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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
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January 27, 2012

TO: GARY HOOSIER, DIRECTOR  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
DEPARTMENT OF HEALTH

FROM: GLENN M. OKIMOTO, Ph.D.  
DIRECTOR OF TRANSPORTATION *Glenn M. Okimoto*

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR KUMAU STREET  
ENTRANCE IMPROVEMENTS AT PIER 4, INTERISLAND CARGO  
TERMINAL PROJECT, HILO HARBOR, ISLAND OF HAWAII, HAWAII

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The Department of Transportation Harbors Division, has reviewed the Draft Environmental Assessment for the subject project. Under HRS Chapter 343, the Department anticipates a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, one copy of the document in pdf format, and two copies of the Draft EA and the project summary on disk. Please call Bert Toba, HMP Development Officer, at 586-2455 if you have any questions.

Enc.

## OEQC Publication Form The Environmental Notice

### Instructions to Applicant or Agency:

1. Fill out this Publication Form and email to: [oeqc@doh.hawaii.gov](mailto:oeqc@doh.hawaii.gov)
2. Send one (1) pdf and one (1) hardcopy of the EA / EIS to OEQC

**Name of Project:** Kumau Street Improvements at Pier 4 Interisland Cargo Terminal Project, Hilo Harbor, Island of Hawai'i, Hawai'i

**Applicable Law:** Ch. 343 HRS

**Type of Document:** Draft Environmental Assessment

**Island:** Hawai'i

**District:** Hilo

**TMK:** (3) 2-1-007: 005, 007, 052

**Permits Required:**

- DOT Plan Review and Approval
- NPDES NOI Forms C & F
- Community Noise Permit

**Name of Applicant or Proposing Agency:** State of Hawai'i  
Department of Transportation, Harbors Division

Address: 79 South Nimitz Highway  
City, State, Zip: Honolulu, Hawai'i 96813  
Contact and Phone: \_\_\_\_\_, XXX-XXXX

**Approving Agency:** State of Hawai'i  
Department of Transportation, Harbors Division

Address: 79 South Nimitz Highway  
City, State, Zip: Honolulu, Hawai'i 96813  
Contact and Phone: \_\_\_\_\_, XXX-XXXX

**Consultant:** R. M. Towill Corporation

Address: 2024 N. King Street, Suite 200  
City, State, Zip: Honolulu, Hawai'i 96819-3494  
Contact and Phone: Brian Takeda, Project Coordinator, (808) 842-1133

**Project Summary:** Summary of the direct, indirect, secondary, and cumulative impacts of the proposed action (less than 200 words).

The proposed project involves the construction of improvements to Kumau Street to provide an alternative entryway for commercial and other vehicles into Hilo Harbor. Hilo Harbor is a vital Department of Transportation, Harbors Division (DOT-H) facility supporting the importation and shipment of commodities, goods, and products important to the economy and quality of life for the Island of Hawai'i and the State. The project purpose is to facilitate and integrate with the future planned completion of the Pier 4, Interisland Cargo Terminal at Hilo Harbor, as previously identified in the Hawai'i Commercial Harbors 2020 Master Plan, Final EIS. The Pier 4 Terminal will accommodate projected future increases in interisland cargo volume that will utilize the proposed access through Kumau Street.

A NPDES permit for the discharge of construction related stormwater will be filed. A Best Management Practices (BMPs) Plan will be submitted to control and treat the discharge of pollutants into receiving waters. The direct impacts related to construction activities will be contained within the property and should not create any indirect, secondary or cumulative impacts within the property or to adjacent properties.

The proposed project is not expected to result in significant adverse impacts to geology, soils, biological resources, air quality, natural hazards, cultural resources, socio-economics, or land uses. Minimal impacts may consist of minor traffic, noise and air quality disturbances to the surrounding area of the site, however impacts will be temporary, and conditions will return to their previous state once construction is complete.

Hawai'i Revised Statutes, Chapter 343, Draft Environmental Assessment

***Kumau Street Entrance Improvements at  
Pier 4, Interisland Cargo Terminal Project***

Hilo Harbor, Island of Hawai'i, Hawai'i

January 2012

State of Hawai'i  
Department of Transportation  
Harbors Division  
Hale 'Awa Ku Moku Building  
79 South Nimitz Highway  
Honolulu, Hawai'i 96813-4898

R. M. Towill Corporation  
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HRS, Chapter 343  
Draft Environmental Assessment  
***Kumau Street Entrance Improvements at  
Pier 4, Interisland Cargo Terminal Project***  
Hilo Harbor, Island of Hawai‘i, Hawai‘i

January 2012

Prepared for:

State of Hawai‘i  
Department of Transportation  
Harbors Division  
Hale ‘Awa Ku Moku Building  
79 South Nimitz Highway  
Honolulu, Hawai‘i 96813-4898

Prepared by:

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**Appendix B** – Soils Investigation, Kumau Street Entrance Improvements, Pier 4, Interisland Cargo Terminal, Hilo Harbor, Hilo Hawai‘i, Job HMP 60906, Hirata & Associates, Inc., September 2010.

**Appendix C** – Archaeological Literature Review and Field Inspection for the Proposed Kumau Street Entrance Improvements, Pier 4, Hilo Harbor, Island of Hawai‘i, Cultural Surveys Hawai‘i, Inc., August 2010.

## ***Section 1***

### ***Project Summary***

<b>Project</b>	Kumau Street Improvements at Pier 4 Interisland Cargo Terminal Project, Hilo Harbor, Island of Hawai'i, Hawai'i
<b>Applicant</b>	Department of Transportation, Harbors Division
<b>Accepting Agency</b>	Department of Transportation, Harbors Division
<b>Agent</b>	R. M. Towill Corporation
<b>Location</b>	Hilo Harbor, Island of Hawai'i, Hawai'i
<b>Proposed Action</b>	Widening of Kumau Street on both sides, Kalaniana'ole Avenue (approximately 240 feet west of the Kumau Street intersection and approximately 375 feet east of the Kumau Street intersection), and Road "A" paving (approximately 100 feet east of the Kumau Street intersection).
<b>Site Determined</b>	Yes
<b>Present Use</b>	Road Right-of-Way. Immediate adjacent uses are industrial district uses.
<b>Tax Map Keys (TMKs)</b>	(3) 2-1-007: 052, State of Hawai'i (3) 2-1-007: 005; 007, Private
<b>Total Parcel Area/Project Site</b>	1.7 acres
<b>Flood Insurance Rate Map (FIRM)</b>	Flood Zone D
<b>State Land Use District</b>	Urban
<b>Special Management Area</b>	Yes
<b>County of Hawai'i Zoning</b>	General Industrial District (MG)
<b>Land Owners</b>	See Above
<b>Permits That May be Required</b>	Community Noise Permit; NPDES NOI Forms C & F, DOT Plan review and approval
<b>Anticipated Determination</b>	Finding of No Significant Impact (FONSI)

## ***Section 2 Project Purpose and Location***

### ***2.1 Purpose of Project***

The proposed project involves the construction of improvements to Kumau Street to provide an alternative entryway for commercial and other vehicles into Hilo Harbor. Hilo Harbor is a vital Department of Transportation, Harbors Division (DOT-H) facility supporting the importation and shipment of commodities, goods, and products important to the economy and quality of life for the Island of Hawai'i and the State.

Commercial harbor operators using the harbor range from major cargo carriers including Matson and Young Brothers, to cruise ship and boating operators, commercial fishermen, and charter boat operators. Other operations including agricultural services, cement and petroleum distribution are also located at the harbor.

The purpose of the proposed project is to facilitate and integrate with the future planned completion of the Pier 4, Interisland Cargo Terminal at Hilo Harbor, as previously identified in the Hawai'i Commercial Harbors 2020 Master Plan, Final EIS<sup>1</sup>. The Pier 4 Terminal will accommodate projected future increases in interisland cargo volume that will utilize the proposed access through Kumau Street.

Kūhiō Street, the main entrance to the harbor accommodates cargo and passenger traffic. The demand for this project stems from the need for an alternative entryway to provide greater accessibility and an alternative means for container movement at the west end of the harbor near Kalaniana'ole Avenue. Kumau Street is presently too narrow to adequately accommodate the movement of tractor trailers hauling shipping containers. Widening the road will provide easier passage of the cargo containers and other vehicles transporting wide and heavy loads. The proposed project will provide a solution by widening Kumau Street to serve as an additional entrance, thus alleviating congestion on Kūhiō Street.

The project will benefit harbor users by decreasing the volume of traffic on Kūhiō Street by diverting container and heavy truck movement from this location to Kumau Street. The diversion of container and heavy truck traffic will reduce congestion on Kūhiō Street and improve the reliability and efficiency of the planned Pier 4, Interisland Cargo Terminal.

### ***2.2 Purpose of Environmental Assessment***

The purpose of this Environmental Assessment (EA) is to address the requirements of Hawai'i Revised Statutes (HRS), Chapter 343, and Hawai'i Administrative Rules (HAR), Chapter 11-200. The specific action that requires the preparation of this EA includes the use of state or county lands and/or funds for development.

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<sup>1</sup> The planned expansion of Pier 4 is described in the Final EIS for the Hawai'i Commercial Harbors 2020 Master Plan, July 2001, DOT Harbors Division. This Environmental Assessment provides further detail for the proposed Kumau Street improvements.

This EA provides information and evaluation of the potential for adverse environmental impacts on the natural and built environment associated with the proposed project. This EA will also inform interested parties of the proposed project and seek public comment on relevant environmental issues that should be addressed during preparation of the Final EA.

### *2.3 Project Location*

Kumau Street is located on the west side of Hilo Harbor on the Island of Hawai'i. It is less than half a mile away from both Hilo Harbor and Kūhiō Street. Kumau Street is less than one tenth of a mile in length and runs perpendicular to Kūhiō Bay and Kalaniana'ole Avenue. At the south or mauka terminus of Kumau Street, the project also involves improvements to Kalaniana'ole Avenue near its intersection with Kumau Street. Near the makai end of Kumau Street, Road "A" will be paved from Kumau Street extending approximately 100 feet toward Hilo Harbor. See **Figure 1, Project Location** and **Photos 1 through 3**.





*Photo 1: Kalaniana'ole Avenue as seen from west edge of project area looking east  
Photo Credit: Kauai Environmental Inc.*



*Photo 2: Kumau Street as seen from Kalaniana'ole Avenue looking north.  
Photo Credit: Kauai Environmental Inc.*



*Photo 3: Kumau Street as seen from Ocean View Drive looking south.  
Photo Credit: Kauai Environmental Inc.*

### **Section 3**

## **Project Description, Estimated Construction Cost and Schedule**

### **3.1 Description of Proposed Plan**

The project area comprises approximately 1.7 acres. The Kumau Street and Kalaniana‘ole Avenue right of way are under the jurisdiction of the County of Hawai‘i. The portion of Road “A” is located on State owned property. Small portions of private property are required for adequate turning movements at the intersection of Kumau Street and Kalaniana‘ole Avenue. See **Figure 2, Tax Map Key** and **Figure 3, General Site Plan**. The affected parcels include:

Tax Map Keys (TMKs)	Area of Parcel (Acres)	Ownership
(3) 2-1-007: 005	1.028	Private
(3) 2-1-007: 007	1.540	Private
(3) 2-1-007: 052	0.301	State of Hawai‘i
Total Area:	2.869	

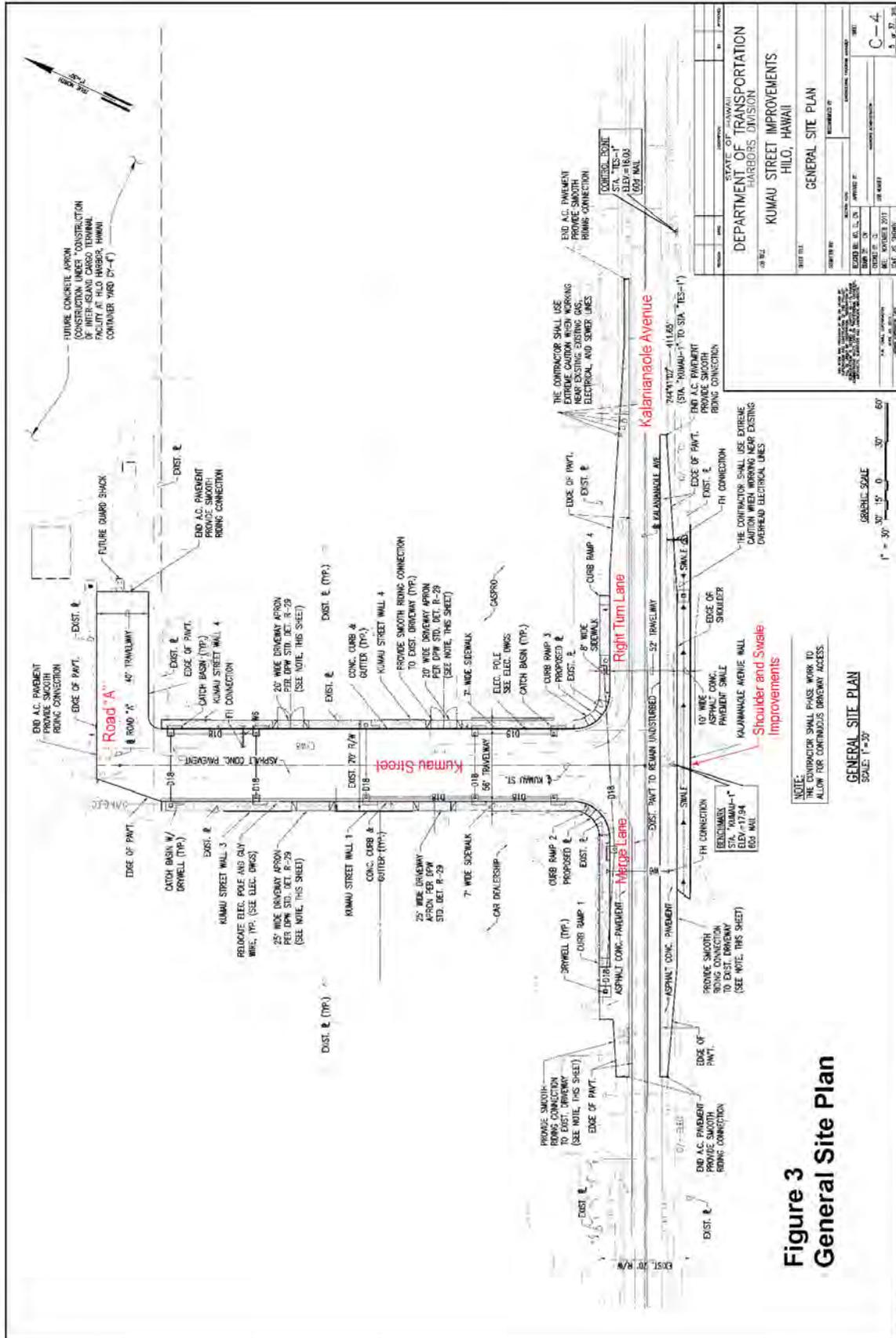
Kalaniana‘ole Avenue in the vicinity of Kumau Street is within an existing 70 foot wide right of way. The roadway is an existing two lane two way roadway with approximately 26 feet of pavement width. A new 12 foot wide right turn lane is proposed east of the intersection with Kumau Street. The improvements extend approximately 500 feet from the midpoint of the Kumau Street right of way. A new 12 foot wide merge lane is proposed to the west of the intersection with Kumau Street. These improvements extend approximately 1,000 feet from the midpoint of the Kumau Street right of way. A 12 foot shoulder and 10 foot asphalt concrete swale is proposed on the other side of Kalaniana‘ole Avenue. An 8 foot wide sidewalk and 2 foot wide concrete curb and gutter are proposed abutting a portion of the merge lane and right turn lane. See **Figure 4, Typical Section, Kalaniana‘ole Avenue**.

Kumau Street is located within an existing 70 foot wide right of way. Existing improvements include a narrow two way asphalt concrete paved surface ranging between 14 to 20 feet in width with grassed and landscaped shoulders. Proposed improvements include a four lane two way road. Each lane is proposed to be 13 feet in width. Near its approach to Kalaniana‘ole Avenue, there would be a designated left turn lane and right turn lane. On each side of the travelway, a 2 foot wide concrete curb and gutter is proposed which would abut a 7 foot wide sidewalk. Proposed improvements within the Kumau Street right of way extend approximately 400 lineal feet. See **Figure 5, Typical Section – Kumau Street**.

Road “A” is an existing narrow gravel and dirt road. Proposed improvements include 18 foot and 22 foot wide travel lanes. Approximately 100 lineal feet from the Kumau Street right of way is proposed to be paved with an asphalt concrete surface. Future concrete apron improvements are proposed to be completed as part of the Hawai‘i Commercial Harbors 2020 Master Plan in order to connect Hilo Harbor improvements with Road “A”. See **Figure 6, Typical Section Road “A”**.

The project also involves relocation of utility poles and guy wires, meter boxes, valve boxes, signs, and fire hydrants as well as providing smooth transitions to existing driveways. Other improvements including gates, stations, lighting, fencing and other features may also be included based on project priorities by the DOT-H.





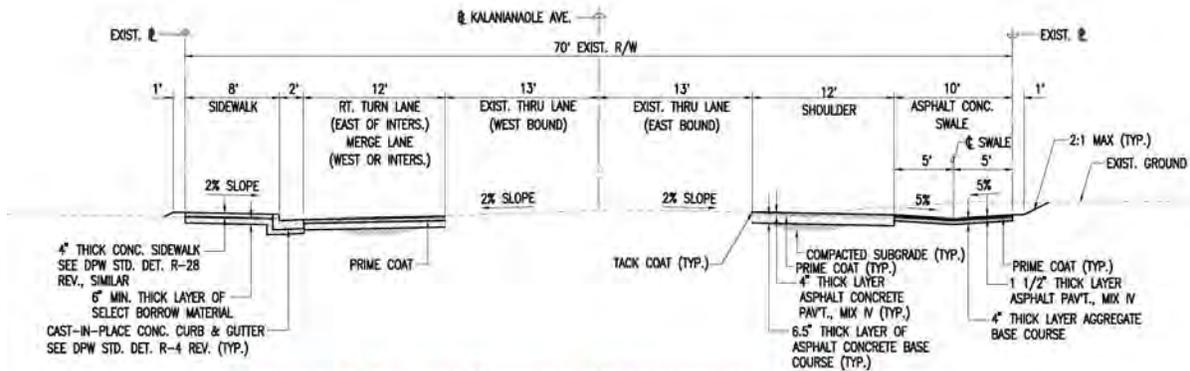


Figure 4 Typical Section - Kalaniana'ole Avenue

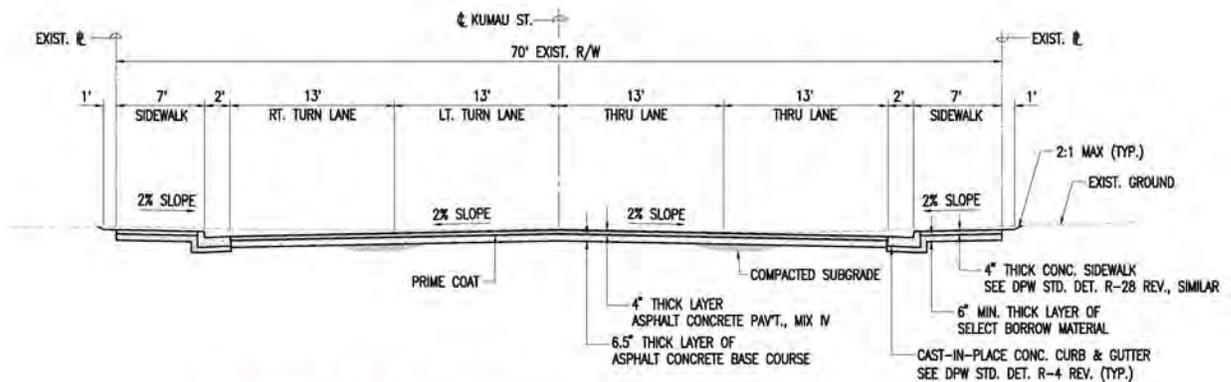


Figure 5 Typical Section - Kumau Street

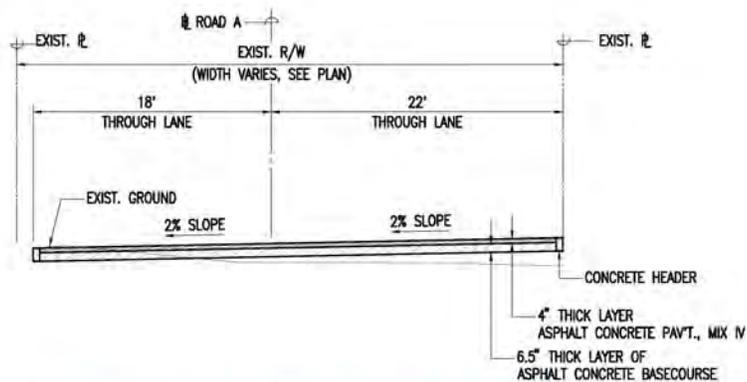


Figure 6 Typical Section, Road "A"

Minor construction related traffic, noise, and air quality (dust) disturbances are anticipated during construction. Construction equipment used for this project may include, but are not

limited to: loader, bulldozers, dump trucks, loader-backhoe, trencher, grader, water trucks, concrete hauler pumper, and flatbed trucks. The contractor will be required to observe and comply with all federal, state, and local laws required for the protection of public health, safety, and the environment.

The contractor will prepare a Best Management Practices (BMPs) Plan for this project. The BMPs Plan will consist of erosion control measures such as planting or hydromulching grass seedling, erecting silt fencing/curtains, berms, and/or other applicable erosion control devices to prevent construction related soils and silt from mixing with storm water runoff.

Shoring (sheet piles or other related method), if required, will be used in accordance with OSHA requirements (part 3, Chapter 132). No blasting will be required or allowed.

Upon the completion of work, areas surrounding the project site that have been affected by construction will be restored as much as practicable to pre-existing conditions. The following will be required:

- All construction-related debris, including excavated material, fill material, and refuse shall be removed from the project site and disposed of properly by the contractor.
- All construction equipment shall be removed from the project site promptly after construction is complete.
- Any temporary modification to existing utilities, such as power or communications lines, shall be repaired to their pre-existing condition.
- Roadways providing access to the site shall be cleared of construction debris and any damage from construction traffic repaired. Gates and/or fencing removed to provide access to the site shall be replaced.
- All areas damaged by construction staging shall be restored. Exposed ground areas shall be seeded or hydromulched as appropriate.
- Temporary pumps, pipelines, and electrical lines will be removed from the site and all surplus excavation material and construction debris will be removed and disposed of off-site in compliance with applicable State, and County regulations.

### *3.2 Estimated Construction Cost and Schedule*

The first phase of the proposed project is scheduled for construction starting in 2012 with a duration of approximately 12-18 months. The total estimated cost is \$7 million.

## ***Section 4***

### ***Project Alternatives and Preferred Alternative***

#### ***4.1 Alternatives to the Proposed Action***

Alternatives to the proposed project that were considered include: (1) the No Action Alternative; (2) the Delayed Action Alternative; (3) Alternative Sites; and (4) the Preferred Alternative. A description of each of these alternatives is provided below.

##### ***4.1.1 No Action***

The No Action alternative involves no further action to widen Kumau Street and Kalaniana‘ole Avenue. Taking No Action would avert the potential for negative adverse environmental impacts associated with construction activities and would eliminate the need for the expenditure of approximately \$7 million in design, engineering, and construction costs.

The No Action alternative however would fail to accomplish an objective of the Hawai‘i Commercial Harbors 2020 Master Plan for the future build out of the Pier 4 area of the Hilo Harbor by improving Kumau Street. Taking no further action would result in Kūhiō Street remaining as the only suitable entryway into the harbor for trucks hauling shipping containers and heavy freight. This would maintain an existing substandard condition and promote increased traffic congestion and limit accessibility into and out of the harbor.

Because the No Action alternative would fail to accomplish the objective of this project to improve access and the requirements of the Hawai‘i Commercial Harbors 2020 Master Plan, it is rejected from further consideration.

##### ***4.1.2 Delayed Action***

The Delayed Action alternative involves the construction of the project, but at a later date. Delaying the project would temporarily avoid the potential for adverse environmental effects and the need for the expenditure of funds for planning, design, development, and construction activities. However, because the potential for environmental impacts and project costs would only be delayed, impacts and costs associated with the project would eventually be borne when the project is implemented.

Delaying the project to a later time is expected to have virtually the same effect as the No Action alternative:

- The provision of container movement from Kūhiō Street would continue to be constrained due to congestion and limited accessibility to and from the harbor.
- Construction costs would be averted in the short-term, but are expected to ultimately be higher due to inflation and other factors while resulting in environmental outcomes similar to the Preferred Alternative of proceeding with the proposed project.
- Delayed Action would also delay the project’s implementation schedule and relationship to the Hawai‘i Commercial Harbors 2020 Master Plan, while resulting in little to no change in the potential environmental impacts and mitigation measures that would be applied to the project.

Because the Delayed Action alternative would fail to accomplish the project objective to facilitate container and heavy truck movement on Kumau Street, and support the development of the Pier 4 Terminal at Hilo Harbor, it is also rejected from further consideration.

#### *4.1.3 Alternative Sites and Preferred Alternative*

Alternative locations for the proposed project were considered. However, there is only one street in the surrounding vicinity that provides an alternative location for the proposed project. Kahau Street is located east of the proposed project site approximately one half mile from the proposed master planned Pier 4 Terminal. The use of Kahau Street would require crossing a major part of the harbor to access the area of the Pier 4 Terminal. This would result in increased container and heavy truck movement and congestion within the Hilo Harbor area and for this reason improving Kahau Street was not pursued further.

Another alternative considered but not carried forward included the potential for construction of a new access road to serve the Pier 4 Terminal area. This alternative was also considered but not carried forward based on the potential for displacement of area businesses, and costs associated with construction of a new roadway.

Based on the above, the Preferred Alternative is to improve Road "A", Kumau Street, and its connection with Kalaniana'ole Avenue to accommodate the more efficient movement of container and heavy truck traffic from the planned Pier 4 Terminal and existing Hilo Harbor area. The Preferred Alternative is the only alternative that (1) meets the objective of accommodating container and heavy truck movement while promoting the more efficient circulation of harbor related traffic; and (2) is consistent with the Hawai'i Commercial Harbors 2020 Master Plan Final EIS which has previously identified the improvement of Kumau Street for future development<sup>2</sup>.

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<sup>2</sup> The subject Environmental Assessment is based on the Final EIS for the Hawai'i Commercial Harbors 2020 Master Plan, July 2001, which identified Hilo Harbor improvements at a master planning level of detail. Improvements to Kumau Street were identified in Section 2.5.4, Construction of Terminals. The specific areas of Kumau Street and Kalaniana'ole Avenue requiring improvements were not known at that time but are now provided in this document to support the Final EIS for the Hawai'i Commercial Harbors 2020 Master Plan and to meet the requirements of HRS, Chapter 343.

## ***Section 5 Description of Existing Site Conditions, Potential Impacts, and Proposed Mitigation***

### ***5.1 Existing Site Conditions***

The proposed project area lies along the existing Kumau Street and Kalaniana'ole Avenue. The project area is surrounded by commercial and industrial development which includes petroleum storage and distribution facilities, a mixed-use industrial park, an auto dealership, an AirGas supply store, and several other small businesses.

Businesses within and surrounding the Kūhiō Industrial Plaza include, but are not limited to: Nissan and Mazda car dealerships, Gaspro, Tesoro Gas Station, Herb's Herbs, Pacific Island Floors, Harper's Rentals, and Power Self Storage. The Orchid Manor Apartments are located along the western end of the project area. See **Photos 4, 5 and 6**.



*Photo 4: Tesoro fuel Terminal on Kalaniana'ole Avenue  
Photo Credit: Kauai Environmental Inc.*



*Photo 5: Kalaniana'ole Avenue, Kumau Street located just beyond car dealership on left; view to northeast. Photo Credit: Cultural Surveys Hawai'i, Inc.*



*Photo 6: Kalaniana'ole Avenue and Kumau Street Intersection; note HELCO sign indicating buried gas line; view to southwest. Photo Credit: Cultural Surveys Hawai'i, Inc.*

Infrastructure and utilities within the project area includes sidewalks, utility poles, fencing, signage, curbing, unpaved parking areas, and a buried gas line running beneath Kumau Street owned by the Hawaiian Electric Light Company (HELCO).

Kumau Street adjoins Kalaniana‘ole Avenue, a major roadway fronting the Hilo Harbor area. Kumau Street is a narrow two-lane, asphaltic concrete (AC) roadway under the jurisdiction of the County of Hawai‘i. An existing underground fuel line carries petroleum products from a storage terminal within the harbor to the HELCO power plant located approximately 1.5 miles south of the project site. A warning sign noting the presence of the fuel line within the project area is at the intersection of Kalaniana‘ole Avenue and Kumau Street (Kaua‘i Environmental, Inc. [KEI], July 2010).

## *5.2 Climate*

### *5.2.1 Description*

Hilo’s climate is characterized by abundant sunshine and rainfall, relatively constant temperatures, and infrequent severe storms. The mean annual rainfall is approximately 132.35 inches and March and April are the wettest months (The State of Hawai‘i Data Book 2009).

Wind patterns in Hilo are sharply diurnal (having a marked difference between day and evening). Dominant easterly tradewinds prevail during the day (9 a.m. to 8 p.m.) and cooler westerly winds sweep down the slopes of Mauna Loa in the evening. Monthly temperatures in the project area range from 74.1 degrees Fahrenheit (F) in January and 76.3 degrees F in August. The annual mean temperature is 73.9 degrees F (The State of Hawai‘i Data Book 2009).

### *5.2.2 Potential Impacts and Proposed Mitigation*

Improvements to Kumau Street and Kalaniana‘ole Avenue will not affect the climate; however, the proposed project will be affected by climatic conditions such as rainfall. Potential impacts and mitigation measures for these climatic factors are further discussed in Section 5.7, Natural Hazards.

## *5.3 Geology and Topography*

### *5.3.1 Description*

Hawai‘i, the largest island of the Hawaiian Archipelago, covers an area of approximately 4,000 square miles. The island was formed by the activity of five shield volcanoes:

- Kohala (5,505 feet elevation), which is long extinct.
- Mauna Kea (13,748 feet elevation), which has had activity during recent geologic time.
- Hualālai (8,251 feet elevation), which last erupted in 1801.
- Mauna Loa (13,679 feet elevation), which is still active.
- Kīlauea (4,040 feet elevation), which is still active.

Hilo is located on the eastern flank of the Mauna Loa Volcano. The topography within the project area is generally level with a slight slope towards the ocean. Elevations range from two to eight feet (0.6 to 2.4 meters) above mean sea level (msl). The commercial harbor is situated on land reclaimed from the bay by the placement of coralline fill materials over coralline lagoonal (silt) deposits overlying basalt formations.

### *5.3.2 Potential Impacts and Proposed Mitigation*

The potential for significant adverse effects to topography and geology are not anticipated based on the limited scope and scale of the proposed project. Clearing activities will be limited to the general vicinity of the road right-of-way and involve clearing and grading, and construction of the roadway surface. A total area of approximately 2.0 acres will be required and used for earthwork, construction staging, and placement of traffic controls during construction.

Because of the designation of the project site as an existing thoroughfare and right of way, adverse impacts are not expected. See Section 5.5 Soils, for further discussion.

## *5.4 Water Resources and Hydrology*

### *5.4.1 Surface Water*

#### *5.4.1.1 Description*

There are no standing bodies of water on the subject property and no channels to carry flowing surface waters. Storm waters that fall on the subject property drain toward the ocean, either over land or through existing storm sewer systems. Drainage along Kumau Street is extremely poor, according to local residents and business managers, with standing water accumulating for short periods following heavy rainfalls (KEI, 2010).

The only major surface water feature of the site includes Hilo Harbor. Other surface water features including perennial or intermittent streams are not present although two wetland features are located in proximity to the site. See Section 5.6, Wetlands.

#### *5.4.1.2 Potential Impacts and Proposed Mitigation*

The construction of the project will facilitate the management of surface runoff which presently accumulates in depressions and low lying surface features adjacent to the existing Kumau Street. Drywells will be constructed to accept storm water runoff from the surface of the completed improvements area and help to reduce the incidence of untreated runoff flowing into the harbor.

During construction, pollution control measures will be implemented in accordance with Clean Water Act regulations requiring the filing of a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit. As required a Site Specific Construction Stormwater Best Management Practices Plan (BMP) will be prepared and followed by the project contractor to handle the treatment of stormwater runoff, erosion, and sediment control.

### *5.4.2 Groundwater*

#### *5.4.2.1 Description*

The lava formation beneath Hilo Harbor area appears to be a pāhoehoe flow, which is characterized by a smooth, rope-like or billowy surface with an internal structure of vesicular (porous) rock. In general, the basalt formations in the area are considered to be relatively permeable rock and can transmit water quite readily in the horizontal and vertical directions. Water is normally transmitted through the porous rock matrix, along fractures and cavities/voids, and along clinker layers. Therefore the permeability of the basalt is highly dependent on the presence of fractures, cavities, and clinker layers.

The Hilo Harbor area is not a groundwater source for drinking water (RMTC, 2000). Geotechnical borings of the area of Pier 1 conducted in 1999 indicate ground water was encountered at depths of about 8 to 8.5 feet below the existing ground surface and is primarily comprised of sea water. It is likely that water levels encountered in the borings may be influenced by the tide, seasonal precipitation, and storm surge conditions (Geolabs, 1999).

In August 2010, KEI, Inc., performed a Phase I Environmental Site Assessment (ESA) for the area of the proposed Kumau Street Improvements Project to identify any potentially hazardous materials or conditions that could impact construction activities (**Appendix A**). KEI confirmed that the project area is located below the State Department of Health (DOH) designated Underground Injection Control (UIC) line, indicating that groundwater in this area is brackish and not considered a potable resource for human consumption.

#### *5.4.2.2 Potential Impacts and Proposed Mitigation*

The proposed project is not anticipated to itself constitute an adverse potential impact on the groundwater resources of the area. The potential for construction related impacts to groundwater are principally anticipated to involve discharges percolating into the ground from stormwater commingling with demolition debris, sediments, and stored construction materials. Mitigation measures include the preparation of a NPDES Construction Stormwater Permit to ensure against mixing and discharge of storm water runoff with construction associated materials and debris. A BMPs Plan will address the potential for mixing of stormwater with construction materials and debris by describing management, structural, and vegetative controls that may be applied at the project site.

The following is a sample BMPs Plan that is representative of BMPs that will be applied to the proposed project:

##### Before Construction:

1. Existing ground cover will not be destroyed, removed or disturbed more than 20 calendar days prior to start of construction.
2. Erosion and sediment control measures will be in place and functional before earthwork can begin, and will be maintained throughout construction. Temporary measures may be removed at the beginning of the work day, but shall be replaced at the end of the work day.

##### During Construction:

1. Clearing shall be held to the minimum necessary for grading, equipment operation, and site work.
2. Construction shall be sequenced to minimize the exposure time of cleared surface areas. Areas of one phase shall be stabilized before another phase can be initiated. Stabilization shall be accomplished by protecting areas of disturbed soils from rainfall and runoff by use of structural controls such as PVC sheets, geotextile filter fabric, berms or sediment basins, or vegetative controls such as grass seedling or hydromulch.

3. Temporary soil stabilization with appropriate vegetation shall be applied on areas that remain unfinished for more than 30 calendar days, and permanent soil stabilization using vegetative controls shall be applied as soon as practicable.
4. All control measures shall be checked and repaired as necessary, e.g., weekly in dry periods and within 24 hours after any heavy rainfall event. During periods of prolonged rainfall, daily checking should be conducted.
5. Maintenance and fueling of construction equipment and vehicles shall be performed only in designated areas with appropriate protection measures including use of a containment berm to control potential spillage of fuel, lubricants or hydrocarbon based constituents. Absorbent and cleanup materials shall be placed in a conspicuous location to facilitate cleanup in the event of inadvertent leaks or spills. Refueling and maintenance of vehicles and equipment shall not be permitted outside of designated refueling areas.
6. All liquid materials including petroleum, oils, and lubricants (POLs), solvents, and cleaners, shall be stored in sealable containers. No open containers for the storage of such materials will be permitted.
7. Vehicle washing may be prohibited or only be permitted in a designated area protected by appropriate controls such as a containment berm.

After Construction:

Following construction, all equipment no longer necessary to the site will be removed. Construction debris (that cannot be recycled in accordance with Section 1805 of Public Law 109-59) and refuse will be disposed of at an approved facility that accepts construction and demolition debris waste by the contractor.

Refer to Section 5.16, Hazardous Waste, for further information.

## 5.5 Soils

### 5.5.1 Description

Soils throughout the area are classified as Keaukaha series. See **Figure 7, Soils**. Shallow surface soils averaging seven inches in depth are classified as “muck.” Below the muck is shallow bedrock. Infiltration rates are very slow; soils are clayey and have a high water table or are shallow to an impervious layer.

According to Sato et al. (1973:27):

*“[t]he Keaukaha series consists of well drained, thin organic soils overlying pāhoehoe bedrock. These soils occupy the low areas of Mauna Loa. They are at an elevation ranging from near sea level to 1,000 feet and receive from 90 inches to more than 150 inches of rainfall annually. Their mean annual soil temperature is between 72° and 74° F. The natural vegetation consists of ‘Ōhi‘a, tree fern, uluhe fern and guava...Keaukaha soils are used for woodland, pasture and home sites.”*

And,

*“[t]his soil is near the city of Hilo. It is undulating to rolling and follows the topography of the underlying pāhoehoe lava. Rock outcrops occupy about 25 percent of the area. In a representative profile the surface*

*layer is very dark brown muck about 8 inches thick. It is underlain by pāhoehoe bedrock. This soil is strongly acid.”*

According to John Peard of the DOH HEER office in Hilo, the bedrock in this area is lava basalt that is prone to cracks and fissures. This makes identification, delineation and remediation of subsurface contamination difficult. He also states that this area has a weak hydrological gradient toward the ocean combined with strong tidal influences, which make any potential contaminant migration complex and unpredictable (KEI, 2010).

### *Contaminated Soils*

A review of previous environmental records provided by the DOT-H indicated variable arsenic concentrations exceeding both natural background levels and DOH Environmental Action Levels in surface soils throughout the Port of Hilo area, including two sampling locations on or in close proximity to the project area. See also Section 5.16, Hazardous Waste, for further discussion.

#### *5.5.2 Potential Impacts and Proposed Mitigation*

The proposed project will involve minor grading, excavation and backfill activities to prepare the site for development. Earthwork will consist of minor grading to level the site and install utilities.

According to a geotechnical soils report prepared by Hirata & Associates (Hirata & Associates, 2010, **Appendix B**), excavation into the onsite silty sand can generally be accomplished using conventional excavating equipment, however, excavations into basalt will require pneumatic equipment. The onsite silty sand will be acceptable for reuse in compacted fills and backfills. All rock fragments larger than 3 inches in maximum dimension should be removed from the on-site silty sand prior to reuse.

Surface soils may be impacted due to elevated arsenic concentrations throughout the area. Engineered controls to mitigate against potential arsenic exposure pathways will include paving of the entire site with concrete and/or AC pavement, and the use of clean, uncontaminated soil cover. The implementation of these controls is expected to be sufficient to reduce the potential threat to human health and the environment by eliminating the exposure pathway. Other controls may be implemented in accordance with a Soil Management Plan, prepared if required for this project.

Based on the findings and results of the Phase I, ESA, it is recommended that the contractor hire an environmental professional to monitor the site during construction. A personal gas monitor or CGI detector will be used along with visual and olfactory indication by the environmental monitor. If contaminated materials are detected, construction will cease immediately and standard protocols for soil contamination will be followed including:

- Contacting and alerting the construction manager
- Preparing a Procedures Plan for the handling and treatment of contaminated materials
- DOH approval of the Procedures Plan and notice to proceed with plan
- Further coordination and instructions from the DOH



It is expected that most of the excavated materials will be returned to trenches and safely covered on-site. However, the contaminated materials that cannot remain on-site will be sampled, analyzed, and appropriately disposed of at a DOH-approved facility. The transport of the materials shall also comply with State and Federal regulations regarding the transportation of hazardous or petroleum contaminated materials. It is expected that a minimal amount of material will be removed from the property. Disposal of the materials will also comply with State requirements and site-specific permits at the disposal site.

The potential for release of sediments in storm water runoff from excavated areas and stockpile material sites will be addressed through a County-approved Erosion Control Plan (ECP), if required, and NPDES permits that will be secured for this project. The ECP and NPDES permit applications will provide for the use of BMPs to prevent or mitigate the potential for impacts to State waters as a result of storm water runoff from the construction site.

The implementation of the proposed mitigation measures described above is expected to result in no further adverse impact to the soil conditions on the project site. No further mitigation measures are proposed or are anticipated to be required.

## *5.6 Wetlands*

### *5.6.1 Description*

Wetlands play an integral role in the environment. They prevent erosion in the surrounding area through the presence of wetland associated plants with root systems that hold soil in place. The plants also serve as a physical barrier and absorb energy from waves. Wetlands also provide a natural filtration system for runoff. Nutrients swept into the wetland from runoff are absorbed by plant roots and microorganisms that live in the soil, or stick to the soil particles themselves. Through this process, most of the nutrients and pollution in the water are absorbed and retained and are prevented from entering the ocean (Environmental Protection Agency, 2010).

There are U. S. Fish and Wildlife (USFWS) National Wetlands Inventory coded wetlands in the vicinity of the proposed project site. See **Figure 8, Wetlands**. The wetlands are designated E2SS3P:

The following is the USFWS description for wetland code E2SS3P:

**E** – System ESTUARINE. The Estuarine System describes deepwater tidal habitats and adjacent tidal wetlands that are influenced by water runoff from and often semi-enclosed by land. They are located along low-energy coastlines and they have variable salinity.

**2** – Subsystem INTERTIDAL. This is defined as the area from extreme low water to extreme high water and associated splash zone.

**SS** – Class SCRUB-SHRUB. This includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.

**3** – Subclass Broad-Leaved Evergreen. Woody angiosperms (trees or shrubs) with relatively wide, flat leaves that generally remain green and are usually persistent for a year or more; e.g., red mangrove (*Rhizophora mangle*).



**P – WATER REGIME** Irregularly Flooded. Tidal water floods the land surface less often than daily.

### *5.6.2 Potential Impacts and Proposed Mitigation*

The identified wetland areas are located outside of the project site and would therefore not be directly impacted by the proposed project. The potential for indirect construction related impacts to the wetlands and waters of Hilo Harbor are anticipated to be primarily from discharges associated with construction activity involving the release of demolition debris and construction materials in storm water runoff.

In addition to the control of construction storm water runoff identified in Section 5.4.2, Groundwater, discharges of stormwater runoff associated with harbor operations are regulated and mitigated through an existing NPDES Municipal Separate Storm Sewer System Permit (MS4). A condition of the MS4 requires that the DOT-H develop and implement a stormwater management program (SWMP) to reduce the contamination of stormwater runoff and prohibit illicit discharges from harbor related stormwater drainage systems that discharge into state waters. During operation of the proposed project, the mitigative elements of the MS4, including maintenance of the Kumau Street area to protect against inadvertent spills or releases of contaminants from trucks using the facility, will be practiced.

No adverse impacts to the area wetlands are anticipated and no further mitigation is anticipated to be required.

## *5.7 Natural Hazards*

### *5.7.1 Description*

The Island of Hawai‘i is susceptible to five main types of natural hazards; tsunami, volcanic eruption, earthquakes, hurricanes and flooding. Natural hazards such as hurricanes, flooding, and tsunami are unavoidable for coastal harbor areas.

#### *Flood Hazard*

Sudden high waves and the strong currents they generate are perhaps the most consistent and predictable coastal hazard in Hawai‘i (University of Hawai‘i at Hilo, 1998). Because the project site is situated within a harbor, it is susceptible to coastal flooding. Breakwaters at Hilo Harbor were constructed by the U. S. Army Corps of Engineers to minimize ocean surges and flooding.

According to the Flood Insurance Rate Maps. See **Figure 9, Flood Zones**. (FIRM) #155166-0885C, the project area is in an area designated as Zone X. The Zone X designation is used for areas located outside, but adjacent to, the 100 and 500 year flood zone. The only 100 year flood zone in the area is located between the project area and the shoreline of Hilo Bay.

#### *Earthquake and Volcanic Activity Hazards*

Natural hazards in the Hawai‘i region are infrequent and rarely destructive. The most frequent are small earthquakes that usually go unnoticed. Most of Hawai‘i’s earthquakes are directly related to volcanic activity and are caused by magma moving beneath the earth’s surface. These earthquakes tend to be concentrated beneath Kīlauea and Mauna Loa, the island’s active volcanoes, particularly their south flanks and in the region between them. The northern part of

the Big Island is made up of two volcanoes, Mauna Kea and Kohala. Mauna Kea has erupted several times in the last 10,000 years, most recently about 4,500 years ago. This volcano is considered dormant but not extinct.

The largest earthquake in the recent past occurred in 2006 approximately 6 miles southwest of the Island of Hawai'i measuring 6.7 on the Richter scale. This event caused heavy damage to the Kona and Kohala Districts and generated a small tsunami measured by the Pacific Tsunami Center to be approximately 4 inches.

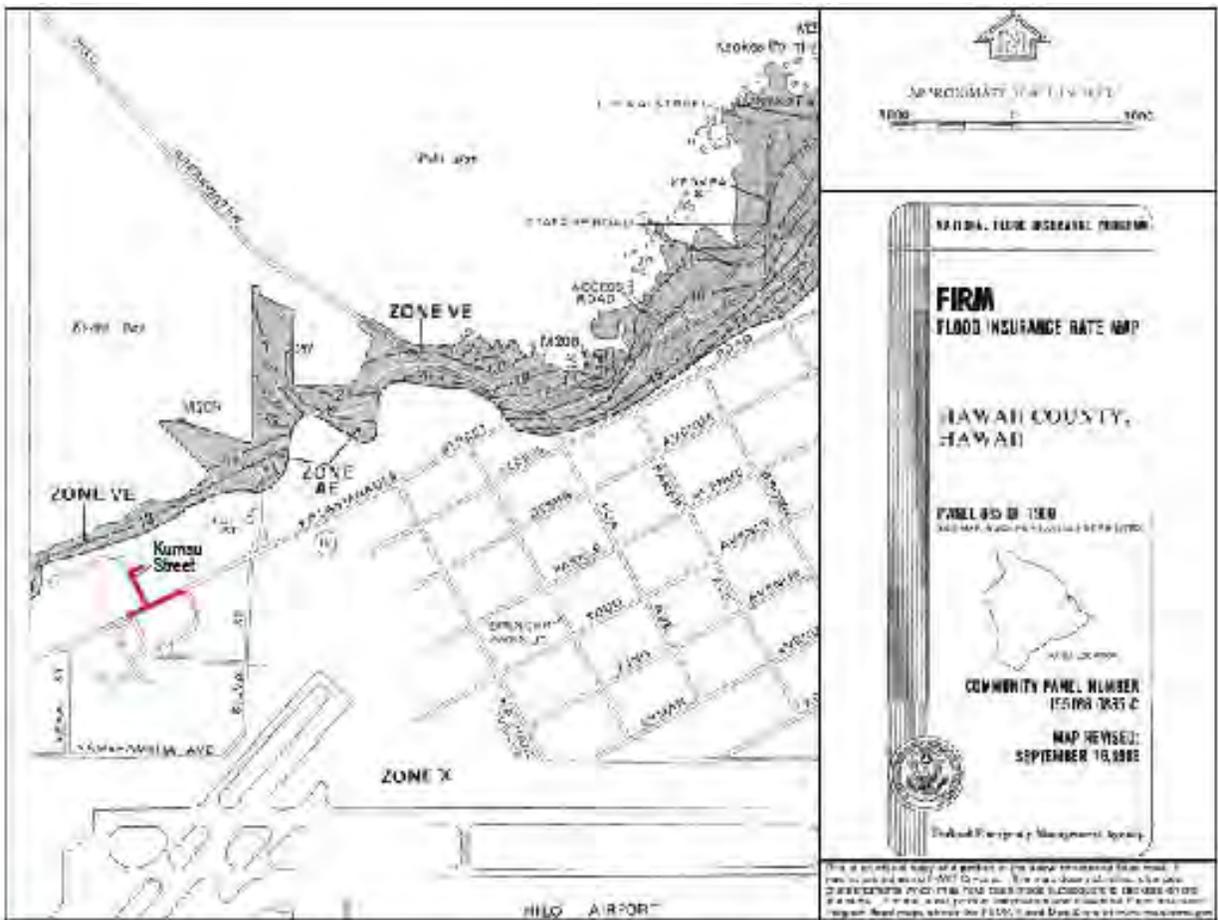
The 2006 International Building Code (IBC) provides minimum design criteria to mitigate against the potential for damage to man made structures due to seismic disturbances. The IBC scale is rated from Seismic Design Category A through E, with A being the lowest level of potential seismic induced ground movement. The project site on the island of Hawai'i is located within the general Seismic Design Category D.

The U. S. Geological Survey (USGS) has prepared volcanic hazard maps that divide the island into zones that are ranked from 1 through 9 based in the probability of coverage by lava flows. Zone 1 is the area of greatest hazard, and Zone 9, the area of least hazard. The project site is located in lava hazard Zone 3. Zone 3 includes other areas on Mauna Loa in which the hazard is gradationally lower than in Zone 2. During the past 750 years, lava flows have covered about 15 to 20 percent of Zone 3 on Mauna Loa. These areas are less affected by rift activity than Zone 2, although the area of Zone 3 that lies on the northwest flank of the volcano is vulnerable to eruptions originating at vents on that flank. Because of its location on the slopes of the active volcano Mauna Loa, Hilo is particularly exposed to the potential hazard of lava flows from volcanic eruption. The harbor is located in a Lava Flow Hazard Zone 3.

#### *Hurricane Hazard*

Heavy rains and strong winds associated with tropical storms occasionally impact the Hawaiian Islands and can cause flooding and major erosion. Hurricanes occasionally approach the Hawaiian Islands, but rarely reach the islands with hurricane force wind speeds.

Hawai'i's annual "hurricane season" is from June through November. Hawai'i has experienced the full effects of five hurricanes since 1949. The first (Hiki, 1950) moved from east to west, north of the islands. The other four, Nina, (1957), Dot (1959), 'Iwa (1982) and Iniki (1992), all traveled on more-or-less northerly headings and affected the Wai'anae Coast with high winds and storm surge. Except for Hiki, the storms moved across, or very close to, Kaua'i. Nina remained southwest and west of the islands (U.S. Navy, 2002).



**Legend**

- - Proposed Project Area (approximate)
- Zone X - An area that is determined to be outside the 100 and 500-year floodplains.
- Zone VE - An area inundated by 100-year flooding with velocity hazard (wave action); Base Flood Elevations have been determined.

**Figure 9 - Flood Zones  
Kumau Street  
Hilo, Island of Hawaii, Hawaii**

See Graphic Scale Above

R. M. Towill Corporation

Of the eight hurricanes since 1950, only two minor ones, Fico in 1978 and Estelle in 1986, affected the Island of Hawai'i (University of Hawai'i at Hilo, 1983).

*Tsunami Hazard*

Tsunamis are a series of enormous waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite. A tsunami can move hundreds of miles per hour in the open ocean and smash into land with waves as high as 100 feet or more. From the area where the tsunami originates, waves travel outward in all directions. Once the wave approaches the shore, it builds in height. The topography of the coastline and the ocean floor will influence the size of the wave. There may be more than one wave and the succeeding one may be

larger than the one before. That is why a small tsunami at one beach can be a giant wave a few miles away. (<http://www.fema.gov/hazard/tsunami/index.shtm>)

All tsunamis are potentially dangerous, even though they may not damage every coastline they strike. A tsunami can strike anywhere along most of the U.S. coastline. The most destructive tsunamis have occurred along the coasts of California, Oregon, Washington, Alaska, and Hawai'i (<http://www.fema.gov/hazard/tsunami/index.shtm>). Most tsunami affecting the Hawaiian Islands come from sources in the zone of mountain building that borders the Pacific Ocean. Hawai'i has experienced nine damaging tsunami since 1820.

A tsunami can occur at any time with limited or no warning. Persons in low lying shoreline or beach areas are advised to immediately go to higher ground.

### *5.7.2 Potential Impacts and Proposed Mitigation*

#### *Flood Hazard*

The proposed project involving roadway and infrastructure improvements is not expected to be significantly impacted based on its location within the Federal Emergency Management Agency Flood Zone X. It is noted that no habitable structures are proposed that would constitute an unreasonable risk to life or property. Given the requirement for the proposed project to be located within proximity of the shoreline, the proposed use is considered reasonable and is not anticipated to have a significant impact on flood conditions. No further mitigation measures related to flooding are planned or proposed.

#### *Earthquake and Volcanic Activity Hazard*

Mitigation measures to address the potential for earthquake hazards will be addressed by requiring that structures proposed for this project be built, at a minimum according to the design standards for Seismic Design Category D as established by the IBC.

#### *Hurricane and Tsunami Hazards*

To mitigate against potential impacts from hurricanes, the proposed project will ensure that improvements are designed to present building codes which offer some protection from damage. To mitigate against tsunami and storm surge impacts, engineering analyses will be performed to determine proper design criteria to be applied to structures associated with this project. DOT-H personnel will also coordinate with the State and County of Hawai'i Civil Defense agencies to implement established procedures in the event of a flood or tsunami.

## *5.8 Flora and Fauna*

### *5.8.1 Flora*

#### *5.8.1.1 Description*

The proposed project areas consist of mostly hard surfaces that include paved and graveled areas comprising the road travelway and shoulders, and rocky ground with loosely scattered pockets of soil. Vegetation found in this area is sparse with the exception of introduced and exotic species used for landscaping and ground cover along the roadways and within adjoining and nearby commercial and residential lots.

Vegetation in the area is similar to that found during a previous botanical survey undertaken by Char & Associates, Inc., in September 2000. The Botanical Survey – Hilo Harbor, Char & Associates, Inc., included a portion of the proposed project area referenced as the “Ocean Research Site.” According to the report:

Existing homes and landscaped lawns and plantings cover most of the site. These contain commonly grown ornamental species such as coconut (Cocos nucifera), areca palm (Chrysalidocarpus lutescens), avocado (Persea americana), various croton (Codiaeum variegatum) hibiscus (Hibiscus rosa-sinensis), plumeria (Plumeria rubra) cultivars, papaya (Carica papaya), and Alexandra palm (Archontophoenix alexandrae). (Char & Associates, 2000).

The report also noted the presence of other alien plants that included bingabing (Macaranga mappia), Chinese banyan (Ficus microcarpa), California grass, etc.

No threatened or endangered plant species were observed within the project limits.

#### *5.8.1.2 Potential Impacts and Proposed Mitigation*

No adverse effects to rare, threatened or endangered flora are anticipated as all work will be within an area that has been previously subjected to extensive disturbance associated with the development of the Hilo Harbor and surrounding area.

### *5.8.2 Fauna*

#### *5.8.2.1 Description*

Faunal species found at the site consist primarily of small mammals and non-native avifauna that includes rats, mice, feral cats, dogs, and Indian Mongoose (Herpestes auropunctatus). Fauna that were directly observed included cats (Felix domesticus), dogs (Canis familiaris), barred doves (Feopelia striata), rats (Rattus ssp.) and finches (Cardopacus mexicanus frontalis) (Palapala 1994; Corroborated by personal communication, 15-year Hilo Harbor employee, October 2000). None of the species present are listed as candidate threatened or endangered species.

The principal factor limiting species abundance within the project limits probably involves the generally urban and industrial nature of the site and the fact that the site is utilized principally as a road right of way.

#### *5.8.2.2 Potential Impacts and Proposed Mitigation*

It is possible that some wildlife species (none of which were observed to be listed or candidate threatened or endangered species) may be displaced into surrounding areas as a result of increased activity and noise associated with construction activities. However, this is expected to be only of temporary duration and limited principally to the area of the Kumau Street, Kalaniana'ole Avenue and Road “A” right of way. Upon the completion of construction activities the area is expected to return to its present use by vehicular traffic. No long-term adverse effects to area fauna are anticipated or expected.

## 5.9 Archeological and Cultural Resources

### 5.9.1 Description

#### *Introduction*

Cultural Surveys Hawai'i, Inc. (CSH) conducted an archaeological literature review and field inspection for the proposed project in the report, Archaeological Literature Review and Field Inspection for the Proposed Kumau Street Entrance Improvements, Pier 4, Hilo Harbor, August 2010 (**Appendix C**). The study of the project site included the following tasks:

- Historical research involving the study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near the property.
- Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. The assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.
- Preparation of a report including the results of the historical research and fieldwork with an assessment of the archaeological features including recommendations for further archaeological work, if appropriate. Mitigation measures would also be provided in the event that any archaeologically sensitive areas are discovered.

The results of the investigation are summarized in three sections as: (1) background research; (2) results of field inspection; and (3) summary and recommendations.

#### *Background Research<sup>3</sup>*

Waiākea, with its rich natural forest and the ocean resources, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. Hawaiian gods and goddesses frequented Waiākea including Pele, Hi'iaka and Pana'ewa. Many legends have associated Waiākea with Hawaiian *Ali'i* since the 16th century and describe it as a gathering place for ceremonies. The rich mountain resources of taro and sweet potato and the abundant marine resources particularly shrimp and fish made Waiākea very valuable to the Hawaiian people. Some 16 *heiau* of various sizes and class, stood within Waiākea. (CSH, 2010).

The present project area is situated within the lower elevations of what McEldowney (1979) defined as the coastal settlement zone. The zone was described by early Hilo Bay visitors as “a nearly continuous complex of native huts and garden plots interspersed with shady groves of trees, predominately breadfruit (*Artocarpus altilis*) and coconut (*Cocos nucifera*) (McEldowney 1979:16). Plantations containing bananas (*Musa* hybrids), sugarcane (*Saccharum officinarum*), and wauke (*Broussonetia papyrifera*) interspersed with dry land taro, sweet potatoes (*Ipomoea batatas*) and other vegetable crops were also present (McEldowney 1979:16). Habitation for the most part was probably temporary with a few scattered permanent occupation complexes. (CSH, 2010).

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<sup>3</sup> See Table 2. Archaeological Studies Conducted in the Immediate Vicinity of the Project Area, CSH, 2010, for a complete list of the archaeological studies reviewed for this project.

During the mid-19th century, sugar cane agriculture and ranching became prominent in the Waiākea Ahupua‘a. Both of these enterprises flourished until their gradual decline in the early 20th century. The 20th century brought the onset of urban development to the district of South Hilo. Beginning in the 1910s, the lands adjacent to the project area were “...transformed by the construction of new wharf facilities and the breakwater. Railroad tracks, commercial, and U.S. and Territorial Government facilities were erected along the shoreline,” (Haun and Henry 2000:18). (CSH, 2010).

The 1946 tsunami damaged much of the new infrastructure and facilities, but most of the damage was quickly repaired, except for some of the railroad infrastructure, such as the trestle crossing Kanakea Pond. During the World War II period in Hilo, expansion and designation of Hilo airport as General Lyman Field was a major project undertaken as part of the substantial military presence on the island. (CSH, 2010).

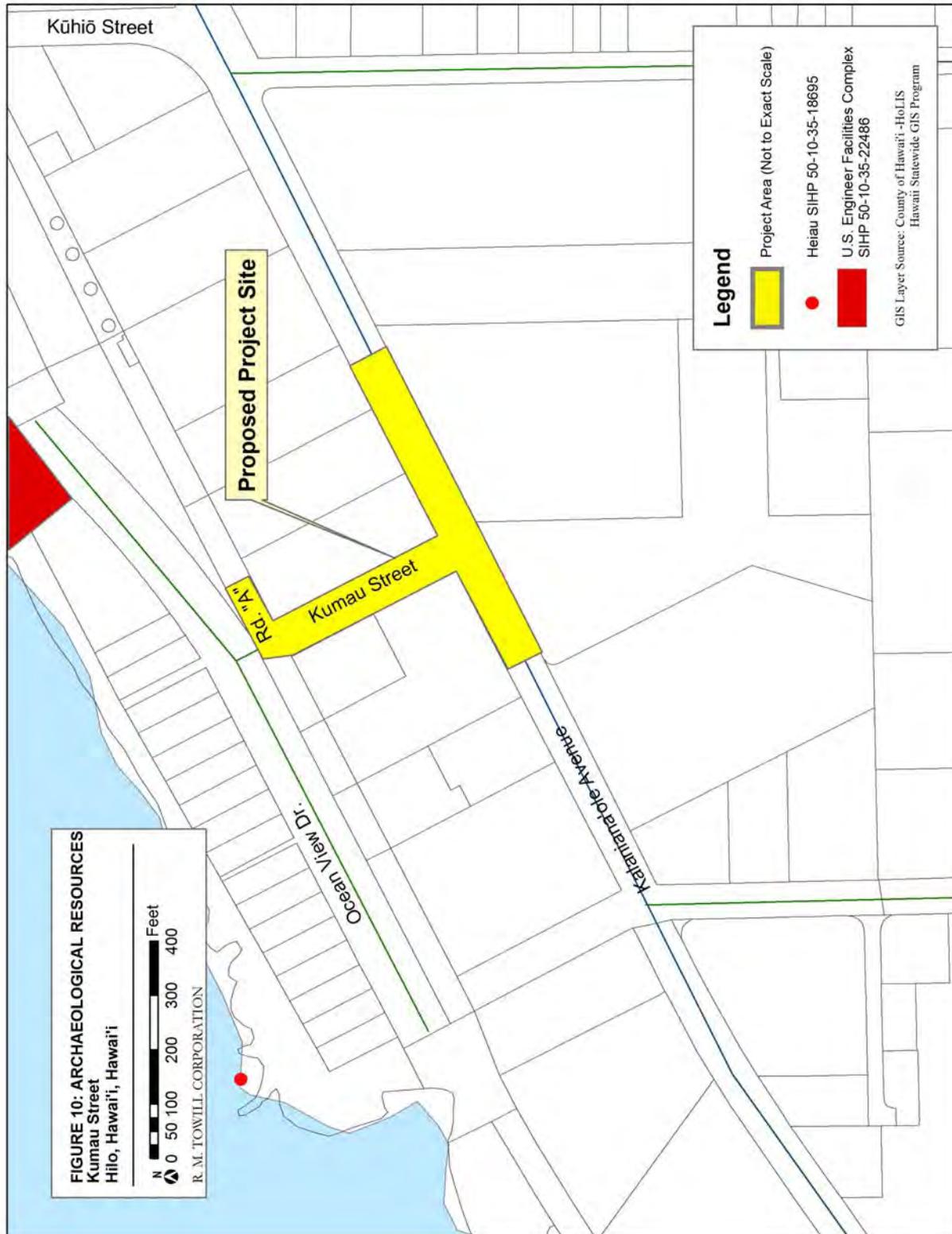
After statehood (1959) and with the closing of the Waiākea Mill, tourism became the next economic mainstay, and large tracts of former Waiākea Homestead and cane lots were converted to housing or sub-division tracts. (CSH, 2010).

Given the extensive development of the general area, and its inundation by tsunamis, it is unlikely that any pre-contact sites still lay within the project area lands. A *heiau* (State Inventory of Historic Places [SIHP] 50-10-35-18695) is known to still exist at the coast to the northwest of the project area, but its enduring presence can be attributed to its location on undeveloped state land. It is highly unlikely that burials might be encountered, as there are no sand deposits within the project area and as the shallow, stony soil found here lies directly atop *pāhoehoe* bedrock. (CSH, 2010).

Roads, commercial buildings, railroad infrastructure, and private homes have all been constructed over the project area lands over the last century. The vacant lots at the Kumau Street and Ocean View Drive intersection seem to coincide with the historic railroad right-of-way. One might expect to find historic remains of this railroad or other harbor-related infrastructure on these lots (though they lay just outside of the project area lands to the north). This hypothesis is supported by the presence of the remains of an engineer facility dating to the early 1900s near the current project area (SIHP 50-10-35-22486) (CSH, 2010). See **Figure 10, Archaeological Resources**.

### *Field Inspection*

The CSH field inspection consisted of a pedestrian survey of the project area. No significant cultural remains were identified. The area consists of modern, paved roadways and adjacent areas that have been previously disturbed by road construction and/or the general development of the area, including commercial and residential development. A modern rock alignment is present on the lawn fronting the Kuhio Industrial Plaza, and is presumably designed to discourage parking in this area. See **Photo 7**. On the makai shoulder of Kalaniana‘ole Street near the Orchid Manor Apartments, areas of the exposed lava bed have been filled to presumably maintain a continuous façade. See **Photo 8**. (CSH, 2010).





*Photo 7: Modern rock alignment fronting the Kuhio Industrial Plaza along the mauka shoulder of Kalanina'ole Avenue; view to the northeast. Photo Credit: Cultural Surveys Hawai'i, Inc.*



*Photo 8: Modern rock construction along the exposed lava bed on the makai shoulder of Kalaniana'ole Street; note the Orchid Manor Apartments in the background; view to the north. Photo Credit: Cultural Surveys Hawai'i, Inc.*

The two mauka (upslope) lots at the intersection of Kumau Street and Ocean View Drive are vacant. These lots seem to coincide with the location of the historic railroad right-of-way, though it appears to have been cleared of all remnant infrastructure. They are now covered in vines, shrubs and trees. At the eastern mauka lot, long wooden beams have been placed horizontally along both its Ocean View Drive and Kumau Street sides, possibly serving as barriers. These beams rise no more than a foot or two from the ground and are covered in vines. A quick look revealed that the beams are not terribly weathered or rotted, which would indicate that they are relatively modern (as opposed to reused, remnant railroad infrastructure). An old Herb's Herbs sign rests on what may be a portion or extension of one of the beams; the more decayed nature of this particular beam can be attributed to its exposure, as it is not covered in vines. The interior of this lot is level except along its southern side. The eastern end of this lot is defined by an overgrown asphalt and gravel road connecting the lot behind A and A Storage to the bay and the eastern end of Ocean View Drive. This general area appears to have at one time functioned as an extension of the old Banyan Drive route, which at one time extended along the shore toward the Harbor. Modern residential structures are now located along Ocean View Drive, as part of the Ocean View Lease Lots. (CSH, 2010).

The western mauka lot at the intersection of Ocean View Drive and Kumau Street is covered in various trees, shrubs, vines, and grasses. The terrain is not as level as that of the eastern lot, but bulldozer push piles are evident along both its southern and eastern sides. Some of the areas of bulldozer push appear to have been "tidied," as a modern trail runs past the push to a modern squatter's camp near the center of the lot. No signs of prehistoric or historic structures or other remains were encountered in either of these lots, or in the remainder of the project area. (CSH, 2010).

It is noted that the CSH scope of work did not include the Road "A" portion of the proposed project. However, the Final EIS for the Hawai'i Commercial Harbors 2020 Master Plan done by the State Department of Transportation in 2001 addressed archaeological issues over the broader Hilo Harbor area from Piers 1-6 including the land area for Road "A". The study done by Haun & Associates identified 16 archaeological studies of the ahupua'a of Waiakea that covered approximately 1,400 acres between sea level and 1,500 foot elevation. None of the previous studies included the Hilo Harbor project area. The only traditional sites identified by the studies are a heiau next to the West Project Area (west of the current project area), the Puna Trail and five ahu reported by Hammatt (Haun & Associates, 2000).

#### *Summary and Recommendations*

The CSH study included portions of Kalaniana'ole Avenue and Kumau Street which are part of the subject project. No historic properties were encountered during the pedestrian survey of the project area. These lands have undergone intensive development since the turn of the 20th century. An unrecorded heiau (SIHP 50-10-35-18695) and remnants of an historic complex (SIHP 50-10-35-22486) are located just outside of the project area to the northwest and northeast, and will not be impacted by the proposed improvements. (CSH, 2010).

Given the lack of any historic properties within the project area, and the unlikelihood of encountering any burials due to the lack of Jaucas sands within the project area, CSH does not see the need for an archaeological inventory survey or for a monitoring program for the Kumau Street intersection improvements project. In the unlikely event that cultural deposits and/or

human skeletal remains are encountered during ground disturbing activities, work should be stopped immediately in that area and the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) should be notified of the nature of the discovery. (CSH, 2010).

The Haun study noted that the absence of traditional sites is attributed to the massive ground disturbance of sugar cane cultivation and commercial and residential development of the Hilo area. No surface evidence of subsurface cultural deposits was identified and it is unlikely that such deposits would be present because there is very little soil over the lava bedrock in the area and because the area has been extensively disturbed by construction activity and periodic tsunami inundation. (Haun & Associates, 2000).

### *5.9.2 Potential Impacts and Proposed Mitigation*

The potential for adverse effects to historic or archaeological resources are not anticipated as no historic properties were encountered or discovered during the CSH survey of the project site. A number of factors responsible for the lack of historic and archaeological resources present include intensive development of the Hilo Harbor area since the 20<sup>th</sup> century, and the lack of suitable substrate (Jaucas sand) for the presence of burials. The Haun study which pertained to a larger Hilo Harbor study area also noted that since no archaeological sites were found, no mitigation measures are recommended.

However, because there is always the potential for the discovery of ‘iwi or other cultural remains, any inadvertent finds will immediately result in the cessation of work and the immediate reporting of the find to the State Historic Preservation Division (SHPD) at (808) 933-7653 (Hawai‘i Island) or (808) 692-8015 (Main Office, O‘ahu). SHPD will furnish further instructions regarding the treatment of the find and the conditions when work may be resumed.

## *5.10 Noise Conditions*

### *5.10.1 Description*

Regulation of noise is governed by the DOH, HAR, Title 11, Chapter 46, “Community Noise Control.” Allowable day and nighttime noise standards for sensitive receptors have been established for conservation, residential, apartment, hotel, business, agricultural and industrial districts. The project site is principally within a business area that includes land that is zoned industrial. The maximum allowable day and night noise levels at the project site are as follows:

<u>Time</u>	<u>Allowable Levels</u>
7:00 am to 10:00 pm	55 dbA
10:00 pm to 7:00 am	45 dbA

Existing sources of noise in the area include motor vehicle traffic, harbor vessels, and the periodic use of combustion and electric powered equipment associated with nearby area businesses and residences. Surf lapping against the nearby shoreline can sometimes be heard.

Construction associated noise is anticipated to result from clearing, grading and road widening and paving. Construction equipment is expected to include, but not be limited to a bulldozer,

excavator, grader, paver, dump trucks, concrete delivery trucks, jackhammers and other powered hand tools.

#### *5.10.2 Potential Impacts and Proposed Mitigation*

Nearby areas which include residential and industrial uses may be temporarily affected by construction generated noise. However, noise generated from construction activities will for the most part not radiate or extend beyond the immediate surrounding project site. The construction related noise is expected to be temporary, of limited duration, and restricted to daytime hours. Upon completion of work noise will return to pre-existing background levels.

Mitigation measures to address the generation of construction related noise include:

- All equipment will be properly muffled in accordance with regulations of the DOH.
- All combustion and air-powered equipment will be maintained in proper working order.
- Work will be limited to weekdays during daylight hours between 8:30 am and 3:30 pm. No work will be scheduled on federal or state holidays.
- The contractor will secure a noise permit from the DOH prior to the initiation of the roadway construction.

No adverse noise impacts associated with this project are anticipated. Mitigation measures as described will be employed to minimize and reduce the potential for such impacts. No further measures are anticipated to be required.

### *5.11 Air Quality*

#### *5.11.1 Description*

No sampling data was collected on air quality. Air quality at the project site is generally good due to the regular presence of tradewinds and the location of the site along the coastline. According to the DOH, Clean Air Branch, air quality of the Hilo area is generally excellent based on data provided at its air quality monitoring station (State of Hawai'i Data Book 2009).

Existing sources of air pollution within the immediate project site are not present with the exception of vehicle related exhausts. Commercial and industrial facilities within and surrounding the Hilo Harbor area, however, include petroleum storage and distribution facilities, a mixed-use industrial park, an auto dealership, and other related businesses which are sources of air pollution.

#### *5.11.2 Potential Impacts and Proposed Mitigation*

Construction activities are expected to have little to no impact since the project will be of limited duration, and where engine exhausts may be a source of potential air pollution, all internal combustion equipment will be governed in accordance with applicable state regulations in HAR, Chapter 11-59 and 11-60, Air Pollution Control.

During construction, fugitive dust is expected to be generated. Fugitive dust will be controlled with regular wetting of the soil by the contractor and/or by the use of dust screens, as required. There will be no long-term effects to air quality once construction is completed.

## *5.12 Visual Resources*

### *5.12.1 Description*

The proposed improvements will not significantly affect existing visual resources in the area. The project area is located in an industrial area adjacent to properties with existing fuel storage and container shipping facilities. Major land uses in the area are primarily industrial in nature.

Scenic areas in the surrounding region of Hilo Bay include the summits and higher elevations of Mauna Loa and Mauna Kea, the arch of the nearly two-mile long harbor break water, the small boat area of Reed’s Bay, and Coconut Island fronting the hotels on nearby Banyan Drive. Views of Hilo Bay and the harbor can be seen from hotels along the east side of Banyan Drive and more distant views can be seen from the north coast of the bay. It has been noted that hotel guests frequently remark positively about the attractiveness and festive atmosphere that the docking of cruise ships presents (Hawai‘i Commercial Harbors 2020 Master Plan, 2001).

### *5.12.2 Potential Impacts and Proposed Mitigation*

No adverse impacts to scenic and visual resources are anticipated. The proposed project is an important element of the Hawai‘i Commercial Harbors 2020 Master Plan and has been designed to be consistent with the surrounding use of the land to meet the growing need for an alternative entryway into the harbor.

Residents along Ocean View Drive may be temporarily exposed to some visual impacts associated with the use and operation of construction equipment. However, these impacts will be temporary and within a surrounding area used for industrial purposes. Upon the completion of construction, all equipment and personnel will be removed and the site will be permitted to return to existing conditions with no permanent visual intrusion to the site. No mitigation measures are anticipated to be required.

## *5.13 Socio-Economic Environment and Demographics*

### *5.13.1 Description*

The Hilo Harbor is located in the South Hilo District. According to the last U. S. Census undertaken for the South Hilo District in 2000, the population was 40,759 persons. Within the Hilo Harbor area are 17 leased house lots located in the vicinity of the proposed project along Baker’s Beach in the area of tax map key (3) 2-1-007. The house lots are primarily beach cottage structures under the jurisdiction of the DLNR. The cottages are leased subject to a scheduled date of termination in 2015.

### *5.13.2 Potential Impacts and Proposed Mitigation*

The economic viability and growth potential of the Island of Hawai‘i is closely tied to the capacity of its essential infrastructure which includes Hilo and Kawaihae Harbors. Because of the economic benefit of promoting the more efficient use of the Hilo Harbor, the economic impact of the proposed project is expected to be favorable.

In the short term, construction expenditures associated with the proposed project will have a beneficial impact on the local construction industry, and construction activities will benefit the community indirectly through the creation of jobs. Construction crew members will most likely

come from all areas of Hawai‘i, including some workers from the Hilo area. However, the crew size will have no significant effect relative to the local or regional population.

In the long term, the widening of Kumau Street will improve the efficient operation of the cargo terminal operations of the harbor. In turn, this is expected to stimulate direct maritime expenditures, create port-related jobs, and develop new businesses. Harbor operations will also require support businesses to supply ships, handle cargo, and provide other services.

Implementation of the proposed project and resultant harbor expansion proposed in the Hawai‘i Commercial Harbors 2020 Master Plan will stimulate harbor related business enterprises and increase local employment. The combined increased business activities in commercial shipping will result in increased state revenues, in the form of excise, individual, and corporate taxes.

## *5.14 Public Facilities and Services*

### *5.14.1 Roads and Transportation*

#### *5.14.1.1 Description*

The following is an evaluation of the traffic conditions along Kumau Street and Kalaniana‘ole Avenue performed in 2010 by Julian Ng, Inc..

Kumau Street is less than one tenth of a mile long and runs perpendicular to Kalaniana‘ole Avenue (mauka side) and Ocean View Drive (makai side). Traffic along this road is very minimal.

Kalaniana‘ole Avenue consists of two 12 foot wide lanes and is approximately 5 miles long. This road turns into the Kapoho Coast Road to the east and Kamehameha Avenue to the west.

The State DOT Highways Division published a report of a traffic count taken on Kalaniana‘ole Avenue, between Kea‘ā Street (700 feet to the west) and Kumau Street. The report shows 15-minute data, by direction of travel, from midnight April 23, 2008 (Wednesday) to 11:45 PM, April 24, 2008 (Thursday).

Using the averages of the 15-minute data, peak hourly traffic volumes occurred in the morning and afternoon, as follows:

**Table 1  
Kalaniana‘ole Avenue, Total Traffic Volume During Peak Hours**

Direction	AM Peak Hour 7:30 AM – 8:30 AM	PM Peak Hour 3:30 PM – 4:30 PM
Westbound	593	751
Eastbound	629	647
Total Volume	1,222	1,397

Midday peak traffic volumes were less than the volumes during the commuter peaks. The counted volume in at least one direction exceeded 100 vehicles per 15-minute period for each period between 6:45 AM and 6:45 PM (during which time the two-way total volume was at least 900 vehicles per hour).

**5.14.1.2 Potential Impacts and Proposed Mitigation**

Improvements to Kumau Street will provide access to the Pier 4 area, and is expected to reduce traffic on the existing Kūhiō Street harbor entrance road. Without the proposed project (improvements to Kumau Street), vehicular access would be through the existing harbor entrance. Therefore, the project would have no impact to traffic volumes west of Kumau Street and east of the existing harbor entrance. By reducing the traffic at the existing harbor entrance, there will be no adverse traffic impacts at that location due to the improvements at Kumau Street. (Julian Ng, Inc., 2010).

Level-of-Service (LOS) analyses were done for future conditions based on the construction of the intersection improvements at Kumau Street and Kalaniana'ole Avenue, assuming volumes of 100 vehicles per hour entering Kumau Street and 100 vehicles per hour exiting Kumau Street from and to the west. The 100 eastbound left turns into Kumau Street would reduce eastbound through traffic by 100 vehicles; similarly, 100 right turns onto westbound Kalaniana'ole Avenue would reduce westbound through traffic by 100 vehicles. The use of an arbitrary volume of 100 vehicles per hour in each direction assumes that project traffic and existing traffic will total 100 vehicles, and the analyses assume that the peak hours coincide. (Julian Ng, Inc., 2010).

An additional 10 vehicles per hour in each direction from/to the east (internal harbor traffic that would use Kalaniana'ole Avenue) was also assumed. Future non-project traffic volumes were assumed to increase at an average rate of 1.5% per year for 23 years. (Julian Ng, Inc., 2010).

The results of the traffic analyses indicated the following:

**Table 2  
Kalaniana'ole Avenue and Kumau Street  
Analysis of Future AM and PM Peak Traffic Conditions With Project**

	AM Peak Hour				PM Peak Hour			
	Kalaniana'ole Avenue, Eastbound	Kumau Street (Southbound)			Kalaniana'ole Avenue, Eastbound	Kumau Street (Southbound)		
		left turn	single shared lane	separate right turn lane		separate left turn lane	left turn	single, shared lane
Volume/capacity ratio	0.17	0.45	0.3	0.15	0.19	0.61	0.36	0.25
Average delay per vehicle (seconds)	11.7	29.7	19.1	70.2	13.2	50.5	24.4	122.7
			23.5				33.1	
Level of Service	B	D	C	F	B	F	C	F
			C				D	
95th Percentile queue (vehicles)	0.6	2.19	1.22	0.51	0.71	3.39	1.57	0.82

The provision of a refuge lane to allow southbound left turns to be executed in two moves (cross westbound traffic, then merge with eastbound traffic) rather than one (find an acceptable gap in

both flows) would decrease delays and improve levels of service for the southbound left turns. (Julian Ng, Inc., 2010).

Based on the analysis, a shared lane on the Kumau Street approach would be sufficient. However, for acceptable levels of service on that approach, a refuge lane on Kalaniana'ole Avenue would be needed so that any left turns can be made in two moves, rather than have to wait for a common gap in the opposing traffic streams. A separate eastbound left turn lane should be provided; since peak hour 95th percentile queues are less than one vehicle, the minimum storage for two vehicles would suffice. The turn lanes and intersection should be designed for the largest truck or combination that is expected to regularly use the intersection. (Julian Ng, Inc., 2010).

In summary, the proposed project is not expected to significantly alter the total volume of traffic on Kumau Street or Kalaniana'ole Avenue. The major source of disturbance to traffic is anticipated from construction activities during deliveries and transit of vehicles to and from the job site. Occasional increases in construction traffic may also result from the periodic movement of vehicles to and from the job site to dispose of demolition debris. These impacts however will be short term in duration and will cease with the completion of the road improvements. Mitigative measures will include the planning of construction activities during the daytime hours with no night work anticipated to be required, and the use of flagmen and/or traffic controls to maintain accessibility for businesses and residents who may use the surrounding area roads. Construction of both roads will also be phased to provide continuous access to the Baker's Beach area for resident/lessees and recreational area users.

#### *5.14.2 Utilities*

##### *5.14.2.1 Description*

A preliminary inventory of utilities at the project site includes the following:

- Aerial utilities include HELCO power and telephone lines. Utility poles supporting overhead lines also support transformers and street lights. These lines run along both Kumau Street and Kalaniana'ole Avenue. Overhead utility poles also extend along Road "A".
- Below ground telecommunications facilities include fiber optic cables and manholes (along Kalaniana'ole Avenue).
- Below ground sewer lines transect Kalaniana'ole Avenue at various points.
- Two HELCO owned gas lines run under Kalaniana'ole Avenue. One line has a diameter of 2 inches and the other, 4 inches.
- Below ground water utilities include a ±8 inch water main and manholes/valve boxes located beneath the surface of Kumau Street and alongside Kalaniana'ole Avenue.

##### *5.14.2.2 Potential Impacts and Proposed Mitigation*

Above and below ground utilities and pipelines will be identified during the design of the proposed improvements project. The presence of the utilities will be field verified prior to the start of demolition activities and if required, will be removed and/or relocated. Any utility

relocations and/or modifications will also be coordinated with the affected utility company to minimize disruption of water, power, wastewater, telecommunications and other services.

Residents and area businesses will be notified prior to construction should any temporary disruption of utility service be required, i.e., if the proposed project requires disconnection of the water main line, a standby tanker truck will be provided for provision of water to residents/businesses. Once construction is complete, utilities will be returned to their original condition.

### *5.15 Solid Waste*

The construction of the proposed project is not expected to have long term impacts to solid waste facilities based on the limited scope and scale of work. Short-term impacts are anticipated in the form of construction debris that will be generated requiring disposal. The construction contractor shall be responsible for the disposal of construction debris at a county-approved landfill site.

### *5.16 Hazardous Waste and Materials*

#### *5.16.1 Description*

KEI, Inc., performed a Phase 1, Environmental Site Assessment (ESA) report of the project site in August, 2010 (**Appendix A**). The purpose of the Phase 1, ESA, was to determine whether conditions or situations at the site might result in present real or potential hazards, or environmental liabilities as dictated by federal, state, and local statutes and regulations. Specific areas investigated included: present and historical uses of the project area and adjacent properties; signs of gross surface contamination; the presence of hazardous materials and wastes; above ground and underground storage tanks (ASTs and USTs); and other indications of the presence of chemical contamination.

The following is a summary of the major findings of the report.

#### *State and Federal Environmental Regulatory Databases*

A review of State and Federal environmental data on the project site indicated the following (KEI, 2010):

- No sites listed by the U. S. Environmental Protection Agency (EPA) on the National Priorities List (NPL) (Superfund), proposed NPL, delisted NPL or Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) databases were identified.
- One site listed on the CERCLIS-No Further Remedial Action Planned (CERC-NFRAP) database was identified. This facility, Wood Protection Co. (aka HPM Building Supply), is not expected to have impacted the subject property due to its distance from and location relative to the subject property.
- No Resource Conservation and Recovery Act (RCRA) corrective action sites were identified.
- A total of eleven (11) RCRA hazardous waste generators were identified, including one large quantity generator, seven (7) small quantity generators and three (3) conditionally

exempt small quantity generators. There is no indication that the hazardous waste generated at these facilities has impacted the project area as no violations have been reported at any of the facilities identified.

- Twelve (12) state-recognized hazardous waste sites were identified. While it is unlikely that any of these sites have directly impacted the project area, the large number of listed State Hazardous Waste Sites (SHWS), and petroleum storage sites in general, in proximity to the project area may have contributed to low-level groundwater contamination and/or subsurface petroleum contamination, as is common in heavily developed industrial areas with a long history of use for petroleum storage and distribution.
- Ten (10) registered underground storage tank (UST) sites were identified. The presence of a large number of UST sites is not uncommon for a commercial industrial area. Absent any documented leaks, the presence of these sites is not expected to have impacted the project area.
- Nine (9) leaking underground storage tank (LUST) sites were identified. The presence of a large number of LUST sites in the vicinity of the project area is not expected to have impacted the subject property, due to the fact that site clean-ups have been completed at each of the sites. However, given the geology of fractured rock below shallow surface soils throughout the area, thorough evaluation and clean-up of subsurface contamination may have been impossible in some cases.
- No historic landfill sites were identified.
- There have been no spill incidents connected with the project area that were reported to the State Hazard Evaluation & Emergency Response (HEER) Office or entered on the Emergency Response Notification (ERNS) database.
- No sites with institutional or engineering controls and no Brownfield sites were identified.

#### *Review of Historical Land Use Information*

A review of historical land use information including fire insurance maps, aerial photographs, historical topographic maps, and interviews with persons familiar with the history of the project area and the surrounding area indicated the following (KEI, 2010):

- A substantial portion of the project area is within or adjacent to areas around the Port of Hilo that have been developed and in use for storage, transportation and distribution of petroleum products dating back to at least the 1940s.
- A railroad line leading to the Port of Hilo once ran along the northern edge of the project area, between Kalaniana'ole Avenue and the harbor.
- The HELCO pipeline that runs through the project area along Kalaniana'ole Avenue has been in place since the 1950s, and was predated by other fuel pipelines in the area. See **Photo 9: HELCO Fuel Pipeline**.
- The subsurface geology of the area, which consists of fractured rock beneath shallow surface soils, makes subsurface contamination in the area hard to identify and delineate,

and difficult to remediate. A weak hydrological gradient and strong tidal influences make contaminant migration complex and unpredictable.

A review of previous environmental records provided by the State DOT-Harbors Division has indicated that variable arsenic concentrations exceeding both natural background levels and State Department of Health Environmental Action Levels (EALs) were identified in surface soils throughout the Port of Hilo area, including two sampling locations on or in close proximity to the project area. (KEI, 2010).



*Photo 9: HELCO Fuel Line, showing warning sign at the corner of Kalaniana'ole Avenue and Kumau Street indicating presence of subsurface fuel pipeline.  
Photo Credit: Kauai Environmental Inc.*

### *Recognized Environmental Conditions*

The following recognized environmental conditions (RECs) and historical recognized environmental conditions (HRECs) have been identified in association with the project area and properties adjacent to the project area (KEI, 2010):

- The presence or likely presence of elevated arsenic levels in surface soils is a recognized environmental condition.
- The long-term historic use of the area for petroleum storage, transport and distribution is a historic recognized environmental condition.

- The long-term historic development of the area for commercial and industrial use is a historic recognized environmental condition.
- The presence of buried fuel pipelines running through the project area that have been in place since the 1950s, and were pre-dated by previous pipelines in the area, is a historic recognized environmental condition.

#### *5.16.2 Potential Impacts and Proposed Mitigation*

##### *Summary of Potential Project Associated Impacts*

KEI identified and summarized the following potential impacts that could affect the construction of the proposed Kumau Street Improvements Project (KEI, 2010):

- Surface soils may be impacted due to elevated arsenic concentrations throughout the area (e.g., this may result in the presence of contaminated soils requiring further verification as to the possible extent and range of contamination present).
- Given the long history of petroleum storage, transportation, and distribution in the area, combined with the subsurface geology and hydrology of the area, which make subsurface contamination hard to identify and delineate, and contaminant migration complex and unpredictable, it is possible that subsurface petroleum contamination could be encountered at any point during the project, especially within areas in close proximity to historic fuel storage and distribution facilities.
- Construction workers performing excavation work within the project area should be aware that subsurface petroleum contamination may be present within localized areas throughout the project area due to the long-term presence of subsurface petroleum pipelines along Kalaniana'ole Avenue. While there is no indication that any leaks already exist within the project area, the pipeline is buried and has not been visually inspected in over 50 years.

##### *Recommendations for Further Action*

Based on the results of the Phase 1, ESA, KEI recommends that a Phase 2, ESA, be conducted to evaluate and quantify the extent of potential contamination in surface and subsurface soils within the project area. Surface soils may be contaminated with elevated levels of arsenic, and subsurface soils may be contaminated with petroleum and petroleum-related compounds. However, due to subsurface geological conditions, any petroleum contamination that may be present would likely be difficult to characterize and delineate.

To address this issue, soil samples should be collected in conjunction with future geotechnical boring, if conducted, in all areas of the project site. The soil sampling and analysis strategy should include the following (KEI, 2010):

- Sampling should include collection of soil samples from geotechnical borings and surface soils. Surface soils should be sampled and processed for analysis using multi-incremental sampling techniques.
- Soil samples should be screened in the field for the presence of volatile organic compounds (VOCs) and petroleum hydrocarbons using a photo ionization detector (PID).

- Soil samples collected from geotechnical boring locations should be analyzed for the following contaminants of potential concern (COPC): total petroleum hydrocarbons (TPH) as gas, oil and diesel; benzene, toluene, ethylbenzene, and xylenes (BTEX); polynuclear aromatic hydrocarbons (PAHs); and Arsenic.
- Surface soil samples should also be analyzed for Arsenic.

The results of the analyses would be used to determine the level of precaution, protection, and/or special handling procedures necessary during excavation and disposal of materials excavated from the site. (KEI, 2010).

#### *Other Mitigation*

All known utilities and underground pipelines shall be identified by the demolition and construction contractor and subsequently disconnected or removed prior to site work. All fuel storage tanks and hazardous materials shall be managed in accordance with measures agreed upon by the State Department of Health (DOH). These measures may include the removal, on-site stabilization, and if feasible recycling of hazardous materials to avoid the potential for release into the environment.

If required, a site-specific Health and Safety Plan shall be prepared prior to construction. The plan will identify safe working conditions for construction in areas with flammable products and/or vapor contamination. The contractor will be required to comply with all conditions of the Health and Safety Plan to ensure that workers will not be exposed to unacceptable safety risks. Compliance with the Health and Safety Plan, DOH regulations, and other regulatory requirements, will be to ensure that no significant impacts from hazardous materials or site contamination will occur during construction activities. Safety measures will include proper techniques for monitoring the presence of flammable vapors in the air, response protocol, personal protective equipment, use of allowable tools, and mechanical measures as appropriate.

The potential for petroleum contamination will be addressed during the project design and construction phases and incorporated into contract and bid documents. Where required, the design and construction phases will be completed in compliance with applicable Federal and State laws and regulations.

The contractor shall be responsible for taking safety, contamination management, and documentation actions required by HRS, Chapter 396, Occupational Safety and Health, and HAR, Chapter 12-8, Hawai'i Occupational Safety and Health. Compliance with the guidance provided in these regulations involves the protection of workers and public health and safety; immediate notification of the DOH regarding safety and contaminant levels; documentation of the locations of the contaminated areas; and proper management of contaminated excavated materials.

It is expected that most of the excavated materials will be returned to trenches and safely covered on-site. However, if contaminated materials are found at the site they will be sampled, analyzed, and appropriately disposed of at a DOH-approved facility. Transport of the materials will also comply with State and Federal regulations regarding the transport of hazardous or petroleum contaminated materials.

Adherence to the above provisions of law are expected to maintain public and worker health and safety and mitigate against the potential for significant short or long term adverse environmental impacts.

## *5.17 Recreational Resources*

### *5.17.1 Description*

The project site is used as a public roadway and improvements at the site will have minimal visual impacts due to the nature of the project involving work primarily at grade and its location in an industrial area.

Within this land use setting, the project site itself does not provide recreational opportunities; however, Baker's Beach and the harbor does provide limited access to the public for recreational waterfront uses. Fishing is the main recreational activity in Hilo Harbor. Surfing and sailing recreation facilities are accommodated in the harbor area but occur outside of the breakwater to maintain safety and accommodate the transit of maritime vessels.

Other recreational areas near the project vicinity include Reeds Beach Park, located approximately a quarter mile west of the project site and the Banyan Golf Course, approximately one half miles from the proposed project site.

### *5.17.2 Potential Impacts and Proposed Mitigation*

There are no recreational activities that take place directly on or around Kumau Street or Kalaniana'ole Avenue. Recreational resources in the surrounding areas will not be affected by the proposed improvements; therefore no mitigation measures are anticipated to be required.

## ***Section 6 Cultural Impact Assessment***

The use of the site for traditional or cultural practices is not expected based on the location of the planned project within an existing rights-of-way used for public transportation purposes. The project area has been previously heavily modified with grading, paving, and road construction activities. Plants found at the site are primarily introduced, exotic species not normally associated with cultural gathering or use activities. The species found at the site included commonly grown ornamentals such as coconut; areca palm; avocado; croton, hibiscus and plumeria cultivars; papaya; Alexandra palm; and alien species such as bingabing, Chinese banyan, and California grasses.

The previously paved and otherwise developed condition of the site is also not conducive to the presence of wahi pana (storied place) or other sites associated with the gathering of important native species that may include ti, flowering Hawaiian plants, or other species bearing fruit.

Based on the above, the potential for adverse effects to traditional and cultural practices is not anticipated. However, as noted in Section 5.9.2, any inadvertent finds will immediately result in the cessation of work and the immediate reporting of the find to the State Historic Preservation Division (SHPD) at (808) 933-7653 (Hawai'i Island) or (808) 692-8015 (Main Office, O'ahu). SHPD will furnish further instructions regarding the treatment of the find and the conditions when work may be resumed.

## ***Section 7***

### ***Relationship to Land Use Policies, Plans, and Controls***

#### ***7.1 Overview***

State and County of Hawai‘i policies, plans, and land use controls are established to guide development in a manner that enhances the environment and quality of life. The establishment of policies, plans, and land use controls at all levels of government are further promulgated to help ensure that the long-term social, economic, environmental, and land use needs of the community and region can be met. The proposed project’s relationship to land use policies, plans, and controls for the region and proposed activity are as follows.

#### ***7.2 State of Hawai‘i***

##### ***7.2.1 Hawai‘i State Plan***

The Hawai‘i State Plan, adopted in 1978, and promulgated in HRS, Chapter 226, consists of three major parts:

Part I, describes the overall theme including Hawai‘i’s desired future and quality of life as expressed in goals, objectives, and policies.

Part II, Planning Coordination and Implementation, describing a statewide planning system designed to coordinate and guide all major state and county activities and to implement the goals, objectives, policies, and priority guidelines of the Hawai‘i State Plan.

Part III, Priority Guidelines, which express the pursuit of desirable courses of action in major areas of statewide concern.

The proposed project is consistent with the objectives and policies of the Hawai‘i State Plan. Specifically, the proposed action will increase and diversify the State’s economic base through upgrading facilities used by the shipping industry. The following section of the Hawai‘i State Plan’s objectives and policies for facility systems are relevant to the proposed action.

***§226-17 Objectives and policies for facility systems--transportation.***

- (b) To achieve the transportation objectives, it shall be the policy of this State to:*
- (4) Provide for improved accessibility to shipping, docking, and storage facilities;*
- (6) Encourage transportation systems that serve to accommodate present and future development needs of communities;*
- (8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;*
- (9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;*
- (10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai‘i’s natural environment;*
- (12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives;*

The proposed project will promote improved accessibility to the Hilo Harbor by trucks and container traffic through the area of the Kumau Street and Kalaniana‘ole Avenue intersection. The project will also facilitate the completion of the Pier 4, Interisland Cargo Terminal, as identified in the DOT, Hawai‘i Commercial Harbors 2020 Master Plan. This will encourage the overall objective for statewide economic growth and diversification through the provision of a facility that will support commerce and trade.

The design and development of this project will address the needs of the community and region through the selection of a site that is consistent with surrounding industrial land uses associated with the Hilo Harbor. The project will be developed in accordance with all laws and regulations necessary to ensure against the potential for adverse environmental effects.

### *7.2.2 State Land Use Law*

The State Land Use Commission classifies all lands in the State of Hawai‘i into one of four land use designations: Urban, Rural, Agricultural and Conservation. According to HRS, Chapter 205, State Land Use Law:

***“Chapter 205, HRS, Districting and classification of lands:”***

*“(a) There shall be four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural and conservation. The land use commission shall group contiguous land areas suitable for inclusion in one of these four major districts. The commission shall set standards for determining the boundaries of each district provided that:”*

*“(1) In the establishment of boundaries of urban districts those lands that are now in urban use and a sufficient reserve area for foreseeable urban growth shall be included;”*

*“In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county.”*

*(b) Urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated.*

The proposed action involves the use of land within the Urban State Land Use District. The project involving the construction of roadway improvements in support of the operations of the Hilo Harbor is consistent with this designation. See **Figure 11, State Land Use District**.

### *7.2.3 State Functional Plans*

The State Functional Plans provide detail to the Hawai‘i State Plan and guide State and County actions under specific functional areas. The proposed project is considered applicable to the Transportation Functional Plan. The applicable objectives and policies are discussed below.

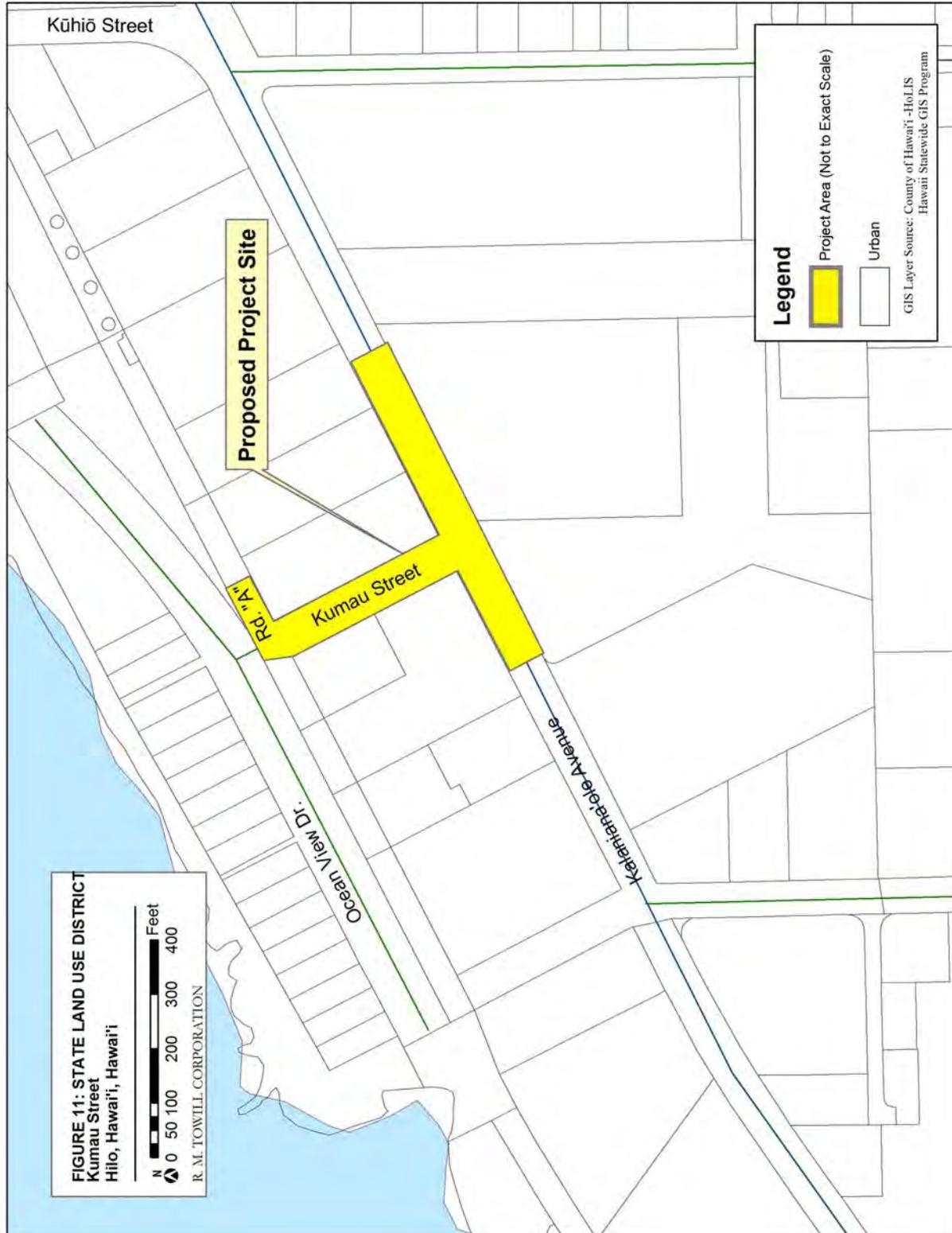
***Transportation***

*Objective I.A: Widening of the transportation system; Policy I.A.1: Increase transportation capacity and modernize transportation infrastructure in accordance with existing master plans.*

The proposed project is included as a part of the DOT, Hawai‘i Commercial Harbors 2020 Master Plan to facilitate the future development of the Pier 4, Interisland Cargo Terminal.

The project will enhance container transportation capacity on Kumau Street by providing an alternative entryway to Hilo Harbor. The new configuration will promote a reduction of traffic along Kūhiō Street by providing an alternative pathway (Kūhiō Street presently serves as the main entrance to the harbor) and will be conducted in compliance with existing State and County of Hawai‘i master plans and land use ordinances.

Kumau Street Entrance Improvements at Pier 4 Interisland Cargo Terminal Project  
Hilo Harbor, Island of Hawai'i, Hawai'i



#### *7.2.4 Hawai‘i Statewide Transportation Plan*

The Hawai‘i Statewide Transportation Plan (HSTP) provides the framework for the planning of Hawai‘i’s transportation system and included: an extensive public involvement and outreach effort with a broad and diverse range of participants; collaboration with the modal divisions of the DOT and its County partners; and, a detailed research effort to ensure that all technical issues associated with the plan were fully analyzed and considered, and that applicable federal and state regulations were satisfied. The stated purposes of the HSTP are:

To establish a framework for the development, integrated management, and operation of Hawai‘i’s multi-modal transportation systems, programs, and facilities; and

To provide a foundation and identify the parameters within which the search for solutions can begin.

The proposed project is consistent with the stated mission and the following goals of the HSTP:

*Mission: To provide for the safe, economic, efficient, and convenient movement of people and goods.*

*GOAL I: Achieve an integrated multi-modal transportation system that provides mobility and accessibility for people and goods.*

*GOAL II: Ensure the safety and security of the air, land, and water transportation systems.*

*GOAL III: Protect and enhance Hawai‘i’s unique environment and improve the quality of life.*

*GOAL IV: Support Hawai‘i’s economic vitality.*

*GOAL V: Implement a statewide planning process that is comprehensive, cooperative, and continuing.*

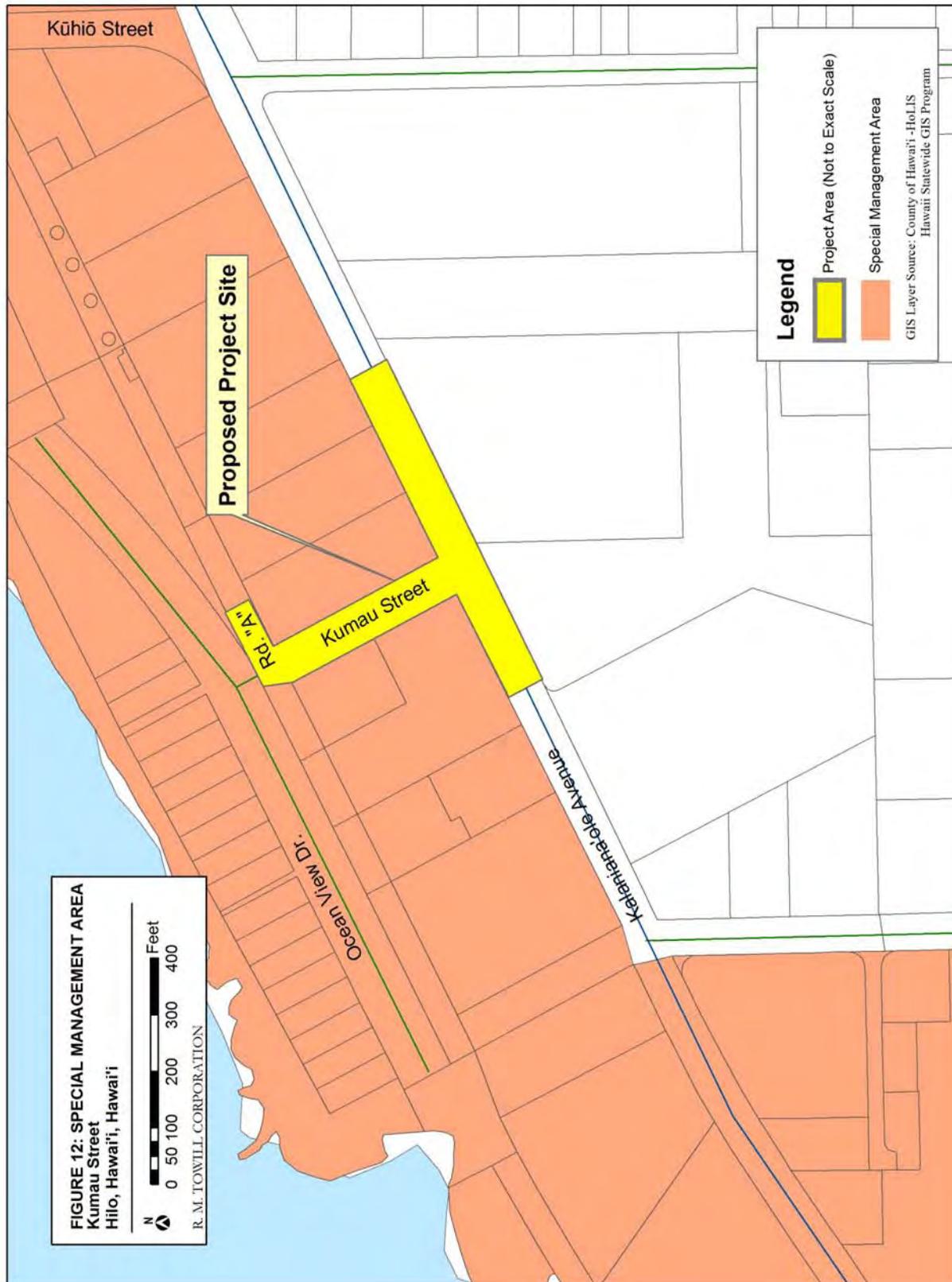
The proposed project will promote the safe and efficient movement of goods through the Hilo Harbor area through the development of a second point of entry and exit at Kumau Street to relieve existing reliance on the use of Kūhiō Street. This second point of entry and exit will promote safety by reducing traffic congestion and support economic vitality by making more efficient the movement of goods and products requiring shipment and transportation from and to the Hilo Harbor. The project is a part of the comprehensive Hawai‘i Commercial Harbors 2020 Master Plan, which identifies the Pier 4, Interisland Container Terminal and surrounding area for future development.

#### *7.2.5 Special Management Area*

The County of Hawai‘i has designated the shoreline and certain inland areas of the island of Hawai‘i as being within the Special Management Area (SMA). SMA areas are designated sensitive environments and protected in accordance with the State’s Coastal Zone Management policies, as set forth in HRS, Chapter 205A, Coastal Zone Management. See **Figure 12, Special Management Area**.

Portions of the proposed project including the entirety of Kumau Street and Road “A” are located within the SMA, but are exempt from County requirements in the State of Hawai‘i under HRS, Chapter 266, Harbors. The specific section citing this exemption is in HRS, Chapter 266-2, Powers and Duties of Department:

Subsection “(b) Notwithstanding any law or provision to the contrary, the department of transportation is authorized to plan, construct, operate, and maintain any commercial harbor facility in the State, including, but not limited to, the acquisition and use of lands necessary to stockpile dredged spoils, without the approval of county agencies.”



### 7.2.6 Coastal Zone Management Act (CZMA)

All land and water use activities in the state must comply with HRS, Chapter 205A, Hawai‘i Coastal Zone Law. The State of Hawai‘i designates the Coastal Zone Management Program (CZMP) to manage the intent, purpose and provisions of HRS, Chapter 205(A)-2, as amended, for the areas from the shoreline to the seaward limit of the State’s jurisdiction, and any other area which a lead agency may designate for the purpose of administering the CZMP.

The following is an assessment of the project with respect to the CZMP objectives and policies set forth in Section 205(A)-2.

#### **1. Recreational resources**

*Objective: Provide coastal recreational opportunities accessible to the public.*

*Policies: A) Improve coordination and funding of coastal recreational planning and management; and B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*

*(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*

*(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;*

*(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*

*(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*

*(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*

*(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;*

*(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and*

*(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.*

Recreational and shoreline facilities and public access to the shoreline will not be adversely affected by the project. Residents will not be adversely affected but may be temporarily limited by equipment noise, dust, and construction related traffic. The project site is situated within an industrial area and does not provide formal recreational opportunities; however, Baker’s Beach and the harbor do provide access to the public for recreational waterfront uses. Fishing is the main recreational activity in Hilo Harbor. Surfing and sailing recreation facilities are accommodated in the harbor area but occur outside the breakwater. There are no recreational activities that take place directly on or around Road “A”, Kumau Street or Kalaniana‘ole Avenue. Recreational resources in the surrounding areas will not be affected by the proposed improvements.

## **2. Historic resources**

*Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

*Policies: (A) Identify and analyze significant archaeological resources;*

*(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and*

*(C) Support state goals for protection, restoration, interpretation, and display of historic resources.*

There are no archaeological or cultural resources known to be present within the immediate project site, as much of the project vicinity had been previously disturbed during the construction of the harbor and the preexisting roadways. However, in accordance with HRS, Chapter 6E, and the requirements of the SHPD, DLNR, should any historic resources, including human skeletal and significant cultural remains, be identified during the construction of the proposed project: (1) work will cease in the immediate vicinity of the find; (2) the find will be protected from any additional disturbance by the contractor; and (3) the SHPD, will be contacted immediately at (808) 933-7653 (Hawai'i Island) or (808) 692-8015 (Main Office, O'ahu) for further instructions including the conditions under which work activities may resume.

## **3. Scenic and open space resources**

*Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.*

*Policies: (A) Identify valued scenic resources in the coastal zone management area;*

*(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline;*

*(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*

*(D) Encourage those developments that are not coastal dependent to locate in inland areas.*

The potential for adverse visual impacts is anticipated to be minimal. The proposed project will involve work on the existing Road "A", Kumau Street and Kalaniana'ole Avenue within a surrounding area used for industrial purposes. No drastic or adverse changes to the visual resources of the area are planned. The proposed project is therefore expected to remain consistent with surrounding land uses to meet the growing need for an alternative entryway into the Hilo Harbor. Public access to the area will be maintained during the construction period; however, residents may be affected by equipment noise, dust, and construction related traffic. These activities will be only for a temporary period of time and will not result in any adverse permanent changes.

## **4. Coastal ecosystems**

*Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

*Policies: (A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*

*(B) Improve the technical basis for natural resource management;*

*(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*

*(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*

*(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.*

Coastal ecosystems will not be affected by the project. No use of the coastal ecosystem will be required. During construction, BMPs will be employed to prevent potential pollutant (sediment) discharges into storm water runoff. These measures will be in place and functional before project activities begin and will be maintained throughout the construction period.

#### **5. Economic uses**

*Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.*

*Policies: (A) Concentrate coastal dependent development in appropriate areas;*

*(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*

*(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*

*(i) Use of presently designated locations is not feasible;*

*(ii) Adverse environmental effects are minimized; and*

*(iii) The development is important to the State's economy.*

The proposed project has been assessed for potential social, visual, and environmental impacts in accordance with State of Hawai'i regulations. With implementation of the mitigation measures identified in this document, no adverse impacts are expected to result. In the short term, construction expenditures will have an overall beneficial impact on the local construction industry, and construction activities will benefit the community indirectly through the creation of jobs. In the long term, the widening of Kumau Street will allow harbor operations to stimulate direct maritime expenditures, and lead to the creation of port-related jobs and new businesses.

#### **6. Coastal hazards**

*Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*

*Policies: (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*

*(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;*

*(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and*

*(D) Prevent coastal flooding from inland projects.*

The proposed project has been evaluated for potential impacts associated with natural hazards including flooding, erosion, and nonpoint source pollution hazards. Natural hazards such as hurricanes, flooding, and tsunami are unavoidable for all coastal harbor areas. Accordingly, all structures proposed for this project will be built, at a minimum, according to equivalent standards

for zone D, as established by IBC. To mitigate from hurricanes, the project will ensure that improvements are designed to present codes which offer some protection from damage.

The DOT, Harbors Division, will continue to coordinate with the County of Hawai‘i Civil Defense agency to implement and maintain established procedures in the event of a flood or tsunami. Although the proposed project is located within the FEMA Flood Zone X, areas outside of the 100 year flood, it is noted that no habitable structures are proposed that would constitute an unreasonable risk to life or property. Given the requirement for the proposed project to be located within proximity of the shoreline, the proposed use is considered reasonable and is not anticipated to have a significant impact on flood conditions.

#### **7. Managing development**

*Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*

*Policies: (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*

*(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and*

*(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.*

The proposed project conforms to all State of Hawai‘i regulations. A comprehensive list of permits that may be required is provided in Section 8, Permits and Approvals That May Be Required. While the proposed project site is under the jurisdiction of the CZMA, no coastal resources will be adversely affected.

#### **8. Public participation;**

*Objective: Stimulate public awareness, education, and participation in coastal management.*

*Policies: (A) Promote public involvement in coastal zone management processes;*

*(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and*

*(C) Organize workshops, policy dialogues, and site-specific mitigation to respond to coastal issues and conflicts.*

The provision for public participation will be provided through the environmental review process as required in HRS, Chapter 343. Public comments will be received during the public comment period associated with the filing of the Draft Environmental Assessment. In addition, environmental permit applications filed for the subject project will be subject to governmental agency and public review as required under law.

#### **9. Beach protection;**

*Objective: Protect beaches for public use and recreation.*

*Policies: (A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;*

*(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and*

*(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.*

The proposed project does not involve nor require the direct use of beaches or shoreline resources.

#### **10. Marine resources**

*Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.*

*Policies: (A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*

*(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;*

*(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*

*(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and*

*(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

The proposed project does not involve the use or development of marine and coastal resources.

### **7.3 County of Hawai‘i**

#### **7.3.1 Hawai‘i County General Plan**

The County of Hawai‘i’s General Plan (GP) is a policy document for the long range comprehensive development of the island of Hawai‘i. The GP was last updated in 2005 and amended by Ordinance No. 06-153 in 2006.

The purposes of the GP are to:

- Guide the pattern of future development in this County based on long-term goals;
- Identify the visions, values, and priorities important to the people of this County;
- Provide the framework for regulatory decisions, capital improvement priorities, acquisition strategies, and other pertinent government programs within the County organization and coordinated with State and Federal programs.
- Improve the physical environment of the County as a setting for human activities; to make it more functional, beautiful, healthful, interesting, and efficient.
- Promote and safeguard the public interest and the interest of the County as a whole.
- Facilitate the democratic determination of community policies concerning the utilization of its natural, man-made, and human resources.
- Effect political and technical coordination in community improvement and development.
- Inject long-range considerations into the determination of short-range actions and implementation.

According to the County of Hawai'i, the GP provides the legal basis for all subdivision, zoning and related ordinances. It also provides the legal basis for the initiation and authorization for all public improvements and projects.

The proposed project is considered consistent with the following provisions of the General Plan:

**(1) Transportation**

**Goals**

- *Provide a transportation system whereby people and goods can move efficiently, safely, comfortably and economically.*
- *Make available a variety of modes of transportation which best meets the needs of the County.*

**Policies**

- *A framework of transportation facilities which will promote and influence desired land use shall be established by concerned agencies.*
- *The agencies concerned with transportation systems shall provide for present traffic and future demands, including mass transit programs for high growth areas.*
- *The improvement of transportation service shall be encouraged.*

**Standards**

- *Transportation systems shall meet the requirements of the State Department of Transportation and the County of Hawaii.*

The proposed project will accomplish the General Plan goals and policies for transportation through the safe and efficient movement of heavy truck and container traffic from the planned Hilo Harbor, Pier 4, Interisland Cargo Terminal, as identified in the DOT, Hawai'i Commercial Harbors 2020 Master Plan. The Master Plan and the subject project will provide an efficient interface between the harbor and the need for the distribution of shipping related goods along the State and County road and highway system. The Master Plan and subject project has further considered present and future traffic demands and will meet the requirements and road standards of the DOT and County of Hawai'i.

**(2) Transportation Terminals**

*The following goal, policies, and standard are set forth to guide the orderly development of the County's transportation terminals and related facilities.*

**Goal**

- *Provide transportation terminals and related facilities for the safe, efficient and comfortable movement of people and goods.*

**Policies**

- *The County shall encourage the programmed improvement of existing terminals, including adequate provisions for control of pollution.*
- *The State Department of Transportation should continue to implement its framework of transportation terminals and related facilities which will promote and influence desired land use policies.*
- *The County shall encourage maximum use of the island's airport and harbor facilities.*

**Standards**

- *Requirements of the State Department of Transportation.*

The proposed project is consistent with the General Plan's goals and policies for transportation terminals by implementing the subject project to support the future development of the Pier 4

area, as noted above. The project will further promote desired land uses as identified in the Hawai‘i Commercial Harbors 2020 Master Plan for the Kumau Street and Kalaniana‘ole Avenue area thereby helping to maximize the use of the Hilo Harbor. All work proposed for this project will be according to the requirements and standards of the DOT.

### *7.3.2 County of Hawai‘i Zoning*

According to the County of Hawai‘i Zoning Code, Chapter 25, the existing zoning surrounding Road “A”, Kumau Street and Kalaniana‘ole Avenue is principally industrial with a portion at the eastern end of Kalaniana‘ole Avenue zoned as resort/hotel. See **Figure 13, Zoning**.

#### ***Division 15. MG, General Industrial Districts.***

*Section 25-5-150. Purpose and applicability. The MG (general industrial) district applies to areas for uses that are generally considered to be offensive or have some element of danger.*

*Section 25-5-151. Designation of MG districts.*

*Each MG (general industrial) district shall be designated by the symbol “MG” followed by a number which indicates the minimum land area, in number of thousands of square feet, required for each building site, or if the number is followed by the symbol “a,” by the minimum number of acres required for each building site.*

#### ***Division 14. ML, Limited Industrial Districts.***

*Section 25-5-140. Purpose and applicability. The ML (limited industrial) district applies to areas for business and industrial uses which are generally in support of but not necessarily compatible with those permissible activities and uses in other commercial districts.*

*Section 25-5-141. Designation of ML districts.*

*Each ML (limited industrial) district shall be designated by the symbol “ML” followed by a number which indicates the minimum land area, in thousands of square feet, required for each building site.*

#### ***Division 9. V, Resort-Hotel Districts.***

*Section 25-5-90. Purpose and applicability. The V (resort-hotel) district applies to areas to accommodate the needs and desires of visitors, tourists and transient guests. It applies to specific areas where public roads and public utilities are available or where suitable alternate private facilities are assured. It may apply to a single isolated hotel or resort with or without a commercial mall or shopping section.*

All work proposed for the roadway improvements project will be in accordance with DOT requirements and coordinated with the County of Hawai‘i zoning code and subdivision standards for the design of roadway improvements. No changes to the underlying zoning of the site will be required.



## ***Section 8***

### ***Permits and Approvals That May Be Required***

#### ***8.1 State of Hawai'i***

Department of Health, Indoor and Radiological Health Branch  
Community Noise Permit

Department of Health, Clean Water Branch  
National Pollutant Discharge Elimination System (NPDES) Permits:  
NOI Form C: Storm Water Associated with Construction Activities  
NOI Form F: Discharges of Treated Hydrotesting Effluent

Department of Transportation, Highways Division  
Plan review and approval

## ***Section 9 Agencies and Organizations Consulted for the Environmental Assessment***

The following agencies, organizations, and individuals will be contacted during the Chapter 343, HRS, environmental review process to disclose the environmental conditions of the site, the proposed undertaking, and the potential impacts and mitigation measures that will be applied to ensure against adverse impacts.

### ***9.1 State of Hawai'i***

- Department of Land and Natural Resources
- State Historic Preservation Division
- Department of Transportation – Highways Division
- Department of Civil Defense

### ***9.2 County of Hawai'i***

- Department of Public Works
- Planning Department
- Department of Water Supply
- Hawai'i Civil Defense Agency
- Fire Department
- Hawai'i Police Department

### ***9.3 Federal Government***

- U. S. Fish and Wildlife Service (as applicable)

### ***9.4 Elected Officials, Organizations and Individuals***

- State Senator Mālama Soloman, 1st Senatorial District
- State Representative Jerry L. Chang, 2nd Representative District
- Hawai'i County Council Member Dennis "Fresh" Onishi, Council District 4
- Hawaiian Electric Light Company

## ***Section 10 Summary of Effects***

### ***10.1 Short Term Effects***

Short term effects associated with the proposed project will be principally during the construction phase. Noise will be temporarily generated from construction activities and the related mobilization of equipment. Construction equipment is expected to include, but not be limited to, backhoe(s), loader(s), or excavator(s), work trucks, and powered hand tools. All internal combustion powered equipment will be muffled in accordance with standard engine operating practices. Upon the completion of work, noise levels will return to preexisting ambient levels.

Fugitive dust may be generated during construction. The contractor will be required to control fugitive dust through the regular wetting of soils and ground areas susceptible to the generation of dust during work activities. Only enough water will be used to wet the surface of ground areas and prevent the generation of runoff.

Protection of water quality will be through the use of mitigative measures including silt fencing/curtains, berms, and other applicable erosion controls to prevent construction stormwater related soils and silt from leaving active areas of work. Specifications for the use of these measures will be through the construction plan approval process and the required NPDES permit applications that will be filed prior to the start of work.

Upon completion of work all construction equipment, machinery, and personnel will be demobilized from the job site with no further disturbance to the area. As required, all debris and waste materials will be disposed of at an approved refuse facility. Active work areas will be replanted with vegetation, as required, similar to that found at the existing site.

### ***10.2 Long Term Effects***

No long term adverse effects are anticipated. The increase in impermeable surface area is expected to be negligible based on the existing hard surfaces of the surrounding area. Accordingly, an adverse increase in surface runoff is not expected to result in significant adverse impacts. Upon completion of work, all equipment used on-site will be demobilized and all debris and waste materials disposed of at an approved state or county refuse facility.

### ***10.3 Significance Criteria***

In accordance with the provisions set forth in HRS, Chapter 343, and the significance criteria in HAR, Chapter 11-200-12, this Draft Environmental Assessment has preliminarily determined that the project will have no significant adverse impact to air and water quality, existing utilities, noise, archaeological or cultural sites, or wildlife habitat. All anticipated impacts will be temporary and will not adversely impact the environmental quality of the area.

According to the Significance Criteria:

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The proposed project is not anticipated to adversely impact any natural or cultural resources. The project site is located on an existing roadway and within an industrial area that has been previously disturbed by clearing and grading to accommodate road and building construction. Any potential archaeological or cultural remains that may have once existed at the site are expected to have been recovered or destroyed during prior development activities. No significant archaeological or cultural sites are therefore anticipated to be discovered. However, in the unlikely event that any remains or artifacts are encountered, practices as identified in Section 5.9.2 of this document will be applied:

Any inadvertent finds will immediately result in the cessation of work and the immediate reporting of the find to the SHPD at (808) 933-7653 (Hawai'i Island) or (808) 692-8015 (Main Office, O'ahu). SHPD will furnish further instructions regarding the treatment of the find and the conditions when work may be resumed.

2. *Curtails the range of beneficial uses of the environment;*

The proposed use of the site will facilitate development of a new entryway to the Hilo Harbor and will not curtail existing surrounding land uses.

3. *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 343, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*

The proposed project is consistent with the environmental policies, goals and guidelines as delineated in HRS, Chapter 343, and as documented in this Environmental Assessment.

4. *Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;*

The proposed project is expected to have little to no effect on the social and economic environment. In general, the planned roadway improvements will serve to meet the level of service needs and standards for transportation infrastructure required for the future development of the Hilo Harbor.

The proposed project will not, by itself, stimulate economic welfare. It will, however, accommodate current and future heavy truck container traffic associated with the operation of the harbor.

5. *Substantially affects public health;*

The proposed project will be developed in accordance with Federal, State, and County of Hawai'i, rules and regulations governing public safety and health. Potential sources of adverse impacts have been identified and appropriate mitigative measures developed. The primary public health concerns are anticipated to involve air, water, noise, and traffic impacts. However, it is expected that these impacts will be either minimized or brought to negligible levels by the appropriate use of the mitigation measures described in this document.

6. *Involves substantial secondary impacts, such as population changes or effects on public facilities;*

The proposed project will not, by itself, stimulate unexpected changes in population. It will, however, accommodate current and future heavy truck container traffic associated with the operation of the harbor. Inasmuch as the project will facilitate improved access to the planned Pier 4 area, such changes have been earlier considered as part of the Hawai'i Commercial Harbors 2020 Master Plan and were determined to result in no adverse effects to population changes or effects on public facilities.

7. *Involves a substantial degradation of environmental quality;*

The proposed project will be developed in accordance with the environmental policies of HRS, Chapter 343. The analysis provided in this Environmental Assessment indicates that no substantial environmental degradation is anticipated or expected.

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

The proposed project addresses the need for an alternative entryway into Hilo Harbor and represents the State DOT's commitment to maintaining efficient transportation infrastructure. It is being developed as part of an ongoing effort to upgrade and expand the capacity of the transportation system to meet existing and projected service demands; discussed further in Hawai'i Commercial Harbors 2020 Master Plan. The project will not by itself, involve a commitment for larger actions. However, parts of surrounding areas will be utilized in the future as a part of the Master Plan.

9. *Substantially affects a rare, threatened, or endangered species, or its habitat;*

There are no threatened or endangered flora or fauna species within or immediately surrounding the project site.

10. *Detrimentially affects air or water quality or ambient noise levels;*

Any potential for adverse impacts to air, water quality, or noise levels will be addressed by use of appropriate mitigative measures as described in this Environmental Assessment.

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 project is located in an area that is already in use as a roadway within an industrial area. The project itself does not possess any sensitive characteristics that would detract from or adversely impact the surrounding environment.

12. *Substantially affects scenic vistas and view planes identified in county or state plans or studies;*

The proposed site is not located within any scenic vista or view plane identified in County or State Plans. The proposed project will result in long-term visual impacts in the form of a widened roadway. The improvements will be noticeable, but will not intrude on existing view planes. In general, the appearance of the widened roadway will be similar to the visual impact

created by the existing roadway and will not detract from existing views. Visual impacts associated with construction activities will be temporary and cease with the removal of construction equipment and personnel.

*13. Requires substantial energy consumption.*

Energy that is used will be in the form of fossil fueled internal combustion equipment, machinery, and vehicles, and electricity supplied to the site by either an existing HECO power connection or by the use of portable generator(s). The use of these forms of energy is not expected to be greater or significantly greater than that used for the development of similar road widening projects.

## ***Section 11***

### ***Summary of Findings and Significance Determination***

In accordance with the provisions set forth in HRS, Chapter 343, and the significance criteria in HAR, Chapter 11-200-12, this Environmental Assessment has evaluated and assessed the potential for environmental impacts associated with the proposed project and it is preliminarily determined that a HRS, Chapter 343, EIS will not be required.

The proposed road widening is not expected to result in significant adverse impacts to geology, soils, hydrology, stream flow, biological resources, air quality, natural hazards, cultural resources, socioeconomics, or land uses. Minimal impacts may consist of minor traffic, noise and air quality disturbances to residents in the area that may traverse the immediate surrounding location of the site, but will completely cease once construction is completed.

***Section 12  
Draft Environmental Assessment Comments and Responses***

This section reserved for written comments and responses to comments.

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## **Appendix A**

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Phase 1, Environmental Site Assessment  
Kumau Street Improvements Project  
Port of Hilo, Hawai'i  
Kaua'i Environmental, Inc.  
August 2010

PHASE 1  
ENVIRONMENTAL SITE ASSESSMENT

*Kumau Street Improvements Project*  
*Port of Hilo, Hawaii*

August 2010

Prepared For:

R. M. Towill Corporation  
2024 N. King Street, Suite 200  
Honolulu, HI 96819

Prepared by:

Kauai Environmental, Inc.  
P.O. Box 1123  
Kilauea, Hawaii 96754

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**PHASE 1**  
**ENVIRONMENTAL SITE ASSESSMENT**

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# PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

## *Kumau Street Improvements Project Port of Hilo, Hawaii*

### EXECUTIVE SUMMARY

Kauai Environmental Inc. performed a Phase 1 Environmental Site Assessment (ESA) for the area to be affected by the Kumau Street Improvements Project at the Port of Hilo in Hilo, on the Island of Hawaii, to identify any potentially hazardous materials or conditions that could impact the construction within this project area. The area to be affected includes Kumau Street between Kalaniana'ole Avenue and Ocean View Drive, and approximately 615 feet of Kalaniana'ole Avenue from 240 feet west of Kumau Street to 375 feet east of Kumau Street.

This assessment was conducted in conformance with the 2000 ASTM Standard for Phase 1 Environmental Site Assessments to determine whether conditions or situations on the properties in question might result in real or potential hazards, or environmental liabilities, that might impact or complicate construction of the Kumau Street Improvements Project. Specific items investigated included: present and historical uses of the project area and adjacent properties; signs of gross surface contamination; the presence of hazardous materials and wastes; above ground and underground storage tanks (ASTs and USTs), and other indications of the presence of chemical contamination.

A review of State and Federal environmental regulatory databases indicated the following:

- No sites listed by the U.S. EPA on the NPL (Superfund), proposed NPL, delisted NPL or CERCLIS databases were identified within the recommended search distances from the project area.
- One site listed on the CERC-NFRAP database was identified within the recommended search distance from the project area. This facility, Wood Protection Co. (aka HPM Building Supply), is not expected to have impacted the subject property due to its distance from and location relative to the subject property.
- No RCRA corrective action sites were identified within the recommended search distance from the project area.
- A total of eleven (11) RCRA hazardous waste generators were identified within the recommended search distance from the project area, including one large quantity generator, seven (7) small quantity generators and three (3) conditionally exempt small quantity generators. There is no indication that the hazardous waste generated at these facilities has impacted the project area as no violations have been reported at any of the facilities identified here.

- Twelve (12) state-recognized hazardous waste sites were identified within the recommended search distance from the project area. While it is unlikely that any of these sites have directly impacted the project area, the large number of listed SHWS, and petroleum storage sites in general, in proximity to the project area may have contributed to low-level groundwater contamination and/or subsurface petroleum contamination, as is common in heavily developed industrial areas with a long history of use for petroleum storage and distribution.
- Ten (10) registered underground storage tank (UST) sites were identified within the recommended search distance from the project area. The presence of a large number of UST sites is not uncommon for a commercial industrial areas. Absent any documented leaks, the presence of these sites is not expected to have impacted the project area.
- Nine (9) leaking underground storage tank (LUST) sites were identified within the recommended search distance from the project area. The presence of a large number of LUST sites in the vicinity of the project area is not expected to have impacted the subject property, due to the fact that site clean-ups have been completed at each of the sites listed above. However, given the geology of fractured rock below shallow surface soils throughout the area, thorough evaluation and clean-up of subsurface contamination may have been impossible in some cases.
- No historic landfill sites were identified within the recommended search distance from the project area.
- There have been no spill incidents connected with the project area that were reported to the HEER office or entered on the ERNS database.
- No sites with institutional or engineering controls and no Brownfield sites were identified within the recommended search distances from the project area.

A site reconnaissance at the project area was performed on July 27, 2010. No indication of any current or historical recognized environmental conditions was observed at any time during this inspection.

A review of historical land use information including fire insurance maps, aerial photographs, historical topographic maps, and interviews with persons familiar with the history of the project area and the surrounding area has indicated the following:

- A substantial portion of the project area is within or adjacent to areas around the Port of Hilo that have been developed and in use for storage, transportation and distribution of petroleum products dating back to at least the 1940s.
- A railroad line leading to the Port of Hilo once ran along the northern edge of the project area, between Kalaniana'ole Ave. and the harbor.

- The HELCO pipeline that runs through the project area has been in place since the 1950s, and was predated by other fuel pipelines in the area.
- The subsurface geology of the area, which consists of fractured rock beneath shallow surface soils, makes subsurface contamination in the area hard to identify and delineate, and difficult to remediate. A weak hydrological gradient and strong tidal influences makes contaminant migration complex and unpredictable.

A review of previous environmental records provided by the State DOT-Harbors Division has indicated the following:

- Variable arsenic concentrations exceeding both natural background levels and State Dept. of Health Environmental Action Levels were identified in surface soils throughout the Port of Hilo area, including two sampling locations on or in close proximity to the project area.

The following recognized environmental conditions (RECs) and historical recognized environmental conditions (HRECs) have been identified in association with the project area and properties adjacent to the project area:

- The presence or likely presence of elevated arsenic levels in surface soils throughout the project area is a recognized environmental condition.
- The long-term historic use of the area for petroleum storage, transport and distribution is a historic recognized environmental condition.
- The long-term historic development of the area for commercial and industrial use is a historic recognized environmental condition.
- The presence of buried fuel pipelines running through the project area that have been in place since the 1950s, and were pre-dated by previous pipelines in the area, is a historic recognized environmental condition.

In summary, the following potential impacts to the construction of the Kumau Street Improvements Project have been identified:

- Surface soils may be impacted due to elevated arsenic concentrations throughout the area.
- Given the long history of petroleum storage, transportation and distribution in the area, combined with the subsurface geology and hydrology of the area which make subsurface contamination hard to identify and delineate, and contaminant migration complex and unpredictable, it is possible that subsurface petroleum contamination could be encountered at any point during the project, especially within areas in close proximity to historic fuel storage and distribution facilities.
- Construction workers performing excavation work within the project area should be aware that subsurface petroleum contamination may be present within localized areas

throughout the project area due to the long-term presence of subsurface petroleum pipelines along Kalanianaʻole Ave.. While there is no indication that any leaks already exist within the project area, the pipeline is buried and has not been visually inspected in over 50 years.

# PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

## Kumau Street Improvements Project Port of Hilo, Hawaii

### 1.0 INTRODUCTION

Kauai Environmental Inc. (KEI) performed a Phase 1 Environmental Site Assessment (ESA) for the area to be affected by the Kumau Street Improvements Project at the Port of Hilo in Hilo, on the Island of Hawaii.

The scope of this ESA includes the areas of the roadway to be impacted by the Kumau Street Improvements Project. The location of the project area is shown in Figure 1 (Appendix A). A detailed view of the project area is shown in Figure 2 (Appendix A). Throughout this report, the roadway areas and portions of adjacent properties included in this assessment will be referred to collectively as: *the project area* or: *the Kumau Street Improvements Project area*.

This assessment was performed in accordance with the guidelines established in the American Society for Testing and Materials (ASTM) 2000 Standard: E 1527-00, "Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process."

### 1.1 Purpose

This investigation has been performed for the R. M. Towill Corporation (RMTC) to identify any potential environmental hazards or liabilities that might be encountered during the construction of Kumau Street Improvements Project. The purpose of this assessment was to investigate past and present land uses of the project area and surrounding areas to determine if the potential exists for hazardous materials contamination or other significant, adverse environmental liabilities associated with these areas.

As defined by the 2000 ASTM Standard, the objective of the Phase 1 ESA process is to identify any "recognized environmental conditions" associated with a parcel of commercial real estate. A "recognized environmental condition" is defined as: "*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.*" The term may include hazardous substances or petroleum products even when stored under conditions in compliance with applicable laws and regulations, but is not intended to include *de minimis* conditions that would not require enforcement action if brought to the attention of the appropriate government agencies.

## 1.2 *Scope of Work*

This Phase 1 ESA is limited to the area to be affected by the construction of the Kumau Street Improvements Project, as shown in Figure 2.

The 2000 ASTM Standard (ASTM E-1527-00) was used for this investigation, rather than the 2005 Standard (ASTM E-1527-05), because the 2000 ASTM Standard is more suitable for the evaluation of environmental management issues related to construction. Revisions added to the 2005 ASTM Standard are primarily intended to establish various CERCLA liability defenses for innocent landowners and owners of contiguous properties, and are thus not relevant to this investigation. Although the 2000 ASTM Standard was used for this investigation, certain requirements from the 2005 Standard were adopted, such as the database search requirements (Section 3.1) and specific requirements for site inspections (Section 4.1). These specific aspects of the 2005 Standard have been adopted for this investigation because the newer Standard is more rigorous than the 2000 Standard in these areas.

The ASTM Standard defines the four components of the Phase 1 ESA process as follows:

- Records Review
- Site Reconnaissance
- Interviews
- Report

The ASTM Standard states that these four components are to be used in concert, with each component providing information that may be used to inform the other components.

In the process of completing this Phase 1 ESA, KEI has performed the following tasks:

- Conducted a review of available environmental records including State and Federal regulatory databases, and contacted local and State agencies to determine the regulatory history associated with the properties, as well as other properties in the vicinity where current or historical commercial or industrial activities might impact the project area;
- Reviewed available sources of historical information for the project area and surrounding areas, including historical topographic maps and aerial photographs, to assess past land use in the vicinity of the project area;
- Conducted a thorough site reconnaissance to assess current uses and condition of the project area and adjacent properties;
- Interviewed persons familiar with the property and the history of the area for information on current and past uses of the project area and other properties in the surrounding areas;
- Reviewed information on site geology, soils, and hydrogeology of the area; and

- Prepared this Environmental Site Assessment Report which documents the findings of this evaluation.

A review of historical and environmental records pertaining to the project area and surrounding properties is documented in Section 3.0. Site reconnaissance, performed by a qualified environmental professional, is documented in Section 4.0. Interviews, also conducted by a qualified environmental professional, are documented in Section 5.0.

### **1.3 *Limitations and Exceptions***

KEI has completed this Phase 1 ESA for the area to be affected by the Kumau Street Improvements Project at the Port of Hilo in Hilo (the “project area”). KEI’s findings and conclusions in this Phase 1 ESA are professional opinions based solely upon visual observations and interviews conducted by KEI, KEI’s interpretation of the available environmental records and historical information, information provided by the Designated Users of this report, and KEI’s interpretation of other documents reviewed during this Phase 1 ESA process. Requests for information resources are made by KEI to collect relevant data on current and past practices at the Project area. KEI may not receive all information requested or be able to verify or confirm received information during the Phase 1 ESA process. Therefore, KEI shall not be held responsible for errors, omissions, or misrepresentations resulting from missing documentation or from inaccurate information provided by such sources.

Limitations encountered during the physical inspection of the project area included: exact boundaries of the project area had not been surveyed and were not marked; any portions of the project area that may extend onto properties adjacent to the existing roadways was inspected from the existing roadways.

KEI has performed its services for this project with the degree of care, skill and diligence ordinarily exercised by professional consultants performing the same or similar services. No warranty or representation, either expressed or implied, is included or intended in KEI’s proposals, contracts, or reports.

Opinions stated in this report do not apply to changes that may have occurred after services were performed. Opinions and recommendations presented herein apply to site conditions existing at the time of our investigation. They do not apply to site changes of which KEI is not aware and has not had the opportunity to evaluate.

Designated Users of this Phase 1 ESA include: RMTC and the State of Hawaii Department of Transportation - Harbors Division (DOT-Harbors). This report is intended for the sole use of these Users on this Project. This report shall not be reused and is not intended or represented to be suitable for reuse by any other person or entity, whether on this project or any other project, or by the Designated Users on any other project. Any reuse of this document or the findings,

conclusions, or recommendations presented herein will be at the user's sole risk and without liability or legal exposure to KEI.

## **2.0 SITE DESCRIPTION**

### **2.1 *Location and Legal Description***

The project area includes approximately 615 feet of Kalaniana'ole Ave., from 240 feet west of Kumau Street to 375 feet east of Kumau Street, and approximately 500 feet of Kumau Street, which runs from Kalaniana'ole Ave. toward the ocean at Hilo Bay (Figure 1, Appendix A). The approximate coordinates at the center of the project area are 19° 43' 36.1" N latitude and 155° 3' 24.8" W longitude.

### **2.2 *Site and Vicinity Characteristics***

#### **2.2.1 Geologic Setting and Soils**

Soils throughout the area are classified as Keaukaha series. Shallow surface soils averaging seven inches in depth are classified as "muck." Below the muck is shallow bedrock. Infiltration rates are very slow, soils are clayey and have a high water table or are shallow to an impervious layer.

According to John Peard of the State Department of Health HEER office in Hilo, the bedrock in this area is lava basalt that is prone to cracks and fissures. This makes identification, delineation and remediation of subsurface contamination difficult.

#### **2.2.2 Groundwater**

The project area is located below the Underground Injection Control line, indicating that the groundwater in this area is brackish and not considered potable. Resource control regulations are not as strict in this area, as the groundwater is not considered a usable resource.

According to John Peard of the State Department of Health HEER office in Hilo, this area has a weak hydrological gradient toward the ocean combined with strong tidal influences, which make any potential contaminant migration complex and unpredictable.

#### **2.2.3 Surface Waters**

There are no standing bodies of water on the subject property and no channels to carry flowing surface waters. Storm waters that fall on the subject property will drain toward the ocean, either over land or through existing storm sewer systems. Drainage along Kumau Street is notoriously poor: according to local residents and business managers, standing water does accumulate for short periods following heavy rainfalls.

#### 2.2.4 Site Flood Boundaries

According to the Flood Insurance Rate Maps (FIRM) #155166-0885C and #155166-0880C, the project area is located outside, but adjacent to, the 100 and 500 year flood zone. The only 100 year flood zone in the area is located between the project area and the shoreline of Hilo Bay.

### 2.3 ***General Site Setting***

This section summarizes general information about the project area as derived from various sources including information from review of historical use and environmental records (Section 3.0), observations made during site reconnaissance (Section 4.0), and information obtained during interviews (Section 5.0).

#### 2.3.1 Current Uses of Project area

The project area consists of a major roadway, Kalanianaʻole Ave., and a small side street, Kumau Street, located in the vicinity of the Port of Hilo. A subsurface fuel pipeline carrying petroleum products from storage terminals at the Port of Hilo to the HELCO powerplant runs through the project area along the northern edge of Kalanianaʻole Ave..

#### 2.3.2 Past Uses of Project area

The project area and surrounding properties have been in use as roadways and industrial or commercial properties dating back to at least the 1940s. The subsurface HELCO fuel pipeline that runs through the project area has been in place since the 1950s, and was apparently predated by other fuel pipelines in the area.

#### 2.3.3 Current Uses of Adjacent Properties

The project area is surrounded by commercial and industrial development, including several large petroleum storage and distribution facilities, a mixed-use industrial park, an auto dealership, an AirGas supply store, and several small businesses.

#### 2.3.4 Past Uses of Adjacent Properties

The area around the project area has a long history of development for commercial and industrial use. Petroleum storage facilities were well established in the area dating back to at least the 1940s. Mixed use industrial facilities have dominated the area for more than 50 years.

### 3.0 REVIEW OF ENVIRONMENTAL AND HISTORICAL RECORDS

In order to identify the presence of recognized environmental conditions at the project area, several published sources of environmental records were searched, including databases maintained for this purpose by state and federal regulatory agencies. This section lists the environmental databases that were searched, and describes the results of each search.

#### 3.1 *Standard Environmental Record Sources*

The 2000 and 2005 ASTM Standards for the Practice of Conducting Phase 1 ESAs (ASTM E 1527-00 and ASTM E 1527-05) define a list of Federal and State regulatory databases as “Standard Environmental Record Sources” to be searched for relevant information as part of the Phase 1 ESA process. These databases record reported environmental incidents, conditions, and permitted or regulated operations that have the potential to impact the properties listed on the databases as well as other properties in proximity to these listed sites. For this investigation, the database search requirements defined in the 2005 ASTM Standard were used, as the search requirements required by ASTM: E 1527-05 are generally more extensive and rigorous than those defined in ASTM: E 1527-00.

A summary of standard environmental database records was provided to KEI by Environmental Data Resources, Inc on July 27, 2010 (*EDR, 2010a*). This summary included the most recent versions available at that time for all required database records, as described below. Federal environmental databases reviewed for this report are detailed in Section 3.1.1. State environmental databases are detailed in Section 3.1.2. Tribal databases were also reported in EDR’s summary, however these results are not included here since, at this time, there are no tribal lands in the State of Hawaii.

EDR’s database report also includes an “orphans” section, in which properties with inadequate or incomplete address information are listed without specific reference to their exact location or distance from the target properties. The sites listed as “orphans” by EDR have been identified by KEI, and those located within the recommended search distances for the various database searches have been added to the appropriate summaries in the sections below.

##### 3.1.1 Federal Database Search Results

Table 1 lists the major Federal database records that were searched for this report. These records are maintained by the United States Environmental Protection Agency (USEPA). For each database searched, ASTM: E 1527-05 specifies a minimum search distance, and also mandates that each database record used must have been updated by the source within 90 days of the search. The dates of the most recent update for each Federal database source are also listed in Table 1. Also listed are the ASTM-mandated search distance for each database and the number of hits, or number of listed sites identified from each database within the recommended search distance. Results from each database search are described individually below.

**Table 1: Federal Environmental Databases Reviewed**

Database	Source Category	Updated by Source	Search Distance	Hits
NPL	National Priority List (Superfund) Sites	7/14/10	1 mile	0
PROPOSED NPL	Sites Proposed for Listing on NPL	7/14/10	1 mile	0
DELISTED NPL	Sites Deleted from NPL	7/14/10	1 mile	0
CERCLIS	CERCLIS Site List	7/12/10	0.5 mile	0
CERC-NFRAP	CERCLIS -No Further Remedial Action Planned	7/12/10	0.5 mile	1
CORRACTS	RCRA Corrective Action List	5/17/10	1 mile	0
RCRA - TSD	RCRA Transport, Storage and Disposal Facilities	7/09/10	0.5 mile	0
RCRA - LQG	RCRA Large Quantity Generators	7/09/10	0.25 miles	1
RCRA - SQG	RCRA Small Quantity Generators	7/09/10	0.25 miles	7
RCRA - CESQG	RCRA Conditionally Exempt SQGs	7/09/10	0.25 miles	3
US ENG CONTROLS	Sites with Engineering Controls	6/14/10	0.5 mile	0
US INST CONTROL	Sites with Institutional Controls	6/14/10	0.5 mile	0
US Brownfield	Brownfield Sites	6/25/10	0.5 mile	0
ERNS	Emergency Response Notification System	7/09/10	site only	0

NPL = National Priority List

CERCLIS = Comprehensive Environmental Response, Compensation, and Liability Information System

CORRACTS = Corrective Action Report

RCRA = Resource Conservation and Recovery Act

***USEPA National Priorities List (NPL)***

The National Priorities List compiled by the USEPA lists the Superfund Hazardous Waste Sites as required by federal law. The identification of the hazardous waste sites presenting the greatest risk to human health and the environment is mandated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) passed in 1980. This list is prioritized according to the severity of the risk to public health and the environment. **No NPL sites were identified within one mile of the project area.**

***USEPA Proposed National Priorities List (PROPOSED NPL)***

Sites that have been proposed for listing on the NPL are listed in this database. Sites are proposed for listing on the NPL through the issuance of a proposed rule in the Federal Register. EPA then accepts comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing. **No Proposed NPL sites were identified within one mile of the project area.**

***USEPA National Priorities List Deletions (DELISTED NPL)***

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 when no further response is appropriate. **No De-listed NPL sites were identified within one mile of the project area.**

***USEPA CERCLIS List (CERCLIS)***

The CERCLIS List, or Comprehensive Environmental Response, Compensation, and Liability Information System database, contains data on potentially hazardous waste sites that have been reported to the EPA by states, municipalities, private companies, and private persons. These sites are considered for possible clean up activities or inclusion onto the NPL. **No CERCLIS sites were identified within one half mile of the project area.**

***USEPA CERCLIS List-No Further Remedial Action Planned (CERC-NFRAP)***

The CERC-NFRAP List contains sites that have been removed from the CERCLIS list and archived. Archived status indicates that assessment at a site has been completed and the USEPA has determined that no further steps will be taken to list the site on the NPL at this 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 considered to be a potential NPL site. **One site listed on the CERC-NFRAP database was identified within one half mile of the project area.** This site, Wood Protection Co. (aka HPM Building Supply), is not expected to have impacted the subject property due to its distance from and location relative to the subject property.

***USEPA RCRA CORRACTS List (CORRACTS)***

The RCRA CORRACTS or Corrective Action Report database lists those facilities that generate, treat, store, or dispose of hazardous wastes that have undergone remediation activity. These sites have experienced spills or releases of hazardous chemicals prompting the need for clean up action. The extent and type of contamination is listed in this report as well as the status of the corrective actions. **No hazardous waste facilities that have undergone corrective action were identified within one mile of the project area.**

***USEPA RCRA TSD Facilities List (RCRA-TSD)***

The USEPA maintains a list of Treatment, Storage, and Disposal (TSD) Facilities that either handle or dispose of hazardous waste as defined by the hazardous waste regulations published by the USEPA according to the Resource Conservation and Recovery Act (RCRA). This information is contained in the Resource Conservation and Recovery Information System (RCRIS). **No TSD facilities listed on the RCRA-TSD database were identified within one half mile of the project area.**

***USEPA RCRA Generators Lists (RCRA-LQG, RCRA-SQG, RCRA-CESQG)***

The USEPA tracks all facilities that generate hazardous wastes in excess of threshold quantities set in the RCRA regulations. RCRA large quantity generators (LQGs) are those that produce in excess of 1000 kilograms of hazardous waste per month; small quantity generators (SQGs) are those that produce greater than 100 kg per month but less than 1000 kg per month; conditionally exempt small

quantity generators (CESQGs) are those that produce less than 100 kg per month, or less than 1 kg of acutely hazardous waste per month. **A total of eleven (11) hazardous waste generators listed on these RCRA databases were identified within one quarter mile of the project area, including one LQG, seven (7) SQGs and three (3) CESQGs.**

Due to the intensive commercial and industrial use of this area, the CESQG sites are not likely to have a significant impact on the project area. Information on the eight LQG and SQG sites within one quarter of a mile are listed below in Table 2.

**Table 2: RCRA Generator Sites within One Quarter Mile**

<b>Facility</b>	<b>Location</b>	<b>Regulatory Status</b>
Chevron Hilo Terminal	666 Kalaniana'ole Ave.	LQG; no violations reported
Tesoro Hawaii Hilo Terminal #1	701 Kalaniana'ole Ave.	SQG; no violations reported
Tesoro Hawaii Hilo Terminal #2	595 Kalaniana'ole Ave.	SQG; no violations reported
Tesoro Hawaii Hilo Terminal #3	601 Kalaniana'ole Ave.	SQG; no violations reported
Shell Oil Products Hilo Terminal	661 Kalaniana'ole Ave.	SQG; no violations reported
Endo Painting	45 Silva St.	SQG; no violations reported
HD Supply Construction Supply	750 Kalaniana'ole Ave.	SQG; no violations reported
Island Cement	187 Silva St.	SQG; no violations reported

Given the fact that no violations have been reported at any of these facilities, the hazardous waste generated at the facilities listed here is not likely to have directly impacted the project area. However, large oil storage facilities at some of these facilities may have had an impact on subsurface conditions in the area.

***USEPA Engineering Controls Sites List (US ENG CONTROLS)***

The USEPA maintains this list of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to prevent regulated or hazardous substances from entering environmental media or effecting human health. **No sites on the US ENG CONTROLS database were identified within one half mile of the project area.**

***USEPA Institutional Controls Sites List (US INST CONTROL)***

The USEPA maintains this list 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 institutional

controls. **No sites on the *US INST CONTROLS* database were identified within one half mile of the project area.**

***USEPA Brownfield Sites List (US Brownfield)***

The USEPA maintains this listing of Brownfield properties addressed by Cooperative Agreement Recipients and/or Targeted Brownfield Assessments. **No Brownfield sites listed on the *US Brownfield* database were identified within one half mile of the project area.**

***USEPA ERNS List (ERNS)***

The Emergency Release Notification System list, compiled by the USEPA, lists the locations and other data on reported releases of oil and hazardous substances. All releases in excess of threshold quantities are required to be reported and included in this list **No entries on the *ERNS* database were identified for the project area.**

3.1.2 State and Local Database Search Results

Table 3 lists the major State database records that were searched for this report. These records are maintained by the Hawaii State Department of Health (DOH). For each database searched, ASTM E 1527-05 specifies a minimum search distance, and also mandates that each database record used must have been updated by the source within 90 days of the search. Table 3 lists the dates of the most recent update for each DOH database source. Also listed are the ASTM-mandated search distance for each database and the number of hits, or number of listed sites identified from each database within the recommended search distance. Results from each database search are described individually below.

**Table 3: State Environmental Databases Reviewed**

Database	Source Category	Updated by Source	Search Distance	Hits
SHWS	State-recognized Hazardous Waste Sites	6/11/10	1 mile	12
SWF/LF	Permitted Solid Waste Facilities and Landfills	7/08/10	0.5 mile	0
UST	Registered Underground Storage Tank Sites	6/07/10	0.25 mile	10
LUST	Leaking UST Sites	6/07/10	0.5 mile	9
SPILLS	DOH HEER Office Release Notifications	6/11/10	site only	0
HI INST CONTROLS	Sites with Institutional Controls	6/11/10	0.5 mile	0
VCP	Voluntary Response Program Sites	6/11/10	0.5 mile	0
DRYCLEANERS	Permitted Dry Cleaning Facilities	7/25/10	0.25 mile	0
HI Brownfield	Brownfield Sites	6/11/10	0.5 mile	0

DOH = Hawaii State Department of Health  
 HEER = Hazard Evaluation and Emergency Response

***State of Hawaii Hazardous Waste Sites (SHWS)***

This list includes all facilities, sites, or areas in which the DOH Hazard Evaluation and Emergency Response (HEER) Office has an interest, has investigated, or may investigate under Hawaii Revised Statutes. **(12) state-recognized hazardous waste sites listed on the SHWS database were identified within one mile of the project area.** Several of these sites are at a sufficient distance that no significant impact to the project area is expected. The sites that are the closest (within one quarter mile) and/or may be in a position to have had a potential impact on the project area are listed below in Table 4.

**Table 4: SHWS Sites within One Quarter Mile**

<b>Facility</b>	<b>Location</b>	<b>Regulatory Status</b>
Tesoro Hawaii Hilo Terminal #1	701 Kalaniana'ole Ave.	No Further Action required.
Tesoro Hawaii Hilo Terminal #2	595 Kalaniana'ole Ave.	No Further Action required.
Tesoro Hawaii Hilo Terminal #3	601 Kalaniana'ole Ave.	No Further Action required.
Pacific Machinery	456 Kalaniana'ole Ave.	No Further Action required.
Equilon Enterprises LLC	661 Kalaniana'ole Ave.	No Further Action required.
Chevron Hilo Terminal	666 Kalaniana'ole Ave.	No Further Action required.
Island Cement	187 Silva St.	No Further Action required.
Wood Protection Co.	150 Keaa St	No Further Action required.
Big Island Asphalt Co.	794 Kalaniana'ole Ave.	No Further Action required.
Aloha Petroleum	999 Kalaniana'ole Ave.	No Further Action required.
Helco Pipeline Release	Kalaniana'ole Ave. and Hualani St	No Further Action required.

While it is unlikely that any of the sites listed in Table 4 have directly impacted the project area, the large number of listed SHWS, and petroleum storage sites in general, in proximity to the project area may have contributed to low-level groundwater contamination and/or subsurface petroleum contamination, as is common in heavily developed industrial areas.

***State of Hawaii Landfill Sites (SWF/LF)***

The DOH list of Solid Waste Facilities and Landfill Sites contains an inventory of solid waste disposal facilities or landfills in the state. These facilities may be active or inactive or open dumps that failed to meet RCRA criteria for proper solid waste landfills. **No state recognized landfills or disposal sites listed on the SWF/LF database were identified within a half mile of the project area.**

### ***State of Hawaii UST List (UST)***

This list of registered underground storage tanks is administered by the DOH Underground Storage Tank (UST) division. All tanks that are registered as required by the federal RCRA regulations are contained on this list. The database also includes the number and types of tanks registered, the regulatory status of the tanks, and whether they have been removed and closed according to state law. **Ten (10) registered underground storage tank sites listed on the UST database were identified within a quarter mile of the project area.** These sites are listed below in Table 5.

**Table 5: UST Sites within One Quarter of a Mile**

<b>Facility</b>	<b>Location</b>	<b>Regulatory Status</b>
Theo K Davies	500 Kalaniana'ole Ave.	1000 gal diesel, permanently out of use 2000 gal gasoline, permanently out of use
Jack L. Ayers Jr.	555 Kalaniana'ole Ave.	1 tank, permanently out of use
Big Island Nissan	471 Kalaniana'ole Ave.	2 used oil tanks, permanently out of use
Pacific Machinery	456 Kalaniana'ole Ave.	1000 gal gasoline, permanently out of use 550 gal diesel, permanently out of use
Mihara Transfer, Inc.	41 Keaa St	1000 gal gasoline, permanently out of use 2000 gal diesel, permanently out of use
Asakura Brothers Ltd.	50 Keaa St	10000 gal tank, permanently out of use
Andrews Trucking Service	58 Keaa St	500 gal gasoline, permanently out of use
Former Schuman Lumber	60 Keaa St	2 x 1000 gal gasoline, permanently out of use
Waiakea Fire Station	95 Keaa St	290 gal gasoline, permanently out of use
HT&T Trucking	187 Silva St.	3 x 8000 gal diesel, permanently out of use

The presence of a large number of UST sites is not uncommon for a commercial and industrial area. Absent any documented leaks, the presence of these sites is not expected to have impacted the project area.

### ***State of Hawaii Leaking UST List (LUST)***

The DOH UST Division records the location and regulatory status of all sites in which leaking underground storage tanks have been identified. **A total of nine (9) leaking underground storage tank sites listed on the LUST database were identified within a half mile of the project area.** These sites are listed below in Table 6.

The presence of a large number of LUST sites in the vicinity of the project area is not expected to have impacted the subject property, due to the fact that site clean-ups have been completed at each of the sites listed below. However, these sites may have contributed to low-level groundwater and sub-surface contamination that is common in heavily developed industrial areas.

**Table 6: LUST Sites within One Half of a Mile**

<b>Facility</b>	<b>Location</b>	<b>Regulatory Status</b>
Pacific Machinery	456 Kalaniana'ole Ave.	Site clean-up completed, No Further Action required.
Allied Aggregates Corp.	160 Keaa St.	Site clean-up completed, No Further Action required.
Kuwaye Trucking Inc	2055 Kalaniana'ole Ave.	Site clean-up completed, No Further Action required.
Mid Pac Petroleum	1801 Kalaniana'ole Ave.	Site clean-up completed, No Further Action required.
Harper Car and Truck Rentals	1690 Kalaniana'ole Ave.	Site clean-up completed, No Further Action required.
Tesoro Gas Express #82	1672 Kalaniana'ole Ave.	Site clean-up completed, No Further Action required.
Hawaii Petroleum Dist.	999 Kalaniana'ole Ave.	Site clean-up completed, No Further Action required.
Young Brothers, Ltd.	Pier 2, Hilo Harbor	Site clean-up completed, No Further Action required.
HT&T Co.	Pier 1, Hilo Harbor	Site clean-up completed, No Further Action required.

***State of Hawaii Hazard Evaluation and Emergency Response Spills List (SPILLS)***

The HEER office maintains a record of all spills and releases of chemicals and petroleum products above the regulatory threshold quantity that have been reported to the HEER office since 1988. These records are used to track all incidents to ensure that they are properly cleaned up. **No record of any spills on the project area that have been reported to the HEER office was identified in the database report.**

***State of Hawaii Institutional Controls Sites List (HI INST CONTROLS)***

The DOH maintains this list of Voluntary Response Program and Brownfield sites with institutional controls in place. **No sites with institutional controls in place were identified within one half mile of the project area.**

***State of Hawaii Voluntary Response Program Sites List (VCP)***

The DOH maintains this list of Voluntary Response Program sites, which are sites where voluntary clean-up projects are underway or have been completed by current or former owners. **No Voluntary Response Program sites listed on the VCP database were identified within a half mile of the project area.**

***State of Hawaii Drycleaners Sites List (DRYCLEANERS)***

The DOH maintains this list of permitted dry cleaning facilities in the state, which are common sources of groundwater contamination. This search is not required by the ASTM standard but is

included due to the prevalence of contamination associated with dry cleaning facilities. **No dry cleaners were identified within a quarter mile of the project area.**

### ***State of Hawaii Brownfield Sites List (HI Brownfield)***

The DOH maintains this list of Brownfield sites. **No Brownfield sites were identified within a half mile of the project area.**

## **3.2 *Standard Historical Use Information Sources***

The following information was reviewed pertaining to the historical uses of the project area and the surrounding area.

### **3.2.1 Aerial Photographs**

Aerial photographs of the project area and the surrounding area were obtained from the Photogrammetry Department at R. M. Towill Corporation in Honolulu, HI. Aerial photographs from R. M. Towill Corporation covering the project area were available from the years 1949, 1952, 1969, 1983, 1992, 1998 and 2003. These photographs were examined for evidence of previous site usage. The following discussion describes the apparent uses of the project area and the adjacent areas noted in each of the photos reviewed.

**1949 Photo:** In this black and white photo, Kumau Street is clearly visible as the western edge of what appears to be industrial development in the vicinity of the Port of Hilo. The edge of the breakwater can be seen in the corner of the photo, beyond the piers. The rail line can also be seen running from the direction of downtown Hilo and ending at the port. There are numerous structures along the edge of Kumau Street and Kalaniana'ole Ave. in the vicinity of the project area, as described in Section 3.2.2.

**1952 Photo:** In this black and white photo, the vicinity of the project area appears to be relatively unchanged from 1949.

**1969 Photo:** This black and white photo shows considerable development in and around the port area, including the vicinity of the project area. Unfortunately, the resolution of the photo is not adequate to discern specific details.

**1983 Photo:** This black and white photo shows the project area in clear resolution. The GasPro and Nissan dealership buildings are clearly visible, as are the houses along the waterfront on Ocean View Drive.

**1992 Photo:** This black and white photo appears to have been taken from a relatively high elevation; no specific details can be discerned.

**1998 Photo:** This black and white photo appears to have been taken from a relatively high elevation; no specific details can be discerned.

**2003 Photo:** This black and white photo appears to have been taken from a relatively high elevation; no specific details can be discerned.

### 3.2.2 Sanborn Fire Insurance Maps

A Certified Sanborn Fire Insurance Map Report, including copies of all historic fire insurance maps available from the Sanborn library covering the project area, was provided to KEI by Environmental Data Resources, Inc on July 27, 2010 (*EDR, 2010c*). The Sanborn Library includes a large collection of historical fire insurance maps dating back to the late 1800's. These maps show all insurable structures in a given area at a specific point in time, and are thus useful indicators of historical land use and changes in land use over time. EDR's report included historic fire insurance maps covering the project area from the years 1957, 1974, 1978, 1987 and 1991; significant features from each of these maps that are relevant to the history of the project area are described below. A copy of EDR's Certified Sanborn Map Report is included here as Appendix C.

**1957 Sanborn Map:** In this fire insurance map showing conditions in 1957, Kumau Street is visible as "Kimi Road," and Ocean View Drive is also labeled Banyan Drive and is shown as a proposed street extending all the way to the Port of Hilo. A rail line is shown along the right-of-way that runs below the modern-day GasPro property, slightly inland from Ocean View Drive. GasPro and the Nissan dealership are not present yet, but there is a "general merchandise" building on the GasPro site with "oxygen mfg" in one corner. Toward the Port area there are numerous oil storage facilities including Associated Oil Co., Union Oil Co., Shell Oil Co. and Standard Oil. across Kalaniana'ole Ave. Is Theo Davies mill and lumber yard.

**1974 Sanborn Map:** In this fire insurance map showing conditions in 1974, the area looks roughly the same as it did in the 1957 map. The major differences are that the rail lines are no longer present, additional oil storage tanks have appeared, and a new building labeled "weed killer mfg" has appeared at the northern end of what is now the GasPro property.

**1978 Sanborn Map:** In this fire insurance map showing conditions in 1978, the area looks roughly the same as it did in the 1974 map. The only major difference is that the original "general merchandise" buildings on the GasPro property have been replaced by buildings matching the current alignment. The "weed killer mfg" building is still present at the northern end of the lot.

**1987 Sanborn Map:** In this fire insurance map showing conditions in 1987, the area looks roughly the same as it did in the 1978 map. The major differences are that the "weed killer mfg" building is no longer present, and a "New and Used Car Sales and

Parking” operation has appeared at the site of the modern-day Nissan dealership.

**1991 Sanborn Map:** In this fire insurance map showing conditions in 1991, there are no significant differences from the 1987 map.

### 3.2.3 Historical Topographic Maps

An Historical Topographic Map Report, including copies of all historical USGS topographic maps available for the site and vicinity of the project area, was provided to KEI by Environmental Data Resources, Inc on July 28, 2010 (*EDR, 2010d*). Historical topographic maps of the Hilo, HI Quadrangle, which include the project area and the surrounding area, were available from the years 1963, 1981 and 1995. These maps were examined for evidence of historic land use patterns. The following discussion describes the apparent uses of the project area and the adjacent areas noted in each of the maps provided by EDR. A copy of EDR’s Historical Topographic Map Report is included here as Appendix D.

**1963 Topo Map:** The USGS Topographic Map of the Hilo, HI Quadrangle from 1963 shows extensive development in the vicinity of the project area.

**1981 Topo Map:** The USGS Topographic Map of the Hilo, HI Quadrangle from 1981 shows increased development in the vicinity of the project area.

**1995 Topo Map:** The USGS Topographic Map of the Hilo, HI Quadrangle from 1995 does not show specific details or individual structures along the waterfront or in the vicinity of the project area.

### 3.3 *Additional Historical Use Information Sources*

This section documents historical use information obtained during the course of this investigation that was derived from sources other than those required by the ASTM E 1527-00 Standard.

#### 3.3.1 Previous Environmental Investigation Report

A previous environmental site investigation report was provided to RMTC by DOT-H. This report, titled “Supplemental Environmental Site Assessment and Evaluation of Remedial Action Alternatives, HELCO Former Kuhio Substation” was prepared for HELCO by Integral Consulting, Inc. of Honolulu, HI (*Integral, 2010*). This report was prepared for a nearby site on TMK parcel (3) 2-1-007: 045, within the Port of Hilo less than one quarter mile from the project area. This site had been the location of a HELCO transformer from 1938 to 1995. The report references a Phase 1 ESA report that had been previously completed. Copies of the Phase 1 ESA report were not provided by DOT-H.

According to the Supplemental Site Assessment report, the previous Phase 1 ESA report identified four nearby properties that could potentially have impacted the site: Brewer Chemical Corp., and the oil terminals operated by Shell, Tesoro and Chevron.

The Supplemental Site Assessment report included analysis of soil samples from the site and the surrounding area for total metals, including arsenic. Determination of elevated arsenic levels at the site led to collection of additional samples at off-site locations, including two samples collected from within (or in close proximity to) the Kumau Street Improvementss Project area. These samples were screened for arsenic concentrations using x-ray fluorescence (XRF). According to the report:

*“Analytical results for surface soil samples collected from off-site locations in the vicinity of Hilo Harbor during this investigation indicate variable arsenic concentrations that exceed both natural background levels and [State Department of Health Environmental Action Levels]” (Integral, 2010).*

The two samples collected from within (or in close proximity to) the Kumau Street Improvementss Project area were identified as locations HKS-8 and HKS-9. Surface soil samples collected at these locations were found to contain arsenic at concentrations of 341 mg/Kg and 141 mg/Kg, respectively. These reported concentrations exceed the DOH EAL for arsenic in residential areas of 20 mg/Kg. Based on these and other sample results for soil samples collected at off-site locations, the Supplemental Site Assessment report concludes that:

*“The regional soil arsenic screening confirmed that the high soil arsenic concentrations are not limited to the subject property. Soil arsenic contamination represents a general environmental condition of the Hilo Harbor and surrounding areas” (Integral, 2010).*

## **4.0 SITE RECONNAISSANCE**

A visual inspection of the project area and surrounding areas was performed by Benjamin Owen of KEI. Photographs of the property taken at the time of the inspection are included in Appendix B.

### **4.1 Methodology and Limiting Conditions**

Inspection of the project area was performed on July 27, 2010. Methodology for this inspection consisted of walking and visually inspecting all accessible areas within the project area, including both sides of Kalaniana'ole Ave. and Kumau Street, and inspecting adjacent properties from the roadways.

The ASTM E 1527-05 Standard requires that observations of certain specific features and conditions be made during the site inspection, and that these observations be documented in the Phase 1 ESA report. The observation of these items are documented in Table 7, which also identifies the section of this report in which any observed items are detailed, where applicable.

## 4.2 *Observations*

This section documents observations recorded at the time of the physical inspection of the project area and the adjacent properties.

Kalanianaʻole Ave. is a busy thoroughfare servicing the harbor facilities and nearby residential areas. The portion of the roadway at the east of the project area is lined with numerous petroleum storage and distribution terminals on both sides of the road. By comparison, Kumau Street is a quiet alley with relatively little traffic. This street is bordered by GasPro / Airgas and a Nissan car dealership. Further down Kumau Street terminates at a small residential area along the coast.

There is relatively little vegetation along Kalanianaʻole Ave., except along the edge of the Nissan dealership, where grass has been planted. There are also some grassy areas along Kumau Street. Surface soils in these areas appear to be very rocky.

No signs of any spills or other potential recognized environmental conditions were noted along the roadways or on any of the adjacent properties.

**Table 7: Observations During Site Inspection of Project area**

<b>Item</b>	<b>Observed?</b>	<b>Section Described in Report</b>
<b>Interior and Exterior Observations</b>	<b>Y / N</b>	
Hazardous substances	Y	<b>Section 4.2 and 5.0</b>
Petroleum products	Y	<b>Section 4.2 and 5.0</b>
Storage tanks	Y	<b>Section 4.2 and 5.0</b>
Odors	N	N/A
Pools of liquid	N	N/A
Drums	N	N/A
Unidentified substance containers	N	N/A
Electrical or hydraulic equipment which may contain PCBs.	N	N/A
<b>Interior Observations</b>		
Heating/cooling systems	N/A	N/A
Fuel source	N/A	N/A
Stains	N/A	N/A
Corrosion	N/A	N/A
Drains	N/A	N/A
Sumps	N/A	N/A
<b>Exterior Observations</b>		
Pits	N	N/A
Ponds	N	N/A
Lagoons	N	N/A
Stained soil or pavement	N	N/A
Stressed vegetation	N	N/A
Solid waste	N	N/A
Waste water	N	N/A
Wells	N	N/A
Septic Systems	N	N/A
Fill Materials	N	N/A

## 5.0 INTERVIEWS

This section documents interviews conducted in the process of conducting this Phase 1 ESA. All interviews conducted for this assessment were conducted by Benjamin Owen.

### **Steve Kirsch, Branch Manager, Airgas West (525 Kalanianaʻole Ave.)**

Mr. Kirsch was interviewed on August 24, 2010. Mr. Kirsch is the branch manager of the AirGas and GasPro outlet which borders the project area on both Kalanianaʻole Ave. and Kumau Street. When asked if he was aware of any current or historical incidents or facilities that could potentially have impacted the project area, Mr. Kirsch indicated that he was not.

### **Ivan Nakano, General Manager, Kamaʻaina Nissan (471 Kalanianaʻole Ave.)**

Mr. Nakano was interviewed on August 24, 2010. Mr. Nakano is the general manager of the Nissan dealership, which borders the project area on both Kalanianaʻole Ave. and Kumau Street. According to Mr. Nakano, the Nissan dealership has removed all of its subsurface lifts and fuel storage tanks, and did not encounter any evidence of subsurface contamination at the time those facilities were removed. When asked if he was aware of any other current or historical incidents or facilities that could potentially have impacted the area, Mr. Nakano cited the spill of a large volume of green fluid from a nearby wood treatment facility as the only incident he was aware of. (Note: This incident occurred at the Wood Protection Co., or HPM Building Supply, which led to the site being listed on the CERC-NFRAP database as noted in Section 3.1.1. No impact to the subject property is anticipated due to the location of this site and distance from the subject property.)

### **Bob Moskwa, Production Staff Engineer, HELCO**

Mr. Moskwa was interviewed on August 24, 2010. Mr. Moskwa is responsible for environmental compliance for the HELCO pipeline and fuel distribution facilities, including the pipeline that runs through the project area. According to Mr. Moskwa, there have been no reported problems with the pipeline in the vicinity of the project area. However, he pointed out that the pipeline has been in place since the 1950s, and there were other fuel pipelines in place before that. Although no problems with or disturbances of the pipeline have been reported in the vicinity of the project area, there has also been no digging or excavation in the area that he was aware of. Mr. Moskwa indicated that the HELCO pipeline is 3-4 foot down in a trench, on a cushion of sand bedding.

### **John Peard, State Dept. of Health HEER Office, Hilo**

Mr. Peard was interviewed on August 24, 2010. Mr. Peard is in charge of the Hilo branch of the HEER office at the State Dept. of Health. When asked if he was aware of any potential environmental concerns in the area, Mr. Peard cited the long history of petroleum storage and distribution at the Port of Hilo. According to Mr. Peard, no one has done a comprehensive study of the area. Based on his experience from review of other projects in the area, he suspects that channels of subsurface contamination may exist that are hard to delineate and identify due to the nature of the shallow fractured rock in the area. In addition, there is a very weak gradient for groundwater flow toward the ocean and a strong tidal influence, so contaminant migration is complex and unpredictable.

## 6.0 CONCLUSIONS

KEI has completed this a Phase 1 ESA for the area to be affected by the Kumau Street Improvements Project at the Port of Hilo, on the Island of Hawaii. The purpose of this investigation was to identify any potentially hazardous materials or conditions that could impact construction within the project area. The area to be affected includes Kumau Street between Kalaniana'ole Avenue and Ocean View Drive, and approximately 615 feet of Kalaniana'ole Avenue from 240 feet west of Kumau Street to 375 feet east of Kumau Street.

This assessment was conducted in conformance with the 2000 ASTM Standard for Phase 1 Environmental Site Assessments to determine whether conditions or situations on the properties in question might result in real or potential hazards, or environmental liabilities, that might impact or complicate construction of the Kumau Street Improvements Project. Specific items investigated included: present and historical uses of the project area and adjacent properties; signs of gross surface contamination; the presence of hazardous materials and wastes; above ground and underground storage tanks (ASTs and USTs), and other indications of the presence of chemical contamination.

A review of State and Federal environmental regulatory databases indicated the following:

- No sites listed by the U.S. EPA on the NPL (Superfund), proposed NPL, delisted NPL or CERCLIS databases were identified within the recommended search distances from the project area.
- One site listed on the CERC-NFRAP database was identified within the recommended search distance from the project area. This facility, Wood Protection Co. (aka HPM Building Supply), is not expected to have impacted the subject property due to its distance from and location relative to the subject property.
- No RCRA corrective action sites were identified within the recommended search distance from the project area.
- A total of eleven (11) RCRA hazardous waste generators were identified within the recommended search distance from the project area, including one large quantity generator, seven (7) small quantity generators and three (3) conditionally exempt small quantity generators. There is no indication that the hazardous waste generated at these facilities has impacted the project area as no violations have been reported at any of the facilities identified here.
- Twelve (12) state-recognized hazardous waste sites were identified within the recommended search distance from the project area. While it is unlikely that any of these sites have directly impacted the project area, the large number of listed SHWS, and petroleum storage sites in general, in proximity to the project area may have contributed to low-level groundwater contamination and/or subsurface petroleum contamination, as is common in heavily developed industrial areas with a long history of use for petroleum storage and distribution.

- Ten (10) registered underground storage tank (UST) sites were identified within the recommended search distance from the project area. The presence of a large number of UST sites is not uncommon for a commercial industrial areas. Absent any documented leaks, the presence of these sites is not expected to have impacted the project area.
- Nine (9) leaking underground storage tank (LUST) sites were identified within the recommended search distance from the project area. The presence of a large number of LUST sites in the vicinity of the project area is not expected to have impacted the subject property, due to the fact that site clean-ups have been completed at each of the sites listed above. However, given the geology of fractured rock below shallow surface soils throughout the area, thorough evaluation and clean-up of subsurface contamination may have been impossible in some cases.
- No historic landfill sites were identified within the recommended search distance from the project area.
- There have been no spill incidents connected with the project area that were reported to the HEER office or entered on the ERNS database.
- No sites with institutional or engineering controls and no Brownfield sites were identified within the recommended search distances from the project area.

A site reconnaissance at the project area was performed on July 27, 2010. No indication of any current or historical recognized environmental conditions was observed at any time during this inspection.

A review of historical land use information including fire insurance maps, aerial photographs, historical topographic maps, and interviews with persons familiar with the history of the project area and the surrounding area has indicated the following:

- A substantial portion of the project area is within or adjacent to areas around the Port of Hilo that have been developed and in use for storage, transportation and distribution of petroleum products dating back to at least the 1940s.
- A railroad line leading to the Port of Hilo once ran along the northern edge of the project area, between Kalanianaʻole Ave. and the harbor.
- The HELCO pipeline that runs through the project area along Kalanianaʻole Ave. has been in place since the 1950s, and was predated by other fuel pipelines in the area.
- The subsurface geology of the area, which consists of fractured rock beneath shallow surface soils, makes subsurface contamination in the area hard to identify and delineate, and difficult to remediate. A weak hydrological gradient and strong tidal influences make contaminant migration complex and unpredictable

A review of previous environmental records provided by the State DOT-Harbors Division has indicated the following:

- Variable arsenic concentrations exceeding both natural background levels and State Dept. of Health Environmental Action Levels were identified in surface soils throughout the Port of Hilo area, including two sampling locations on or in close proximity to the project area.

The following recognized environmental conditions (RECs) and historical recognized environmental conditions (HRECs) have been identified in association with the project area and properties adjacent to the project area:

- The presence or likely presence of elevated arsenic levels in surface soils is a recognized environmental condition.
- The long-term historic use of the area for petroleum storage, transport and distribution is a historic recognized environmental condition.
- The long-term historic development of the area for commercial and industrial use is a historic recognized environmental condition.
- The presence of buried fuel pipelines running through the project area that have been in place since the 1950s, and were pre-dated by previous pipelines in the area, is a historic recognized environmental condition.

In summary, the following potential impacts to the construction of the Kumau Street Improvements Project have been identified:

- Surface soils may be impacted due to elevated arsenic concentrations throughout the area.
- Given long history of petroleum storage, transportation and distribution in the area, combined with the subsurface geology and hydrology of the area, which make subsurface contamination hard to identify and delineate, and contaminant migration complex and unpredictable, it is possible that subsurface petroleum contamination could be encountered at any point during the project, especially within areas in close proximity to historic fuel storage and distribution facilities.
- Construction workers performing excavation work within the project area should be aware that subsurface petroleum contamination may be present within localized areas throughout the project area due to the long-term presence of subsurface petroleum pipelines along Kalaniana'ole Ave.. While there is no indication that any leaks already exist within the project area, the pipeline is buried and has not been visually inspected in over 50 years.

## 7.0 RECOMMENDATIONS FOR PHASE 2 SAMPLING AND ANALYSIS

Based on the results of this Phase 1 ESA, KEI recommends that a Phase 2 ESA be conducted to evaluate and quantify the extent of any potential contamination in surface or subsurface soils within the project area.

Results from the Phase 1 ESA indicate that surface soils throughout the area may be contaminated with elevated levels of arsenic, and that subsurface soils may be contaminated with petroleum and petroleum-related compounds. However, due to the subsurface geological conditions, any petroleum contamination that may be present within the project area would likely be difficult to characterize and delineate.

Based on these results from the Phase 1 ESA, KEI recommends that subsurface soil samples be collected in conjunction with geotechnical borings to be collected throughout the project area. In addition, KEI recommends that surface soil samples be collected in all areas where surface soils are present within the project area.

KEI recommends the following strategy for sampling and analysis of soil samples to be collected in conjunction with geotechnical borings to be collected throughout the project area:

- Sampling efforts should include collection of soil samples from geotechnical borings as well as surface soils. Surface soils should be sampled and processed for analysis using multi-incremental sampling techniques.
- Soil samples should be screened in the field for the presence of volatile organic compounds (VOCs) and petroleum hydrocarbons using a photo ionization detector (PID).
- Soil samples collected from geotechnical boring locations should be analyzed for the following contaminants of potential concern (COPC):
  - Total petroleum hydrocarbons (TPH) as gas, oil and diesel
  - BTEX
  - PAHs
  - Arsenic

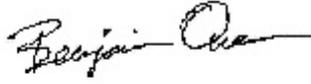
In addition, KEI recommends following strategy for sampling and analysis of surface soil samples to be collected in all areas where surface soils are present within the project area:

- Surface soil samples should be analyzed for the following COPC:
  - Arsenic

Results from these analyses should be evaluated to determine what levels of precautions and protections and/or special handling procedures may be required during excavation and disposal of excavated materials during construction for the Kumau Street Improvements project.

**8.0 SIGNATURE**

This Phase 1 Environmental Site Assessment was performed by Benjamin Owen and supervised by Dave Gerow of Kauai Environmental, Inc. Documentation of his qualifications is included in Appendix E.



\_\_\_\_\_  
Benjamin Owen, MS, REA

\_\_\_\_\_  
8/31/10

Date

## 9.0 REFERENCES

American Society for Testing and Materials (ASTM); *"Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process,"* ASTM 2000 Standard: E 1527-00

ASTM; *"Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process,"* ASTM 2005 Standard: E 1527-05.

Environmental Data Resources, Inc. (EDR); *Environmental Database Search Results for Kumau St. ESA, Hilo, HI* (July 27, 2010).

EDR; *Sanborn Map Report for Kumau St. ESA, Hilo, HI* (July 27, 2010).

EDR; *Aerial Photograph Package for Kumau St. ESA, Hilo, HI* (July 27, 2010).

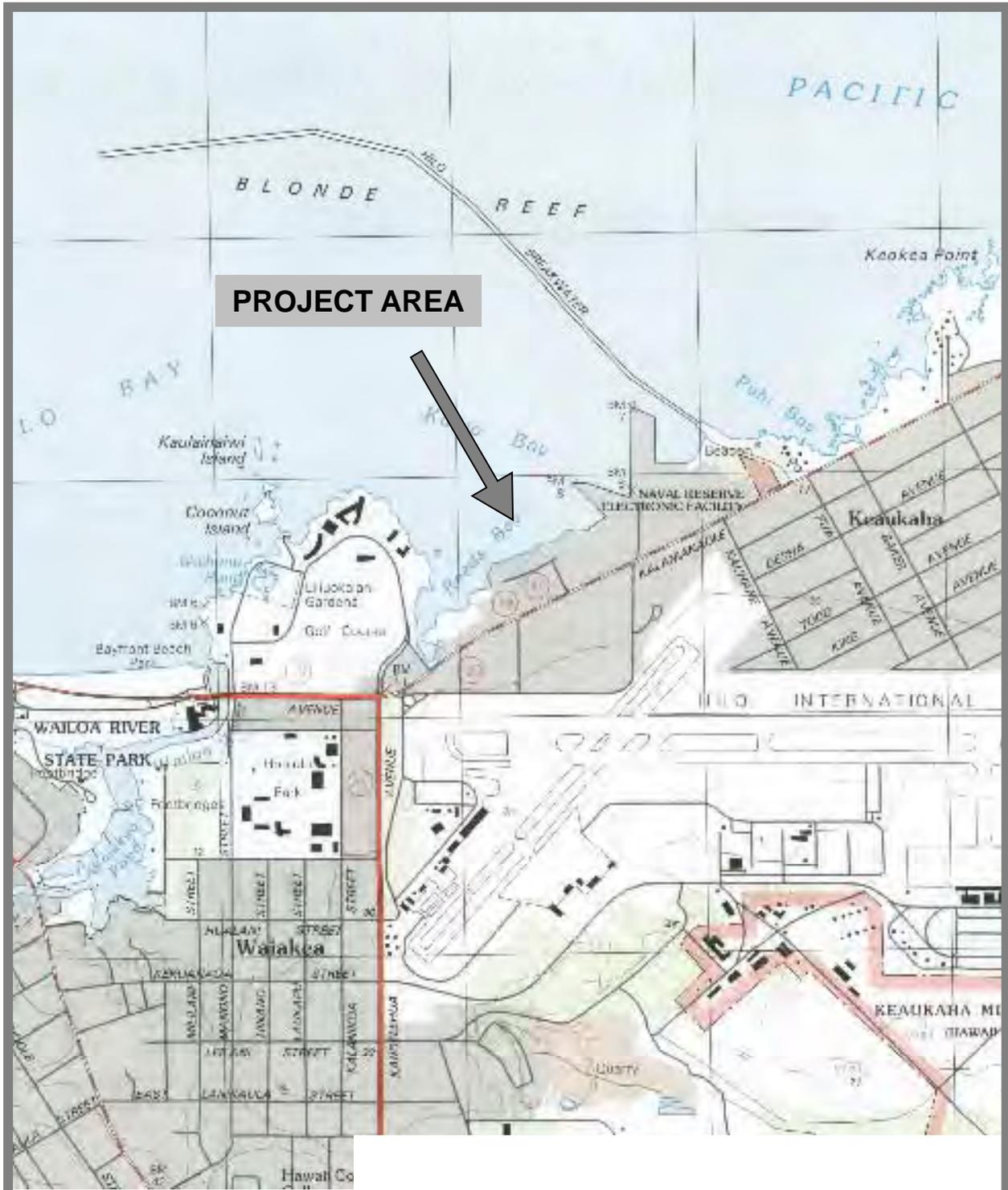
EDR; *Historical Topographic Map Report for Kumau St. ESA, Hilo, HI* (July 28, 2010).

Integral Consulting, Inc.; *Supplemental Environmental Site Assessment and Evaluation of Remedial Action Alternatives, HELCO Former Kuhio Substation* (July 20, 2010).

Sato, Ikeda, Paeth, Smythe, and Takehiro; *Soil Survey of the Island of Hawaii, State of Hawaii* (December, 1973).

APPENDIX A:

**FIGURES**



**PROJECT AREA**



**Figure 1: Site Location**  
*Kumau Road Improvements Project*  
*Hilo, Hawaii*

Source: USGS Quad Topo



***Figure 2: Aerial View of Project Location  
And Surrounding Area***

*Source: Google Earth*

APPENDIX B:

**PHOTOGRAPHS**



Photo 1: Kalaniana'ole Ave. as seen from west edge of project area looking east.



Photo 2: HELCO warning sign at corner of Kalaniana'ole Ave. and Kumau St. indicating presence of subsurface fuel pipeline.



Photo 3: Kumau St. as seen from Kalaniana'ole Ave. looking north.



Photo 4 : Kumau St. as seen from Oceanview Dr. looking south.



Photo 5: Tesoro fuel terminal on Kalaniana'ole Ave.



Photo 6: Shell Oil fuel terminal on Kalaniana'ole Ave.



Photo 7: Fuels storage tanks at Shell Oil fuel terminal on Kalaniana'ole Ave.



Photo 8 : Subsurface fuel pipelines at fuel terminal on Kalaniana'ole Ave.



Photo 9: Motorcycle shop and warehouse next to AigGas and GasPro on Kalaniana'ole Ave.



Photo 10: Kuhio Industrial Park, a mixed use industrial area on Kalaniana'ole Ave.



Photo 11: Entrance to AirGas yard on Kuma Street.



Photo 12 : Exit from AirGas yard on Kumau Street.

APPENDIX C:

**SANBORN FIRE INSURANCE MAP  
REPORT**



**Kumau St. ESA**

Kumau St.

Hilo, HI 96720

Inquiry Number: 2826454.3

July 27, 2010

## Certified Sanborn® Map Report

# Certified Sanborn® Map Report

7/27/10

**Site Name:**

Kumau St. ESA  
Kumau St.  
Hilo, HI 96720

**Client Name:**

Kauai Environmental  
P.O. Box 1280  
Kilauea, HI 96754

EDR Inquiry # 2826454.3

Contact: David Gerow



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## Certified Sanborn Results:

**Site Name:** Kumau St. ESA  
**Address:** Kumau St.  
**City, State, Zip:** Hilo, HI 96720  
**Cross Street:**  
**P.O. #** NA  
**Project:** Kumau St.. ESA  
**Certification #** C206-4108-ABAA



Sanborn® Library search results  
Certification # C206-4108-ABAA

**Maps Provided:**

1991  
1987  
1978  
1974  
1957

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- Library of Congress
- University Publications of America
- EDR Private Collection

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## Sanborn Sheet Thumbnails

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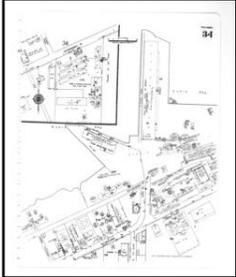


### 1991 Source Sheets



Volume 1, Sheet 34

### 1987 Source Sheets



Volume 1, Sheet 34

### 1978 Source Sheets



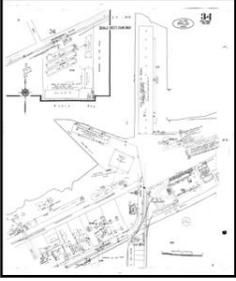
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### 1974 Source Sheets



Volume 1, Sheet 34

**1957 Source Sheets**

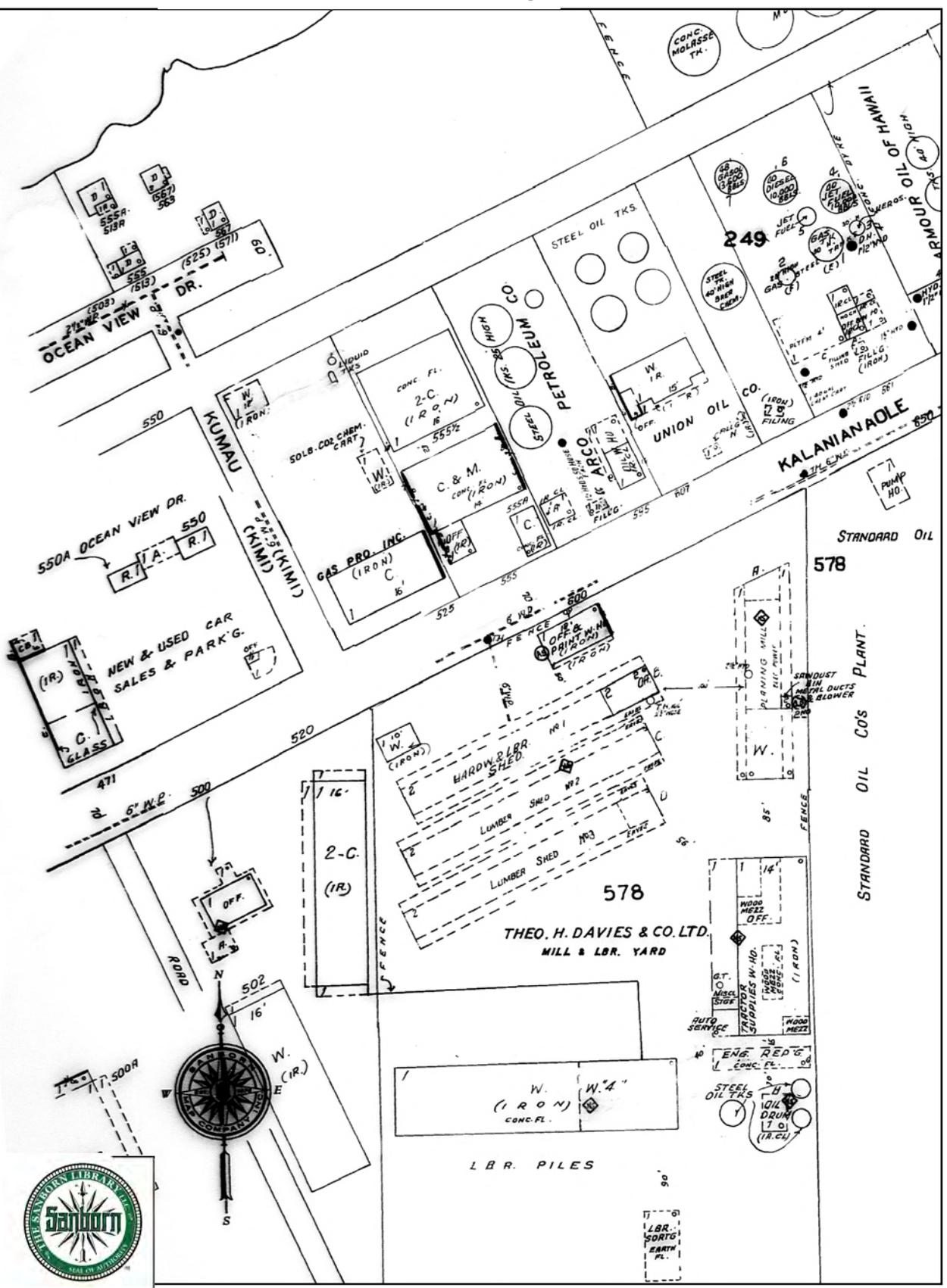


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# 1991 Certified Sanborn Map

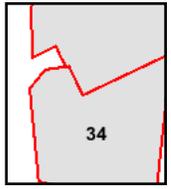
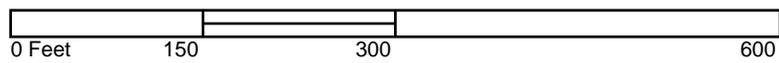
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 City, ST, ZIP: Hilo HI 96720  
 Client: Kauai Environmental  
 EDR Inquiry: 2826454.3  
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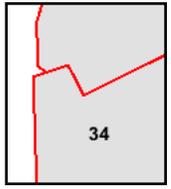
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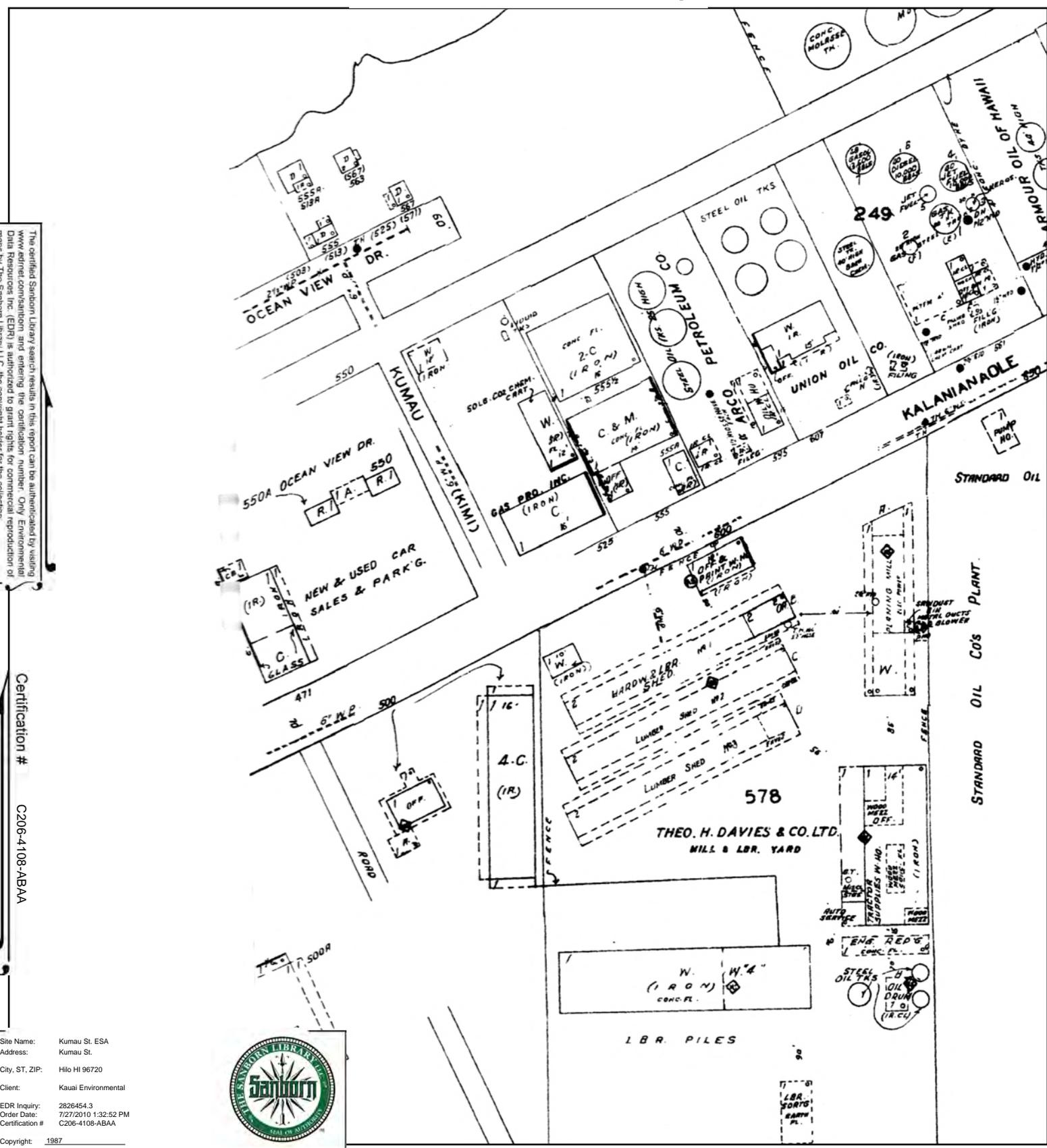
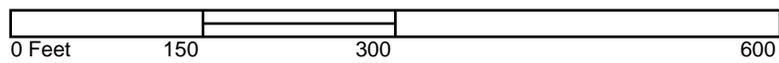
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# 1978 Certified Sanborn Map

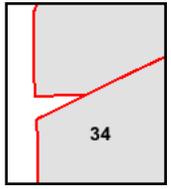
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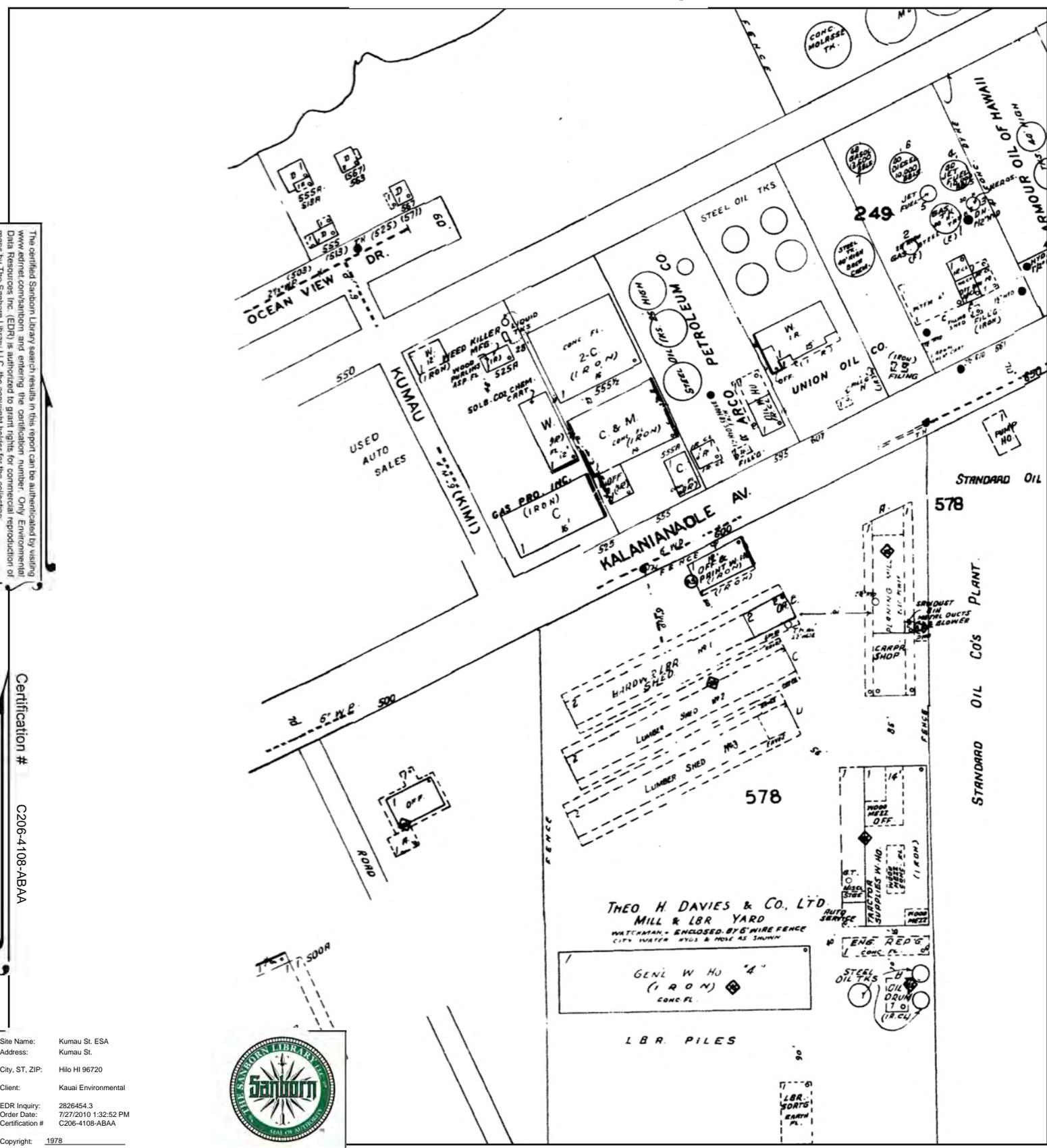
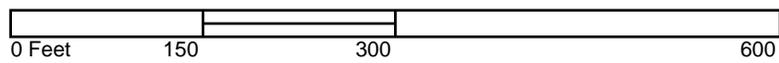
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 City, ST, ZIP: Hilo HI 96720  
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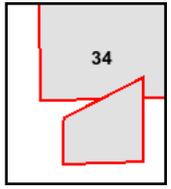
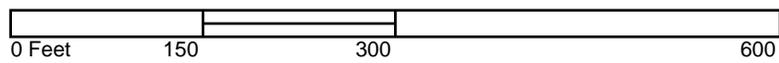
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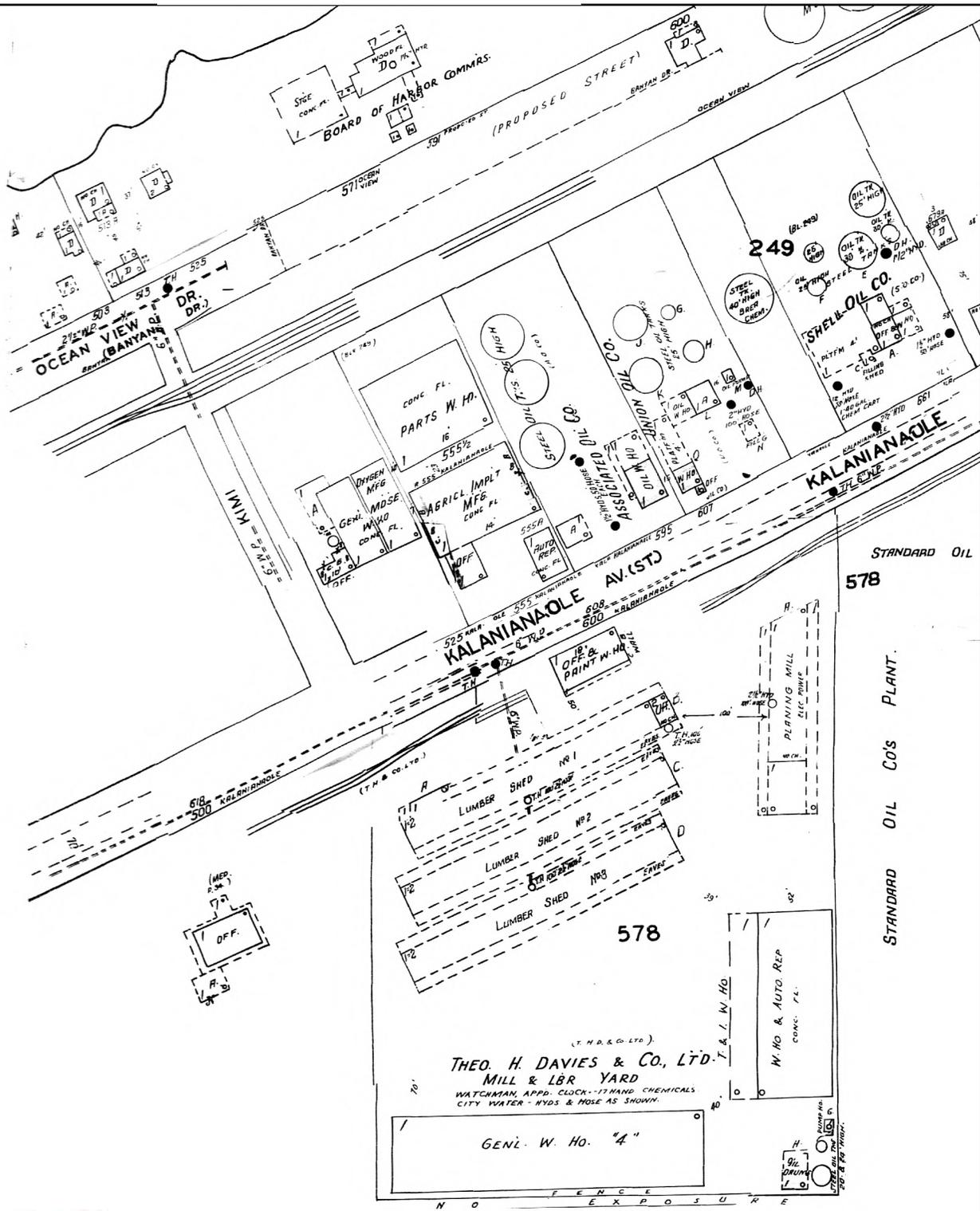
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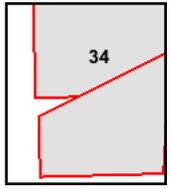
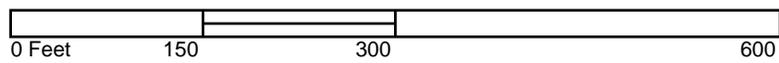
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APPENDIX D:

# **HISTORIC TOPOGRAPHIC MAP REPORT**



**Kumau St. ESA**

Kumau St.

Hilo, HI 96720

Inquiry Number: 2826454.4

July 28, 2010

# The EDR Historical Topographic Map Report

# EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

***Thank you for your business.***  
Please contact EDR at 1-800-352-0050  
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# Historical Topographic Map



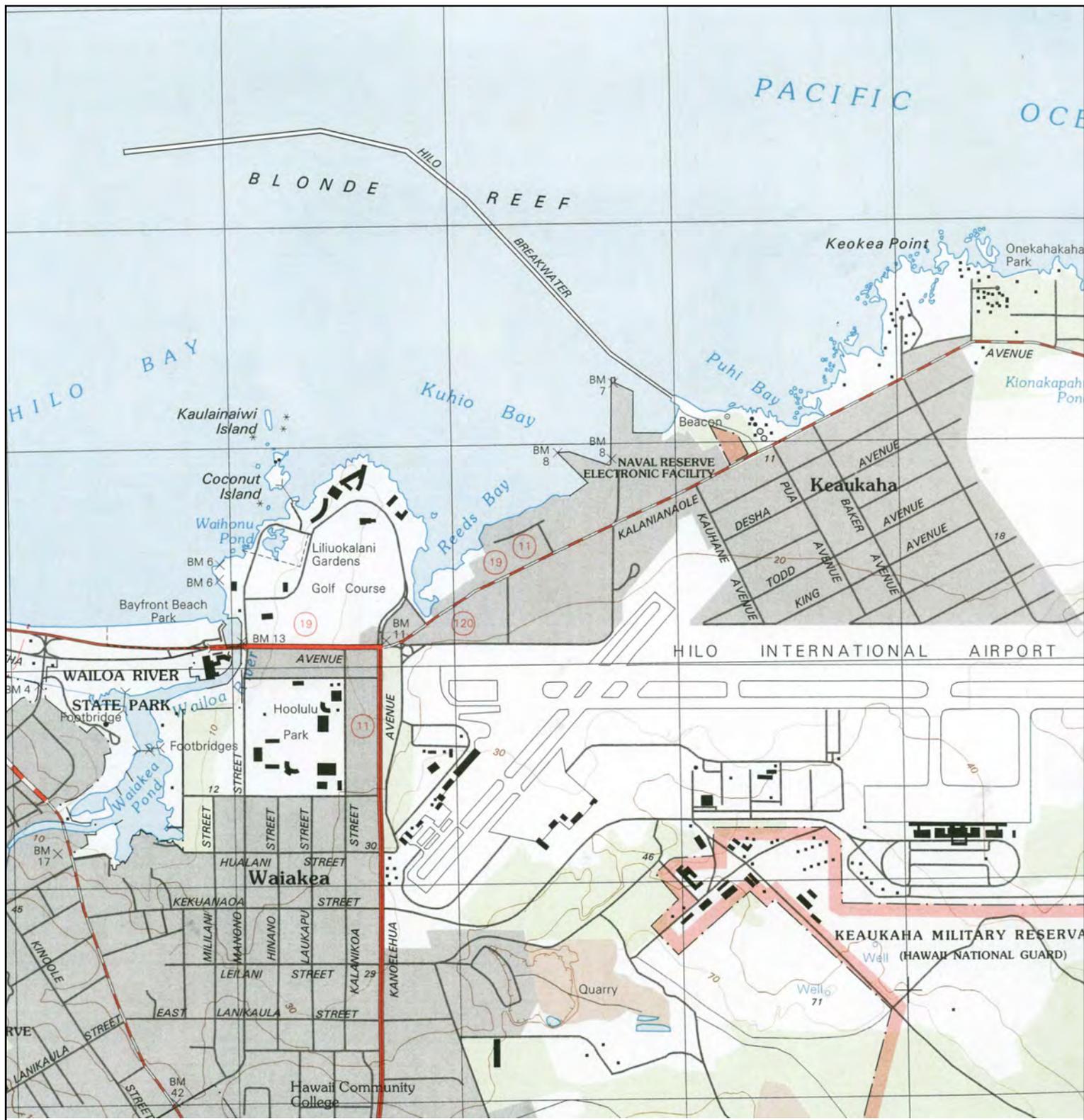
<p>N ↑</p>	<p>TARGET QUAD NAME: Hilo, HI MAP YEAR: 1963</p>	<p>SITE NAME: Kumau St. ESA ADDRESS: Kumau St. Hilo, HI 96720 LAT/LONG: 19.7267 / 155.0569</p>	<p>CLIENT: Kauai Environmental CONTACT: David Gerow INQUIRY#: 2826454.4 RESEARCH DATE: 07/28/2010</p>
	<p>SERIES: 7.5 SCALE: 1:24,000</p>		

# Historical Topographic Map



	TARGET QUAD	SITE NAME: Kumau St. ESA	CLIENT: Kauai Environmental
	NAME: Hilo, HI	ADDRESS: Kumau St.	CONTACT: David Gerow
	MAP YEAR: 1981	Hilo, HI 96720	INQUIRY#: 2826454.4
	SERIES: 7.5	LAT/LONG: 19.7267 / 155.0569	RESEARCH DATE: 07/28/2010
	SCALE: 1:24,000		

# Historical Topographic Map



	TARGET QUAD NAME: Hilo, HI MAP YEAR: 1995	SITE NAME: Kumau St. ESA ADDRESS: Kumau St. Hilo, HI 96720 LAT/LONG: 19.7267 / 155.0569	CLIENT: Kauai Environmental CONTACT: David Gerow INQUIRY#: 2826454.4 RESEARCH DATE: 07/28/2010
	SERIES: 7.5 SCALE: 1:24,000		

APPENDIX E:

**QUALIFICATIONS OF  
ENVIRONMENTAL PROFESSIONAL**

# **BENJAMIN OWEN, MS, REA**

## **President, Owen Environmental Inc.**

### **EDUCATION**

- M.S. Marine Science, UC Santa Cruz, 1996
- B.A. Anthropology, Univ. of Chicago, 1992

### **ACTIVE REGISTRATIONS**

- Registered Environmental Assessor (REA)
- AHERA Asbestos Inspector
- AHERA Asbestos Project Designer

### **PROFESSIONAL EXPERIENCE**

Mr. Owen has over 15 years experience in chemistry, toxicology, environmental science and industrial hygiene. His background includes trace metal and trace organic sampling and analysis, sediment toxicology, project management, hazardous materials assessments, industrial hygiene, occupational health and safety, and biological assessment in marine environments.

As a Project Manager for Kauai Environmental from 2002 through 2009, Mr. Owen performed numerous asbestos and lead paint inspections, hazardous materials surveys, and Phase 1 and Phase 2 Environmental Site Assessments throughout the state. As a Registered Environmental Assessor, Mr. Owen has performed numerous Environmental Site Assessments (ESAs) for commercial, residential, industrial and agricultural properties. As an industrial hygienist, Mr. Owen has designed, managed and monitored asbestos abatement projects and written emergency response, environmental protection, and health and safety plans for various construction, demolition, and remediation projects.

Owen Environmental was formed in January 2010. Mr. Owen continues to work on a variety of environmental projects statewide.

### **PROJECT EXPERIENCE**

**Environmental Audit and Compliance Survey, Hilo Medical Center.** Mr. Owen performed an EH&S survey of all fuel and/or oil storage facilities at this hospital complex and prepared a Spill Prevention Control and Countermeasure (SPCC) Plan for the facility and a Corrective Action Plan to bring the facility into compliance with various environmental regulations.

**Sand Island WWTP Site Investigation, City and County of Honolulu.** Mr. Owen coordinated this extensive site investigation to identify subsurface contamination of soils to be disturbed during the Primary Treatment Expansion Project. The project required sampling soils and groundwater at 150

locations with analysis for a wide variety of potential contaminants.

**Statewide Airports Asbestos Inventory.** As one of the asbestos management consultants for the State DOT Airports Division, Mr. Owen has performed comprehensive asbestos inspections at airport facilities statewide, has designed and managed numerous abatement projects, and maintains a GIS database containing all relevant asbestos data.

**Hazardous Materials Survey and Site Characterization, Frear Hall, UH Manoa** Mr. Owen performed a survey for hazardous materials, including lead paint, asbestos, PCBs, mercury, etc. prior to the demolition and replacement of the Frear Hall dormitory at UH Manoa.

**Hazardous Materials Survey, Pier 1, Port of Honolulu.** Mr. Owen performed a survey for hazardous materials including lead paint, asbestos, PCBs, mercury, etc. prior to the demolition and replacement of Pier 1 freight storage facilities. This project also included preparation of drawings and specifications for removal of asbestos materials, and services during construction.

**Chlordane Site Characterization, Family Housing Replacement Project, MCBH Kaneohe, Oahu.** Mr. Owen helped coordinate and organize this large-scale site characterization requiring soil sampling at over 120 locations.

**Hazardous Materials Survey, Guam Naval Hospital, Guam.** With Kauai Environmental, Mr. Owen inspected nineteen buildings at this facility to identify all potentially hazardous materials that might create health risks or environmental concerns during proposed demolition and replacement of the facility.

**Ewa Mill Environmental Site Remediation, City and County of Honolulu.** Mr. Owen supervised remediation field work at this historic sugar mill and mixed use industrial site, including removal and disposal of lead and PCB contaminated soils, air monitoring, subsurface investigations, excavation of buried waste drums, closure and removal of sumps, ASTs and USTs.

**Phase 1 and Phase 2 ESAs.** As a Registered Environmental Assessor, Mr. Owen has performed more than 50 Phase I ESAs over the past 8 years to identify potential environmental liabilities associated with commercial property, and has performed numerous Phase 2 ESAs to characterize soil and groundwater contamination associated with environmental liabilities identified during the Phase I ESA process.

---

**Appendix B**

Soils Investigation  
Kumau Street Improvements Project  
Pier 4, Interisland Cargo Terminal  
Hilo Harbor, Hilo, Hawai'i  
Job HMP 60906  
Hirata & Associates, Inc.  
September 2010



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Gradation Test Report .....	Plate B2.1

**SOILS INVESTIGATION**  
**KUMAU STREET ENTRANCE IMPROVEMENTS**  
**PIER 4 INTERISLAND CARGO TERMINAL**  
**HILO HARBOR, HILO, HAWAII**  
**JOB HMP 60906**

## **INTRODUCTION**

This report presents the results of our soils investigation performed for the proposed improvements to Kumau Street and Kalaniana'ole Avenue at Hilo, Hawaii. Our scope of services for this study included the following:

- A visual reconnaissance of the site to observe existing conditions which may affect the project. The general location of the project site is shown on the enclosed Location Map, Plate A2.1.
- A review of available in-house soils information pertinent to the site and the proposed project.
- Drilling and sampling four exploratory borings to depths ranging from about 11 to 13 feet. A description of our field investigation is summarized on Plates A1.1 and A1.2. The approximate exploratory boring locations are shown on the enclosed Boring Location Plan, Plate A2.2, and the soils encountered in the borings are described on the Boring Logs, Plates A4.1 through A4.4.
- Performing a percolation test in boring B2 at a depth of about 12 feet. The approximate test hole location is shown on Plate A2.2, and test results are presented on the Hawaii Department of Health Site Evaluation/Percolation Test form, Plate A5.1.
- Laboratory testing of selected soil samples. Testing procedures are presented in the Description of Laboratory Testing, Plate B1.1. Test results are presented on the Boring Logs (Plates A4.1 through A4.4), and Gradation Test Report (Plate B1.1).
- Engineering analyses of the field and laboratory data.

- Preparation of this report presenting the findings of our exploratory fieldwork and laboratory testing, as well as geotechnical recommendations for the design of flexible pavement, utility trench excavation and backfill.

## **PROJECT CONSIDERATIONS**

The proposed project consists of widening Kumau Street to accommodate container movement between Pier 4 and Kalaniana'ole Avenue at Hilo Harbor. New pavement will be required for Kumau Street as well as about 615 feet of Kalaniana'ole Avenue. In addition, we understand that drywells are planned to accommodate drainage.

## **SITE CONDITIONS**

The project site is generally located between Pier 4 and Kalaniana'ole Avenue at Hilo, Hawaii. The site includes Kumau Street, between its intersections with Ocean View Drive and Kalaniana'ole Avenue, and approximately 615 lineal feet of Kalaniana'ole Avenue, between Lot 9-A and 5. The site is relatively level with a total relief on the order of 3 feet. Drainage generally flows in a northeasterly direction.

## **SOIL CONDITIONS**

With the exception of boring B1, all of the borings were drilled through existing AC pavement which consisted of approximately 3 to 12 inches of asphaltic concrete over about 4 to 5 inches of base material. The surface soil in the boring B1 was classified as reddish gray silty sand with gravel. The silty sand was in a loose to medium dense condition and extended to a depth of about 6 feet.

Underlying the silty sand and pavement sections was moderately weathered basalt. The moderately weathered basalt was in a medium hard to hard and moderately fractured condition, extending to the maximum depths drilled.

Neither groundwater nor seepage water was encountered in our borings.

## CONCLUSIONS AND RECOMMENDATIONS

### Pavement Design

Based on a 20-year design life and the traffic data provided by R.M. Towill Corporation, the following pavement section may be used for Kumau Street and Kalaniana'ole Avenue.

4.0"	Asphaltic Concrete
<u>6.5"</u>	<u>Asphaltic Concrete Base</u>
10.5"	Total Thickness

The pavement section above assumes that a permeable base layer will not be required. If a permeable base layer is required, a minimum 6 inches of untreated permeable base should be placed beneath the asphaltic concrete base.

The pavement subgrade throughout most of the site is expected to expose the basalt. In areas where the silty gravel is exposed, the subgrade should be scarified to a minimum depth of 6 inches, moisture conditioned to about 2 percent above optimum moisture content, and compacted to 95 percent as determined by ASTM D 1557.

### Pipe Support

A conventional crushed rock cradle may be used for support of the underground utility lines. The crushed rock material should also be placed along the sides of the pipes, covering at least one-half the pipe diameter. The crushed rock material should conform to, and be placed in accordance with, the Standard Specifications for Public Works Construction and the Water System Standards, State of Hawaii.

### Trench Excavation and Backfill

Based on our exploratory borings, we believe that excavations into the onsite silty sand can generally be accomplished using conventional excavating equipment. However, it is our opinion that excavations into the basalt will require pneumatic equipment.

Temporary cuts into the near surface silty sand should be stable at slope gradients of 1H:1V or flatter. Temporary excavations into the basalt stratum should be stable at near vertical gradients. However, it should be the Contractor's responsibility to conform to OSHA safety standards during construction, which may require sheeting and bracing for excavations.

The onsite silty sand will be acceptable for reuse in compacted fills and backfills. All rock fragments larger than 3 inches in maximum dimension should be removed from the onsite silty sand prior to reuse. Reuse of excavated basalt in structural fills and backfills will require crushing/processing the material to a well-graded consistency, with a maximum particle size of 3 inches.

If required, import borrow should conform to specifications in the Standard Specifications for Public Works Construction. All backfill should also be placed and compacted in accordance with specifications in the Standard Specifications for Public Works Construction.

### **ADDITIONAL SERVICES**

We recommend that we perform a general review of the final design plans and specifications. This will allow us to verify that the pavement design and subgrade preparation recommendations have been properly interpreted and implemented in the design plans and construction specifications.

For continuity, we recommend that we be retained during construction to (1) review and/or perform laboratory testing on import borrow to determine its acceptability for use in compacted fills, (2) observe compaction of structural fill, subgrade, and base material, and perform compaction testing, and (3) provide geotechnical consultation as required. Our services during construction will allow us to verify that our

recommendations are properly interpreted and included in construction, and if necessary, to make modifications to those recommendations, thereby reducing construction delays in the event subsurface conditions differ from those anticipated.

## **LIMITATIONS**

The boring logs indicate the approximate subsurface soil conditions encountered only at those times and locations where our borings were made, and may not represent conditions at other times and locations.

This report was prepared specifically for R.M. Towill Corporation and their subconsultants for design of the proposed improvements to Kumau Street and Kalaniana'ole Avenue in Hilo, Hawaii. The boring logs, laboratory test results, and recommendations presented in this report are for design purposes only, and are not intended for use in developing cost estimates by the contractor.

During construction, should subsurface conditions differ from those encountered in our borings, we should be advised immediately in order to re-evaluate our recommendations, and to revise or verify them in writing before proceeding with construction.

Our recommendations and conclusions are based upon the site materials observed, the preliminary design information made available, the data obtained from our site exploration, our engineering analyses, and our experience and engineering judgement. The conclusions and recommendations in this report are professional opinions which we have strived to develop in a manner consistent with that level of care, skill, and competence ordinarily exercised by members of the profession in good standing, currently practicing under similar conditions in the same locality. We will be responsible for those recommendations and conclusions, but will not be

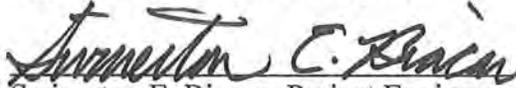
Hirata & Associates, Inc.

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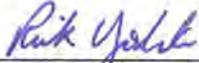
responsible for the interpretation by others of the information developed. No warranty is made regarding the services performed, either express or implied.

Respectfully submitted,

HIRATA & ASSOCIATES, INC.



Swinerton E. Biacan, Project Engineer



Rick Yoshida, Project Manager



This work was prepared by  
me or under my supervision  
Expiration Date of License:  
April 30, 2012

**APPENDIX A**

**FIELD INVESTIGATION**

## DESCRIPTION OF FIELD INVESTIGATION

### GENERAL

The site was explored on August 5 and 6, 2010, by performing a visual reconnaissance of the site and drilling 4 exploratory test borings to depths ranging from about 11 to 13 feet with a CME-55 truck-mounted drill rig. In addition, a percolation test was performed in boring B2 at a depth of about 12 feet in general accordance with Department of Health guidelines.

During drilling operations, the soils were continuously logged by our field engineer and classified by visual examination in accordance with the Unified Soil Classification System. The boring logs indicate the depths at which the soils or their characteristics change, although the change could actually be gradual. If the change occurred between sample locations, the depth was interpreted based on field observations. Classifications and sampling intervals are shown on the boring logs. A Boring Log Legend is presented on Plate A3.1, while the Unified Soil Classifications and the Rock Weathering Classification Systems are shown on Plates A3.2 and A3.3, respectively. The soils encountered are logged on Plates A4.1 through A4.4.

Borings were located in the field by measuring/taping offsets from existing site features shown on the plans. Surface elevations at boring locations were estimated based on a Topographic Survey provided by R.M. Towill Corporation. The accuracy of the boring locations shown on Plate A2.2, and the surface elevations shown on the boring logs are therefore approximate, in accordance with the field methods used.

### SOIL SAMPLING

Representative and bulk soil samples were recovered from the borings for selected laboratory testing and analyses. Representative samples were recovered by driving a 3-inch O.D. split tube sampler a total of 18 inches with a 140-pound hammer

dropped from a height of 30 inches. The number of blows required to drive the sampler the final 12 inches are recorded at the appropriate depths on the boring logs, unless noted otherwise. A bulk soil sample was recovered from boring B1 at a depth of about 12 inches.

Core samples were obtained by drilling with an NX core barrel having an inside diameter of 2.1 inches. Recovery percentages for each core run are shown on the enclosed Boring Log. The rock quality designation (RQD) for the core run is also shown on the Boring Log. This is a modified core recovery percentage which takes into account the number of fractures observed in the core samples. Only pieces of core 4 inches in length or longer, as measured along the centerline, were included in the determination of this modified core recovery percentage. Fractures caused by drilling or handling were ignored.

The following is a general correlation between RQD percentages and rock quality.

<u>RQD (%)</u>	<u>Description of Rock Quality</u>
0 - 25	Very Poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

Reference: Tunnel Engineering Handbook, Second Edition,  
edited by J.O. Bickel, T.R. Kuesel, and E.H. King, 1996.

## **PERCOLATION TESTING**

A percolation test was performed in general accordance with State Department of Health guidelines. The approximate test hole location is shown on Plate A2.2, and the test results are shown on Plate A5.1.

PROJECT SITE



NOT TO SCALE

Reference: Hawaii Atlas & Gazetteer, Topo Maps of the Entire State by DeLorme (1999)

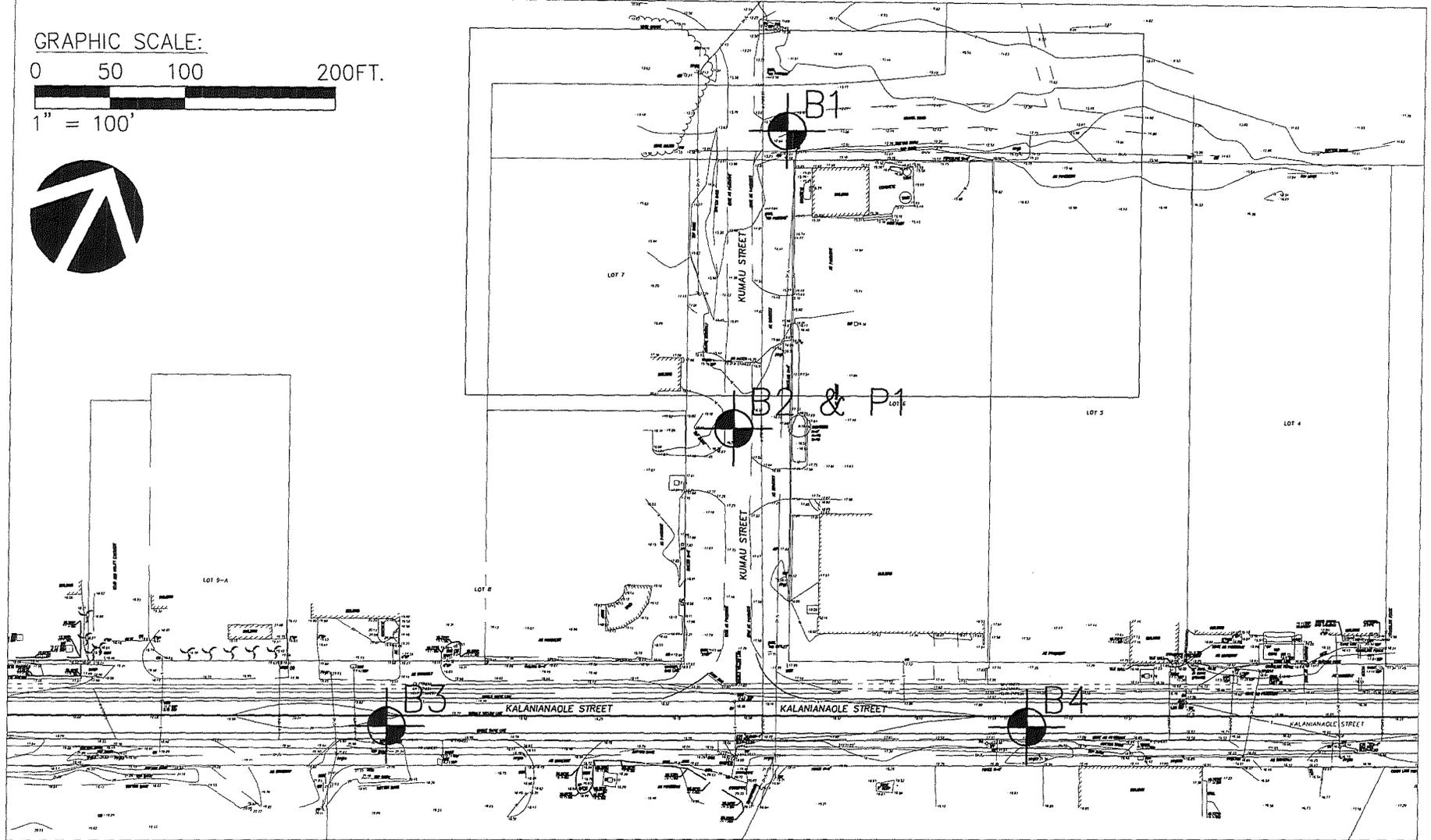
W.O. 10-4974	Kumau Street Entrance Improvements
Hirata & Associates, Inc.	<p style="text-align: center;">LOCATION MAP</p> <p style="text-align: right;">Plate A2.1</p>

GRAPHIC SCALE:

0 50 100 200FT.



1" = 100'



LEGEND:

 Approximate location of borings and percolation test

Reference: Topographic Survey Plan provided by R.M. Towill Corporation.

W.O. 10-4974

Kumau Street Entrance Improvements

Hirata & Associates, Inc.

BORING LOCATION PLAN

Plate A2.2

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of the material is LARGER than No. 200 sieve size.)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines.)	GW Well graded gravels, gravel-sand mixtures, little or no fines.
			GP Poorly graded gravels or gravel-sand mixtures, little or no fines.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size.)	GRAVELS WITH FINES (Appreciable amt. of fines.)	GM Silty gravels, gravel-sand-silt mixtures.
			GC Clayey gravels, gravel-sand-clay mixtures.
	SANDS WITH FINES (Appreciable amt. of fines.)	CLEAN SANDS (Little or no fines.)	SW Well graded sands, gravelly sands, little or no fines.
			SP Poorly graded sands or gravelly sands, little or no fines.
		SM Silty sands, sand-silt mixtures.	
FINE GRAINED SOILS (More than 50% of the material is SMALLER than No. 200 sieve size.)	SILTS AND CLAYS (Liquid limit LESS than 50.)		ML Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50.)		MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH Inorganic clays of high plasticity, fat clays.
			OH Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			PT Peat and other highly organic soils.
			FRESH TO MODERATELY WEATHERED BASALT
			VOLCANIC TUFF / HIGHLY TO COMPLETELY WEATHERED BASALT
			CORAL

SAMPLE DEFINITION		
 2" O.D. Standard Split Spoon Sampler	 Shelby Tube	RQD Rock Quality Designation
 3" O.D. Split Tube Sampler	 NX / 4" Coring	 Water Level

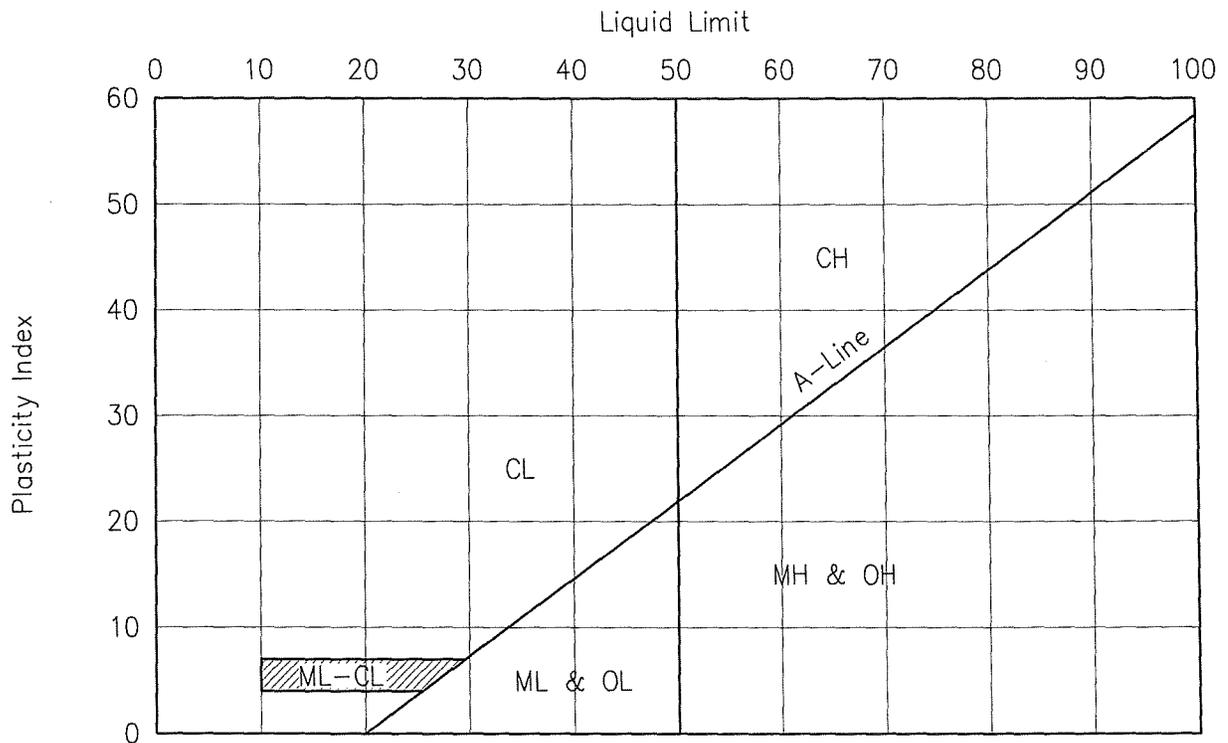
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Kumau Street Entrance Improvements

Hirata & Associates, Inc.

# BORING LOG LEGEND

# PLASTICITY CHART



# GRADATION CHART

COMPONENT DEFINITIONS BY GRADATION	
COMPONENT	SIZE RANGE
Boulders	Above 12 in.
Cobbles	3 in. to 12 in.
Gravel	3 in. to No. 4 (4.76 mm)
Coarse gravel	3 in. to 3/4 in.
Fine gravel	3/4 in. to No. 4 (4.76 mm)
Sand	No. 4 (4.76 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.76 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and clay	Smaller than No. 200 (0.074 mm)

W.O. 10-4974

Kumau Street Entrance Improvements

Hirata & Associates, Inc.

UNIFIED SOIL CLASSIFICATION SYSTEM

Plate A3.2

<u>Grade</u>	<u>Symbol</u>	<u>Description</u>
Fresh	F	No visible signs of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	WS	Slight discoloration inwards from open fractures, otherwise similar to F.
Moderately Weathered	WM	Discoloration throughout. Weaker minerals such as feldspar decomposed. Strength somewhat less than fresh rock but cores cannot be broken by hand or scraped by knife. Texture preserved.
Highly Weathered	WH	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric preserved.
Completely Weathered	WC	Minerals decomposed to soil but fabric and structure preserved (Saprolite). Specimens easily crumbled or penetrated.
Residual Soil	RS	Advanced state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.

Reference: Soils Mechanics, NAVFAC DM-7.1, Department of the Navy, Naval Facilities Engineering Command, September, 1986.

W.O. 10-4974	Kumau Street Entrance Improvements
Hirata & Associates, Inc.	<b>ROCK WEATHERING CLASSIFICATION SYSTEM</b> Plate A3.3

BORING LOG

W.O. 10-4974

BORING NO. B1 DRIVING WT. 140 lb. START DATE 8/6/10  
 SURFACE ELEV. 13.0±\* DROP 30 in. END DATE 8/6/10

DEPTH	GRAPH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
0	[Dotted pattern]	[Sample boxes]	7	44	19	Silty SAND (SP) – Reddish gray, moist, loose to medium dense, with gravel.  Gray basalt fragments from 5 feet.
			13	93	21	
5			31/11"	81	34	
	[Cross-hatched pattern]	[Sample box]	10/No Penetration			MODERATELY WEATHERED BASALT (WM) – Gray, slightly fractured, moderately vesicular, medium hard to hard. Begin NX coring at 8 feet. 95% Recovery from 8 to 13 feet. RQD = 83%
10						Clinker pocket at 11.5 feet.
						End boring at 13 feet.
15						
20						
25						
30						Neither groundwater nor seepage water encountered.  * Elevations based on Topographic Survey provided by R.M. Towill Corporation.

BORING LOG

W.O. 10-4974

BORING NO. B2 DRIVING WT. 140 lb. START DATE 8/5/10  
 SURFACE ELEV. 16.4± DROP 30 in. END DATE 8/5/10

DEPTH FOOT	GRAPH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
0			10/No Penetration			MODERATELY WEATHERED BASALT (WM) – Gray, moderately fractured, slightly vesicular, medium hard to hard. Covered by 3 inches AC over 5 inches of base material. Begin NX coring at 2 feet. 95% Recovery from 2 to 7 feet. RQD = 69%
5						67% Recovery from 7 to 12 feet. RQD = 58%
10						End boring at 12 feet.
15						
20						
25						Neither groundwater nor seepage water encountered.
30						



BORING LOG

W.O. 10-4974

BORING NO. B4 DRIVING WT. 140 lb. START DATE 8/5/10  
 SURFACE ELEV. 17.5± DROP 30 in. END DATE 8/5/10

DEPTH	GRAPH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
0			10/No Penetration			MODERATELY WEATHERED BASALT (WM) – Gray, highly fractured, slightly vesicular, medium hard to hard. Covered by 12 inches AC over 4 inches of base material. Begin NX coring at 1 foot. 100% Recovery from 1 to 6 feet. RQD = 37%
5						100% Recovery from 6 to 11 feet. RQD = 62%
10						End boring at 11 feet.
15						
20						
25						Neither groundwater nor seepage water encountered.
30						

**SITE EVALUATION/PERCOLATION TEST**

Date/Time: August 2, 2010  
 Test performed by: Hirata & Associates, Inc.  
 Owner: Kumau Street Entrance Improvements  
 Tax Map Key: \_\_\_\_\_  
 Test Number: P1

Elevation: 16.4± ft.  
 Depth to Groundwater Table: >12 ft. below grade (based on boring B2)  
 Depth to Bedrock (if observed): 0 ft. below grade (based on boring B2)  
 Diameter of Hole: 4 in.  
 Depth to Hole Bottom: 12 ft. below grade

Depth (inches)	Soil Profile (Color, texture, other)
<u>0 - 3</u>	<u>AC</u>
<u>3 - 8</u>	<u>Base material</u>
<u>8 - 144</u>	<u>Gray basalt</u>

**PERCOLATION READINGS**

Time 12 inches of water to seep away: N/A min.  
 Time 12 inches of water to seep away: N/A min.

- For percolation tests in sandy soils, record time intervals and water drops every 10 minutes for at least 1 hour.
- For percolation tests in non-sandy soils, presoak the test hole for at least 4 hours. Record time intervals and water drops at least every 10 minutes for 1 hour; or if the time for the first 6 inches to seep away is greater than 30 minutes, record time intervals and water drops at least every 30 minutes for 4 hours or until 2 successive drops do not vary by more than 1/16 inch.

Time interval	Drop in inches	Time interval	Drop in inches
<u>*See note</u>	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Percolation Rate (time/final water level drop): \_\_\_\_\_ min/in

\* Water pumped into the test hole at a rate of 24 gallons per minute for 15 minutes. A measurable head could not be maintained.

As the engineer responsible for gathering and providing site information and percolation test results, I attest to the fact that above site information is accurate and that the site evaluation was conducted in accordance with the provisions of Chapter 11-62, "Wastewater Systems" and the results were acceptable.



\_\_\_\_\_  
 Engineer's Signature/Stamp

**APPENDIX B**

**LABORATORY TESTING**

## **DESCRIPTION OF LABORATORY TESTING**

### **CLASSIFICATION**

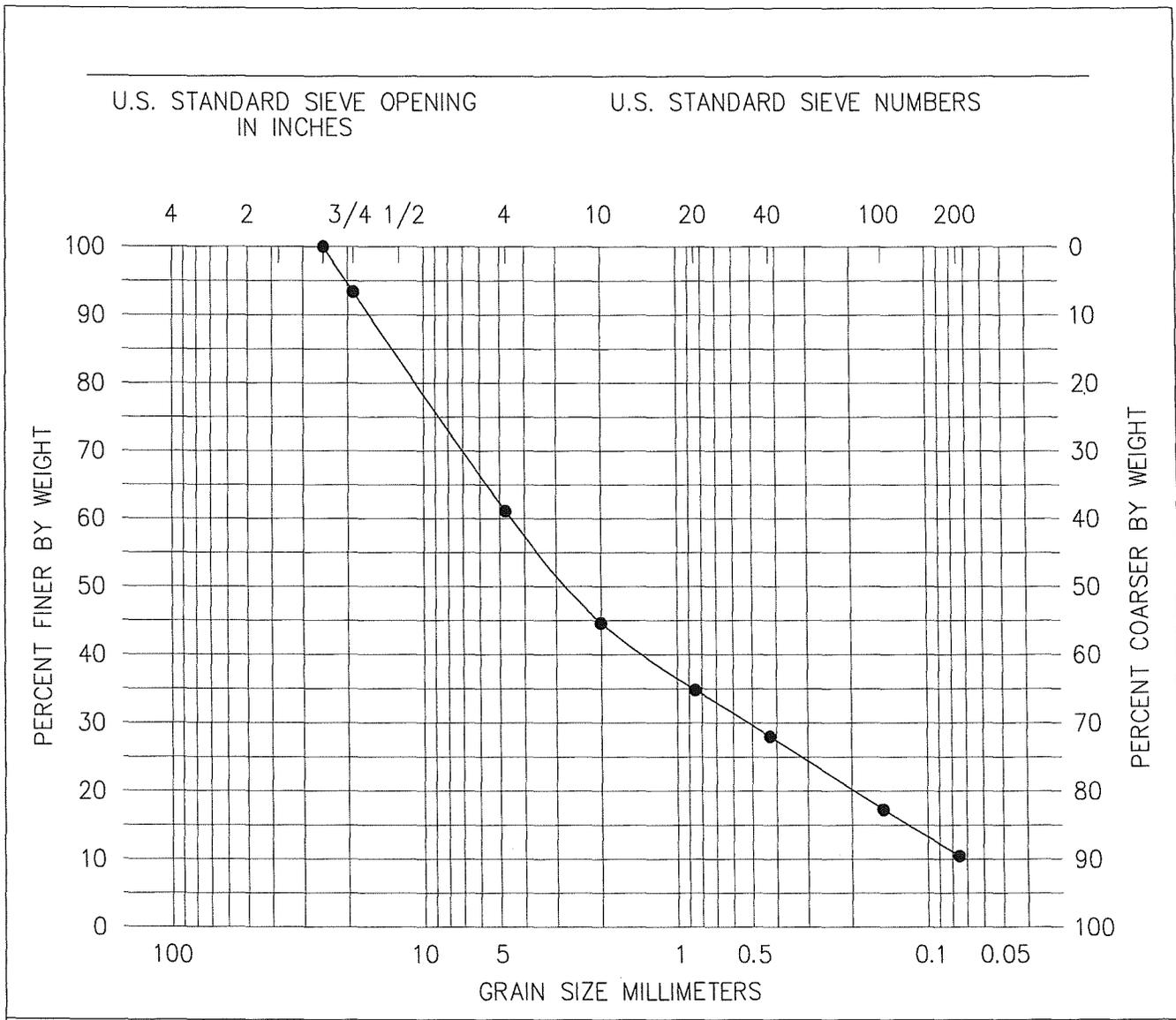
Field classification was verified in the laboratory in accordance with the Unified Soil Classification System. Laboratory classification was determined by visual examination. The final classifications are shown at the appropriate locations on the Boring Logs, Plates A4.1 through A4.4.

### **MOISTURE-DENSITY**

Representative samples were tested for field moisture content and dry unit weight. The dry unit weight was determined in pounds per cubic foot while the moisture content was determined as a percentage of dry weight. Samples were obtained using a 3-inch O.D. split tube sampler. Test results are shown at the appropriate depths on the Boring Logs, Plates A4.1 through A4.4.

### **SIEVE ANALYSIS**

A sieve analysis test was performed in general accordance with ASTM D 422 on a bulk sample obtained from boring B1 at a depth of about 12 inches. The test is used to determine the grain size distribution. Test results are presented on Plate B2.1.



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

● Sample #1	Location: Boring B1 at a depth of about 12 inches
	Description: Reddish gray silty sand

## **Appendix C**

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Archaeological Literature Review and Field Inspection  
for the Proposed Kumau Street Entrance Improvements  
Pier 4, Hilo Harbor, Island of Hawai'i  
Cultural Surveys Hawai'i, Inc.  
August 2010

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**Archaeological Literature Review and Field Inspection  
for the Proposed Kumau Street Entrance Improvements,  
Pier 4, Hilo Harbor,  
Waiākea Ahupua‘a, South Hilo District, Island of Hawai‘i  
TMK: (3) 2-1-007:999**

**Prepared for  
R. M. Towill Corporation**

**Prepared by  
Sarah Wilkinson, B.A.,  
Aulii Mitchell, B.A.,  
and  
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai‘i, Inc.  
Kailua, Hawai‘i  
(Job Code: WAIAKEA 5)**

**August 2010**

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Wailuku, Hawai‘i 96793  
Ph: (808) 242-9882  
Fax: (808) 244-1994**

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## Management Summary

<b>Reference</b>	Archaeological Literature Review and Field Inspection for the Proposed Kumau Street Entrance Improvements, Pier 4, Hilo Harbor, Waiākea Ahupua'a, South Hilo District, Island of Hawai'i TMK: (3) 2-1-007:999
<b>Date</b>	August 2010
<b>Project Number (s)</b>	Cultural Surveys Hawai'i (CSH) Job Code: WAIAKEA 5
<b>Investigation Permit Number</b>	The fieldwork component of the archaeological literature review and field inspection study was carried out under CSH's annual archaeological permit # 10-10 issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
<b>Project Location</b>	The project area includes approximately 1,500 feet of Kalaniana'ole Street at the intersection of Kumau Street, and Kumau Street including approximately 30 feet on either side of the roadway heading <i>makai</i> (seaward) toward Hilo Harbor to its terminus at Ocean View Drive (Figure 1). Kumau Street is located approximately one kilometer (0.6 miles) east of Banyan Drive and approximately 400 m seaward of Hilo International Airport.
<b>Land Jurisdiction</b>	Preliminary plans for this project indicate that County of Hawai'i and private lands will be impacted; the project will abut State Department of Transportation (DOT) lands (see Figure 4)
<b>Agencies</b>	State of Hawai'i Department of Land and Natural Resources/State Historic Preservation Division (DLNR/SHPD)
<b>Project Description</b>	The proposed project would affect various improvements along a 1,500 foot section of Kalaniana'ole Street—1,000 feet west of the Kumau Street intersection and 500 feet east of the Kumau Street intersection. Kumau Street would undergo improvements along its length to its termination at Ocean View Drive. Modifications would include road widening as well as other improvements.
<b>Project Acreage</b>	Approximately 2.5 acres

<b>Document Purpose</b>	The proposed project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS Chapter 6E-8 and HAR Chapter 13-275]. The purpose of this study is to facilitate planning and SHPD decision making regarding appropriate mitigation—if any. This investigation does not fulfill the requirements of an archaeological inventory survey investigation per the rules and regulations of the SHPD/DLNR (per HAR Chapter 13-276). However, the level of work is sufficient to determine if there are any major archaeological concerns within the project area and to develop data on the general nature, density and distribution of archaeological resources, as well as to provide recommendations of any additional cultural resource management work that might be needed prior to land alteration within the project area. This document was prepared to support the project's historic preservation and environmental review.
<b>Fieldwork Effort</b>	The fieldwork component of the archaeological literature review and field inspection study was accomplished on July 23, 2010 by Sarah Wilkinson, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required 1 person-day to complete.
<b>Results Summary</b>	No significant historic properties were identified during the archaeological field inspection. The project lands include existing modern road shoulders and bulldozed areas.
<b>Mitigation Recommendation</b>	Given the lack of any historic properties within the project area, and the unlikelihood of encountering any burials due to the lack of Jaucas sands within the project area, CSH does not see the need for an archaeological inventory survey or for a monitoring program for the Kumau Street intersection improvements project. No further archaeological work is recommended. In the unlikely event that cultural deposits and/or human skeletal remains are encountered during ground disturbing activities, work should be stopped immediately in that area and the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) should be notified promptly of the nature of the discovery.

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## Section 1 Introduction

---

### 1.1 Project Background

At the request of R. M. Towill Corporation, Cultural Surveys Hawai'i, Inc. (CSH) has conducted this archaeological literature review and field inspection study for the proposed improvements at the Kumau Street entrance to Pier 4 of Hilo Harbor, Waiākea Ahupua'a, South Hilo District, Hawai'i Island, TMK(3) 2-1-007: 999 (Job HMP. 60906). The Kumau Street entrance is located along the *makai* (seaward) lane of Kalaniana'ole Street in South Hilo (Figure 1 through Figure 4).

The approximately 2.5-acre project area is predominately owned by the County of Hawai'i, though some private land will be impacted. The project will abut State of Hawai'i Department of Transportation (DOT) land along the north end of Kumau Street (see Figure 3). The proposed project would involve various improvements along a 1,500 foot section of Kalaniana'ole Street (1,000 feet west of the Kumau Street intersection and 500 feet east of the Kumau Street intersection) and on Kumau Street. Kumau Street and the adjacent portions of Kalaniana'ole Street would undergo modifications including road widening as well as other improvements. (see Figure 4).

The proposed project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS Chapter 6E-8 and Hawai'i Administrative Rules (HAR) Chapter 13-275]. This investigation does not fulfill the requirements of an archaeological inventory survey investigation per the rules and regulations of the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) (per HAR Chapter 13-276). However, the level of work is sufficient to determine if there are any major archaeological concerns within the project area and to develop data on the general nature, density, and distribution of archaeological resources, as well as to provide recommendations of any additional cultural resource management work that might be needed prior to land alteration within the project area. This document was prepared to support the project's historic preservation and environmental review.

### 1.2 Scope of Work

The agreed upon scope of work for this archaeological literature review and field inspection is as follows:

1. Historical and previous archaeological background research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports 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. This assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.

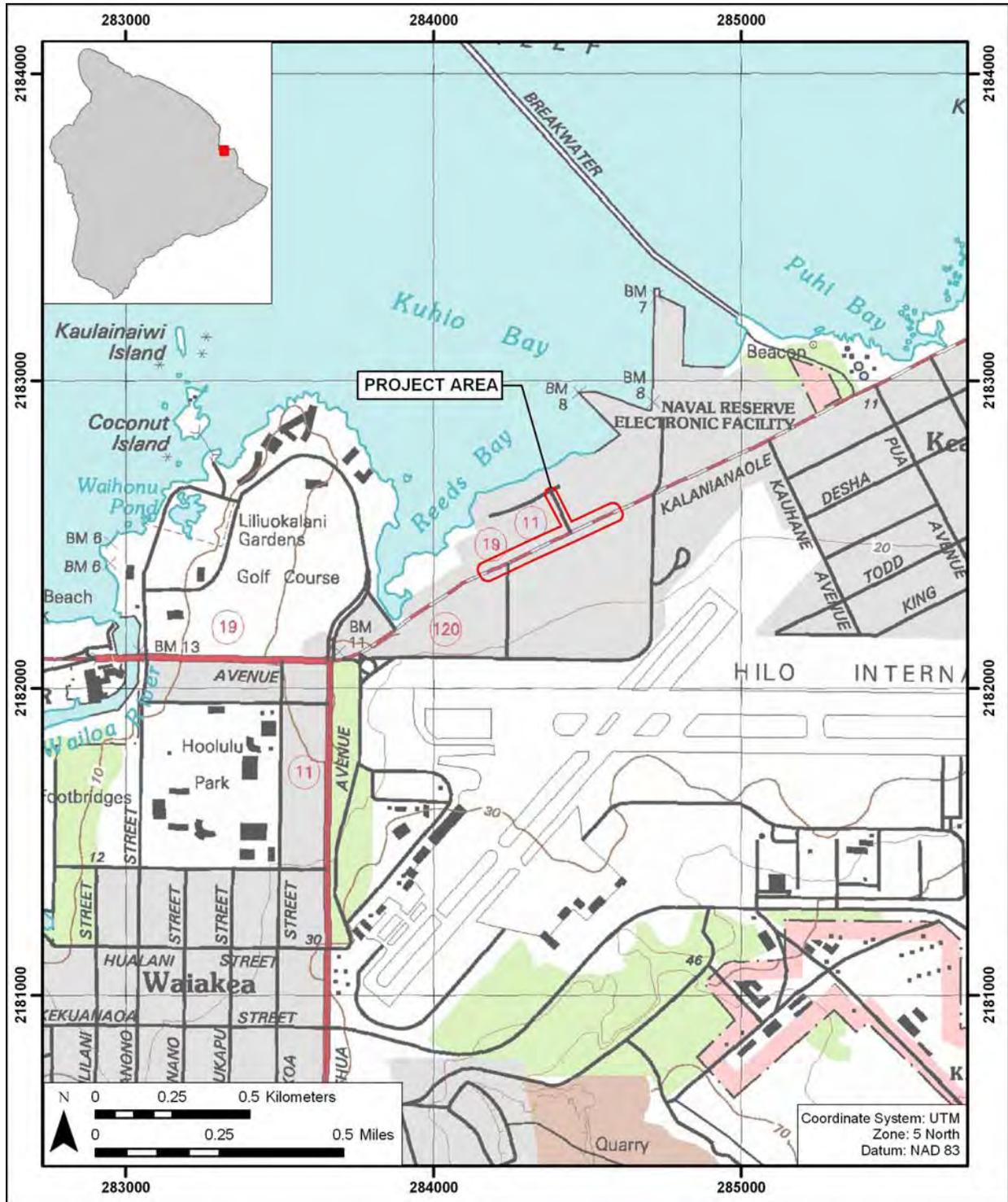


Figure 1. Portion of the 1995 Hilo Quadrangle US Geological Survey 7.5' Topographic Map, showing the location of the project area



Figure 2. Aerial photograph (Google Earth 2009) showing the location of the project area





Figure 4. Draft Site Plan for the Kumau Street Improvements project, showing the project area limits (in red); map provided by R.M. Towill

3. Preparation of a report to include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It will also provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

## 1.3 Environmental Setting

### 1.3.1 Natural Environment

The project area is located along the eastern coast of the island of Hawai'i, along Kalaniana'ole Street approximately one kilometer (0.6 miles) east of Banyan Drive, and along the entire length of Kumau Street (approximately 400 m seaward of Hilo International Airport). The topography within the project area is generally level with a slight slope towards the ocean. Elevations range from two feet to eight feet (0.6 to 2.4 meters) AMSL (Above Mean Sea Level). Vegetation in the project area consists of manicured lawn areas, ornamental trees and shrubs, Norfolk pine, mango and albizia trees, and a few native species including: *niu* (*Cocos nucifera*), *kī* (*Cordyline terminalis*), *hau* (*Hibiscus tiliaceus*) and *mai'a* (*Musa spp*). Non-native ground cover, grasses and weed plants, including morning glory and *lilikoi* (passion fruit) vines, cover the vacant lots at the corner of Ocean View Drive and Kumau Street.

One soil type, rKFD or Keaukaha Extremely Rocky Muck (6 to 20 percent slopes), constitutes the lands within the project area (Figure 5). According to Sato et al. (1973:27):

[t]he Keaukaha series consists of well-drained, thin organic soils overlying pahoehoe bedrock. These soils occupy the low areas of Mauna Loa. They are at an elevation ranging from near sea level to 1,000 feet and receive from 90 inches to more than 150 inches of rainfall annually. Their mean annual soil temperature is between 72° and 74° F. The natural vegetation consists of ohia, tree fern, uluhe fern, and guava...Keaukaha soils are used for woodland, pasture, and home sites.

About the rKFD type in particular, Sato et al (1973:27) report that:

[t]his soil is near the city of Hilo. It is undulating to rolling and follows the topography of the underlying pahoehoe lava. Rock outcrops occupy about 25 percent of the area. In a representative profile the surface layer is very dark brown muck about 8 inches thick. It is underlain by pahoehoe bedrock. This soil is strongly acid.

### 1.3.2 Built Environment

The project area lies along existing modern roadways. Infrastructure within the project area includes sidewalks, utility poles, fencing, signage, curbing, unpaved parking areas, and a buried gas line. The Kumau Street entrance is located less than half a mile west of the Kuhio Street entrance to the Hilo Harbor. The project area is fronted by the Kuhio Industrial Plaza and businesses including but not limited to: Nissan and Mazda car dealerships, Gaspro, Tesoro Gas Station, Herb's Herbs, Pacific Island Floors, Harper's Rentals, and Power Self Storage. Orchid Manor Apartments are located along the western end of the project area.



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## Section 2 Methods

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### 2.1 Document Review

Background research included: a review of previous archaeological studies on file at SHPD; review of documents at Hamilton Library of the University of Hawai'i at Mānoa, 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 study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona 'Aina database (<[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 types and locations of historic properties in the project area.

### 2.2 Field Methods

The fieldwork component of the archaeological literature review and field inspection was conducted on July 23, 2010 by CSH archaeologist Sarah Wilkinson, B.A., under the general supervision of Hallett H. Hammatt Ph.D. (principal investigator). The fieldwork required 1 person-day to complete.

In general, the purpose of the field inspection was to develop data on the nature, density, and distribution of archaeological sites within the project area, and also to develop information on the degree of difficulty that vegetation and terrain create for future archaeological studies. The field inspection consisted of a walk-through reconnaissance of the project area. Potential archaeological sites or site areas were to be documented with written descriptions, maps, and photographs.

## Section 3 Background Research

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### 3.1 Traditional Background

Waiākea literally means broad waters (Pukui et al. 1976:219), but is also a type of taro (*kalo*) grown in Kona, Hawai'i (*lehua ke'o ke'o*, a variety of taro called *waiākea*) (Pukui and Elbert 1986:377). Waiākea, with its rich natural resources of forests and the sea, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. According to many legends, Waiākea was also associated with the Hawaiian royalty (*ali'i*).

Handy and Handy (1972) recorded the agricultural methods used to grow taro, sweet potatoes, and sugar cane in Waiākea in the 1930s. They describe the natural habitat and agricultural development of Waiākea and South Hilo:

In lava-strewn South Hilo there were no streams whose valleys or banks were capable of being developed in terraces, but [taro] cuttings were stuck into the ground on the shores and islets for many miles along the course of the Wailuku River far up into the forest zone. In the marshes surrounding Waiākea Bay, east of Hilo, taro was planted in a unique way known as *kanu kipi* (mounded taro patches)...On the lava-strewn plain of Waiākea and the slopes between Waiākea and the Wailuku River, dry taro was formerly planted wherever there was enough soil. There were forest plantations in Pana'ewa and in the lower fern-forest zone above Hilo town and along the course of the Wailuku River [Handy and Handy 1972:538-539].

Handy and Handy cite a 1922 article in the Hawaiian language newspaper, *Ka Nūpepa Kū'oko'a*, that refers to planting sweet potatoes and sugar cane on *pāhoehoe* (smooth lava) lava fields:

...There are *pāhoehoe* lava beds walled in by the ancestors, in which sweet potatoes and sugar cane were planted and they are still growing today. Not only one or two but several times forty (*mau ka'au*) of them. The house sites are still there, not one or two but several times four hundred in the woods of Pana'ewa. Our indigenous bananas are growing wild, these were planted by the hands of our ancestors [Handy and Handy 1972:131-132].

There are abundant references to Waiākea in the myths and legends of Hawai'i recorded by the early ethnographers Thrum, Emerson, Westervelt, and Fornander. One early account of the Hawaiian chiefdom Waiākea is told by Samuel Kamakau (1961:15-17) in a story of the unification of the Island of Hawai'i under chief 'Umi-a-Līloa, beginning with the chiefly residences of Waiākea in the 16th century. The legend establishes Waiākea as a relatively early residence of Hawaiian *ali'i*. Hilo's Kānoa Heiau, where human sacrifices were offered, was also mentioned in the story, indicating its early existence (Kelly, Nakamura and Barrère 1981:1).

The project area lands are within a portion of Waiākea that is known as Keaukaha (literally, "passing current"). Only one legend that references the place name "Keaukaha" was found; the legend of Punia relates, "This was the only place where there were any people, all the rest of the place round about Keaukaha was inhabited by ghosts" (Elbert 1959:14).

Table 1 is a comprehensive list of Hawaiian tales that include Waiākea as a place setting. These legends were primarily found in the *Hawaiian Legends Index* (Revised Edition) compiled by Lillian Ching and edited by Dr. Masae Gotanda, Director of Hawai'i State Library (1989).

Table 1. Legends of Waiākea, Hawai'i

<b>Author</b>	<b>Original Publication and Year</b>	<b>Legend Title</b>
Emerson, Nathaniel	<i>Pele and Hi'iaka</i> (1915)	"Pele and Hi'iaka"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 1 (1916-1919)	"The Story of Umi"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 2 (1916-1919)	"Legend of Kuapakaa"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 2 (1916-1919)	"Legend of Halemano"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 1 (1916-1919)	"Legend of Kapuaokaoheloai"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 1 (1916-1919)	"Legend of Kaipalaoa, the Hoopapa Youngster"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 2 (1916-1919)	"Famous Men of Early Days"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 2 (1916-1919)	"Legend of Pamano"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk lore</i> , v. 2 (1916-1919)	"Brief Stories of Ghosts and Cunning"
Gowen	<i>Hawaiian Idylls of Love and Death</i> (1908)	"Keala"
Pukui and Green	<i>Folk tales from Hawaii</i> (1995)	"The Story of Pele and Hi'iaka"
Hale'ole, S. N.	<i>The Hawaiian Romance of Laieikawai</i> (1919)	"Kaipalaoa"
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i>	"Umi's Necklace War"

Author	Original Publication and Year	Legend Title
	(1923)	Tradition”
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	“Kai a Kahinali ‘i”
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	“Ulu’s Sacrifice”
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	“The Hinas of Hawaiian Folk-lore”
Thrum, Thomas G.	<i>Hawaiian Folk Tales</i> (1998)	“Stories of the Menehunes: As Heiau Builders”
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	“Keaomelemele, The Maid of the Golden Cloud”
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	“Keaunini”

Many of the above stories merely mention Waiākea in passing, including Fornander’s “Legend of Pamao” (1916-1919:304-305) and “Brief Stories of Ghosts and Cunning” (1916-1919:422-423) and Pukui and Green’s “The Story of Pele and Hi‘iaka” (1995:25). The “Legend of Halemano” tells of love between Halemano and his wife Kamalalawalu and their home in Waiākea, in an area called ‘Uluomālama, apparently above the cliffs of Pana‘ewa, Hilo. Halemano looked at his wife, and when he saw the tears in her eyes, his love for her again welled up within him as he remembered how they had lived at ‘Uluomālama in Waiākea, Hilo; so he chanted as follows:

We once lived in Hilo, in our own home,  
 Our home that was in Panaewa...  
 The streams of Hilo are innumerable,  
 The high cliff was the home where we lived...  
 From the waters of Wailuku where the people are carried under,  
 Which we had to go through to get to the many cliffs of Hilo,  
 Those solemn cliffs that are bare of people...

*Noho i Hilo i o maua hale-e,  
 He hale noho i Panaewa e;...  
 He kini, he lehu, kahawai o Hilo e,  
 Pali kui ka hale a ke aloha i alo ai. ...  
 Mai ka wai lumalumi kanaka o Wailuku,*

*A kaula i alo aku ai i na pali kinikini o Hilo,*

*O ia mau pali anoano kanaka ole, ...*

(Fornander 1916-1919:250-251, vol. V, part II)

Another brief mention of Waiākea is found in Pukui and Green's "The Story of Pele and Hi'iaka" in *Hawaiian Stories and Wise Sayings*. Hi'iaka, Pele's sister, "slept at Waiakea, Hilo, and in the morning kept on as far as Kukui-lau-mania, where she turned to gaze back over the country, then continued her journey toward the cliffs of Hilo" (Pukui and Green 1995:25). Waiākea was often visited by Hawaiian chiefs of high rank. In Westervelt's "Keaomelemele, The Maid of the Golden Cloud," chief Kahanai-a-ke-Akua (adopted son of the gods), and his friend Waiola (water of life), "went down to Waiākea, a village by Hilo...The men were invited to sport, but only Waiola went because Kahanai himself was of too high rank" (Westervelt 1915:133).

In the legend "Keala" (Gowen 1908:43-50), "well-known landmarks" of Waiākea are viewed by Ahi, a Hawaiian priest, in his spirit form:

The green water below was the bay of Hilo, the mountain was the terrible Kilauea, where in Halemaumau, the house of everlasting fire, the goddess Pele was wont to ride the red surges with her sisters and tilt with lances of flaming lava. The road was the mountain-path from Waiakea to Kapapala... (Gowen 1908:47)

John Papa 'Ī'ī makes two general references to Waiākea, Hilo. According to 'Ī'ī, at the time of Kamehameha I (circa 1800):

The lands of the chief of Kau were divided within their own district, each being given a portion and each asking for what he wanted. For this reason, a skilled war leader whose name I have forgotten said to Keoua Kuahuula, son of Kalaniopuu and half brother of Kiwalao, perhaps you should go to the chief and ask that these lands be given us. Let Waiākea and Keaau be the container from whence our food is to come and Olaa the lid ['Ī'ī 1959:13-14].

'Ī'ī's second reference notes the well-known surf of "Kanukuokamanu in Waiākea, Hilo" ('Ī'ī 1959:134). Kanukuokamanu, on the western side of Wailoa River, was also mentioned in the 16<sup>th</sup>-century story by Kamakau (1961:15-17) as a beach where chiefs and people gathered "at night ... to amuse themselves with hula dancing, chanting, and the playing of games calling for forfeits of entertainment or sexual favors" (Kelly et al. 1981:1). This summary was likely drawn from two legends: "Story of Umi" and "Umi's Necklace War Tradition."

The "Story of Umi" describes the chiefly residences at Hilo and the king of Hilo, Kulukulua. The legend tells of the chiefs of Hilo gathering at a place called Kanukuokamanu, in Waiākea:

"One night there was a grand entertainment for all the chiefs of Hilo at Kanukuokamanu, in Waiākea; there was dancing and games of *papahene*, *kilu* and *lōkū*. (A he po le 'ale'a nui no na 'lii o Hilo a pau ma Kanukuokamanu ma Waiākea, he hula, he papahene, a he kilu, a me a ka lōkū)" [Fornander 1916-1919:220-221].

A similar story “Umi’s Necklace War Tradition” also mentions the festive night at Kanukuokamanu, Waiākea, and Umi’s marriage to ʻĪwalani, the daughter of the king of Hilo (Thrum 1923).

The “Legend of Kapuaokaokeloai” makes a passing reference to Waiākea as a place where the people of “high chief rank of Hilo” lived (*O Waiākea, i Hilo ka ʻāina, o ka mua ke kaikunāne, o ka muli ke kaikuahine, he mau aliʻi lākou no Hilo*) (Fornander 1916-1919:540-541). Again, this passage reiterates the importance of Hilo as a chiefly residence. This story is also told in “The Hina’s of Hawaiian Folklore” (Thrum 1923).

Another reference to the associated royalty of Waiākea can be found in the “Legend of Kaipalaoa, the Hoopapa Youngster” (Fornander 1916-1919:574-575). According to the legend, “Kaipalaoa” (a relative of Kukuipahu, the king of Kona) “was born in Waiākea, Hilo.”

Many legends tell of the abundant fish and shrimp of Waiākea. The fishpond of Waiākea was so valued that Kamehameha I sent runners from Kawaihae and Kailua to fetch live mullet from Waiākea. Fornander’s (1916-1919:490-491) work describes Kamehameha I sending his fastest runners, Makoa and Kāneakaʻehu, to “Hilo to get mullet from the pond of Waiākea, on the boundary adjoining Puna” (*o ka nanawa ia o Makoa e holo ai i Hilo i ka ʻanae o ka loko o Waiākea, aia ma ka palena e pili la me Puna*).

The rich and varied resources that Waiākea offered made it one of the most important locales on Hawaiʻi Island. Traditional accounts concerning Waiākea include references to it being the seat of chiefly residences as early as ca. A.D. 1550 (Kelly et al. 1981). Chiefly associations with Waiākea continued through traditional times and into the historic era.

Reed’s Bay, along which the project area is situated, was traditionally called Kanakea, or “wide stream.” A legend about Reed’s Bay discusses a hole in the bay called Kaluakoko:

A legend of Reed’s Bay refers to a hole called Kaluakoko beneath the water. A man and a woman lived nearby, and later a second woman came to live with them. The new wife became jealous of the first, and convinced her to go net fishing one day when the husband was fishing, though the husband had forbidden it because it would affect his fishing. As she caught shrimp at the edge of a large hole, the second wife pushed her into the hole and covered the entrance with a rock, killing her. Blood spread through the sea foam and the fisherman, followed its trail in his canoe, moved the stone, and saw what had happened. He confronted the second wife, who lied, and then beat her to death. According to the story, the hole has been referred to as Kaluakoko (the Hole of Blood) [Wolforth 2004; from Rechtman 2009:24].

## 3.2 Historical Background

The *ahupuaʻa* (land division extending from the mountains to the sea) of Waiākea, South Hilo, is large, encompassing some 95,000 acres. It extends from the coast to approximately the 6,000 foot elevation on the windward slope of Mauna Loa. In 1979 Holly McEldowney prepared an “Archaeological and Historical Literature Search and Research Design,” as part of a “Lava Flow Control Study” (McEldowney 1979). In her report, McEldowney describes five zones of land use and associated resources. The five zones (Figure 6), which are applicable to Waiākea,

include: I. Coastal Settlement; II. Upland Agricultural; III. Lower Forest; IV. Rain forest; and V. Sub-Alpine or Montaine (McEldowney 1979:14). The current project area is situated within Zone I, the Coastal Settlement zone. Thus, only this zone is described in depth here.

Zone I is defined as ranging “from sea level to roughly 20 to 50 ft. elevation or 1/2 mile inland.” The zone was described by early visitors to Hilo Bay as:

...a nearly continuous complex of native huts and garden plots interspersed with shady groves of trees, predominately breadfruit (*Artocarpus altilis*) and coconut (*Cocos nucifera*). Other than these residential complexes, canoe sheds, several heiau, and large complexes catering to chiefs and their retainers were mentioned. Gardens, outlined by windbreaks or small plantations of bananas (*Musa* hybrids), sugarcane (*Saccharum officinarum*), and *wauke* (*Broussonetia papyrifera*) were primarily planted with dryland taro, mixed with sweet potatoes (*Ipomoea batatas*) and minor vegetable crops [McEldowney 1979:16].

Ellis (1963) visited the area in 1823 (see section 3.2.2 below) and at the time estimated some 2,000 people resided in “400 houses or huts along Hilo Bay.” McEldowney (1979:15) notes that Hilo Bay was one of several settlements on the east coast of the Big Island and was “an elongate complex paralleling the coastline.” The abundance of marine resources and access to fresh and brackish water influenced settlement patterns. Since the majority of fishponds were concentrated west of the project area, primarily within Hilo Bay and vicinity, settlement was also concentrated west of the project area.

### 3.2.1 Early 1800s

Land use during the early historic period was still essentially subsistence-based. Settlement was primarily focused on the coastal zone as was most of the agricultural production of both indigenous food crops and newly introduced plants. Significant alterations to these life-ways began occurring in the 1800s. The establishment of the American Board of Commissioners for Foreign Missions (ABCFM) station in Hilo, the sandalwood trade, and the arrival of whalers began the shift from subsistence to a market-based economy.

### 3.2.2 1820s

In 1823, Reverend William Ellis conducted a two month journey around the entire island of Hawai'i, utilizing a route primarily along the coast. During his journey Ellis made observations of indigenous Hawaiian agriculture and population densities. The following is his account of the coastal inhabitants of the North Hilo and Hāmākua districts:

...the inhabitants, excepting at Waiakea, did not appear better supplied with the necessaries of life than those of Kona, or the more barren parts of Hawaii. They had better houses, plenty of vegetables, some dogs, and few hogs, but hardly any fish, a principle article of food with the natives in general [Ellis 1963:252].

T. Stell Newman (2000) conducted an ethnohistorical study utilizing the observations of Ellis in conjunction with modern environmental data in an attempt to define indigenous Hawaiian land use patterns circa 1823. Through an analysis of Ellis's journal writings Newman was able to

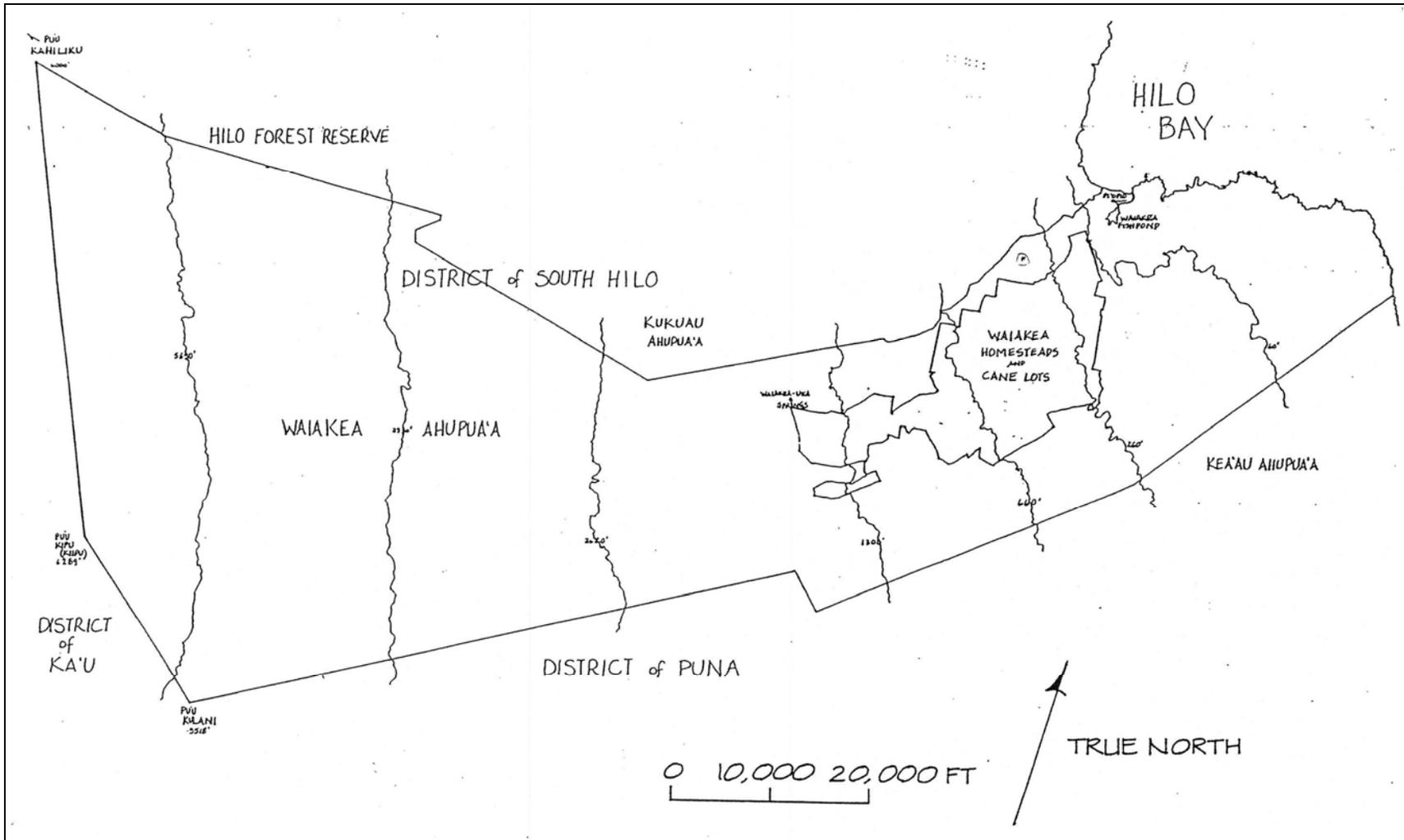


Figure 6. Ahupua'a of Waiākea (from McEldowney 1979:64)

reconstruct Ellis's route around the island. Ellis's route was then plotted onto a map and all references by Ellis about indigenous Hawaiian agriculture, population density, soil type, water resources, and botany were matched to the route allowing Newman (2000) to establish four agricultural zones: Irrigation, Dry land Farming, Scattered Farms, and Field Systems (Figure 7). Based on a review of Newman's map it appears that the current project area falls into the Scattered Farms agricultural zone, which is defined as having a low population density, dispersed settlement with few fishing villages at the coast, and scattered fields and gardens with no major field systems (Newman 2000). Crops that would have been cultivated consisted of dryland taro, sweet potato, bananas, yams, breadfruit, sugarcane, and paper mulberry. Note that number 25 shows the location of Hilo, which is identified as "Waiakea".

C.S. Stewart, an American missionary traveled to Hilo in 1825 with Lord Byron on the *H.M.S. Blonde*. He described the Waiākea vicinity as the ship landed at Coconut Island, approximately one kilometer west of the proposed project area:

The beach is covered with varied vegetation, and ornamented by clumps and single trees of lofty cocoa-nut, among which the habitations of the natives are seen, not in a village, but scattered everywhere among the plantations, like farm-houses in a thickly inhabited country...At a very short distance from the beach, the bread-fruit trees were seen in heavy groves, in every direction intersected with pandanus and tutui [*kukui*], or candle-tree, the hibiscus and the acacia, &c. The tops of these rising gradually one above another, as the country gently ascended towards the mountains in the interior, presented for twenty or thirty miles in the south-east, a delightful forest scene [Stewart 1970:362-363].

The American Board of Commissioners for Foreign Missions (ABCFM) established themselves in Hilo in the mid-1820s. The years following the missionary's arrival were spent introducing a new religion that was not accepted by the general population until the late 1830s (McEldowney 1979:33-34, 36).

### 3.2.3 1830s

A "religious revival" occurred in Hilo in the late 1830s due in part to the preaching of Titus Coan and several other factors. The Hawaiian population had been considerably reduced at this point due to the introduction of new diseases and a decline in the birth rate. Alterations to traditional religion and life-ways were prevalent and this devotion to the new religion intensified these changes:

During the revivals height [between 1837 and 1840], as many as 10,000 people congregated in Hilo at one time, Among other consequences, this led to the severe alteration of traditional habitation and garden sites within the Hilo area, the permanent or temporary abandonment of entire villages in outlying areas, and a deeper disruption of traditional Hawaiian beliefs and subsistence patterns [McEldowney 1979:37].

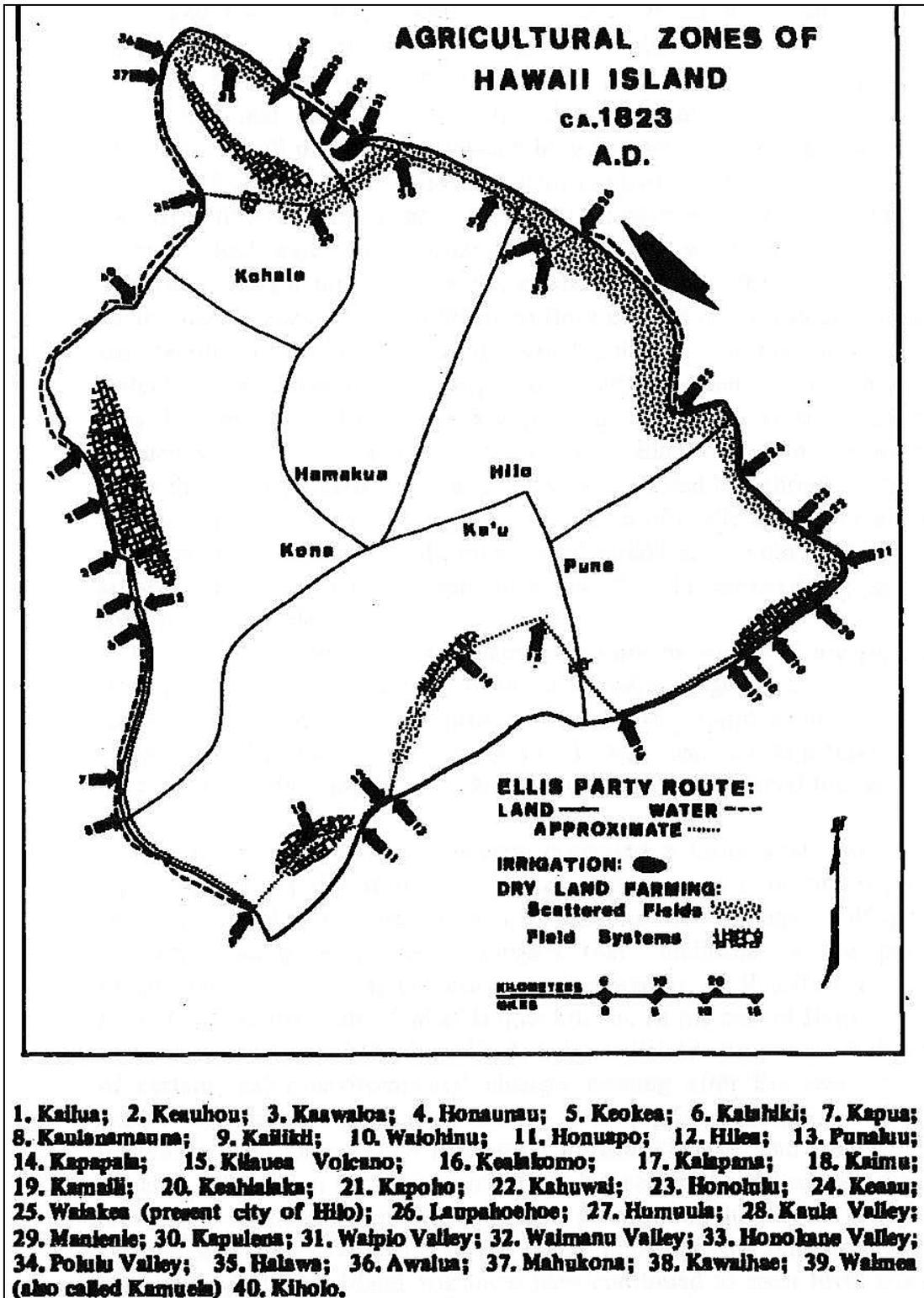


Figure 7. Map of Hawai'i Island showing the route of Reverend William Ellis and the agricultural zones delineated by Newman (from Newman 2000)

### 3.2.4 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown and the *ali'i* received their land titles. *Kuleana* (title or ownership) awards to commoners for individual parcels within the *ahupua'a* were subsequently granted in 1850. It is through records for Land Commission Awards (LCAs) generated during the Māhele that the first specific documentation of life in Hawai'i, as it had evolved up to the mid-nineteenth century come to light. Although many Hawaiians did not submit or follow through on claims for their lands, the distribution of LCAs can provide insight into patterns of residence and agriculture. Many of these patterns of residence and agriculture probably had existed for centuries past. By examining the patterns of *kuleana* (commoner) LCA parcels in the vicinity of the project area, insight can usually be gained to the likely intensity and nature of Hawaiian activity in the area.

Waiākea Ahupua'a was held by Kamehameha. When he died in 1819, his son Liholiho received the lands. The Kamehameha dynasty's control over the valuable property was affirmed in the *ahupua'a*'s status as Crown Land during the Māhele, with the *'ili* (subdivision of an *ahupua'a*) of Pi'opi'o, which is located west of the project area, awarded to Victoria Kamāmalu (LCA 7713:16), a granddaughter of Kamehameha I and heir to Ka'ahumanu as well.

Twenty-six (26) LCAs were granted within Waiākea, none of which are within or in the vicinity of the present project area. Most LCAs were within the coastal zone and for the most part focused around the edges of the large fishponds of Waiākea. The two exceptions are LCA 2663 and 2402; they were in the lower portion (i.e. ca. 100 ft. AMSL) of the upland agricultural zone. Land use information of the *kuleana* generally refers to cultivated fields with house lots, indicating habitation and agricultural production within the same zone, unlike leeward Hawai'i Island where in many cases *kuleana* included coastal house lots with associated upland agricultural lots, because of elevation dependent rainfall.

The lands directly surrounding the project area appear to have been maintained as government lands. By the 1918, a portion of this area began to be leased as the Waiakea Warehouse Lots (Figure 8). A 1936 Hawaii Territory Survey map (Figure 9) clearly depicts the locations of these lots.

Grant 7099, at the western corner of present Kalaniana'ole Street and Kumau Street, was awarded to Kilagawa and Matsuma, while the eastern corner was granted to the Hilo Rice Mill Co. as Grant 7100. These lots are occupied today by Nissan and Gaspro, respectively. Later on, the Ocean View Lease Lots were created to the north along the coast, with the lands immediately at the shore remaining property of the Territory of Hawai'i. None of the Ocean View Lease Lots depicted on this map indicate specific leases, while the modern tax map indicates that over half of these lots are under private lease, with the remainder belonging to the State (see Figure 3).

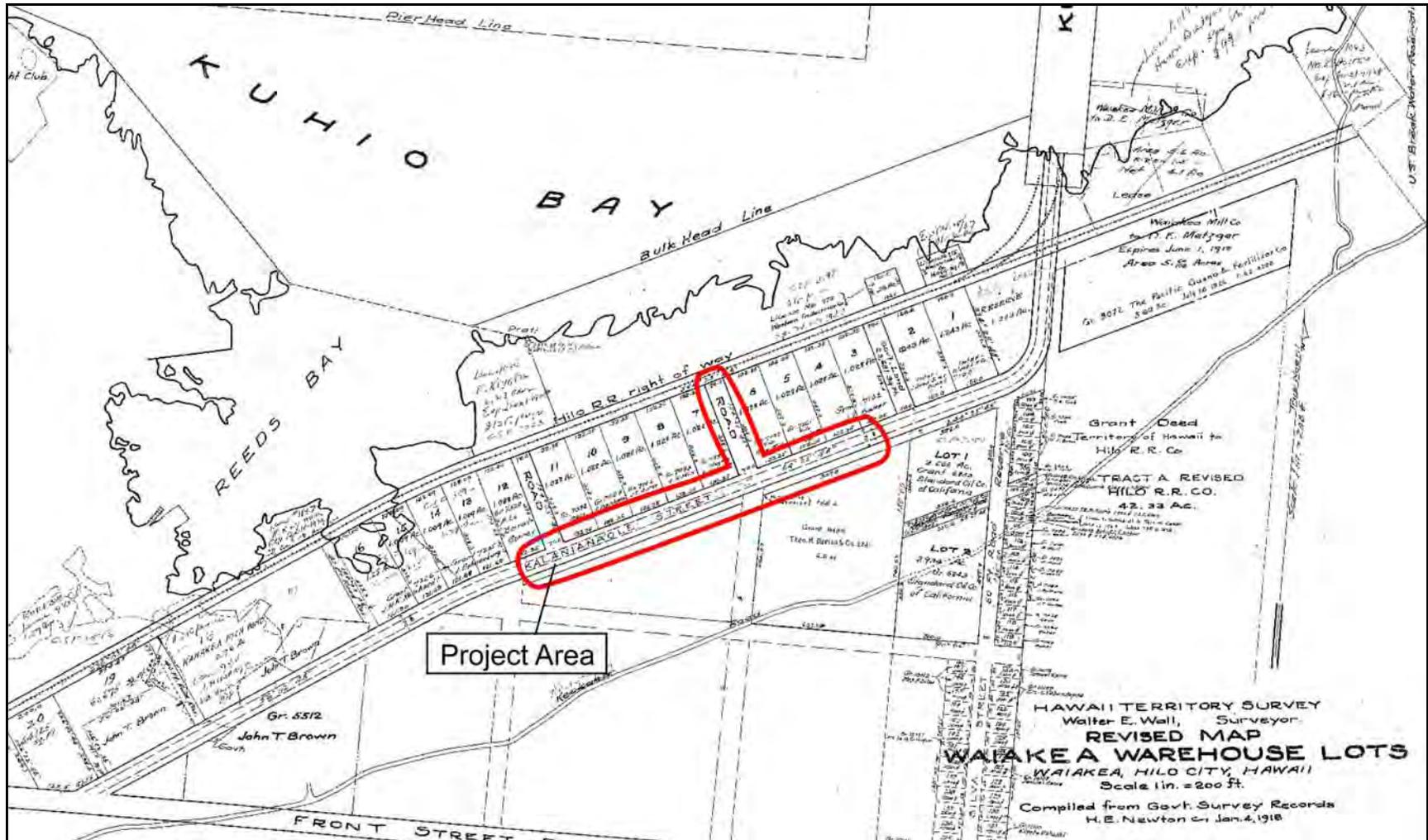


Figure 8. Portion of the 1918 Revised Waiakea Warehouse Lots map by Walter E. Wall, showing the approximate location of the project area in relation to the warehouse lots (Registered Map No. 2539, HTS Plat 0779)

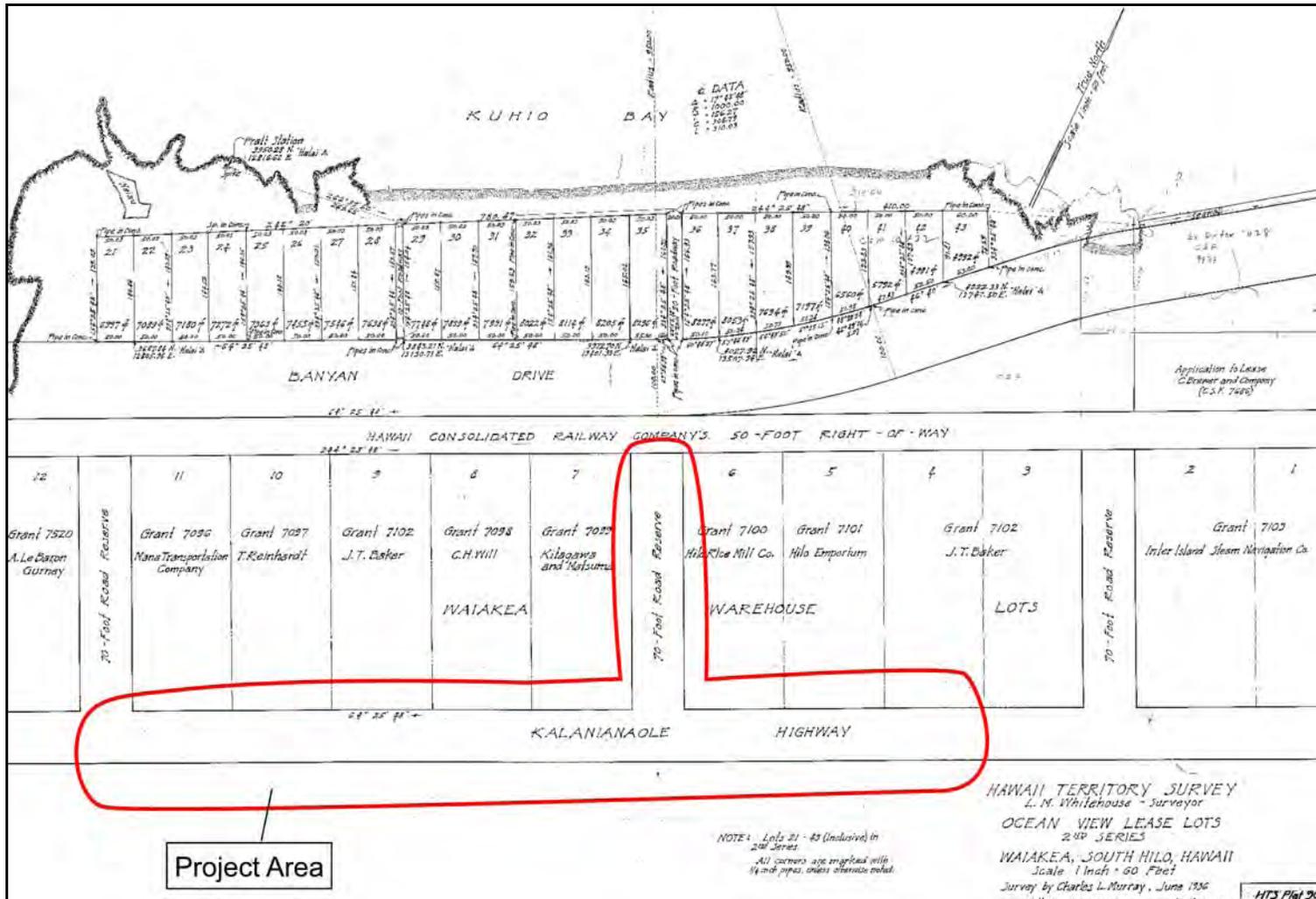


Figure 9. 1936 Ocean View Lease Lots (2<sup>nd</sup> Series) map by L.M. Whitehouse, showing the approximate location of the project area in relation to the Waiakea Warehouse Lots and Ocean View Lease Lots (Registered Map No. 2539, HTS Plat 0901)

### 3.2.5 Late 1800s

The coastal zone continued to contain the vast majority of the population. Houses and stores were concentrated in the northern half of Hilo Bay, somewhat removed from Waiākea, because at the time the main pier for Hilo was at the mouth of the Wailuku River. Hilo was being transformed into an entirely wooden-framed “New Bedford type Whaling Town.” Whaling ships requiring supplies visited the port causing the export economy to grow. More foreigners were settling in Hilo and began purchasing Hawaiian lands (McEldowney 1979:38).

Isabella Bird describes the country area around Hilo in 1873 and the variety of crops grown: “Above Hilo, broad lands sweeping up cloud wards with their sugar-cane, *kalo* (taro), melons, pine-apples, and banana groves suggest the boundless liberality of nature” (Bird 1964:38). McEldowney describes other land usage activities in Waiākea: “Other examples of business, not directly related to sugar cultivation, were the continued use of the Waiākea fishponds, an active Chinese fish market, small pastures above Hilo supporting dairy cattle, and scattered vegetable gardens” (McEldowney 1979:39). Cattle ranching and timber for firewood and housing were the primary interior land uses during this period.

Large-scale commercial sugar cane production began in Waiākea in the late 1870s with the establishment of the Waiākea Mill Company. The Waiākea Mill Company leased Waiākea Crown lands extending from the town of Hilo up to 1,100 ft. elevation. The mill was located at the head (*mauka* – upland end) of Waiākea Fishpond and sugar was transported by barge through the pond and down Wailoa River to Hilo Bay. In 1879, a 3-mile segment of railroad was constructed from the Waiākea Mill to the cane fields, “the first in the ‘Sandwich Islands’ to haul sugar cane with a steam locomotive” (Condé and Best 1973:117). Three years later, on October 1, 1882, Queen Emma visited the Waiākea plantation “to take a ride on the railroad...and a pleasant trip was made into the cane fields, a distance of four miles from the mill” (Condé and Best 1973:118).

McEldowney describes other land usage activities in Waiākea: “Other examples of business, not directly related to sugar cultivation, were the continued use of the Waiākea fishponds, an active Chinese fish market, small pastures above Hilo supporting dairy cattle, and scattered vegetable gardens” (McEldowney 1979:39). Cattle ranching and timber for firewood and housing were the primary interior land uses during this period. Access to the lands of Keaukaha remained difficult; as an 1882 Hawaiian Government Survey map shows, no roads extended into this eastern-most section of Waiākea (Figure 10).

### 3.2.6 Early 1900s to the Present

Sugar and its associated industries continued to expand during the early 1900s. Haun and Henry (2000:10) discuss the impetus behind the extension of the railroad to Hilo Bay and the development of the wharfs:

Between 1900 and the 1930s, the population of Hilo grew dramatically with the expansion of sugar cane cultivation, pineapple production, the timber industry, and other commercial developments. In the 1910s, the Hilo Railroad Company expanded the rail system to Puna and Hilo Town. A railroad wharf was built north

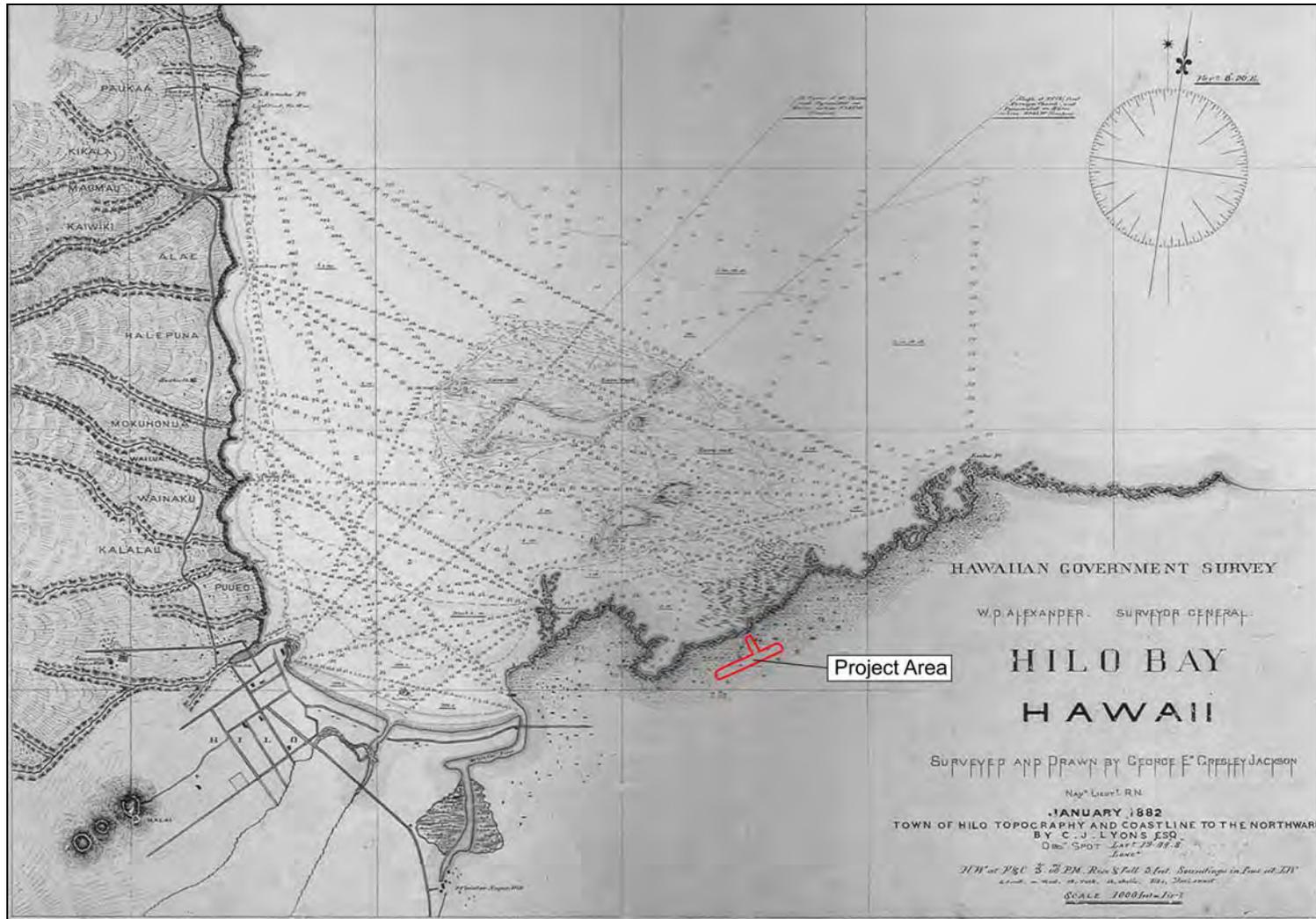


Figure 10. Portion of the 1882 Hawaiian Government Survey Map of Hilo Bay by G. E. Jackson, showing the approximate location of the project area in relation to the developed areas of Hilo

of the mouth of the Wailoa River. Between 1909 and 1913, the railroad was extended to North Hilo and Hamakua Districts.

The pending opening of the Panama Canal and anticipated increase in trans-Pacific shipping lead to serious efforts to build a breakwater to protect shipping in Hilo Bay. Construction of the breakwater began in 1908. The breakwater was initially planned for a location just east of Coconut Island, but the plan was modified and the selected site was approximately 6,000 ft east of the island. The initial plans called for a 10,000 ft long breakwater along Blonde Reef. Stone for the structure was brought by railroad from quarries in Puna and Waiākea. The breakwater was completed in 1929...

...By the 1910s, the existing railroad and government wharf facilities were inadequate to support shipping. In 1912, the Territorial Government contracted the construction of a new wharf approximately one mile east of Coconut Island and the dredging of the adjacent portion of the bay. The new wharf, designated Kuhio Wharf was completed in 1916. From the beginning, the wharf was congested and plans for a second wharf were made. Construction of the wharf began in 1921 and it was completed in 1923. A third wharf was completed in 1927.

A 1915 Hawaii Territory Survey map (Figure 11) shows the railroad, and the project area's proximity to the early economic development of the area, including the Kūhiō Wharf and the beginnings of the Hilo breakwater (State Inventory of Historic Places [SIHP] number 50-10-35-7441). The 1915 map also depicts what appears to be a road heading in the direction of the Kūhiō Wharf, terminating just before the breakwater. The 1918 map (see Figure 8) clearly depicts this route as part of the Hilo Railroad right-of-way. It is unclear whether or not, at some point between 1915 and 1918, the right-of way was constructed over an existing road (possibly the old Banyan Drive route), or if the 1915 map simply depicts this section of the railway in a different manner than the other rail routes included on that map. Figure 8 also shows the location of a triangulation station, called "Pratt," located along the eastern point of Reed's Bay just northwest of the project area, and Kalaniana'ole Street ending at the Kūhiō Wharf.

Ranching in the Hilo area, although not specifically in Waiākea, came under the control of two large enterprises—the Parker and Shipman ranches. In Waiākea a large portion of the upland agricultural zone that was too rocky for sugar cane cultivation became available for lease as Waiākea pasture lands. The specific use of the pasture land is not known but McEldowney notes: "A substantial amount of grazing land adjacent to Hilo or to sugarcane fields supported dairy cows for Hilo's several dairies" (McEldowney 1979:41). In 1918 the 30-year lease of the Waiākea Mill Co. expired and, because Hawai'i had become a territory,

...the land fell under homesteading laws that required the government to put some of it up for lease to homesteaders who would be willing to grow sugar cane on it. Waiākea Mill was to grind the crop for them. A total of about 700 acres of land was divided into cane lots (between 10 and 76 acres each) and house lots ranging from 1 to 3 acres... [Kelly et al. 1981:121].

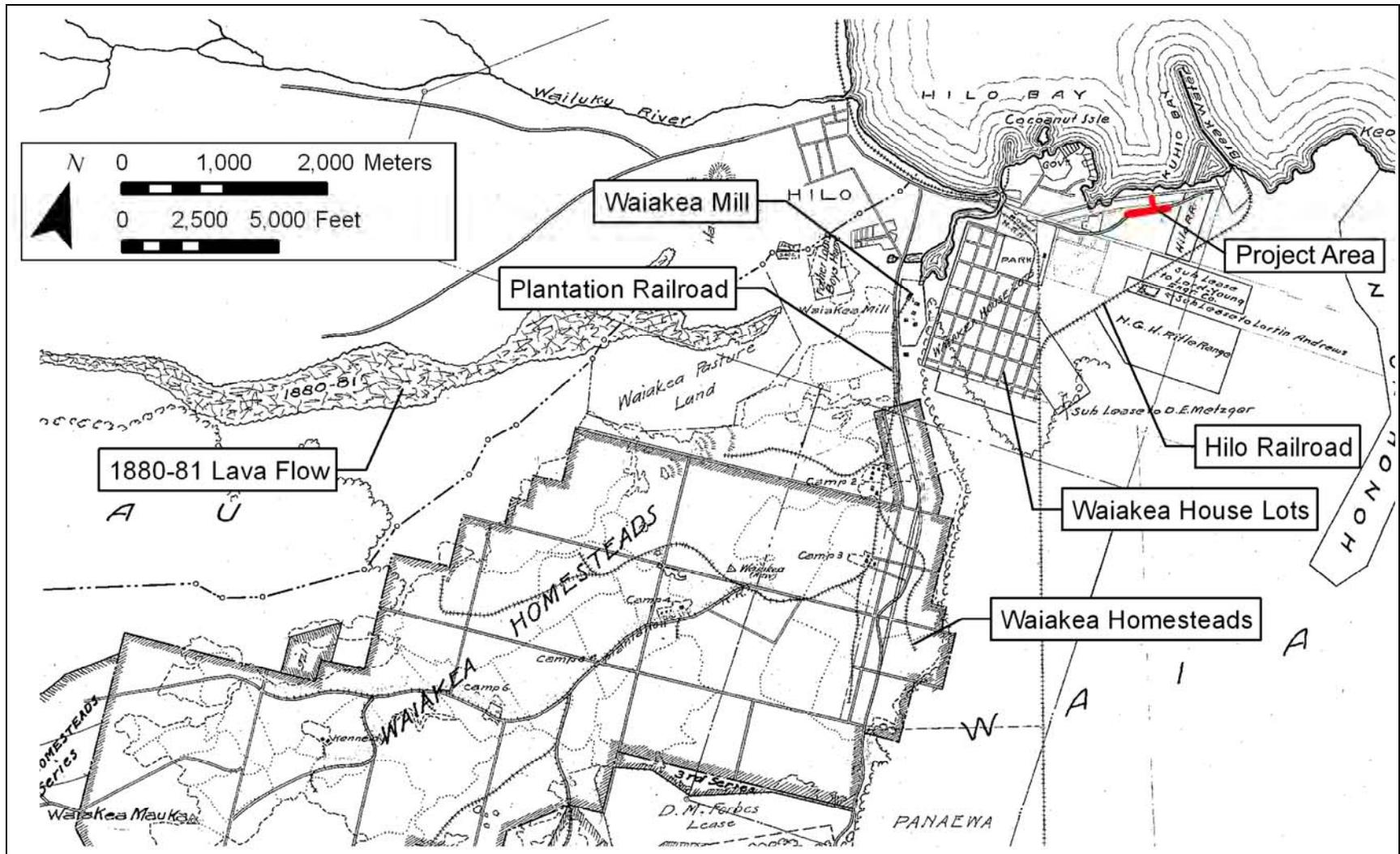


Figure 11. Portion of the 1915 Map of Waiākea Government Tract (HTS Plat 775) by W.E. Wall, showing the approximate location of the project area in relation to features discussed in the text

The large Waiākea Homesteads area *mauka* of the Waiākea Mill is shown on the 1915 map (see Figure 11). The plantation railroad system and several plantation camps are also indicated within the homestead area. The homestead and cane lots eventually reverted to the overall mechanized cultivation and the homestead and cane lot experiment “was declared a failure” (Kelly et al. 1981:121).

By the 1920s the Waiākea Mill Co. had some 7,000 acres in cane production. Rechtman and Lang (2009:12) discuss some of the consequences of sugar production in this region:

Sugar cultivation brought dramatic changes to the Hilo area. Some of its large fishponds (Hanalei, Kalepolepo, Mohouli, Waiāhole, and Hoakumau) were filled and thus destroyed. Many old residences, burial sites, trails, *heiau*, and more were destroyed by the development of sugar plantation fields.

In the 1920s large tracts of remaining forests in Waiākea were “designated as forest reserve” to maintain the “forest as a ‘watershed’ to capture, retain, and support the continuous flow of water necessary to the sugar industry” (McEldowney 1979:42). Clearly, sugar was the dominant economic factor during this period including the institution of settlements (i.e. camps).

Development near the project area in the 1920s included the Keaukaha Hawaiian Homestead settlement. The settlement was the second established in the state under the Hawaiian Homes Commission Act, and was described as “an unqualified success” (Kelly et al. 1981:229). By 1930 some 200 house lots had been leased to Hawaiian families (Akoi 1989:44). This was despite the Hawaiian Homes Commission (1925:12) statement that the 2,000 acres settlement was “not suited to agriculture.” These lots, located just east of the project area, are shown in Figure 12 along Keaukaha Road, the present Kalanianaʻole Street. Also shown is the route of the “Old Keaukaha Road,” which included an extension to the harbor. Development of the Hilo Airport, adjacent to the Keaukaha Homestead, also began in the 1920s (Kelly et al. 1981:230).

Between 1925 and 1930, a beach was formed along the shoreline fronting the Ocean View Lease Lots. The beach, called Baker’s Beach, was a result of dredging in the harbor at that time and “...reduced wave energy caused by the new breakwater,” (Haun and Henry 2000:10, 18). Figure 13 shows how this beach significantly extended the shoreline along this section of the bay, and depicts an unnamed *heiau* (traditional place of worship) west of the beach. The 1946 tsunami displaced much of this sand, and today little of it remains.

In 1931, the Hawaiian Cane Products Co., Ltd. began a firm that developed a new product, a fiber board product called “canec”. Canec was made from bagasse, the fibrous byproduct of sugar production that was usually burned by sugar factories for fuel. The Waiākea Mill began selling their bagasse to the canec plant, which was located approximately 200 yards from Waiākea Sugar Mill (Condé and Best 1973:119).

Several major construction projects were completed in the Hilo area in the 1920s and 1930s, including Hilo Bay wharfs, bridges, and completion of the breakwater. Some of the projects were related to damages caused by the winter of 1923 that included storm surf in January and a tidal wave in February (Kelly et al. 1981:171). A 1931 map (Figure 14) depicts what was the Keaukaha Road as Kalanianaʻole Street. In addition, it depicts the Waiakea Warehouse lots and the more *makai* Territory of Hawai'i lands separated by the Hawaii Consolidated Railway right-



Figure 12. 1923 Hawai'i Territory Survey Map of the Keaukaha House Lots by W.E. Wall (Registered Map No. 2704, HTS Plat 0790), showing the development around the Hilo Harbor

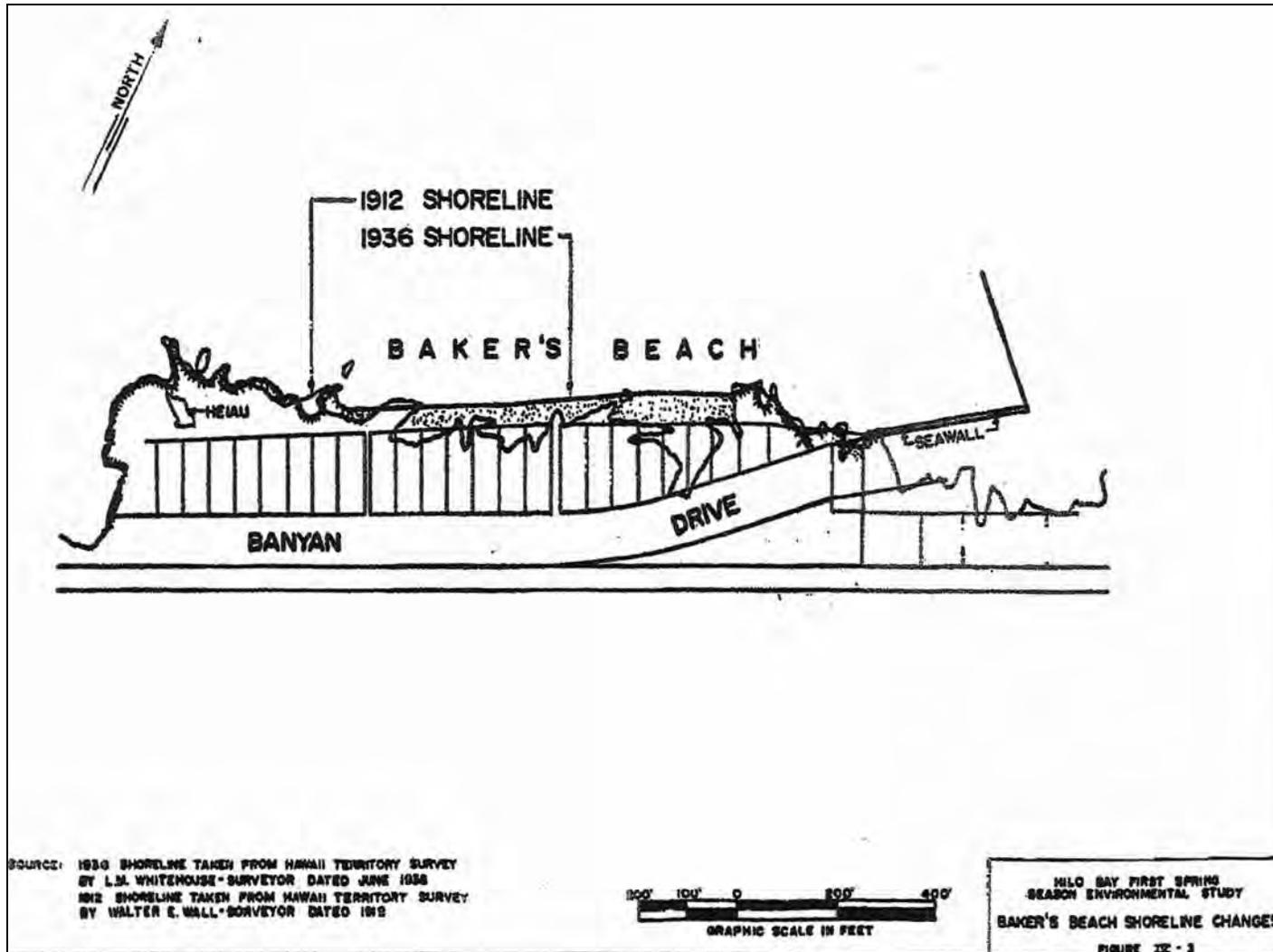


Figure 13. Map of Baker's Beach, showing the change in the shoreline from 1912 to 1936 (from Kelly et al. 1981; reprinted in Haun and Henry 2000:17)

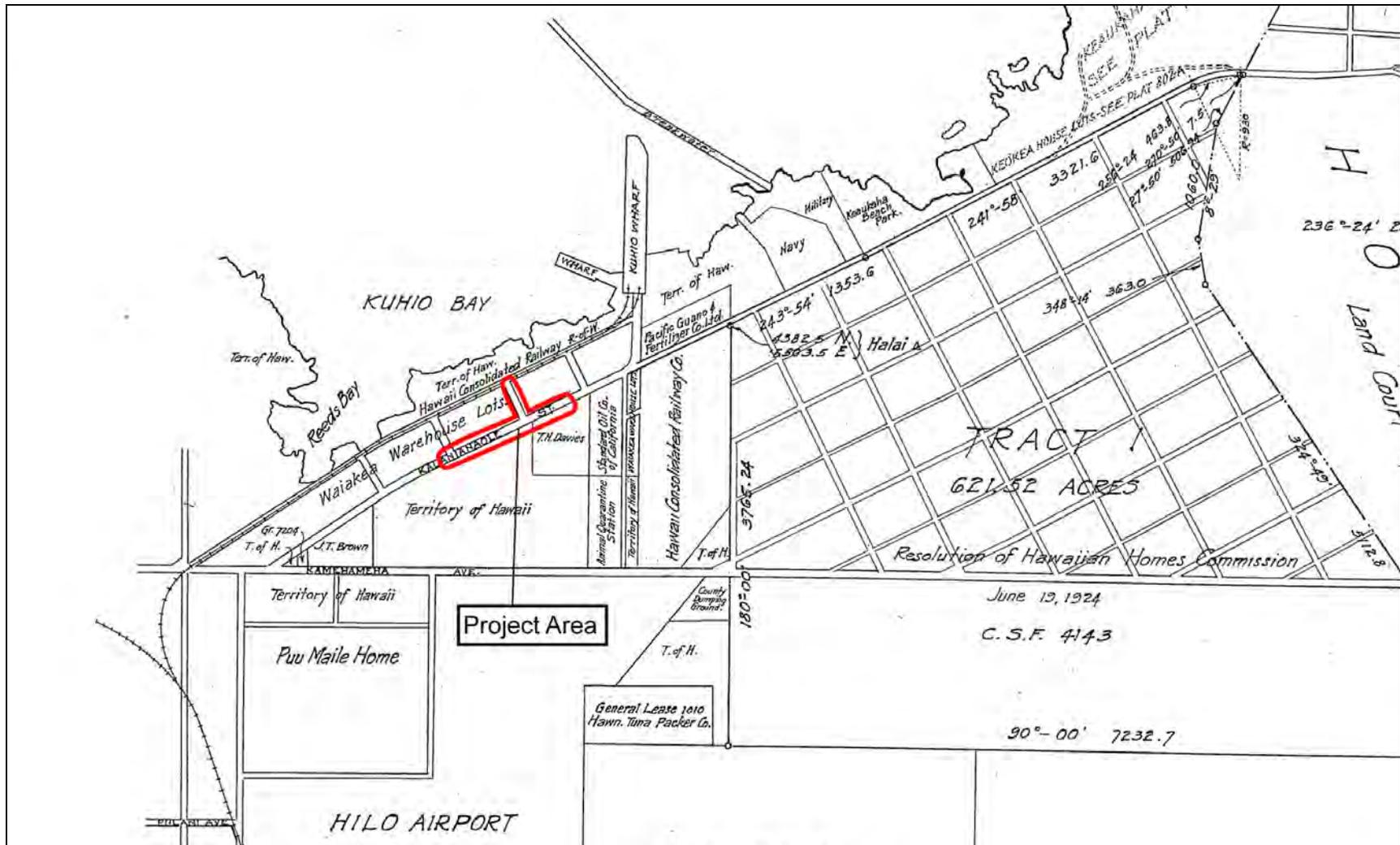


Figure 14. Portion of the 1931 Revised Keaukaha Tracts 1 and 2 map by R.D. King, showing the approximate location of the project area in relation to features discussed in the text (HTS Plat 0002-0HH)

of-way, which terminated right at the end of Kūhiō Wharf. It should be noted that the Ocean View Lease lots depicted on the 1936 map (see Figure 9) are not visible on the 1931 map.

In 1939, Pu'umaile Home, a hospital for patients with tuberculosis was built east of the project area on Keaukaha Point. A 2.5-foot thick seawall was constructed to protect the hospital from wave action and tsunamis. The hospital was evacuated but survived the April 1946 tsunami that destroyed 90% of the homes on the Keaukaha coastline (Figure 15). The tsunami also destroyed much of the railroad infrastructure around Hilo Bay, which was not rebuilt (Rechtman and Lang (2009:13). Included in this infrastructure was a trestle constructed around 1916 which crossed the portion of Reed's Bay called the "Ice Pond," or Kanakea Fishpond (Figure 16); remnants of this trestle are still visible there today (Rechtman 2009:24).

During the 1940s World War II period in Hilo, projects related to the military presence on the island included the expansion and designation of Hilo Airport as General Lyman Field and the construction of Saddle Road. Sugar production began to decrease and the Waiakea Mill Company ceased operations in 1948.

Following statehood in 1959 and the demise of the sugar mill and canec plant, tourism became the next economic mainstay. In Waiākea, C. Brewer & Co. built a hotel complex at the site of the old canec plant. Other hotels were built along the Hilo Bay frontage of Waiākea near Coconut Island or Mokuola. Large tracts of former Waiākea Homestead and cane lots were converted to housing and sub-division tracts.



Figure 15. 1946 photo showing waves cresting seawall at Pu‘umaile Hospital, near the project area, during April 1, 1946 tsunami (Pacific Tsunami Museum Archives)



Figure 16. Photo of the remnants of the railroad trestle crossing the Ice Pond after the 1946 tsunami (From Wolforth 2004:24; reprinted in Rechtman 2009:25)

### 3.3 Previous Archaeological Research

#### 3.3.1 Heiau of Waiākea

Thrum (1907a:40-41) lists and describes 16 *heiau* in the district of Hilo (Figure 17) and remarks that “little evidence of their existence now remains” (Thrum 1907b:55). The three *heiau* located near Waiākea’s coastline are: Kapa‘ie‘ie Heiau (unknown class, SIHP # 50-10-35-18883), Makaokū Heiau (*luakini* [sacrificial temple] class, SIHP # 50-10-3-188843) on the shore opposite of Coconut Island (Mokuola), and Ohele Heiau (*luakini* class, SIHP # 50-10-3-18884). Rosendahl’s Waiākea Ahupua‘a research is thorough and includes mention of one specific *heiau* within Waiākea: Kapa‘ie‘ie (Rosendahl 1994:5). Kapa‘ie‘ie Heiau was originally recorded by A. E. Hudson in a 1932 manuscript of archaeological and historical literature research of east Hawai‘i (Hudson 1932). According to Rosendahl (1994:5), Kapa‘ie‘ie Heiau was located “along the old Hilo – ‘Ōla‘a trail (not far from the route of modern-day Kīlauea Avenue).” Hudson writes:

There was a heiau named Kapaieie near Honokawailani in Waiākea. Bloxam who passed the site on his way from Hilo to the volcano says that its center was marked by a single coconut tree. At the time of his visit nothing remained but ruined walls choked with weeds. He was told that the priests would lie in wait for passersby and dispatch them with clubs. Thrum [1908:40] states that the site was famed in the Hilo-Puna wars but its size and class are unknown. No remains of any kind could be found and no Hawaiians with whom I talked had ever heard of it [Hudson 1932:240].

According to Thrum (1907a:40), Makaokū Heiau was located:

...on the shore opposite Coconut Island, Hilo, of *luakini* class, connected with the noted Mokuola place of refuge; dimensions unknown, though it is said to have had a high pyramid of stone as if for a place of observation. The stones of this heiau were taken by Capt. Spencer in the sixties for a boat landing.

Thrum further notes: “...the area of [Mokuola] included also a portion of the mainland adjoining. The *heiau* connected with it, named Makaoku, was of the *luakini* class” (1907b:56).

Thrum also reported on ‘Ohele Heiau in Waiākea (see Figure 17) near the “old Pitman store”. It was reportedly “a small *luakini* class *heiau* measuring 60 feet square. It was destroyed before Pitman’s time,” or by the early- to mid-1800s (Stokes and Dye 1991:155).

None of the *heiau* described by Thrum are in close proximity to the project area and he does not include Pū-hala, the fish *heiau* (*heiau ho‘oulu i‘a*) mentioned by Pukui et al. (1976:131).

Akoi’s (1989:22) oral history of Keaukaha mentions a fishing *heiau* called Puhī that is possibly the same as Pū-hala, and another *heiau* that “is in the pond of the Kepoo family”. No other details are provided for the *heiau* in the pond but the *heiau* at Puhī contained two *manō* (shark). The *manō* were the family’s ‘*aumakua* (ancestral gods) and were fed every day (Akoi 1989:22).

An unnamed *heiau* appears on the 1936 Hawaii Territory Survey map (see Figure 9), northwest of the project area on the eastern point of Reed’s Bay. This *heiau* appears on the

modern tax map as well (see Figure 3). In 1983 this *heiau* was investigated by the SPHD; the results of this investigation are described in section 3.3.2 below.

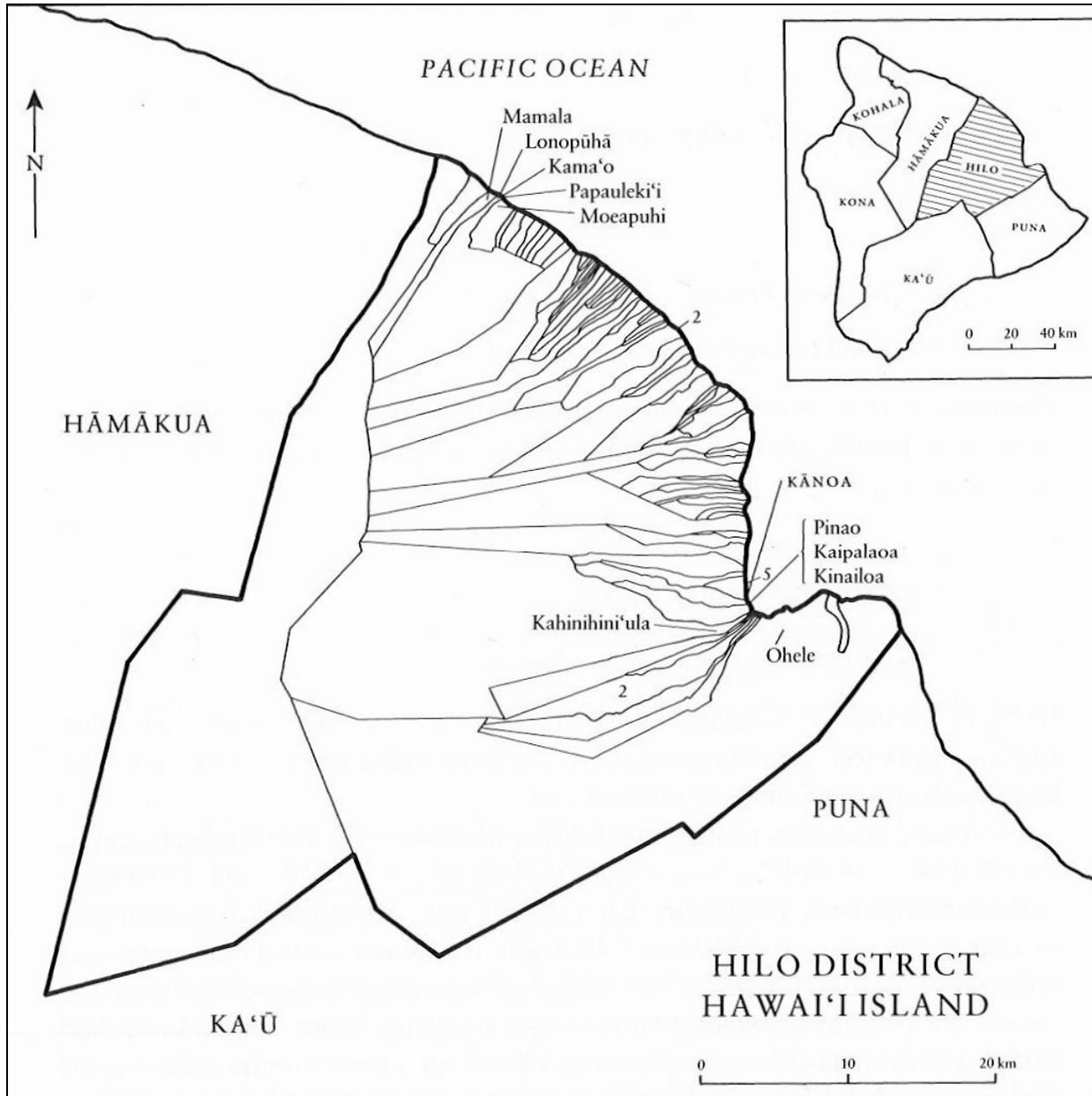


Figure 17. Locations of *heiau* documented by John F. G. Stokes in the Hilo District (Stokes and Dye 1991:155)

### 3.3.2 Recent Archaeological Studies

Numerous archaeological studies have been conducted within Waiākea Ahupua'a. Six studies have focused on lands within the immediate vicinity of the current project area. These studies are listed in Table, along with two more general studies: a 1990 study of Hawaiian fishponds by DMH, Inc., and a 2009 study conducted by Rechtman Consulting, which covered the *makai* lands of Pi'ihonua, Punahoa, Pōnāhawai, Kūkūau, and Waiākea *ahupua'a*. Figure 18 shows the locations of the studies listed in Table 2, excluding DMH, Inc. (1990) and Rechtman (2009).

Table 2. Archaeological Studies Conducted in the Immediate Vicinity of the Project Area

Source	Nature of Study	Location	Findings
Kam 1983	Records check	State lands at Reed's Bay, Waiākea (TMK [3] 2-1-07:11)	A check of records confirmed no previous records for the unnamed <i>heiau</i> depicted on modern tax map (as addressed earlier in this report). The <i>heiau</i> was assigned as SIHP 50-10-35-18695.
Pietrusewsky 1989	Burial Documentation	Wailoa Bridge, Lihikai Street, Waiākea (TMK [3] 2-1-001:012)	Documentation of a single set of human remains in the area near the mouth of the Wailoa Stream, in the vicinity of the current Suisan Fish Market. This burial was named SIHP 50-10-35-11115.
Smith and Tourtellotte 1988	Burial Removal	Wailoa Bridge, Lihikai Street, Waiākea (TMK [3] 2-1-001:012)	Excavation and study of SIHP 50-10-35-11115
DMH, Inc. 1990	Fishponds of Hawai'i	Island of Hawai'i	Documented Kanakea Pond (also locally known as the "ice pond") at Reed's Bay (SIHP 50-10-35-18896).
Haun and Henry 2000	Archaeological Inventory Survey	Hilo Harbor, Waiākea (TMK [3] 2-1-09:2, 12, 41, 42 & [3] 2-1-07:20-37)	SIHP 50-10-35-22486, early 1900s U.S. engineer facilities
Wolforth 2004	Archaeological Inventory Survey	Kanakea Fishpond at Reed's Bay (TMK [3] 2-1-6:13 and 15)	Previously identified Kanakea Pond (SIHP 50-10-35-18896), another small-unnamed pond (SIHP 50-10-35-24230), and a remnant feature (SIHP 50-10-35-7413) of the former railroad.

Source	Nature of Study	Location	Findings
Wolforth 2006	Archaeological Inventory Survey	Expansion of the existing Reed's Bay Beach Park (TMK [3] 2-1-6:13 and 15)	Two previously identified sites, Kanakea Pond (SIHP 50-10-35-18896, a Hawaiian fishpond) and a small portion of the historic railroad (SIHP 50-10-16-7413). Three new historic properties were identified: Reed's Bay Beach (SIHP 50-10-35-24917), the Scott-Legionnaire-Orchid Hotel (SIHP 50-10-35-24918) and three pecked basins (SIHP 50-10-35-24919).
Rechtman 2009	Archaeological Assessment	<i>Makai</i> (Hilo Bayfront) lands of Pi'ihonua, Punahoa, Pōnāhawai, Kūkūau, and Waiākea <i>ahupua'a</i>	No new findings; reports the findings of Pietruszewsky 1989, Smith and Tourtellotte 1988, DMH, Inc. 1990, Wolforth 2004, and Wolforth 2006

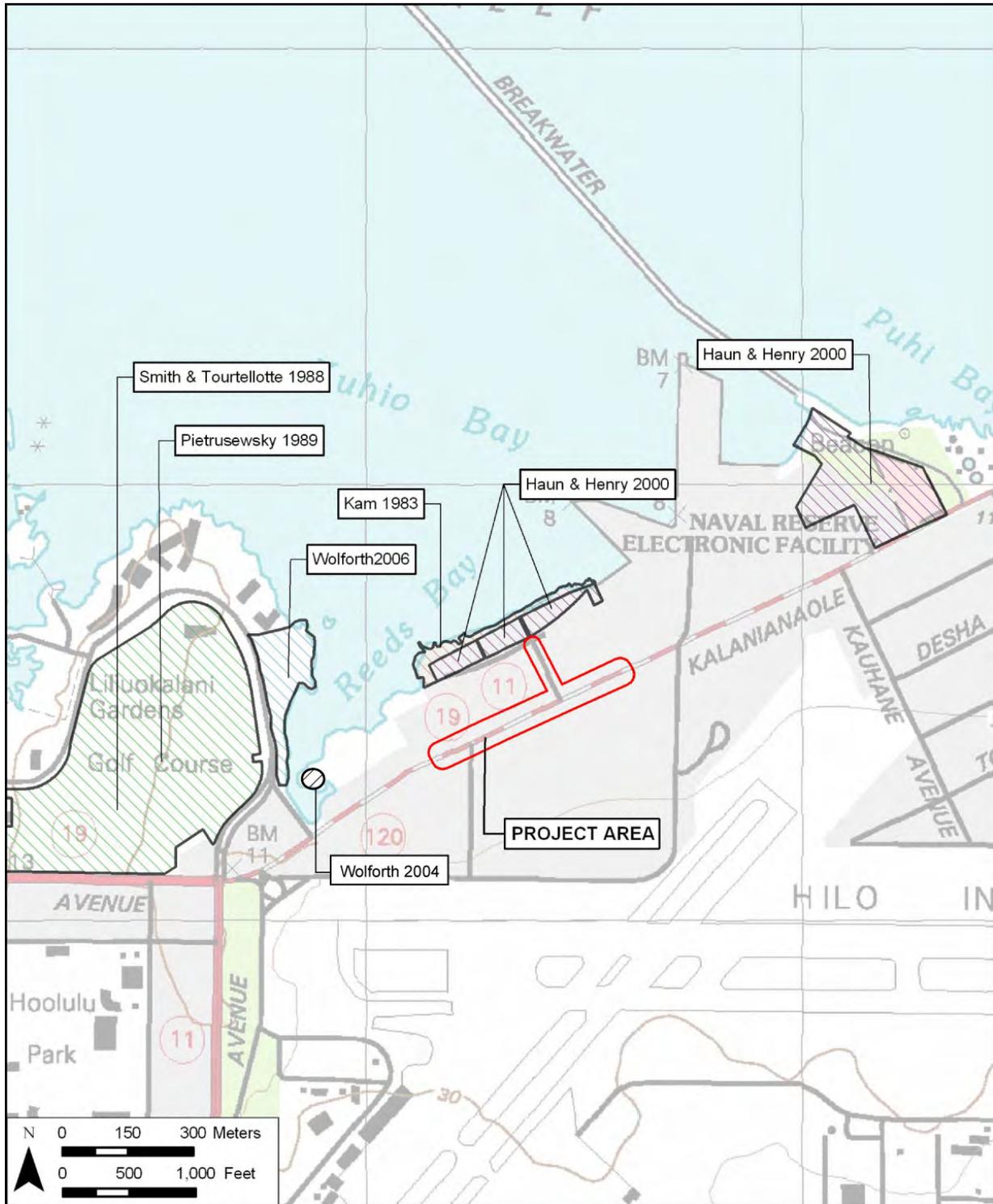


Figure 18. Portion of the 1995 Hilo Quadrangle US Geological Survey 7.5' Topographic Map, showing previous archaeological studies in the vicinity of the current project area

In 1983, Wendall Kam of the SHPD investigated a claim of a *heiau* depicted on modern Tax Map Key [3] 2-1-007; this unnamed *heiau* also appears on the 1936 Ocean View Lease Lots map (see Figure 9). No records were found at that time pertaining to the *heiau*; Kam (1983:1) recommended that it be recorded and photographed. This site was assigned as SIHP 50-10-35-18695, but no formal documentation ever occurred. In 2000, Haun and Associates came upon the *heiau* just outside of the bounds of their survey of two parcels near the Hilo Harbor (a description of this investigation follows below). Haun and Henry (2000:22) described the feature as:

...a platform on State land near the northwest corner of the Western Project Area [present Ocean View Lease Lots]. The platform probably corresponds with the *heiau* reported by Kam (1983). The feature, which was viewed from a distance of approximately 10m, is situated in a grove of ironwood trees in the backyard of a house on Parcel 20 of TMK: 3-2-1-07. The feature is roughly 3-4 m square at the top and tapers to approximately 5-6 m at the base. It is approximately 1.5 m high with sloping sides. There is a c. 0.5 m deep depression in the center of the paved upper surface.

As this *heiau* has still never been formally investigated, its function has never been officially determined.

In 1988, a single set of human remains was identified near the mouth of the Wailoa Stream across from the Suisan Fish Market, which is located approximately one mile west of the current project area. The remains were documented (Pietruszewsky 1989) and then excavated and studied (Smith and Tourtellotte 1988). As Rechtman (2009:27) writes, “[t]his discovery, while only that of a single set of remains, does indicate that the possibility exists for additional remains, especially in coastal areas of former dune deposits along the Hilo bay front.”

In 1990, a comprehensive statewide study of Hawaiian fishponds was conducted by DMH, Inc. The only fishpond documented in the immediate vicinity of the current project area was Kanakea Pond, which is also locally known as “ice pond” and has been named SIHP 50-10-35-18896.

In 2000, Haun and Associates undertook a survey of two parcels near the Hilo Harbor: one parcel just west of the breakwater, and the second parcel at the Ocean View Lease Lots and within the lands abutting the eastern end of Ocean View Drive (see Figure 18). A concrete slab complex, SIHP 50-10-35-22486, is located in this latter parcel, adjacent to the current project area. According to Haun and Henry (2000:22), “[t]he [sites’] features consist of two concrete slabs (Features A and B), a set of parallel concrete curbs (Feature C), and two displaced sections of concrete slab located at the water's edge (Feature D). These features are in fair condition and are altered. Piles of bulldozed materials bound the structural remains to the west, south, and east.” Figure 19 shows the location of this site just east of Ocean View Drive.

Rechtman (2009:27) describes the results of studies conducted by Scientific Consultant Services (Wolforth 2004, 2006) around Reed’s Bay:

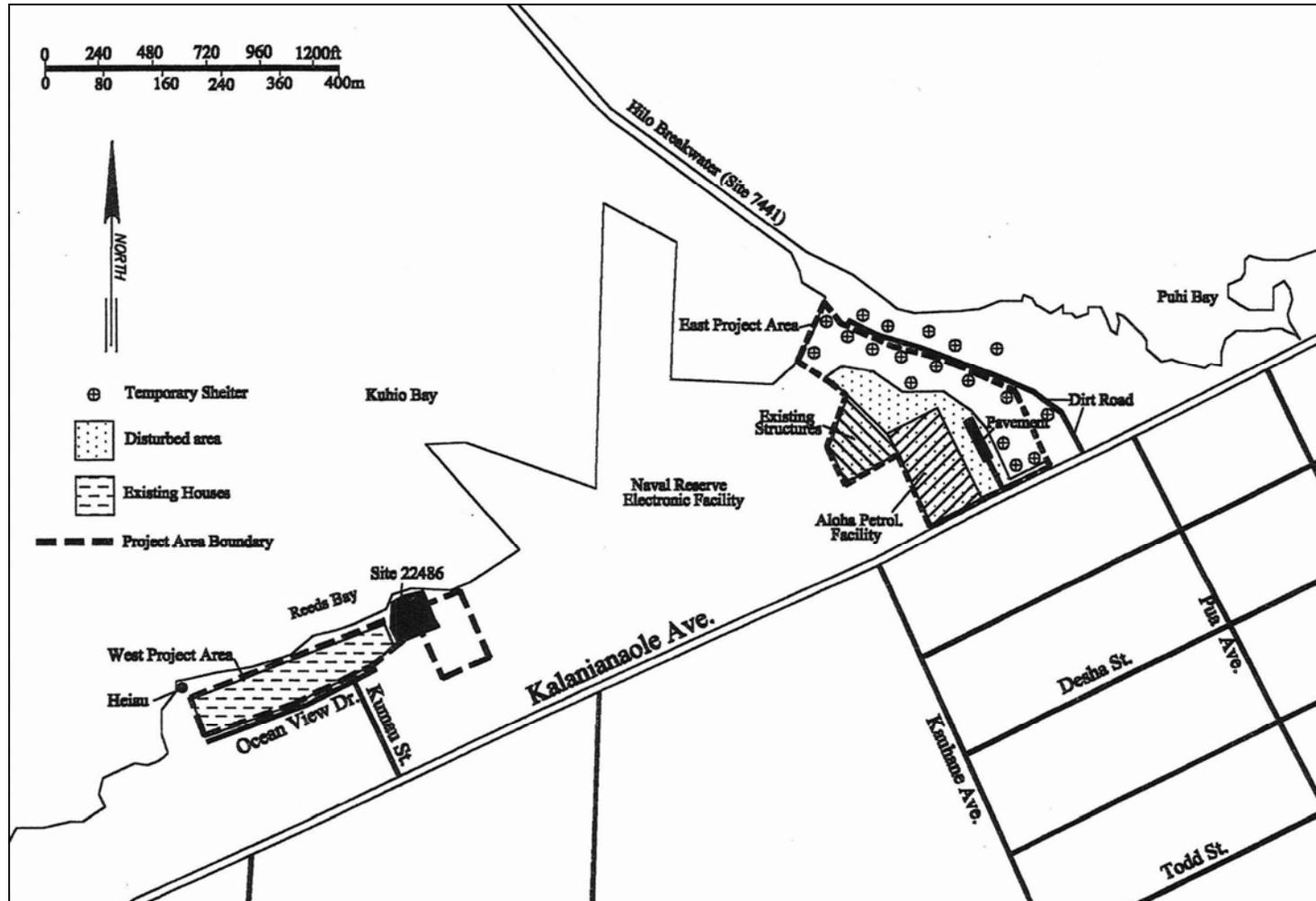


Figure 19. Map showing the findings within the lands surveyed by Haun and Associates in 2000; note Site 22486, just northeast of the current project area past the end of Ocean View Drive, and the location of the unnamed *heiau* (from Haun and Henry 2000:23)

Wolforth conducted two archaeological studies for proposed parks within the greater Hilo Bay area: for Kūhiō-Kalaniana'ole Park (2004), and for Reed's Bay Beach Park (2006). As a result of his 2004 study, Wolforth identified three sites, Kanakea Pond (SIHP Site 18896), another small-unnamed pond (SIHP Site 24230), and a remnant feature (SIHP Site 7413) of the former railroad. Preservation was recommended for the two pond sites and no further work for the railroad trestle support. Wolforth's (2006) Reed's Bay archaeological study identified five sites, two of which were recorded in his earlier study (Wolforth 2004). In addition to Sites 7413 and 18896, Site 24917 (Reed's Bay Beach), Site 24918 (location of Scott-Legionnaire Hotel), and Site 24919 (Pecked Basins) were identified. No further work was recommended for three of the sites, and preservation was recommended for Sites 7413 and 18896.

### 3.4 Background Summary and Predictive Model

Waiākea, with its rich natural forest and the ocean resources, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. Hawaiian gods and goddesses frequented Waiākea including Pele, Hi'iaka and Pana'ewa. Many legends have associated Waiākea with Hawaiian *ali'i* since the 16th century and describe it as a gathering place for ceremonies. The rich mountain resources of taro and sweet potato and the abundant marine resources particularly shrimp and fish made Waiākea very valuable to the Hawaiian people. Some 16 *heiau* of various sizes and class, stood within Waiākea.

The present project area is situated within the lower elevations of what McEldowney (1979) defined as the coastal settlement zone. The zone was described by early Hilo Bay visitors as "a nearly continuous complex of native huts and garden plots interspersed with shady groves of trees, predominately breadfruit (*Artocarpus altilis*) and coconut (*Cocos nucifera*) (McEldowney 1979:16). Plantations containing bananas (*Musa* hybrids), sugarcane (*Saccharum officinarum*), and *wauke* (*Broussonetia papyrifera*) interspersed with dry land taro, sweet potatoes (*Ipomoea batatas*) and other vegetable crops were also present (McEldowney 1979:16). Habitation for the most part was probably temporary with a few scattered permanent occupation complexes.

During the mid-19th century sugar cane agriculture and ranching became prominent in Waiākea Ahupua'a. Both of these enterprises flourished until their gradual decline in the early 20th century. The 20th century brought the onset of urban development to the district of South Hilo. Beginning in the 1910s, the lands adjacent to the project area were "...transformed by the construction of new wharf facilities and the breakwater. Railroad tracks, commercial, and U.S. and Territorial Government facilities were erected along the shoreline," (Haun and Henry 2000:18). This development included the Waiākea Warehouse Lots and Ocean View Lease Lots located along and adjacent to the present project area lands.

The 1946 tsunami damaged much of the new infrastructure and facilities, but most of the damage was quickly repaired, except for some of the railroad infrastructure, such as the trestle crossing Kanakea Pond. During the World War II period in Hilo, expansion and designation of Hilo airport as General Lyman Field was a major project undertaken as part of the substantial military presence on the island.

After statehood (1959) and with the closing of the Waiākea Mill, tourism became the next economic mainstay, and large tracts of former Waiākea Homestead and cane lots were converted to housing or sub-division tracts.

Given the extensive development of the general area, and its inundation by tsunamis, it is unlikely that any pre-contact sites still lie within the project area lands. Very little—if any—of the natural landscape remains. A *heiau* (SIHP 50-10-35-18695) is known to still exist at the coast to the northwest of the project area, but its enduring presence can be attributed to its location on undeveloped state land. It is highly unlikely that burials might be encountered, as there are no sand deposits within the project area and as the shallow, stony soil found here lies directly atop *pāhoehoe* bedrock.

Roads, commercial buildings, railroad infrastructure, and private homes have all been constructed over the project area lands over the last century. The vacant lots at the Kumau Street and Ocean View Drive intersection seem to coincide with the historic railroad right-of-way. One might expect to find historic remains of this railroad or other harbor-related infrastructure on these lots (though they lie just outside of the project area lands to the north). This hypothesis is supported by the presence of the remains of an engineer facility dating to the early 1900s near the current project area (SIHP 50-10-35-22486).

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## Section 4 Results of Field Inspection

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### 4.1 Survey Findings

The field inspection consisted of a pedestrian survey of the approximately 2.5-acre project area. No significant cultural remains were identified during the pedestrian survey. The lands within the project area consist of modern, paved roadways and adjacent areas that have been previously disturbed by road construction and/or the general development of the area, including commercial and residential development (Figure 20 through Figure 24). A modern rock alignment is present on the lawn fronting the Kuhio Industrial Plaza, and is presumably designed to discourage parking in this area (Figure 25). On the *makai* shoulder of Kalaniana'ole Street near the Orchid Manor Apartments, areas of the exposed lava bed have been filled to presumably maintain a continuous façade (Figure 26).

The two *mauka* (upslope) lots at the intersection of Kumau Street and Ocean View Drive are vacant. These lots seem to coincide with the location of the historic railroad right-of-way, though they appear to have been cleared of all remnant infrastructure. They are now covered in vines, shrubs and trees, but the vegetation is passable (Figure 27 and Figure 28). At the eastern *mauka* lot, long wooden beams have been placed horizontally along both its Ocean View Drive and Kumau Street sides, possibly serving as barriers. These beams rise no more than a foot or two from the ground and are covered in vines. A quick look revealed that the beams are not terribly weathered or rotted, which would indicate that they are relatively modern (as opposed to reused, remnant railroad infrastructure—see Figure 29). An old Herb's Herbs sign rests on what may be a portion or extension of one of the beams; the more decayed nature of this particular beam can be attributed to its exposure, as it is not covered in vines (Figure 30). The interior of this lot is level except along its southern side, where it slopes gently up to meet the Herb's Herbs driveway. The eastern end of this lot is defined by an overgrown asphalt and gravel road connecting the lot behind A and A Storage to the bay and the eastern end of Ocean View Drive (Figure 31). This general area appears to have at one time functioned as an extension of the old Banyan Drive route, which at one time extended along the shore toward the Harbor (see Figure 9). Modern residences are now located along Ocean View Drive, as part of the Ocean View Lease Lots (Figure 32).

The western *mauka* lot at the intersection of Ocean View Drive and Kumau Street is covered in various trees, shrubs, vines, and grasses (see Figure 28). The terrain here is not as level as that of the eastern lot, but bulldozer push piles are evident along both its southern and eastern sides (Figure 33). Some of the areas of bulldozer push appear to have been "tidied," as a modern trail runs past the push to a modern squatter's camp near the center of this lot (Figure 34). No signs of prehistoric or historic structures or other remains were encountered in either of these lots, or in the remainder of the project area.



Figure 20. Photo taken along Kalaniana'ole Street, showing the built environment within the project area; the Kumau Street intersection is located just beyond the car dealership on the left; view to the northeast



Figure 21. Photo of the Kalaniana'ole Street and Kumau Street intersection; note the HELCO signage indicating the buried gas line; view to the southwest



Figure 22. Photo of the west shoulder of Kumau Street, showing the Nissan dealership on the right and Herb's Herbs at the end of the street on the left; view to the northwest



Figure 23. Photo of a bulldozed lot located across from Gaspro and just *mauka* of the western vacant lot at the corner of Kumau Street and Ocean View Drive; view to the west



Figure 24. Photo of the back of the Gaspro lot along the Herb's Herbs Driveway; view to the east



Figure 25. Photo of the modern rock alignment fronting the Kuhio Industrial Plaza along the *mauka* shoulder of Kalanina'ole Avenue; view to the northeast



Figure 26. Photo of modern rock construction along the exposed lava bed on the *makai* shoulder of Kalaniana'ole Street; note the Orchid Manor Apartments in the background; view to the north



Figure 27. Photo of the eastern vacant lot at the *mauka* corner of Kumau Street and Ocean View Drive, looking back towards the Gaspro and Herb's Herbs lots; view to the south



Figure 28. Photo of the western vacant lot at the *mauka* corner of Kumau Street and Ocean View Drive; the squatters' camp is out sight in the middle of this lot; view to the south



Figure 29. Close-up photo of the vine-covered wooden beam barricading the eastern vacant lot along Kumau Street; view to the northeast



Figure 30. Photo of the Herb's Herbs driveway adjoining the eastern vacant lot to the left (*makai*); the Gaspro property line is just out of sight to the right; note the wooden beam on which the sign sits; view to the northeast



Figure 31. Photo of the overgrown asphalt road extending from the end of Ocean View Drive; view to the south



Figure 32. Photo of the *makai* shoulder of Ocean View Drive where Kumau Street intersects; note the landscaped driveways and lawns of the residences along the street, the dead-end at which the old asphalt road begins, and the Hilo Harbor in the background; view to the southeast



Figure 33. Photo of bulldoze push piles bordering the trail heading into the squatter's camp along the bulldozed lot; view to the southwest



Figure 34. Photo of the modern squatter's camp in the center of the western vacant lot; view to the southwest

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## Section 5 Summary and Recommendations

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### 5.1 Summary

At the request of R. M. Towill Corporation, Cultural Surveys Hawai'i, Inc. has conducted this archaeological literature review and field inspection study for the proposed improvements at the Kumau Street Entrance, Waiākea Ahupua'a, South Hilo District, Hawai'i Island, TMK(3) 2-1-007:999 (Job HMP. 60906). The proposed project would affect various improvements along a 1500 foot section of Kalaniana'ole Street—1000 feet west of the Kumau Street intersection and 500 feet east of the Kumau Street intersection—and Kumau Street would undergo improvements along its length to its termination at Ocean View Drive, not limited to but including road widening.

No historic properties were encountered during the pedestrian survey of the project area. These lands have undergone intensive development since the turn of the 20<sup>th</sup> century. An unrecorded *heiau* (SIHP 50-10-35-18695) and remnants of an historic complex (SIHP 50-10-35-22486) are located just outside of the project area to the northwest and northeast, respectively, and will not be impacted by the proposed improvements.

### 5.2 Recommendations

Given the lack of any historic properties within the project area, and the unlikelihood of encountering any burials due to the lack of Jaucas sands within the project area, CSH does not see the need for an archaeological inventory survey or for a monitoring program for the Kumau Street intersection improvements project. In the unlikely event that cultural deposits and/or human skeletal remains are encountered during ground disturbing activities, work should be stopped immediately in that area and the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) should be notified of the nature of the discovery.

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