. Map showing previous archaeological studies in the vicinity of the project area, outlined in red

railroad bridge was noted by Goodman and Cleghorn (1998) during an inventory survey. Further details of Goodman and Cleghorn's inventory survey follow below.

### **McAllister 1933**

Other archaeological sites within the ahupua'a of Waikele were recorded during the first attempt at a comprehensive survey of archaeological sites on the island of O'ahu which was accomplished by J. Gilbert McAllister (1933) of the Bishop Museum in 1930. McAllister recorded five sites within the *ahupua'a* and describes their condition at the time of the survey (refer to Figure 5):

Site 122 is Ahuena *heiau*

Only a small portion of paving of very small waterworn stones at the edge of a 25 foot elevations remains of what must have been an important *heiau*, for the site is known and remembered by all the old Hawaiians (*kamaaina*).

Site 127 is Mokoula *heiau*

...southwest of the main road in the village of Waipahu. The *heiau* has been completely destroyed for building purposes of the neighborhood. The site is at the edge of a 50-foot elevation which projects out into the present rice fields...

Site 128 is Waipahu spring

famous in tradition as the place at which the *tapa* mallet appeared after having been lost in Kahuku...A pump has been placed over the site.

Site 129 is a *heiau*

...said to have been named Hapupu. The Waipahu plantation stables on the mountain side of the road across from the schoolhouse west of the town now occupy the site of the former *heiau* at Waikele. Nothing remains of the *heiau*.

Site 139 is the Kalanamaihi fishing shrine at Kapapahu, Honouliuli

... are two large rough stones about 2.5 feet in size, with six or seven smooth stones averaging 1 foot in size in a small pile adjoining the larger stones. The entire site is covered with *akulikuli* and would not be noticed or considered if the Hawaiians did not know of its former sacredness.

The archaeological sites McAllister recorded are located amidst the profusion of habitation and work activity areas in the *makai* portion of Waikele discussed in the previous section of this report.

In more recent times, archaeological projects have been conducted in Waikele since the 1980s. These are summarized below, in chronological order.

### **Dicks et al. 1987**

An archaeological reconnaissance survey investigated the 216 acre West Lock Estates – Golf Course and Parks Project area. Seven sites were identified during the study. Historic and prehistoric habitation and burial sites were encountered. Also found were remnants of an

extensive agricultural system “which combined aquaculture in fishponds situated on the shores of West Loch, irrigated pondfield cropping of the floodplain, and dryland cultivation of the surrounding slopes and uplands.” Sites were assigned the following state identification numbers: 3318, 3319, 3320, 3321, 3322, 3323, and 3324. All of the sites were determined to be significant for their information content and/or cultural value.

### **Nagaoka and Davis 1989**

This archaeological investigation included subsurface testing and monitoring within a 7.93-acre parcel proposed for park development on the shore of Pearl Harbor. Results indicated likely prehistoric activity in the area.

### **Folk and Hammatt 1990**

This project consisted of reconnaissance and background historical research for the proposed Waipahu Street widening project. The authors identified the project area as "archaeologically sensitive" because historical data "point to present day Waipahu town as occupying the same physical space as the earlier traditional Hawaiian village of Waikele" (Folk and Hammatt 1990:9). Folk and Hammatt also indicate that the portions of the project area along Waikele Stream were never cultivated in sugarcane. They suggest that, because early historic and traditional Hawaiian archaeological remains are many times well preserved under urban streets and construction, it is likely that archaeological deposits would be encountered during excavation activities. They recommend monitoring during widening project.

### **Goodman and Nees 1991**

This archaeological reconnaissance and inventory survey spanned 3,600 acres in Waiawa Ahupua'a in the Ewa district. The study area extended from H2 in the south, Waiawa Gulch in the east, Dole pineapple fields to the west, and Kipapa Gulch to the north. A complex of rockshelters, terraces, and petroglyphs (State Site 2263) and a surface lithic scatter (State Site 2262) were found in the upland regions of the study area. Only three pre-Contact sites were identified in this entire region, indicating that historical land use in Waiawa may have destroyed much of the evidence of occupation during pre-Contact times. Historical modifications due to pineapple and sugar cane cultivation as well as railroad systems and activities of the U.S. military were documented.

### **Hammatt et al. 1993 & Hammatt et al. 2000**

This archaeological investigation covered a 39.6 acre parcel in the *ahupua'a* of Waikele inland from West Loch and running along H1. This study area contained two archaeological sites – State Site 50-80-09-530, a petroglyph field, and State Site 50-80-09-4660, remnants of the former Oahu Sugar Plantation camp. Most of the activity that had taken place on this site from the 1890s to the present was associated with the sugar industry, including sugar cane cultivation and the construction of the plantation community. It was deemed unlikely that any subsurface archaeological resources would remain.

### **Spear 1993 & 1994**

This reconnaissance survey was conducted at the site of proposed rezoning and development of the Oahu Sugar Mill (TMK: 9-4-02: various). No significant archaeological sites were located in the project area and no further investigations were recommended.

### **Cleghorn 1996**

This inventory survey investigated 23 acres surrounding and including the Oahu Sugar Mill in Waipahu. The mill and associated buildings comprised 60% of the project area. The remainder comprised Skill Village, a plantation supervisors' residential area. No surface archaeological sites were observed within the project area.

### **Goodman and Cleghorn 1998**

This inventory survey investigated approximately 200 acres on Waipio Peninsula at Pearl Harbor. Three archaeological sites were observed: a fishpond wall remnant, a sugar cane-era pumping station complex, and a railroad bridge and right-of-way (ROW) for a portion of the Oahu Railway and Land Company. Goodman and Cleghorn state that this ROW and railroad bridge are a part of the historic property SIHP 50-80-12-9714 which was placed on the National Register of Historic Places (NRHP) in 1975, however, this portion of the railroad tracks was deemed ineligible for inclusion in the NRHP in 1982 because the tracks were no longer present. Goodman and Cleghorn noted that the O.R.&L. iron railroad bridge spanning Kapahaki Stream and an access tunnel extending under Farrington Highway were the only remaining features of the railroad. Backhoe testing did not reveal any cultural deposits associated with traditional Hawaiian habitation and activity. The investigation noted that the original landscape within this portion of Waipi'o Peninsula had been "buried with up to 3 [meters] of fill."

### **Hammatt and Chiogioji 1998**

This archaeological assessment studied the highway corridor along H1 starting at Halawa and continuing to the H1-H2 interchange. No surface archaeological sites were observed along this corridor, however a number of historic buildings, including wood-frame houses, Pearl City Fire Station, and Pearl City Hongwanji Buddhist temple were identified. Urban development along the highway corridor likely removed all pre-Contact cultural sites.

### **Rechtman and Henry 1998**

An archaeological reconnaissance survey was carried out at the Red Hill Fuel Storage facility and the Ewa Drum Filling and Fuel Storage facility. No archaeological sites were identified as expected due to the amount of disturbance and development in the study area.

### **Cleghorn 1999**

A walk through survey was conducted along a 100 foot wide corridor across the O.R.&L. right-of-way (ROW), across Kapahaki Stream, and ending at Waipahu Depot Rd. (within the current project area) for a proposed irrigation line for the Waipio Peninsula Soccer Park. The O.R.&L. ROW was clearly visible. Archaeological monitoring was recommended for trenching

within the ROW to allow for collection of data on railroad construction methods. The erosional banks of Kapahaki Stream were also investigated. Wild mangrove was noted along the stream banks, however no evidence of subsurface cultural deposits was observed.

### **Athens et al. 2000**

An archaeological study was carried out on U.S. Navy lands in order to investigate the invention and development of fishponds. The study included fishponds located throughout Pearl Harbor, including Loko Eo and Loko Hanalo on the Waipio Peninsula and other fishponds within West Loch. Advances in the <sup>14</sup>C dating method have made dating marine samples feasible and more accurate. The Pearl Harbor fishpond study strived to make use of these new dating methods to create a previously impossible timeline for fishpond construction. Results indicated that the oldest of the fishponds appear to have been constructed after AD 1200-1300. Two of the fishponds dated to AD 1540-1791 and AD 1552-1809. One appears to date to after AD 1436-1636. They find no indication of early fishpond construction.

### **Hammatt and Chiogioji 2000**

This inventory survey investigated approximately 40 acres along Manager's Drive in Waipahu for Castle and Cook Homes. It located two historic properties: a previously identified historic property, pre-Contact petroglyphs designated SIHP 50-80-09-0530 and a former Oahu Sugar Company plantation camp named Higashi Camp designated SIHP 50-80-09-4660. No surface archaeological sites associated with traditional Hawaiian occupation were observed in any portion of the study area. The land fill (identified as up to 3 meters deep in portions of Waipi'o Peninsula just south of the study area) and modern building activities have eliminated any remnant sites. Additionally, intact subsurface evidence of traditional Hawaiian occupation would have been similarly eliminated during the decades of rice farming in the study area.

### **Ostroff et al. 2001**

An inadvertent discovery of human remains occurred during the installation of a new storm drain at the Filipino Community Center in Waikele. The remains were designated State Site number 50-80-09-5882 in the State's Inventory of Historic Places (SIHP). The FilCom center resides on the Old Oahu Sugar Company property. The burial was determined to be an articulated Native Hawaiian adult found in a flex position and in a stratum devoid of historic materials.

### **Hammatt et al. 2004**

An archaeological assessment and cultural impact evaluation took place for a street drainage improvement project in Waipahu Town. The study area was a fully developed portion of a residential neighborhood. This parcel of land had also undergone extensive crop cultivation in historic times. As expected, no historic properties or cultural remains were found.

### **Perzinski et al. 2004**

This archaeological inventory survey covered 13.219 acres in the *ahupua'a* of Waipi'o in the Ewa district near to the coastline of Middle Loch. The parcel was found to contain a thick

cultural layer dating back to the period spanning a range of dates around AD 1400 potentially corresponding to the time that Kunana Fishpond and Loko Eo were built. Two human burials were also encountered. This parcel was also the location of the Brown Estate and remnants of historic structures from this estate were also found.

### **Rasmussen and Tomonari-Tuggle 2006**

Archaeological monitoring was carried out along the Waiiau Fuel Pipeline which runs across multiple *ahupua'a*, including Waikele in the vicinity of Waipio Peninsula. No materials of significance were uncovered during monitoring and most of the sediments along the pipeline consisted of fill.

### 3.3 Background Summary and Predictive Model

Historic documentation and modern scholarship have identified the southern, *makai* (seaward) portion of Waikele Ahupua`a — where the present study area is located — as an extensive complex of fishponds, agricultural fields, house lots, and pasture land that had evolved in traditional Hawaiian times before western contact. Waikele itself was known as a residence place of the *ali`i*, the Hawaiian royalty, and was often referenced in Hawaiian legends and traditions.

Native Hawaiian activity and habitation at the middle of the 19<sup>th</sup> century continued to be clustered in the *makai* lowlands around the meander of Waikele Stream (or Kapakahi Stream) and the fishponds near the coast. Land Commission Award (LCA) documents from the *Mahele* indicate that the present study area comprised small fishponds, taro *lo`i* (irrigated fields), and, possibly, houselots that continued to be utilized at mid-19th century.

During the later 1800's, the taro fields and fishponds in the present study area were converted to rice fields as Chinese immigrants began to lease and purchase Waikele lands. By 1892, the study area was located within an expanse of rice fields that extended from Waikele to Waiau.

It appears that portions of the study area continued to be planted in rice until the end of the 1930s. With the United States' entry into World War II, lands and fishponds of Waipi`o Peninsula that had not been previously developed for military purposes were appropriated by the United States government and filled in. (The entire study area is identified as “fill land” and “tropaquepts” in the soil survey of O`ahu, [Foote *et al.* 1972: map sheet no. 53, Figure 4].)

Historic rice cultivation followed by modern land filling – beginning during World War II – have very likely disturbed or destroyed any Native Hawaiian sites that may have existed in the area. If Native Hawaiian cultural layers are present, they would most likely contain evidence of taro agriculture and house sites. This region remained very active through historic times, as evidenced by the construction of Waipahu Depot Street and the railroad tracks that pass through the project area. It is probable that railroad tracks and associated structures will be present. Cultural artifacts associated with the railroad and transport of war materials may also be present.

## Section 4 Results of Fieldwork

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Upon the request of Environmental Planning Solutions, LLC --- Environet, Inc., Cultural Surveys Hawai'i, Inc (CSH) carried out a field check of 9.2 acres along a portion of Waipahu Depot Street and the surrounding area located in the Waikele Ahupua'a, Ewa District, Island of Oahu, TMK [1]-9-03-002: 009. The fieldwork took one person day to complete and consisted of a surface inspection carried out by Matthew J. Bell. GPS locations and photographs were taken at all features or locations of interest as shown in Figure 17.

Nearly the entire surface of the study area has been altered through bulldozing and fill events. The eastern edge of Waipahu Depot Street is entirely developed up to a low gate near the southern end of the study area. Kapakahi Stream itself has been partially channelized with local terrigenous sediments. No pre-Contact surface features were noted during the investigation, but some historic plantation era infrastructure remnants were noted. Of the greatest concern is the Oahu Railway and Land Company (O.R.&L.) railroad bridge (shown in Figure 18 and Figure 19) that crosses the central portion of the project area. This bridge will be discussed in greater detail in section 4.1.2 below.

### 4.1.1 Northern Portion of the Project Area

The portion of the project area to the north of the O.R. & L. railroad bridge runs closely along Kapakahi Stream. It is an urban area with no surface historical properties. Residences and businesses run along the eastern boundary of this portion of the project area. A very large building, probably a car dealership, was under construction at the time of the field check near to Farrington Highway (Figure 20). Utilities and drains are visible in the banks of the stream (Figure 21) and running along the roadway indicating some level of previous disturbance. A steel pipe runs the entire length of Waipahu Depot Street, intermittently visible until the roadway turns while the pipe continues straight ahead (Figure 22). A retaining wall made of boulders and concrete supports the steeply sloped banks of the Kapakahi Stream in this area (Figure 21). A 4 meter x 1 meter collection of concrete bricks stamped "AP GREEN 1A" form the remnants of an old pavement at the corner of Ha'akoa Place and Waipahu Depot Street (Figure 23).

### 4.1.2 Central Portion of the Project Area

As noted above, an O.R. & L. railroad bridge (Figure 18) and right-of-way (ROW) runs east/west through the central portion of the project area. The bridge is constructed of riveted and welded steel and measures approximately 5.9 meters wide by 18 meters long. O.R.&L built a main railroad line that ran from Honolulu to Kahuku in 1889 and continued build connecting lines throughout the 1890's to various locations, such as the Oahu Sugar Company. The steel railroad bridge noted during the field investigation was once a part of the O.R.&L. railroad. A 13-mile long portion of the O.R.&L. railroad was placed on the National Register of Historic Places in 1975 and assigned SIHP #50-80-12-9714. The portion of the O.R.&L. that runs through the project area was determined ineligible to the National Register due to the absence of the original tracks (O.R.L. N.R.H.P Nomination Form 1982). While studying a 200 acre parcel of land for the development of the Waipio Peninsular Soccer Park, archaeologists Goodman and Cleghorn (1998) noted the ROW and determined that the railroad bridge spanning Kapakahi

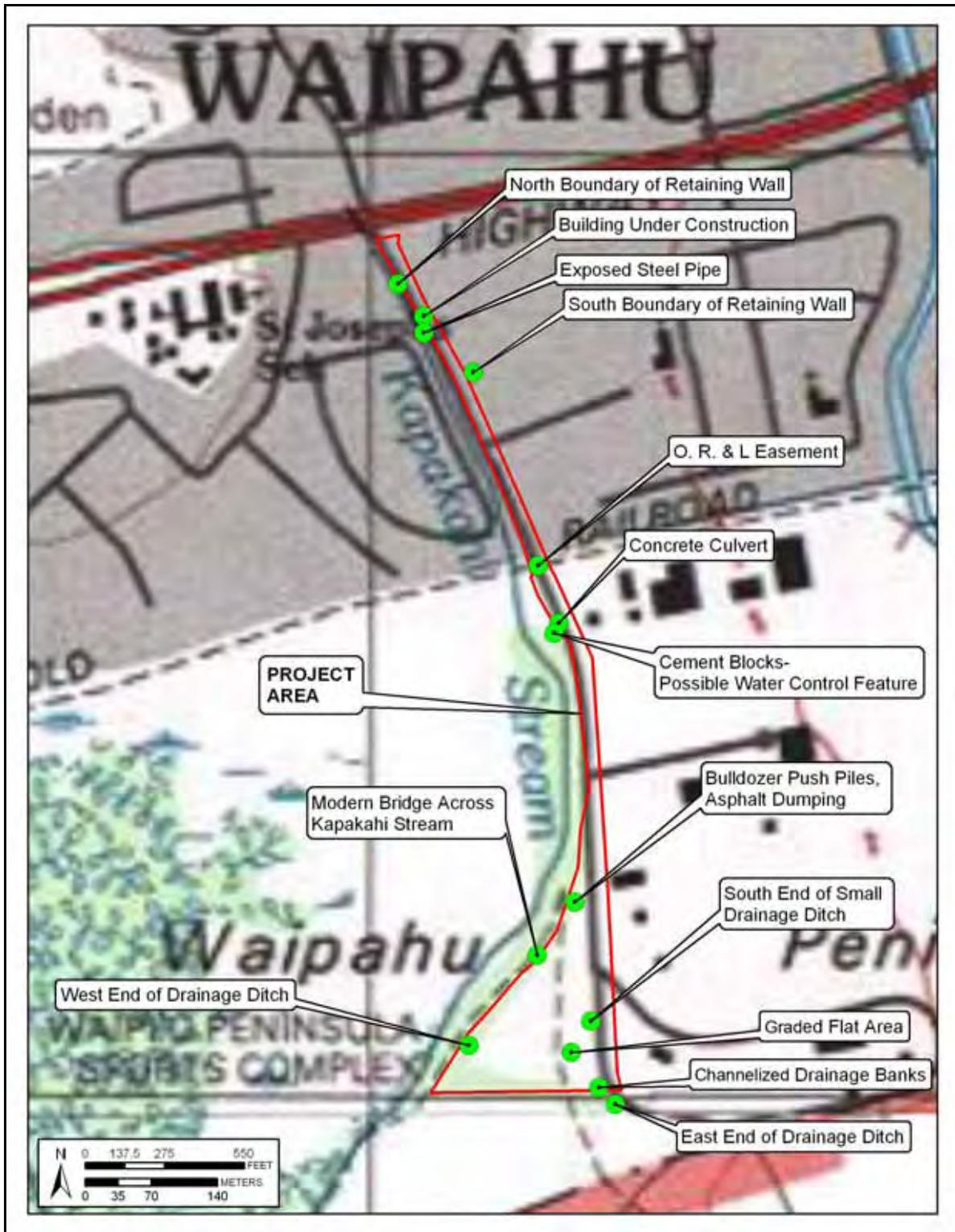


Figure 17. Map showing the GPS locations of various structures and areas of interest throughout the study area



Figure 18. Photograph of the O.R. & L. Bridge across Kapakahi stream, looking south



Figure 19. Photograph of the O.R. & L. Bridge looking west at utility lines crossing the bridge.



Figure 20. Photograph of a new building under construction along Waipahu Depot Street, most likely a car dealership



Figure 21. Photograph of a retaining wall and utility pipe along Kapakahi Stream; view to the north



Figure 22. Photograph of the steel pipe visible intermittently along Waipahu Depot Street; view to the north



Figure 23. Photograph of and old pavement of cement bricks reading "A.P. Green 1A"

Stream and an access tunnel beneath Farrington Highway were the only existing remnants of the railroad line. No further study of the bridge was completed. At the present, it is used to allow modern utilities to cross Kapakahi Stream (Figure 19). The associated railroad ROW, located to the east, appears to be used as parking lots (Figure 24).

#### 4.1.3 Southern Portion of the Project Area

The project area continues to the south of the railroad bridge, widening as the stream curves to the west and Waipahu Depot road continues straight to the south. No surface historic properties are present in this area. The eastern boundary follows Waipahu Depot Street until it curves sharply to the east. A police academy and a waste transfer station lie along this border (Figure 25). The western boundary continues to follow Kapakahi Stream. Where the stream and the road are close together, the area between the two is grubbed, graded, and regularly mowed and used for parking. Two large concrete blocks measuring about 1m x 2m each have been placed in the west half of the stream in this vicinity, potentially for water control.

The triangular patch of land between the stream and Waipahu Depot Street in the southernmost part of the project area is highly modified. The high elevation of this portion suggests that it is most likely a result of landfill. Very recent modifications and disturbances noted in this area are as follows: 1) Bulldozer pushpiles consisting primarily of asphalt were observed, implying significant bulldozer activity in the area; 2) A massive amount of mulch had been recently dumped along the east bank of Kapakahi Stream (Figure 27); 3) Comparison of the current cleared state of the stream banks with their mangrove-covered state in relatively recent aerial photos taken from Google Earth show that grubbing has occurred in the very recent past (Figure 28); 4) Two large drainage ditches flow through this portion of the project area. One ditch lies near the southern boundary and merges into Kapakahi Stream (Figure 28). The second ditch, a short ways north, closer to the railroad bridge, is smaller and drier; 5) A bulldozed flat area with coral rubble approximately 4 meters above road grade is located at the center of this triangular area of land (Figure 29); 6) A modern concrete and steel I-beam bridge crosses Kapakahi Stream in this area as well (Figure 30).



Figure 24. Photograph of the O.R. & L. alignment due east from Kapakahi bridge.



Figure 25. Photograph of Waipahu Depot Road and the graded stream bank across the street from the police academy; view to the northeast



Figure 26. Photograph of concrete blocks in Kapakahi Stream potentially used for water control



Figure 27. Photograph of bulldozer pushpiles of mulch on the back of Kapakahi Stream, modern bridge in the background; view to the north



Figure 28. Photograph of the cleared, mulched banks of Kapakahi Stream and the confluence with the large drainage ditch at the south end of the project area; view to the southwest



Figure 29. Photograph of the elevated gravelly, coral cobbly area; view to the northwest



Figure 30. Photograph of modern bridge crossing Kapakahi Stream, photo scale is 1 meter long; view to the northwest

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## Section 5 Traditional Cultural Practices

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Traditional cultural practices are based on a profound awareness concerning harmony between man and our natural resources. The Hawaiians of old depended on these cultural practices for survival. Based on their familiarity with specific places and through much trial and error, Hawaiians communities were able to devise systems that fostered sustainable use of nature's resources. Many of these cultural practices have been passed down from generation to generation and are still practiced in some of Hawai'i's communities today.

This project seeks to assess traditional cultural practices as well as resources pertaining to the project area within Waikele Ahupua'a. This section will convey the different types of traditional practices, cultural resources associated with the vicinity.

### 5.1 Gathering for Plant Resources

Many of the plants within the project area are exotic or introduced species such as *kiawe* trees (*Prosopis pallida*) or *koa haole* (*Leucaena leucocephala*) (Figure 31). Grasses cover much of the graded areas and shrubs are found along the stream banks. Castor bean (*Ricinus communis*) lies amidst other low lying plants in the mulch piles along Kapahaki Stream (Figure 32). Many of the plants found in the project area are those that grow very quickly after bulldozing has taken place and it is obvious that the project area has recently been altered and graded.

While many of these species do have ethnographic uses, all of the species observed within the project area are commonplace and can be found elsewhere. The altered and graded condition of the project area also makes it less likely that people are regularly collecting plants from this property. Regardless, the proposed improvements to Waipahu Depot Street and a potential boardwalk within the project area will have very little impact on the existing plant species and will only allow better access to any plants that may be used for cultural purposes.

### 5.2 Marine and Freshwater Resources

The present project area lies along Kapakahi Stream (Figure 22). Nearby residents may use the project area to this stream for fishing or crabbing. If this practice is going on, then the improvements to Waipahu Depot Street and the potential construction of a boardwalk for bird watching will most likely improve access to Kapakahi Stream as opposed to hindering it. The proposed improvements to the project area are unlikely to disturb any fishing or other practices associated with Kapakahi Stream.

### 5.3 Historic Properties

During this field inspection, one historic site was identified. SIHP 50-80-12-9714 is an Oahu Railroad and Land Company (O.R.&L.) railroad bridge and right-of-way (Figure 18). The bridge and an access tunnel beneath Farrington Highway are the only remainders of the railroad tracks and station that used to run through the area (Goodman and Cleghorn 1998). Based on the current understanding of the proposed Waipahu Depot Street road improvements, this historic



Figure 31. Photograph of *kiawe* trees and a *koa haole* tree within the project area



Figure 32. Photograph of Castor Bean plants amongst other low lying plants along Kapahaki Stream

property will not be disturbed. However, if plans change, the affect to this property must be taken into consideration.

The remainder of an old pavement of undetermined age was observed at the corner of Ha'akoa Place and Waipahu Depot Street. The bricks that make up this pavement read "A.P. GREEN 1A" (Figure 23). If road improvements will disrupt these bricks, their status as a historic property should be determined.

## 5.4 Burials

The portion of the project area along the banks of Kapakahi Stream has historically been a location for taro and rice agriculture. LCAs indicate that residences were maintained within the project area as well, farther from the wetland areas around the stream.

It is unlikely that land used for agriculture would also be used for burials. Furthermore, the proposed Waipahu Depot Street improvements involve only shallow excavations (18" or less). Due to these two factors, it is unlikely that burials will be discovered or disturbed during this project. However, because residences did exist on portions of the project area, the presence of burials cannot be ruled out.

## 5.5 Trails

Nineteenth and twentieth century maps show that the primary travel routes closely followed the existing major roadways. Farrington Highway lies just a few feet north of the present project area and was (and still is) a major roadway through the region. The close proximity of a major pre-contact trail/early post-contact road may have increased use of the project area in pre-contact and early post-contact times.

A number of fishponds are located throughout Waipio Peninsula, including the former Loko Ulumoku (fish pond) (refer to Figure 9) just south of the project area. It is possible that those who tended or fished Loko Ulumoku would use a trail through the project area or perhaps along Kapahaki Stream as a convenient method to access the fishpond. Based on these investigation results, the proposed project is unlikely to affect traditional access or trails.

## 5.6 Summary of Traditional Cultural Practices

Cultural practices related to areas within the project area or associated with Kapahaki Stream are unlikely to be disturbed by the proposed Waipahu Depot Street improvements and the potential construction of a boardwalk for bird watching. Road and boardwalk construction do not involve deep excavation and are unlikely to encounter burials, which are less likely to be present due to the agricultural history of the land. It is unlikely that a portion of the one historic property (O.R.&L. railroad bridge) identified within the project area will be affected by construction and this should be taken into consideration when plans are finalized. The remainder of an old pavement may qualify as a historic property and should be investigated if construction may affect the pavement. Access to the property and stream should not be hampered by this project. If anything, Kapahaki Stream and the areas serviced by Waipahu Depot Road will become more accessible after the completion of these improvements.

## Section 6 Summary and Interpretation

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This field investigation was requested in preparation for upgrades to Waipahu Depot Street, including widening to accommodate the addition of a sidewalk and bike lane along the existing roadway. A wall may be built along the road in the areas that are very close to Kapahaki Stream. Other developments potentially include the installation of a boardwalk on the land between Kapahaki Stream and Waipahu Depot Street for bird watching, however the plans for this are still uncertain at the time of writing this report.

Based on background research, subsurface deposits relating to agriculture and habituation may be encountered if excavation is undertaken in the study area. The likelihood of encountering burials appears to be low, but is a possibility. The number of pre-Contact residences in the area may mean family graves sites may be nearby, but along the banks of the stream where active agriculture was taking place is not the most likely place potential burials would be found.

During the field inspection, no surface archaeological sites associated with traditional Hawaiian occupation were observed in any portion of the study area. The landfill and modern land use, including bulldozing, installation of support structures along the stream bank, and removal of vegetation, have likely eliminated any remnant sites. Additionally, intact subsurface evidence of traditional Hawaiian occupation would have been similarly eliminated during the decades of rice farming in the study area.

An old pavement is located at the corner of Ha'akoa Place and Waipahu Depot Street. The bricks that make up this pavement read "A.P. GREEN 1A" (Figure 23). If road improvements will disrupt these bricks, their potential status as a historic property should be determined.

A historic railroad bridge, built by the Oahu Railroad & Land Company, remains within the project area and is currently used to support utility lines that cross the stream. This bridge is a part of the State Inventory of Historic Properties number 50-80-12-9714 and is the only known remnant of the railroad in the area. This portion of the O.R.&L. railroad has already been determined ineligible to the National Register because it has lost its integrity, for example, its tracks and railroad ties are no longer present.

Culturally, the impact of this proposed project will most likely be minimal. It is unlikely that burials will be located within much of the project area as, historically, the land has been used for agriculture. House sites were present within the project area, however, so burials cannot be ruled out. The project excavation depth of only 18" makes it less likely that burials could be disturbed. Another consideration is access to Kapahaki Stream and the vegetation within the project area, however improvements to the road and construction of a boardwalk should aid access rather than hinder it.

## Section 7 Recommendations

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Based on the current understanding of the intended construction plans, a portion of the one previously identified historic property (O.R.&L. railroad bridge) within the project area will not be affected by construction work. However, it should be emphasized that this recommendation is made based on *the current understanding of the project plans* as provided by the client, Environmental Planning Solutions, LLC --- Environet, Inc.

Much of the land within the project area is landfill over previous wetlands used for taro and rice cultivation. This area has a long history of agriculture and land modification in more modern times, including the building of Waipahu Depot Street and a number of residences and businesses in the immediate vicinity.

Based on the current construction plans for the upgrades to Waipahu Depot Street – widening and improving the road, adding sidewalks and a bike lane, with the deepest excavation depth of 18” – no monitoring is recommended. Excavation at that shallow depth will most likely stay within the fill and not extend into natural sediments.

Culturally, the proposed Waipahu Depot Street improvements and potential construction of a boardwalk should not disturb any cultural practices going on within the project area. There are no unique plants or animals within the project area and, if there are cultural gathering practices or water-related activities occurring, access to plants within the project area and access to Kapahaki Stream will not be hampered by construction. It is unlikely that burials exist within the project area or that they will be disturbed by the shallow excavations, but the possibility cannot be ruled out.

Based on the results of this investigation, it is unlikely the proposed project will affect on-going cultural practices. It also seems unlikely that the project will affect significant historic properties. It is recommended that the project proponents use this investigation to facilitate consultation with SHPD regarding appropriate cultural resource management measured for the project.

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