DEPARTMENT OF DESIGN AND CONSTRUCTION
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DIRECTOR DESIGNATE

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

WW.CSE 17-005

January 25, 2017

Mr. Scott Glenn
Office of Environmental Quality Control (OEQC)
State Department of Health,
235 S. Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Mr. Glenn:

SUBJECT: Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements

With this letter, the City and County of Honolulu, Department of Design and Construction (DDC), transmits the Final Environmental Assessment and Finding of No Significant Impact (FEA-FONSI) for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, situated in Kaneohe in the Koolaupoko District on the island of Oahu for publication in the next available edition of the Environmental Notice.

We have included copies of comments and responses that were received during the 30-day public comment period on the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI).

Enclosed is a completed OEQC Publication Form, one copy of the FEA-FONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

#17-326

If there are any questions, please contact Megan Inouye of our Wastewater Division at (808) 768-8739 or Gabrielle Sham, Planner at Townscape, Inc. at (808) 536-6999.

Very truly yours,

Robert J. Kroning, P.E.
Director Designate

Enclosures: One (1) hard copy of OEQC Publication Form
One (1) hard copy of FEA-FONSI
One (1) CD with: One (1) electronic copy of FEA-FONSI (PDF)
One (1) electronic copy of OEQC Publication Form (MS Word)

AGENCY
PUBLICATION FORM

Project Name:	Final Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, Kaneohe, Oahu
Project Short Name:	(please use no more than five succinct words; count not to include document status, e.g., EA)
HRS §343-5 Trigger(s):	1. Use of County lands and funds 2. Use within the shoreline setback area
Island(s):	Oahu
Judicial District(s):	Koolaupoko
TMK(s):	4-5-047: parcels 095, 094, and 127; 4-5-012: 026
Permit(s)/Approval(s):	City & County DPP: Special Management Area Use Permit, Shoreline Setback Variance, Sewer Connection Application, Trenching Permit, Building Permit, Grading and Grubbing Permit, Zoning Waiver for front yard setback; Application for a Construction Dewatering Permit. City & County DTS: Street Usage Permit. Honolulu Fire Department: Application and Permit for Tank Installation. City & County ENV: Temporary Industrial Wastewater Discharge Permit. State DOH: NPDES permit, Form 1 – Air Conditioning and Ventilation, Community Noise Permit, Community Noise Variance, HRS 103-50 Document Transmittal Form. State SHPD: Archaeological Monitoring Plan and possibly Archaeological Inventory Survey (AIS)
Proposing/Determining Agency:	City & County of Honolulu, Department of Design and Construction
Contact Name, Email, Telephone, Address	Megan Inouye; Minouye3@honolulu.gov; PH: 808-768-8739 650 S. King St., Honolulu HI 96813
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	Townscape, Inc.
Contact Name, Email, Telephone, Address	Gabrielle Sham; gabrielle@townscapeinc.com; PH: 536-6999 900 Fort Street Mall, Suite 1160, Honolulu HI 96813

Status (select one)	**Submittal Requirements**
__ __ DEA-AFNSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
__ x __ FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
____ FEIS Acceptance Determination	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the

	FEIS; no comment period ensues upon publication in the Notice.
FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
____ Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____ Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____ Other	Contact the OEQC if your action is not one of the above items.

Project Summary
Provide a description of the proposed action and purpose and need in 200 words or less.

The City and County of Honolulu, Department of Design and Construction, Wastewater Division, proposes to upgrade the Kahanahou Wastewater Pump Station (WWPS) and the sewer conveyance system in Kaneohe, Oahu. The WWPS, built in 1966, was found to experience high infiltration and inflow of rainwater into the sewer system. Proposed improvements to the WWPS include upgrades in pump capacity from 0.654 million gallons per day (mgd) to 1.26 mgd, renovations to the existing pump station, construction of a new emergency generator building, and other associated on-site improvements.

The proposed sewer improvements include installation of new force and gravity mains along Ka Hanahou Place, Ka Hanahou Circle, Lilipuna Road, Wailele Road, and Makahio Street. This project will re-route sewer to bypass the Waikapoki WWPS and connect to another area of the collection system that will eventually flow into the Kaneohe Wastewater Preliminary Treatment Facility. The proposed project is expected to cost $3.6 million for the WWPS upgrade and $6.5 million for the force/gravity main improvements. The proposed project will have short term impacts on traffic, noise, and air quality during construction. Efforts to minimize these impacts will be implemented to the extent practicable.

Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements Kaneohe, Oahu

FINAL ENVIRONMENTAL ASSESSMENT

Prepared in Partial Fulfillment of the Requirements of Chapter 23, Shoreline Setbacks and Chapter 25, Special Management Area, Revised Ordinances of Honolulu, 1990

Prepared for:
CITY AND COUNTY OF HONOLULU
Department of Design and Construction
Wastewater Division

January 2017

Prepared by:
Townscape, Inc.

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PROJECT SUMMARY

Project Name:	Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements
Proposing and Determining Agency:	City and County of Honolulu Department of Design and Construction, Wastewater Division 650 South King St Honolulu, HI 96813
Agent:	Townscape, Inc. Gabrielle Sham, Environmental Planner 900 Fort Street Mall, Suite 1160 Honolulu, HI 96813 Phone: (808) 536-6999
Tax Map Key Parcels and Roads Potentially Affected:	4-5-047: 095 (Kahanahou WWPS) 4-5-047:094 4-5-047:127 4-5-012: 026 Ka Hanahou Place Ka Hanahou Circle Lilipuna Road Wailele Road Makahio Street
State Land Use District:	Urban District
Existing County Zoning:	Residential District R-10, R-7.5, and R-5
City Development Plan:	Koolau Poko Sustainable Communities Plan
Land Use Designation:	Low Density Residential
Special Designation:	Special Management Area (SMA) Shoreline Setback Area
Determination:	Finding of No Significant Impact (FONSI)

PROJECT SUMMARY (continued)

Pre-Consultation Parties:

City and County of Honolulu

- Department of Environmental Services
- Department of Facility Maintenance
- Department of Planning and Permitting
- Department of Transportation Services
- Honolulu Board of Water Supply
- Honolulu Fire Department
- Honolulu Police Department
- Neighborhood Board #30: Kaneohe
- Honolulu City Council, District 3

State of Hawaii

- Department of Business, Economic Development and Tourism, Office of Planning
- Department of Health, Environmental Management Division
- Department of Land and Natural Resources
  - Commission on Water Resource Management
  - Engineering Division
  - Office of Conservation and Coastal Lands
  - State Historic Preservation Division
- Department of Transportation, Highways Division
- Office of Hawaiian Affairs
- University of Hawaii at Manoa
  - Environmental Center
  - Water Resources Research Center
- Hawaii State House of Representatives, District 48
- Hawaii State Senate, District 24

Utility Companies

- Hawaii Gas
- Hawaiian Electric Company
- Hawaiian Telcom

Private Landowners

- Makani Kai Marina townhouse complex
- Other private landowners

EXECUTIVE SUMMARY

The City and County of Honolulu, Department of Design and Construction, Wastewater Division, proposes to upgrade the Kahanahou Wastewater Pump Station (WWPS) and the sewer conveyance system in Kaneohe, Oahu. The WWPS, built in 1966, was found to experience high infiltration and inflow of rainwater into the sewer system. This requires that the WWPS increase its capacity from 0.654 millions of gallons per day (mgd) to more than 1.26 mgd. The upgrades in pump capacity will also include: renovating and replacing the existing Supervisory Control and Data Acquisition (SCADA) system and motor control center, piping, wet well, and ventilation system; and installing a new emergency generator building, fuel storage tank, and meter vault. Construction on the Kahanahou WWPS will occur entirely within the existing WWPS site.

Hawaiian Electric Company (HECO) will need to upgrade their surrounding wiring from 1-phase to 3-phase power, as the new pumps will require a higher voltage to operate. Underground duct lines will be routed from an existing utility pole on Lilipuna Road to Ka Hanahou Circle and Ka Hanahou Place to service the WWPS to accommodate the new 3-phase electrical system. New manholes will be installed along the route and a new transformer will be placed on the WWPS site.

Upgrades to the Kahanahou WWPS will require improvements to the existing 8-inch force main that conveys wastewater from the Kahanahou WWPS to a 10-inch gravity main and on to the Waikapoki WWPS. Replacing the existing force main will increase the capacity from 1.58 mgd to about 2.5 mgd, based on a 7 feet per second maximum velocity standard. The proposed force main will be re-routed to bypass the Waikapoki WWPS and connect to another area of the collection system that will eventually flow into the Kaneohe Wastewater Preliminary Treatment Facility.

The new force main will exit the WWPS property and run west along Ka Hanahou Circle and Lilipuna Road. At the intersection of Lilipuna Road and Wailele Road the alignment hits its high point; thereby ending the force main and beginning a new gravity main. The gravity main alignment turns south and runs down Wailele Road until Makahio Street. The gravity main alignment then turns west on Makahio Street and connects to an existing sewer manhole within private Tax Map Key (TMK) 4-5-012: 026. The gravity main along Makahio Street from Makamae Street that also connects to the existing sewer manhole within TMK 4-5-012: 026 will also be upsized.

The new 12-inch diameter force main will extend approximately 2,600 linear feet, while the gravity main will extend approximately 2,200 linear feet. New gravity main sizes will range from 12- to 24-inch in diameter. The proposed gravity main will replace the existing gravity main along Wailele Road and Makahio Street; existing sewer laterals will be connected. The existing

gravity main will generally be abandoned in place, unless in conflict with the proposed line. The proposed project is expected to cost $3.6 million for the WWPS upgrade and $6.5 million for the force/gravity main improvements.

In addition to the WWPS upgrade and sewer improvements, the roads along the proposed force and gravity main improvements as well as several adjacent roads, will be repaved as part of this project. Repaving will not exceed 12 inches below grade.

Most project impacts are expected to be short term and related to construction activities, such as noise, dust, and traffic. Efforts to minimize such impacts will be taken to the extent practicable. Long term impacts are improved environmental conditions related to a reduction in sanitary sewer overflows. Based on the analysis of information in this EA, it has been determined that the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements project will not have significant impacts to the natural, built, or social environment. Therefore, a Finding of No Significant Impact (FONSI) will be issued and an Environmental Impact Statement (EIS) will not be required.

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LIST OF FIGURES

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APPENDICES

ACRONYMS

AIS	Archaeological Inventory Survey
AST	Aboveground Storage Tank
BMP	Best Management Practice
BWS	Board of Water Supply
City	City and County of Honolulu
CMU	Concrete Masonry Unit
CSH	Cultural Surveys Hawaii
CSM	Collection System Maintenance Division (ENV)
CWB	Clean Water Branch (DOH)
CWRM	Commission on Water Resource Management
CZM	Coastal Zone Management
DCAB	Disability and Communication Access Board
DDC	Department of Design and Construction (City)
DFIRM	Digital Flood Insurance Rate Map
DLNR	Department of Land and Natural Resources (State)
DOFAW	Division of Forestry and Wildlife (DLNR)
DOH	Department of Health (State)
DPP	Department of Planning and Permitting (City)
DTS	Department of Transportation Services (City)
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENV	Department of Environmental Services (City)
EPA	Environmental Protection Agency (Federal)
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
GPM	Gallons Per Minute

ACRONYMS (continued)

HAR	Hawaii Administrative Rules
HDPE	High Density Polyethylene
HECO	Hawaiian Electric Company
HID	High Intensity Discharge
HP	Horsepower
HRS	Hawaii Revised Statutes
I/I	Inflow and Infiltration
INFIX	(City of Honolulu's wastewater flow calculation model)
KBMP	Kaneohe Bay Master Plan
KBMPTF	Kaneohe Bay Master Plan Task Force
KMCAS	Kaneohe Marine Corps Air Station
kW	Kilowatt
LRFI	Literature Review and Field Inspection
LUO	Land Use Ordinance
MCC	Motor Control Center
MGD	Million Gallons per Day
MH	Manhole
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
OD	Outside Diameter
PVC	Polyvinyl Chloride
SCADA	Supervisory Control and Data Acquisition
SDR	Standard Dimension Radio
SHPD	State Historic Preservation Division (DLNR)
SMA	Special Management Area
SMP	Special Management Area Use Permit
SSO	Sanitary Sewer Overflow
SSV	Shoreline Setback Variance

ACRONYMS (continued)

TMK	Tax Map Key
USDA	United States Department of Agriculture
VFD	Variable Frequency Drive
WWPS	Wastewater Pump Station
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1 PROJECT BACKGROUND AND NEED

The Kahanahou Wastewater Pump Station (WWPS) is owned and operated by the City and County of Honolulu (City) and is located in a residential subdivision in Kaneohe, Oahu. Wastewater from the Kahanahou WWPS tributary area flows to the Kahanahou WWPS and is pumped through an existing force main to the Waikapoki WWPS, where it is pumped through another force main to the Kaneohe Bay East interceptor sewer to the Kaneohe Wastewater Preliminary Treatment Facility (Figure 1).

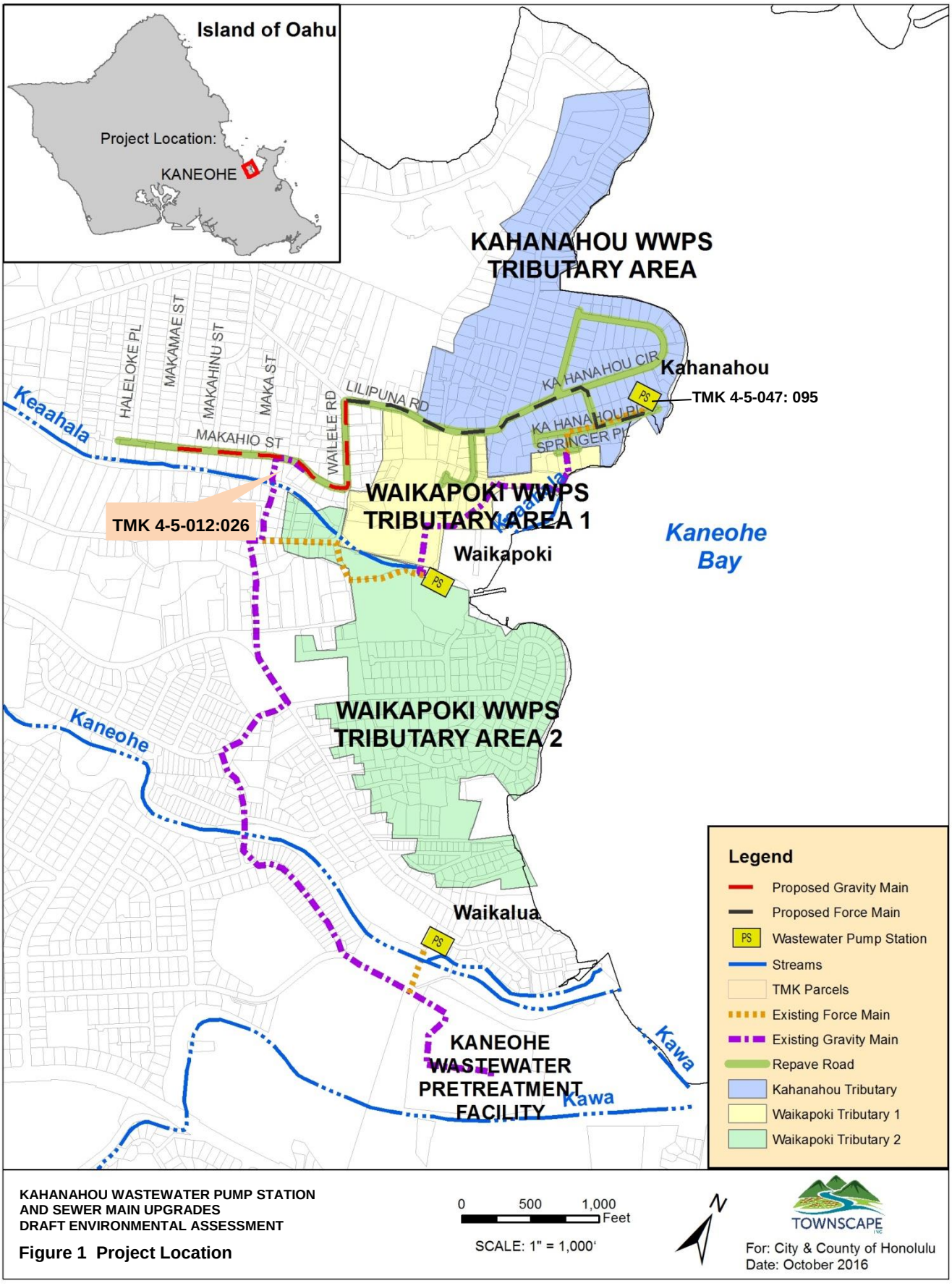
The existing Kahanahou WWPS was built in 1966 and requires additional pumping capacity. The "*Sewer Rehabilitation and Infiltration and Inflow Minimization Study, Volume 3 of 9, Kailua-Kaneohe I/I Engineering Report*" (December 1999) found high infiltration and inflow (I/I), which occurs when rain water enters the sewer system. As a result, the City Department of Design and Construction (DDC) proposes to upgrade the pump capacity of the existing WWPS, as well as upgrade piping, electrical systems and the WWPS building.

In addition to upgrades to the Kahanahou WWPS, the City proposes to install new sewer lines. The sewer improvements will increase the capacity to accommodate the projected peak flows and will also redirect wastewater straight towards the Kaneohe Preliminary Treatment Facility and away from Waikapoki, thus alleviating the magnitude of upgrade required for the Waikapoki WWPS. This proposed project was initiated in response to the *2010 Global Consent Decree* between the U.S. Environmental Protection Agency (EPA) and the City to eliminate sanitary sewer overflows (SSO) to further the objectives set forth by the Clean Water Act.

Environmental review of this project is required by Chapter 343, Hawaii Revised Statutes. The statutory triggers for preparation of this Environmental Assessment are:

1. Use of County lands and funds and;
2. Use within the shoreline setback area

Additionally, the project is within the Special Management Area (SMA) and will require an SMA Major permit, which requires an environmental assessment or environmental impact statement be prepared.



KAHANAHOU WASTEWATER PUMP STATION AND SEWER MAIN UPGRADES DRAFT ENVIRONMENTAL ASSESSMENT

Figure 1 Project Location

1.1 KAHANAHOU WWPS LOCATION AND EXISTING FACILITIES

The Kahanahou WWPS is located at 45-13 Ka Hanahou Place, Kaneohe, Hawaii 96744 (Tax Map Key [TMK] 4-5-047: 095), a 7,893 square-foot parcel in close proximity to Kaneohe Bay (Figure 1). There is an existing concrete masonry unit (CMU) wall on the northeast side of the property and a chain link fence enclosing the remaining sides with a double swinging gate at the driveway entrance. The WWPS and building was completed in 1966 and includes a generator room, pump station area, work area, toilet and service sink, motor control area, and steel stairway with grating landings that lead to the basement pump room.

The parcel is bordered on three sides by residential properties and a private access road, Ka Hanahou Place, provides access to the site. An existing drainage easement runs adjacent to the rear property line and encroaches slightly onto the property. On-site landscaping includes trees; hedges; and a large, flat grassy area at the front of the property.

Kahanahou Wastewater Pump Station as seen from Ka Hanahou Place.

The Kahanahou WWPS was put into service in 1966 with a peak flow capacity of 460 gallons per minute (gpm) at 41 feet total dynamic head (TDH). The WWPS was retrofitted in 2006 with a new ball valve assembly and vault and the WWPS capacity was revised to 510 gpm at 41 TDH. One pump can pump 347 gpm at 45 feet TDH and two pumps can operate at 510 gpm at 47.5 feet TDH. The WWPS consists of the following components:

- One wet well measuring 21'4" long, 8'0" wide, and 10'0" high, divided into two sections and separated with isolation stop gates
- Single 15-inch vitrified clay pipe that delivers influent sewage into the wet well via a gated distribution box
- One dry well measuring 21'4" long and 11'6" wide and is mechanically ventilated
- One ¼ horsepower (HP) sump pump rated for 25 gpm at 18 feet TDH
- Two 10 HP separately coupled solids handling pumps with extension shafts rated for 510 gpm at 41 feet located in the dry well
- A mechanical ventilation system
- An electrical system
- Controls
- Propane-fueled standby engine generator
- A SCADA digital display monitors the pump station operations.

1.2 EXISTING SEWER FORCE MAIN

The original cast iron force main servicing the Kahanahou WWPS was put into service in 1966 and replaced in 2007 with a high density poly-ethylene (HDPE) force main to eliminate increasingly frequent pipe failures, possibly due to corrosion from age and close proximity to the ocean. The original cast iron force main was abandoned in place.

The current 8-inch diameter force main has a capacity of about 1.58 mgd, based on a 7 feet per second maximum velocity standard, and is approximately 800 lineal feet in length, running from the Kahanahou WWPS to a manhole on Springer Place (Figure 1). At Springer Place, the line continues as a 10-inch gravity main for approximately 1,600 lineal feet through the marina area towards the Waikapoki WWPS. The last 272 feet of gravity main before the Waikapoki WWPS are 12 inches in diameter. The tributary areas labeled "Kahanahou Tributary," "Waikapoki Tributary 1," and "Waikapoki Tributary 2" all currently discharge to the Waikapoki WWPS.

2. PROPOSED PROJECT DESCRIPTION

The existing Kahanahou Wastewater Pump Station was found to have inadequate capacity to accommodate future projected peak flows. Any upgrade to the capacity of the WWPS will also require upsizing of the force main that carries the wastewater towards the Kaneohe Wastewater Preliminary Treatment Facility. The sewer improvements are coupled with the pump station upgrade and addressed in this EA.

2.1 KAHANAHOU WWPS

The proposed project will replace the existing separately coupled solids handling pumps with new larger capacity constant speed dry pit submersible pumps that will increase the capacity of the WWPS from 0.654 mgd to a capacity of more than 1.26 mgd. Variable Frequency Drives (VFDs) will be installed to control electrical currents and to limit the maximum flow to avoid spills through downstream manholes. The new pump equipment will require additional power, panel space, and working clearances. This will require both interior alterations to the existing WWPS building and the construction of a new emergency generator building. Before the pump station can come online, Hawaiian Electric Company (HECO) will be upgrading their surrounding wiring from 1-phase to 3-phase power to increase the voltage for the new pumps.

Within the WWPS building, the existing SCADA system and Motor Control Center (MCC) controls would be replaced and installed in a new air conditioned electrical room. All piping in the dry well would be replaced and the original wet well liner would be replaced with a corrosion-resistant polymer, monolithic lining to protect the concrete from the corrosive effects of wastewater. Additionally, in order to comply with National Fire Protection Association (NFPA) "NFPA 820" (Standard for Fire Protection in Wastewater Treatment and Collection Facilities), the ventilation system would be replaced and new supply and exhaust fans, ductwork, and intake and exhaust openings would be installed.

A new emergency generator building is proposed for construction at the front of the property to house a new diesel fueled generator to replace the existing propane fueled unit (Figure 2). This diesel generator has a larger capacity than the existing propane system, which is needed to accommodate the larger 85 HP pump motors. The new emergency generator building will be 350 square feet (SF) in size to accommodate the new generator and minimum work clearances in front of the electrical panel boxes that are required by code. The proposed generator building materials and finishes would complement and/or match the existing pump station building, including CMU concrete block walls, metal doors and frames, stainless steel louvers, screened openings and a low sloping concrete roof to match the pump station roof slope. Selected CMU walls, doors and louvers would be acoustically treated to minimize noise impacts.

A new 1,000 gallon fuel storage tank will be needed to power this generator with diesel fuel. An aboveground storage tank (AST) will be installed, as it is preferred by the City's Collection System Maintenance Division (CSM) due to reduced risks of leaks and groundwater contamination, lower costs and permitting requirements. Also, a new meter vault will be installed to provide a space for flow meter access and to allow operators to direct pump station discharge to either the existing force main or the new force main. The vault will be located next to the new emergency generator building and will be approximately 20 feet by 12 feet with 10-inch thick concrete walls. The vault will extend from approximately one foot above grade (grade is at approximately 5.5 feet elevation) to a bottom of vault elevation of -1.5 feet. The vault will be covered by fiberglass-reinforced plastic grating with a hatch for access.

To accommodate the new 3-phase electrical system, underground duct lines will be routed from an existing utility pole on Lilipuna Road to Ka Hanahou Circle and Ka Hanahou Place to service the WWPS. New manholes will be installed along the route and a new transformer will be placed on the WWPS site.

2.2 SEWER MAIN IMPROVEMENTS

In order to accommodate the increased capacity of the Kahanahou WWPS, the existing 8-inch force main that conveys wastewater from Kahanahou WWPS to the gravity main that runs to the Kaneohe Wastewater Preliminary Treatment Facility, must be upsized, from the current capacity of approximately 1.58 mgd to 2.5 mgd, based on a 7 feet per second maximum velocity standard.

The new force main will be about 2,600 lineal feet in length and will be 12-inch in diameter. It will start at the Kahanahou WWPS, run west on Ka Hanahou Place and follow the road north to its intersection with Ka Hanahou Circle. There, it goes west along Ka Hanahou Circle and Lilipuna Road. At the intersection of Lilipuna Road and Wailele Road, the alignment hits its high point; thereby ending the force main and beginning the gravity main. The new and upsized gravity main will run south along Wailele Road until Makahio Street, then turns west on Makahio Street and connects to an existing sewer manhole within a private property (45-156 Makahio Street, TMK 4-5-012: 026), where it will connect to an existing gravity sewer line. A new 15-foot wide sewer easement through the private parcel will be obtained to replace the existing narrower easement. The gravity main from Makamae Street to TMK 4-5-012: 026 will also be upsized (Figure 3). Gravity line improvements are about 2,200 linear feet in length and will range from 12- to 24-inch in diameter. The existing force main that runs toward the Waikapoki WWPS will remain in place to serve as a backup to the new force main. The existing gravity main will generally be abandoned in place, unless in conflict with the proposed line. The proposed gravity main will convey flow from the WWPS as well as flow from the adjacent residential lots.

The gravity main upsizing included in this project intends to mitigate predicted surcharges due to the proposed flow and routing of the Kahanahou WWPS force main. Both the existing and proposed sewer systems ultimately flow to the Kaneohe Preliminary Treatment Facility and since there is no change in tributary area coverage, there will be no change in the amount of discharge to this downstream facility.

The proposed force main will replace the existing 8-inch force main and will no longer connect to the existing gravity main discharging to the Waikapoki WWPS. This gravity main is to remain and continue to service the Waikapoki Tributary 1 area (Figure 1). Since the proposed force main will no longer connect to the gravity main discharging to Waikapoki WWPS, the "Kahanahou Tributary" area will no longer flow to the Waikapoki WWPS. The total tributary area discharging to the Waikapoki WWPS will therefore be significantly reduced, alleviating the magnitude of upgrade required for the Waikapoki WWPS. In addition to the WWPS upgrade and sewer improvements, the roads along the proposed force and gravity main improvements, as well as several adjacent roads (such as Ka Hanahou Circle and Lilipuna Place), will be repaved as part of this Kahanahou project (shown in green in Figure 3). Repaving will not exceed 12 inches below grade.

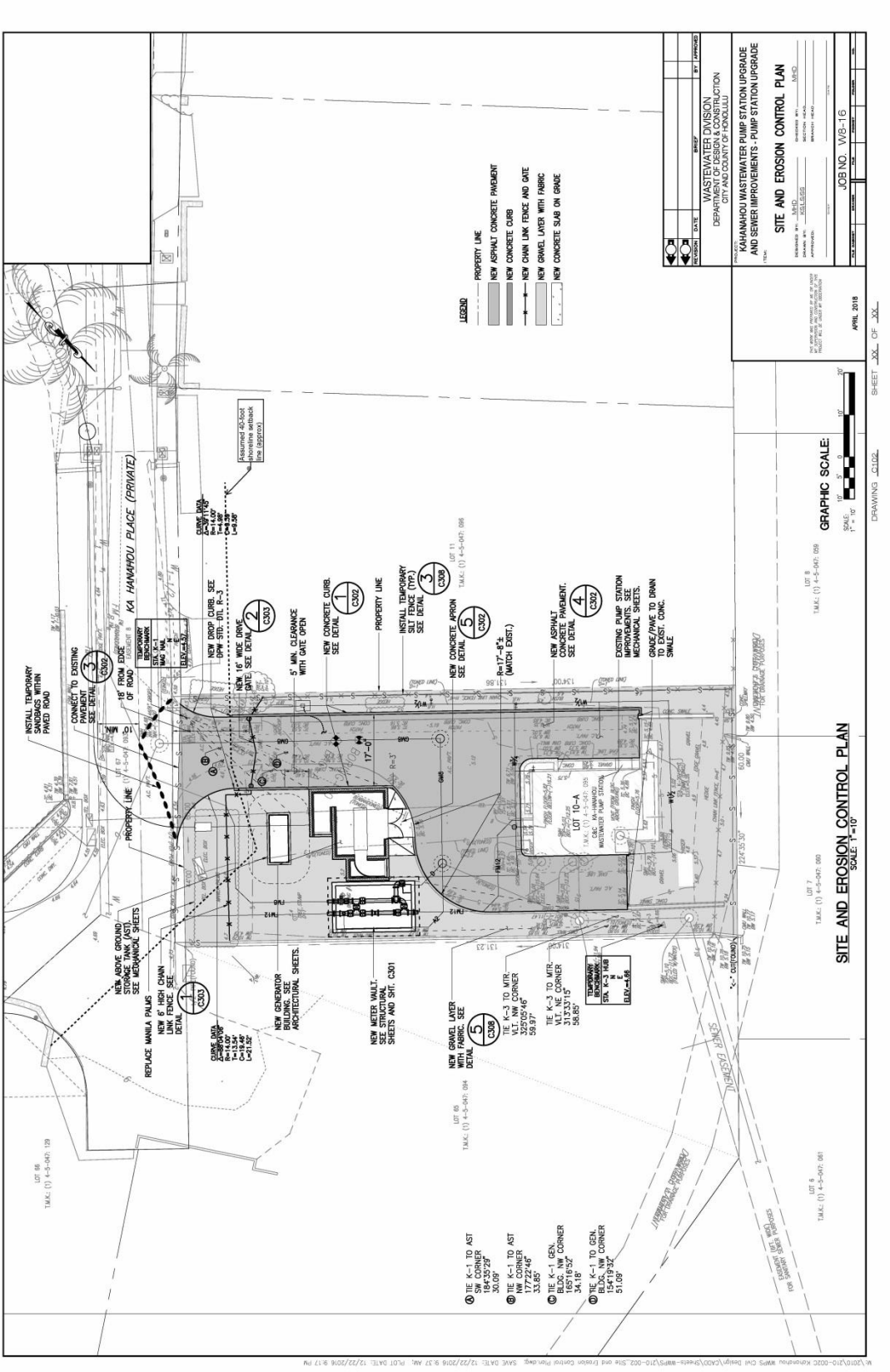
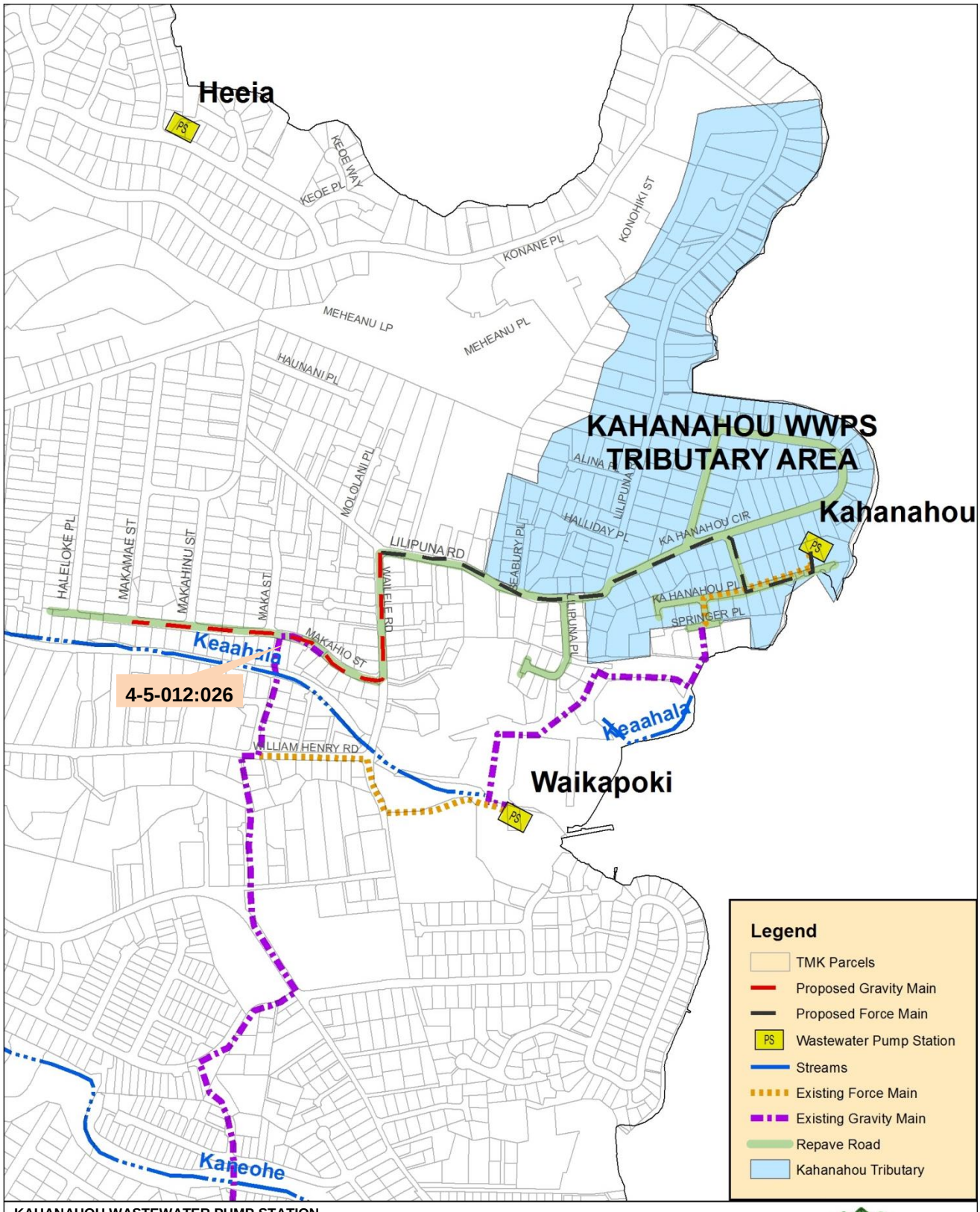


Figure 2 Site Plan



KAHANAHOU WASTEWATER PUMP STATION AND SEWER MAIN UPGRADES DRAFT ENVIRONMENTAL ASSESSMENT

Figure 3 Proposed Sewer Main and Tributary Area

2.3 CONSTRUCTION SEQUENCE AND COSTS

The estimated construction cost for the sewer improvements is $6.5 million, while estimated cost for the WWPS upgrade is $3.6 million. These estimates are for budgetary and preliminary engineering report purposes only, and will be refined as design progresses. Funding for the project will be provided by the City.

The general construction sequence is as follows:

1. New force main work will be completed without connection to the pump station.

2. Temporary bypass piping and pumps will be installed while connections are made to the new sewer line.

3. New emergency generator building will be constructed and pump station upgrades will then be completed.

4. New force main will be connected and new pumps will be started.

5. Temporary systems will be shut off and removed.

3. ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION

3.1 TOPOGRAPHY AND SOILS

The existing ground topography along the proposed force and gravity main alignments varies from roughly 4.6 feet to 105 feet in elevation. The beginning of the proposed force main at the Kahanahou WWPS is the low point of the line (elevation 4.6 feet). The existing ground generally slopes upward to a high point near the intersection of Lilipuna Road and Wailele Road (elevation 105 feet); the gravity main alignment then ends along Makahio Street at about elevation 64.6 feet.

The project area is located on four soil types designated by the U.S. Department of Agriculture Soil Survey of 1972 (Figure 4). The Kahanahou Wastewater Pump Station and part of the proposed sewer force main are located on "Fill land, mixed (FL);" areas filled with material dredged from the ocean or hauled from nearby areas, or garbage and general material from other sources. A section of the proposed new force and gravity main (the central section of the project area) are located on "Kaneohe silty clay, 8-15% slope (KgC)", a well-drained soil found on terraces and alluvial fans in Windward Oahu. This soil type develops in alluvium and colluvium derived from basic igneous rock. Runoff rates are medium and erosion hazard is moderate. Another section of the proposed sewer gravity main along Wailele Road and Makahio Street (on the southwestern end of the project area) then passes through "Lolekaa silty clay, 3-8% slope (LoB)", a soil found on terraces and fans, strongly acidic with moderately rapid permeability. Runoff is slow and the erosion hazard is slight. The final section of the gravity main along Makahio Street passes through "Hanalei silty clay, 2-6% (HnB)", a thick, dark grey silty clay with red-brown mottles. The 10-inch thick surface layer is acidic, and the clay loam subsoil is neutral. Runoff is slow and erosion hazard is slight.

Impacts and Mitigation

No significant impact to ground topography or soils is expected as a result of this project. The proposed force and gravity main will be installed underground and mostly within existing road rights-of-way or easements. Minor grading may be required to return the project corridor to its pre-construction condition. The pump station upgrades are above-ground on the existing property and will not include soil disturbance or grading. For construction of the emergency generator building, there may be some soil disturbance and appropriate Best Management Practices (BMPs) will be used. However, the site topography will not be affected.

Mitigation Measures: BMPs will be employed to minimize erosion and soil loss during construction. Construction practices will comply with the guidelines found in the following regulations:

- *Revised Ordinances of Honolulu (ROH) Chapter 14, Articles 13-16, relating to Grading, Grubbing, Stockpiling, Soil Erosion, and Sediment Control;*
- *Rules Relating to Soil Erosion Standards and Guidelines (April 1999), Department of Planning and Permitting, City and County of Honolulu; and*
- *Erosion and Sediment Control Guide for Hawaii (1968), Soil Conservation Service, US Department of Agriculture.*

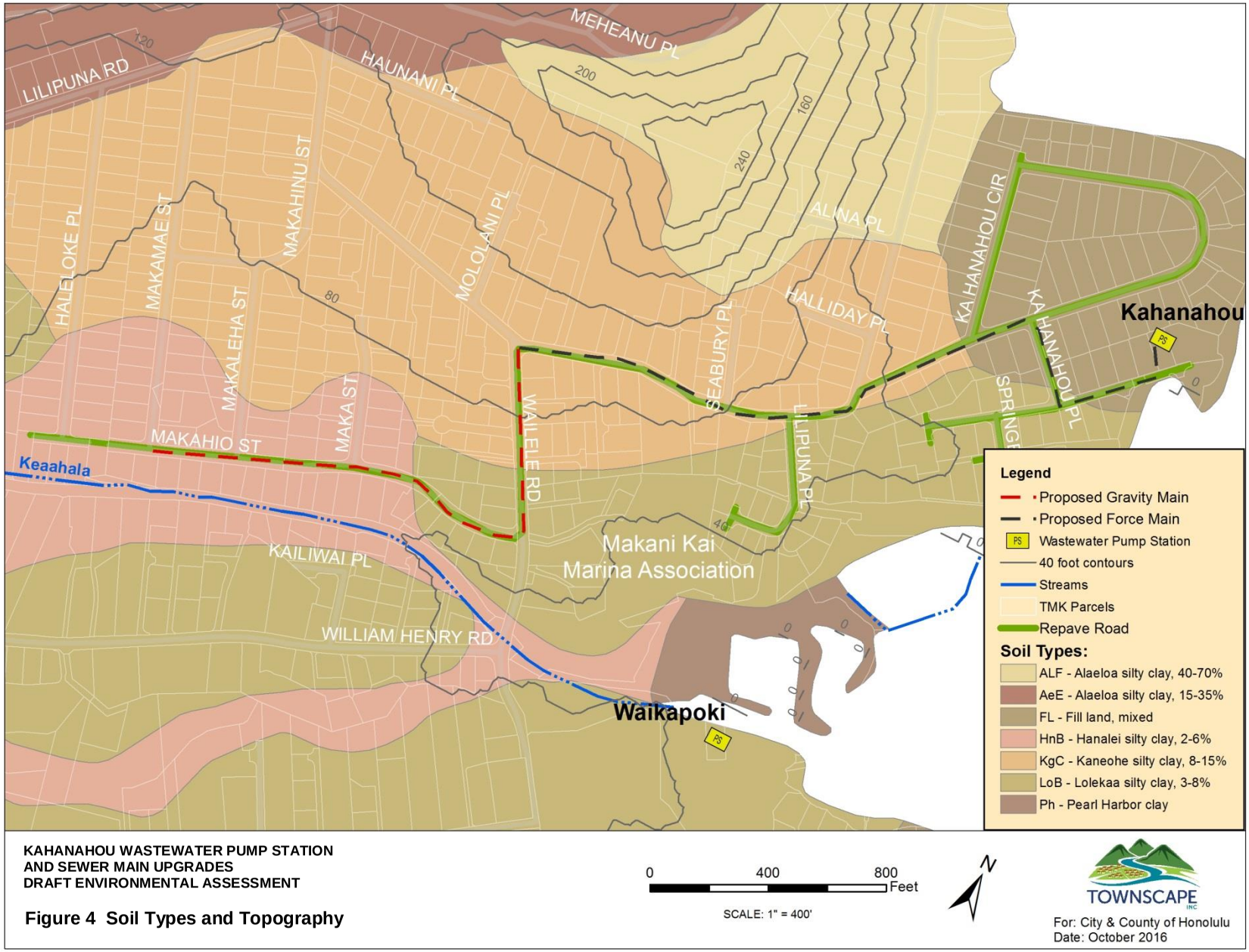


Figure 4 Soil Types and Topography

3.2 CLIMATE AND HYDROLOGY

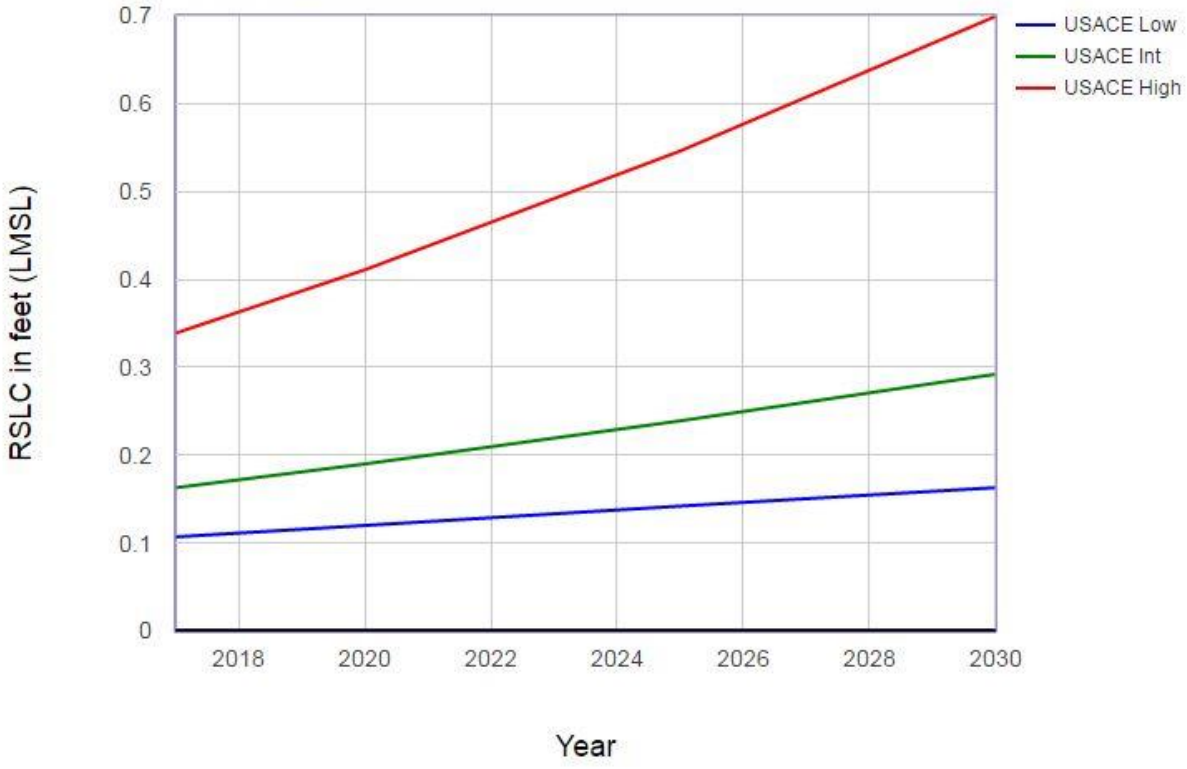
Average annual rainfall in the project area is approximately 50 inches. Predominant tradewinds bring cooler, wetter weather December through April, with slightly higher temperatures and drier conditions during the summer months. The project area is located within the Commission on Water Resource Management (CWRM) Aquifer System Area of Koolaupoko, in the Keaahala watershed between Heeia and Kaneohe watersheds (Figure 5). The CWRM sustainable yield for the Koolaupoko Aquifer System Area is 30 mgd. Perennial Keaahala Stream runs in an easterly direction to the south of the project area, emptying into Kaneohe Bay.

Over time, changes in the climate are anticipated. According to the National Climate Assessment, climate change will consist of rising carbon dioxide in the atmosphere, rising air and sea temperatures, rising sea levels and upper-ocean heat content, changing ocean chemistry and increasing ocean acidity, changing rainfall patterns, decreasing base flow in streams, changing wind and wave patterns, changing extremes, and changing habitats and species distribution. The average global sea level has risen about 8 inches since 1900. However, recent observations have indicated an increased rate of rise over the past two decades (1.3 inches per decade). Sea level rise will incrementally increase coastal flooding and erosion, thus, posing major risks for coastal structures, infrastructures, and properties.

Planning for sea level rise is challenging because there are changing and unknown factors. The United States Army Corps of Engineers (USACE) issued an Engineering Regulation (ER 1100-2-8162) that provides “guidance for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating and maintaining USACE projects.” The guidance in the regulation can also be used as the basis for assessing the potential relative sea level change that may be experienced by projects in shoreline areas. Using the USACE on-line Sea Level Change Calculator, Figure 6 provides the potential relative sea level rise change for the Mokuoloe tidal gauge from 2017 to 2030, which is the year this project is designed to handle flows for.

Figure 5 Physical Features and Hydrology

Figure 6 **Relative Sea Level Change Projections - Gauge: 1612480, Mokuoloe, HI (05/01/2014)**



Impacts and Mitigation

The proposed project is not anticipated to create conditions that would impact the local climate. Ground and surface water hydrology will not be affected and water quality impacts will be beneficial, if any (see Section 3.4). See Section 3.6 for further discussion on impacts to flooding as a result of climate change.

According to the USACE Sea Level Change Calculator, the proposed project is not anticipated to be significantly affected by sea level rise during the life of the project. Table 1 indicates that by 2030, the projected sea level rise is in the range of 0.16 to 0.70 feet. However, the rate of rise should become clearer as the time for the planning for the next upgrade project approaches, and as new policies and regulations are developed. There are ongoing efforts at the State and City to evaluate changes that need to be made to the current rules, regulations, and practices standards, with the ultimate goal of establishing a standard that can be implemented Statewide.

Table 1. Estimated Sea Level Rise for Mokuoloe, USACE Sea Level Change Calculator

YEAR	USACE LOW	USACE INT	USACE HIGH
2017	0.11	0.16	0.34
2020	0.12	0.19	0.41
2025	0.14	0.24	0.55
2030	0.16	0.29	0.70

While the long-term impacts of climate change are worth considering, this project is intended to upgrade near-term flow rates in order to reduce the chances of overflow and bring the WWPS and sewer lines into compliance with the EPA consent decree, which mandates that the improvements be completed by 2020. The project is designed to accommodate flows for the year 2030, providing an opportunity to reassess the impacts of climate change when the facilities are up for renewal and/or replacement at or near that time.

From a long-term perspective, the proximity of the Kahanahou WWPS to the existing shoreline does increase the site's vulnerability to the effects of sea level rise. However, the extent of sea level rise during the life of this project is not expected to reach levels that will impact the WWPS. The decision to accommodate, protect, and/or relocate facilities in response to potential long-term impacts will likely be done through future planning efforts. Changes in sea levels are anticipated to occur gradually and over many years, which should provide the City with sufficient time to plan and implement the necessary measures. The City recognizes the threat of sea level rise and the need to plan for future impacts and will provide full support and cooperation towards ongoing efforts to establish State-wide policies and regulations.

3.3 AIR QUALITY AND NOISE

Air quality in the vicinity of the project is primarily affected by emissions from vehicular, residential and natural sources, but is considered acceptable due to the prevailing northeasterly tradewinds. Based on data from the State Department of Health (DOH), Clear Air Branch Annual Summary of the 2011 Hawaii Air Quality Data, both State and Federal ambient air quality standards are currently being met in the project vicinity.

Noise levels in the vicinity of the project are low, as land uses in the area are primarily residential. Sources of ambient noise are vehicular travel, recreational use in Kaneohe Bay, and periodic activity at and associated with Kaneohe Marine Corps Base Hawaii.

Impacts and Mitigation

Impacts on air quality and noise from the pump station upgrades and installation of the force and gravity main and connections are anticipated to be minor and short-term. Installation of the force main may require machinery that generates noise and dust, and emissions from construction equipment and vehicles may slightly impact air quality in the area. All work is anticipated to be done during daytime hours. The pump station and emergency generator building will be equipped with sound reducing materials, including solid walls and acoustical rated metal doors, to decrease equipment noise transmission to the neighborhood.

Mitigation Measures: The short-term effects on noise and air quality during construction will be mitigated by compliance with the DOH rules on air pollution and noise control. Temporary bypass pumps will be housed in a customizable fiberglass enclosure. Acoustical panels may be installed if necessary. Best management practices during construction typically include:

- Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dusty equipment in areas of least impact;
- Providing an adequate water source at the site prior to start-up of construction activities for dust control;
- Landscaping and rapid covering of bare areas, including slopes;
- Controlling of dust from shoulder and access roads;
- Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- Controlling of dust from debris being hauled away from project site.

Heavy vehicles traveling to and from the project site must comply with the provisions of the DOH's Administrative Rules, Chapter 11-42, "Vehicular Noise Control for Oahu." Although all work is anticipated to be done during daytime hours, a noise variance will be obtained by the Contractor should any work be performed during nighttime. Furthermore, activities associated

with the construction phase of the project must comply with the DOH's Administrative Rules, Chapter 11-46, "Community Noise Control" which states that:

- The Contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the rules as stated in Section 11-46-6(a).
- Construction equipment and on-site vehicles requiring an exhaust of gas must be equipped with mufflers as stated in Section 11-46-6(b) (1)(A).
- The Contractor must comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the permit as stated in Section 11-46-7 (d) (4).

3.4 WATER QUALITY

The waters of Kaneohe Bay near the project site are designated class AA by the DOH. The objective of class AA waters is to remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions (HAR 11-54). Water quality samples evaluated in DOH's "2014 State of Hawaii Water Quality Monitoring and Assessment Report" show Kaneohe Bay not attaining water quality standards for at least one parameter in each of seven locations.

Impacts and Mitigation

No adverse impacts on surface or ground water quality are anticipated. The proposed project will reduce the risk of wastewater spills by increasing both the pump capacity of the Kahanahou WWPS and the capacity of the force main delivering wastewater to the gravity main, thereby decreasing the risk of spills and groundwater contamination. The long term impacts of the proposed improvements will be beneficial to near shore water quality and marine habitat.

Mitigation Measures: BMPs will be used during the construction process to avoid dewatering effluent and construction debris from causing runoff problems. Excavated material will be hauled off-site to a site selected by the Contractor. If suitable, the excavated material can be used to backfill the trenches. Excavated material will not be discharged into coastal waters. Specific BMPs that will be applied to this project will be determined during the detailed design phase and are not yet available, but may be reviewed during the permit application process. Please see Section 7 for a list of permits that are expected be required.

Prior to construction, compliance with State water quality requirements will be sought. Construction dewatering and storm water permits will be obtained from the City and the State DOH pursuant to City Ordinance and Section 11-55 of the Hawaii Administrative Rules.

As part of the anticipated National Pollutant Discharge Elimination System (NPDES) Permit, water quality sampling and analyses will be undertaken for potential contaminants which may be

anticipated. An effluent discharge control plan will be prepared incorporating BMPs, appropriate structural or non-structural mitigative measures such as containment berms and filtration or detention ponds which would control the discharge of stormwater runoff and effluent resulting from construction activities. Generally, measures from the City's Storm Water Best Management Practice Manual, dated November 2011, will be implemented, where appropriate.

3.5 WETLANDS

The National Wetlands Inventory identifies several types of wetlands in the State of Hawaii. Estuarine and Marine Deepwater wetlands exist in the vicinity of the project area, extending along the shoreline and up Keaahala Stream (Figure 5). These wetlands provide filtration of storm water and protection against ocean waves. The WWPS and proposed force and gravity main do not pass through any wetlands.

Impacts and Mitigation

The proposed project does not pass through any wetlands and is not anticipated to have any impacts on wetlands in the area. No mitigative measures are proposed.

3.6 FLOODING AND TSUNAMI HAZARDS

The WWPS and a majority of the force and gravity main alignments are in the Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Map (DFIRM) Zone X (outside the 500-year floodplain). A section of the gravity main along Makahio Street is located within Zone X (protected from the 1% annual chance flood by a levee). Just south of the project area is Zone AE (a 1% annual chance flood). See Appendix A for the location of the flood protection levee in relation to the project area. A section of the force main passes through the tsunami evacuation zone where it passes nearest to Kaneohe Bay (Figure 7).

Impacts and Mitigation

The proposed project is not anticipated to have any impact on flooding, designated flood zones, or tsunami zones. The new force main will be installed underground and will therefore be protected where it is located within the tsunami evacuation zone. The WWPS is located within FEMA's DFIRM Zone X (outside the 500-year floodplain) and outside of the tsunami inundation zone.

This project is intended to upgrade near-term flow rates in order to reduce the chances of overflow and bring the WWPS and sewer lines into compliance with the EPA consent decree, which mandates that the improvements be completed by 2020. The proposed pump station and conveyance system are designed to handle, at minimum, flows for the year 2030 5-year, 24-hour storm.

Over time, climate change is expected to increase precipitation, possibly increasing inflow and infiltration into collection systems. However, projected rainfall increases specific to the Kaneohe area are not available, and increasing pump capacities and over-sizing the force main to account for unknown possible future flows beyond what is currently designed would result in deficiencies. Such deficiencies include causing the pumps to short-cycle and the flow velocity in the pipes to be too low, causing solids to fall out of suspension and collect in the pipe.

However, during actual operations, additional capacity is available as the pump operates at higher points on the pump curve as the wet well level rises, although this is not considered in the rating per the standards. There is also peak flow storage capacity in the wet well itself and in the collection system that may help to shave wet weather peaks which have a short duration. The possibility for the second pump to turn on provides additional capacity that can be available to handle conditions that surpass the design conditions. These factors provide additional reserve capacity which allows operations to manage more flow, including possible intense rain events due to changing climate conditions.

In the design of the sanitary sewer system, there is also consideration that some level of inflow and infiltration is present although the overall concept of the sanitary system is intended to be sealed against inflow and infiltration. Higher groundwater due to rising sea level will cause increased rates of inflow and infiltration to the sewer system. When inflow and infiltration becomes excessive for this or any other reason, then rehabilitation or replacement of the sewers may be needed. The City has a significant sewer rehabilitation program on-going with one benefit being reduction of excessive inflow and infiltration. Sewer rehabilitation methods include spot repairs, installing pipe liners, pipe replacement, and manhole sealing and rehabilitation. Sewer rehabilitation in the Kahanahou service area was done in 2006 to 2009, and a post-rehabilitation study showed evidence of a 60% reduction in the dry weather flow at the pump station. Although sewer rehabilitation efforts cannot fully eliminate all inflow and infiltration, it has proven to be an effective mitigation measure for reducing and minimizing inflow and infiltration. It is expected that by continuing an effective sewer rehabilitation program, excessive inflow and infiltration can be controlled and impacts due to a rising groundwater table in the future can be mitigated through such measures.

Additionally, the HDPE pipes used for this project will be able to withstand any possible saltwater inundation, as the pipes are immune to galvanic corrosion. The fused joints/fittings will also minimize the risk of any joint leakage.

3.7 SOCIO-ECONOMIC CONDITIONS

Land use within the project area is primarily residential. Some recreational land uses may be found along Kaneohe Bay; several small piers extend into the nearshore waters. Windward Mall, a regional shopping center, is located within a mile of the project's western extent.

As mentioned in Section 5.6, the Koolaupoko Sustainable Communities Plan designates the area in the vicinity of the planned Kahanahou WWPS upgrade project as a low density residential area with a modest projected population growth.

Impacts and Mitigation

The proposed sewer force/gravity main and pump station upgrades will accommodate projected wastewater flows for the current year conditions through the design year 2030, and the anticipated economic life of 15 to 20 years for the electrical equipment. This will provide adequate infrastructure to support the expected population growth in Kaneohe but is not expected to promote growth beyond the modest levels recognized in the Koolaupoko Sustainable Communities Plan (2000), as the increase in WWPS capacity is intended to accommodate the peak wet weather flow due to storm events, and not for the purposes of additional development. Additionally, this neighborhood is already built-out and not expected to incur any more significant development. Overall, this project is expected to benefit the community by minimizing future public health and environmental hazards. It will benefit the City, and thereby taxpayers, via reduced operating costs and by reducing the risk of legal actions and fines against the City for further Clean Water Act violations. The project will also provide employment for contractors and thereby benefit material suppliers and others in the construction industry.

There is an existing City easement for the privately-owned portion of Ka Hanahou Place. One private landowner, TMK 4-5-012: 026, is expected to be directly impacted by the proposed project (Figure 3). A new 15-foot wide sewer easement through the private parcel will be obtained to replace the existing narrower easement.

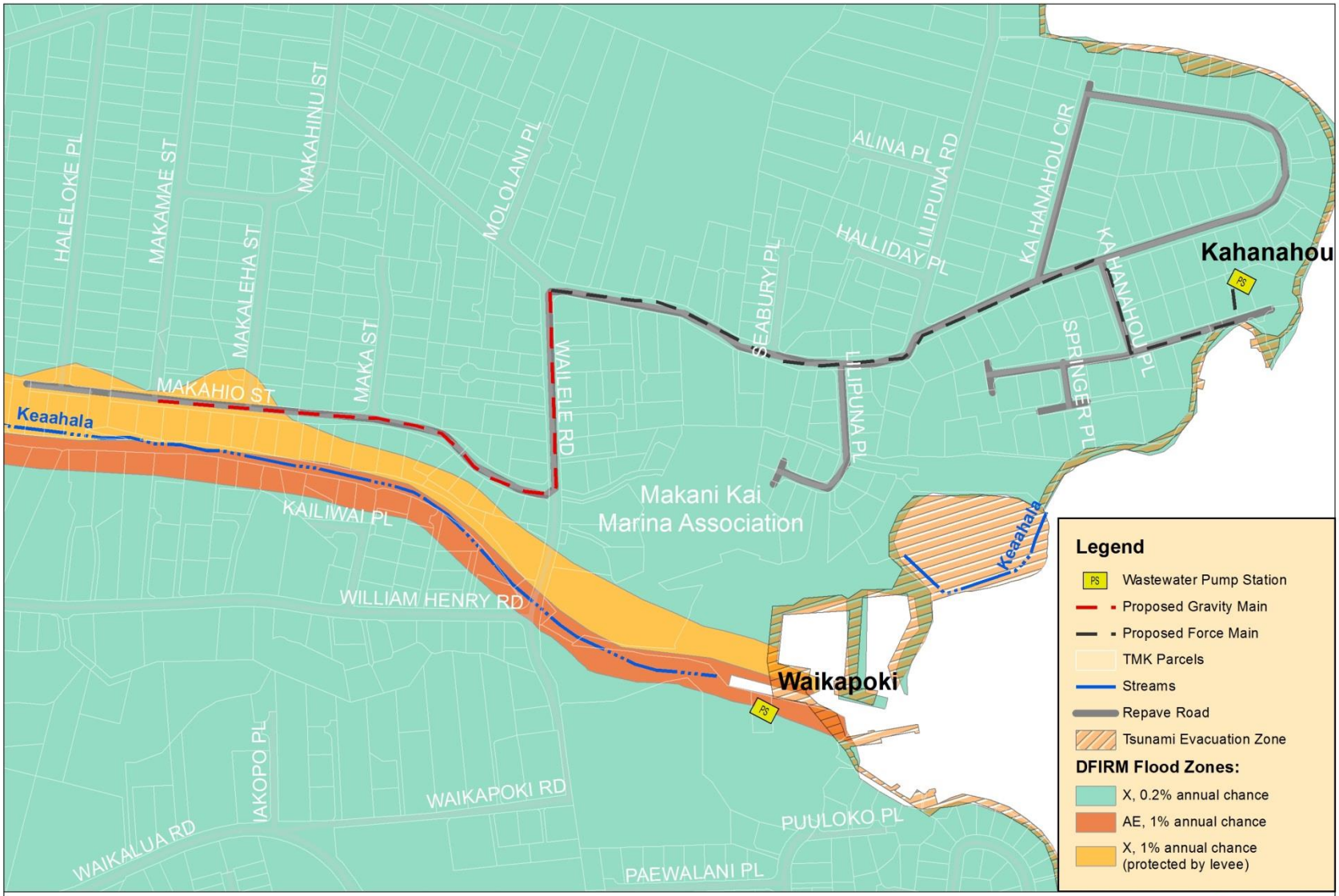


Figure 7 Flood and Tsunami Hazards

3.8 INFRASTRUCTURE

3.8.1 Traffic and Roads

Vehicular access to the Kahanahou WWPS is from Ka Hanahou Place. From the pump station, the proposed force main runs along Ka Hanahou Place, Ka Hanahou Circle, and Lilipuna Road, while the proposed gravity main runs along Wailele Road and Makahio Street.

Impacts and Mitigation

Construction activities and the HECO three-phase power installation will temporarily affect vehicular traffic in the vicinity of the pipe installation work, but are not expected to have a major impact on circulation. A traffic control plan will be developed during the design phase, allowing residents access to and from their homes. Sections of Ka Hanahou Place, Lilipuna Street, Wailele Road, and Makahio Street may be temporarily affected by construction work, and other roads in the area may see a slight increase in traffic as a result.

Gravity main and force main alignments will be adjusted to ensure that one traffic lane can remain open at all times, as only partial road closures will be allowed. All roads will be open at the end of each work day. Work will occur on Monday to Friday and generally during off-peak hours from 8:30 a.m. to 3:30 p.m., or as coordinated by the Contractor with the City and surrounding residents, to minimize disruption of traffic. Residents in the vicinity of the project area, the Honolulu Police Department, and Honolulu Fire Department will be informed about the timing and location of construction work and alternate routes.

Contractor will be responsible for following Federal, State, County, and Occupational Safety and Health Administration regulations such as installing signage and barricades for safety around work areas.

3.8.2 Water System and Electrical Service

Potable water is provided to the Kahanahou WWPS by the Honolulu Board of Water Supply (BWS) water line on Ka Hanahou Place. Daily water usage consists of sanitary fixtures, landscape irrigation, washdown and other maintenance purposes. Additional water is needed on an intermittent basis for wet well cleaning and maintenance of the odor control system.

Electrical power is provided to the Kahanahou WWPS by HECO overhead service lines along Ka Hanahou Place. To accommodate the new 3-phase electrical system, underground duct lines will be routed from an existing utility pole on Lilipuna Road to Ka Hanahou Circle and Ka Hanahou Place to service the WWPS. New manholes will be installed along the route and a new transformer will be placed on the WWPS site. In the event of a commercial power outage, the new emergency generator will start and essential loads automatically transfer to emergency power.

Impacts and Mitigation

The proposed actions are not anticipated to impact utilities such as potable water and electricity. Prior to construction, all existing utility lines along and in proximity to the force main alignment will be identified and their depths located to avoid damaging them. The Contractor will contact the utility companies to ensure proper coordination. In the event of a power outage in the neighborhood, the pump station will continue to operate via its back-up generator.

3.8.3 Wastewater System

This project is the result of litigation aimed at inadequate wastewater systems in the City and County of Honolulu. The existing Kahanahou Wastewater Pump Station was found to have inadequate capacity to meet future projected flows. The proposed upgrades to the pump station will also require an upsizing of the related force and gravity mains.

Impacts and Mitigation

Since the construction of this project will upgrade the wastewater system, only beneficial long-term impacts are expected. The proposed project would reduce the risk of wastewater spills by increasing the capacity of the Kahanahou WWPS to accommodate the anticipated future peak flows from the Kahanahou tributary area. Due to flows from the Kahanahou tributary area bypassing the Waikapoki WWPS after construction of the new force main, the demands on the Waikapoki WWPS will be decreased.

Temporary construction-related impacts on the conveyance system will be mitigated via temporary above-ground bypass piping systems and pumps that discharge into a mobile tanker. The temporary pump system will have 100% redundancy, meaning that a second pump of the same capacity would be used if the first pump fails. However, the City will be notified to send

trucks to haul away the wastewater should both pumps fail. The Contractor will be responsible for submitting a Wastewater Spill Mitigation Plan prior to construction.

3.9 HISTORICAL AND CULTURAL RESOURCES

Cultural Surveys Hawaii (CSH) completed a Literature Review and Field Inspection (LRFI) report in 2014 and submitted it to the State Historic Preservation Division (SHPD) for review and comment. It was later revised in August 2016 to reflect a new alignment for the sewer line improvements (Appendix D). The LRFI includes an analysis of the history of the ahupuaa and previously conducted archaeological studies in the vicinity of the project area. None of the previous archaeological studies completed in Kaneohe and analyzed for the LRFI covered the project area, however some were conducted close by. The Kaneohe ahupuaa was densely populated during pre-contact times and abundant fresh water made it an agriculturally active area with many traditional crops. In post-contact times, sugar, rice, pineapple and ranching all made their way through the ahupuaa. Fishponds were another common historic feature with some fishponds and remnants still visible today.

The field inspections conducted by CSH revealed only one historic property close to the project area: the remnants of an old fishpond wall. This stacked stone wall is the relic of Kalokohanahou Fishpond, which will not be altered by the proposed work.

Impacts and Mitigation

The Kahanahou WWPS is built on a historic fishpond that was filled in decades ago. The remnants of Kalokohanahou Fishpond are still present, but will not be altered by the proposed force main and any work on the WWPS itself is not anticipated to disturb any archaeological features. The LRFI report concludes that due to the serpentine nature of the proposed work and the extensive land modifications that have taken place in modern times, the likelihood of intact cultural deposits being present in the project area is very low.

The earlier LRFI report (2014) and the revised LRFI report (2016) reflecting the new sewer alignment has been submitted to SHPD. Both the reports recommended archaeological monitoring for all ground disturbances more than 12 inches below current grade and that an archaeological inventory survey did not appear warranted for development within the project area. A draft archaeological monitoring plan has been submitted and is being reviewed by SHPD.

3.10 FLORA AND FAUNA

Vegetation in and around the immediate vicinity of the project corridor consists mainly of residential and roadway landscaping. The State Geographic Information System (GIS)

vegetation maps show that little to no Federal or State listed or candidate threatened or endangered plant or animal species are currently found within the project area. Wildlife in the project area is limited to mammals and birds which have adapted to the urban environment.

Impacts and Mitigation

Construction will occur primarily within existing road rights-of-way and previously landscaped areas. No threatened or endangered species are anticipated in the project area, due to its residential nature. To the extent possible, vegetation removal will be kept to a minimum, and the project is not expected to have a significant impact on flora and fauna in the area. Should vegetation need to be replaced, use of native species and/or xeriscape will be considered. Proper lighting will be used to minimize and avoid artificial lighting impacts to seabirds. Exterior light fixtures for the new generator building will use effective light shields to shine the lighting downwards to prevent attracting sea birds to the area. Exterior light fixtures for the WWPS will also be replaced with proper lighting to minimize light pollution and impacts to seabirds.

3.11 CUMULATIVE IMPACTS

The proposed project is not expected to have a considerable cumulative effect upon the environment, or involve a commitment to larger activities. Upgrades to the Kahanahou WWPS and sewer mains will accommodate the modest population growth outlined in the Koolaupoko Sustainable Communities Plan and are consistent with the vision expressed by the City and County of Honolulu's low-density residential zoning in the area. The residential nature of the project area indicates that natural and cultural resources have already been altered from their original state. No threatened or endangered species are expected to be impacted by the proposed upgrades, and archaeological surveys and/ or monitoring will be implemented if required by SHPD.

The primary impacts of the proposed action would be short-term and occur during construction. Best management practices will be used to minimize and mitigate potential negative impacts such as noise, dust, traffic and erosion. Water quality may be temporarily impacted by construction activities, but BMPs will be employed to ensure that impacts are as minimal as possible. Generally, measures from the City's Storm Water Best Management Practice Manual, dated November 2011, will be implemented, where appropriate. The specific BMPs that will be applied for this project will be determined during the detailed design phase and are not yet available, but may be reviewed during the permit application process. In the long-term, water quality will be maintained by the proposed upgrades.

The proposed Kahanahou WWPS and sewer main upgrades are consistent with a broader City and County of Honolulu Wastewater Division strategy to maintain adequate wastewater management facilities in Kaneohe. Both the existing and proposed sewer systems flow to the

Kaneohe Wastewater Preliminary Treatment Facility; therefore there will be no change in the amount of discharge to this downstream facility. Since the proposed force main will no longer connect to the existing gravity main that discharges to the Waikapoki WWPS, the "Kahanahou Tributary" area will no longer flow to the Waikapoki WWPS. Therefore, the magnitude of upgrade required for the Waikapoki WWPS will be alleviated.

4. ALTERNATIVES TO THE PROPOSED PROJECT

This project consists of two components: (1) improvements to the Kahanahou WWPS, and (2) improvements to the force and gravity mains. Each component went through its own engineering/design phase that analyzed the various routes, design parameters and mechanical alternatives. After evaluation of four different alternatives for the WWPS and four alternative routes for the force and gravity mains, the preferred alternative chosen for this project was the least intrusive, most cost-effective and efficient alternative to comply with the requirements of the Consent Decree. The selected route also provides the most accessibility to the sewer system for maintenance purposes and eliminates the lengthy process of obtaining easements for several private properties that would be required with the alternative routes.

4.1 NO ACTION ALTERNATIVE

The "no build" or "no action" alternative would consist of not making any of the proposed upgrades, resulting in no immediate impacts. However, since this project is aimed at reducing future environmental and public health impacts by increasing the safety and capacity of an aging sewer system, which is also required by the Consent Decree between the City and EPA, this is not a feasible option. The City is legally required to upgrade the WWPS.

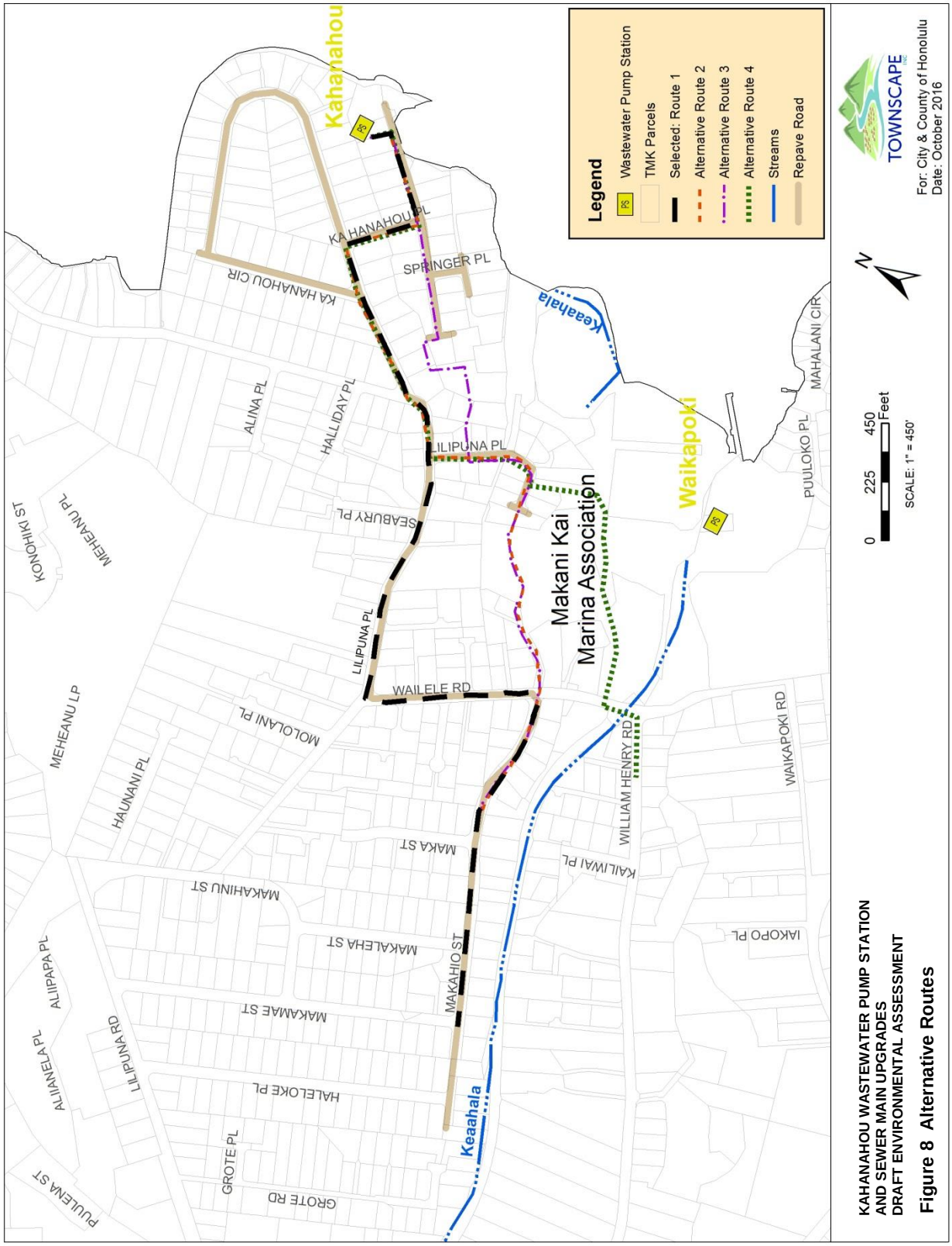
4.2 POSTPONED ACTION ALTERNATIVE

The "postponed action" alternative would consist of postponing any of the proposed upgrades until a future date. As with the "no action" alternative, this would increase the risk of future wastewater spills and resulting environmental and public health problems. As set forth in the Consent Decree, EPA requires the City to upgrade its system within the specified timeline (2020). Postponing the construction could result in not meeting this deadline; therefore, this is not a feasible option.

4.3 ALTERNATIVE SEWER LINE ALIGNMENTS

Alternative alignments to the proposed sewer line were considered (Figure 8). They all started at the Kahanahou WWPS and ran southwesterly, connecting to a manhole and then splitting into various directions. The following other alignments were considered:

- An alignment that consisted of a force main running through an existing five-foot easement on a private residence and through the private Marina Kai property. The route was dismissed due to concerns regarding accessibility needed for future maintenance and/or repair through the Marina Kai property. The route would also require a five-foot easement on the private residence that is bounded by an existing car port and cannot be widened. In addition, obtaining an easement through Makani Kai Marina is anticipated to be a prolonged process that would jeopardize the project's ability to meet its Consent Decree deadline.
- An alignment that consisted of a force main running west through a number of private properties and ending at the existing sewer manhole on Makahio Street. This route was dismissed due to narrow space along certain areas of the proposed alignment. This route also crossed the greatest number of private properties, making it the most difficult to implement. Avoidance of private properties is desired per City Design Standards.
- An alignment that consisted of a force main running west along Ka Hanahou Circle, turning south along Lilipuna Place and through some private properties, transiting a bridge on Wailele Road and connecting to an existing sewer manhole on William Henry Road. This route was dismissed due to potential impacts on an existing rock retaining wall and recently installed pond, as well as complications regarding the bridge crossing and the manhole connection.


Legend
Wastewater Pump Station
TMK Parcels
Selected: Route 1
Alternative Route 2
Alternative Route 3
Alternative Route 4
Streams
Repave Road
Kahanahou
KA HANAHOU PL
KA HANAHOU CIR
SPRINGER PL
Keaahala
ALINA PL
HALLIDAY PL
LILIPUNA PL
SEABURY PL
Makani Kai
Marina Association
Waikapoki
MAHALANI CIR
PUULOKO PL
KONOHIKI ST
MEHEANU PL
MEHEANU LP
HAUNANI PL
MOLOLANI PL
WAILELE RD
WILLIAM HENRY RD
WAIKAPOKI RD
KAILIWAI PL
IAKOPO PL
MAKA ST
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MAKALEHA ST
MAKAHIO ST
MAKAMAE ST
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TOWNSCAPE INC
For: City & County of Honolulu
Date: October 2016
KAHANAHOU WASTEWATER PUMP STATION
AND SEWER MAIN UPGRADES
DRAFT ENVIRONMENTAL ASSESSMENT
Figure 8 Alternative Routes

5. RELATIONSHIP TO FEDERAL, STATE, AND COUNTY PLANS AND POLICIES

5.1 HAWAII STATE PLAN

The Hawaii State Plan, Chapter 226 of the Hawaii Revised Statutes (HRS), serves as a guide for the future long-range development of the State. The Plan, first adopted in 1978, identifies the goals, objectives, policies, and priorities for the State. The proposed project is in compliance with and directly supports multiple objectives and policies of the Plan by decreasing the risk of sewage spills and protecting environmental and cultural resources. The most relevant sections of the Plan in relationship to the proposed project are listed below:

- §226-13 Objectives and policies for the physical environment—land, air, and water quality.
  (a)(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.

  (b)(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.

- §226-14 Objective and policies for facility systems—in general.
  (a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

  (b) To achieve the general facility systems objective, it shall be the policy of this State to:

  (1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

  (2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

  (3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.

  (4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.

- §226-15 Objectives and policies for facility systems—solid and liquid wastes.
  (a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:

(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.

(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.

(b) To achieve solid and liquid waste objectives, it shall be the policy of this State to:

(1) Encourage the adequate development of sewerage facilities that complement planned growth.

5.2 STATE LAND USE LAW, CONSERVATION DISTRICT USE PERMIT

The State Land Use Law, HRS Chapter 205, established the State Land Use Commission, which classifies all lands within the state into four land use districts: Urban, Rural, Agricultural and Conservation. The project area is within the Urban District; therefore a Conservation District Use Permit is not required.

5.3 STATE HISTORIC AND CULTURAL SITE REVIEW

Cultural Surveys Hawaii completed a LRFI report in 2014 and submitted it to SHPD for review and comment. Based on the LRFI submitted in 2014, SHPD issued a determination of "no historic properties affected with archaeological monitoring." The LRFI was later revised in August 2016 to reflect a new alignment for the sewer line improvements. Similar to the previous findings from the LRFI in 2014, the revised LRFI does not anticipate the need for an AIS; however, an archaeological monitoring program is recommended as an historic preservation mitigation measure. A draft archaeological monitoring plan has been submitted and is being reviewed by SHPD. Information regarding review of historic sites is presented in Section 3.9 of this Environmental Assessment.

5.4 HAWAII COASTAL ZONE MANAGEMENT PROGRAM

The Hawaii Coastal Zone Management (CZM) Program was enacted in 1977 by Chapter 205A of the Hawaii Revised Statutes. This program was created to coordinate federal, state and county agency efforts in the comprehensive management of Hawaii's coastal resources. The Hawaii CZM Program is administered by the State Office of Planning. The four individual counties are responsible for administering the CZM program locally through the SMA permit and Shoreline Setback Variance.

5.4.1 Special Management Area Permit

SMA permits are administered by the City Department of Planning and Permitting (DPP). Portions of the proposed project area are within the SMA boundary. The SMA permit does not regulate "installation of underground utility lines and appurtenant aboveground fixtures less than

four feet in height along existing corridors", unless the "cumulative impact of which may have significant environmental or ecological effect on the special management area…" (Land Use Ordinance Chapter 25, Section 1.3[2][M]). DPP confirmed that most of the project is exempt from SMA requirements pursuant to Exemption Class #2 (Item 8) of the Department of Environmental Services Comprehensive Exemption List (See Appendix E). However, construction of the new generator building triggers the need for a SMA Major Permit (SMP).

5.4.2 Shoreline Setback Variance

HRS 12-222 defines the shoreline as "the upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth." A small portion of the project area along Ka Hanahou Place near the Kahanahou WWPS is within the shoreline setback area. Any proposed construction within the shoreline setback requires review and granting of a variance. In accordance with Land Use Ordinance (LUO) Section 23-1.8(b)(2), the Director may grant a variance if the proposed construction meets the Public Interest Standard:

> *A variance may be granted for an activity or structure which is undertaken by a public agency or by a public utility regulated under HRS Chapter 269…; provided that the proposal is the practicable alternative which best conforms to the purpose of this chapter and the shoreline setback rules. Public interest shall mean principally of benefit to the general public, as determined by the director.*

A joint SMP and Shoreline Setback Variance (SSV) Master Application was submitted to the City DPP Land Use Permits Division on December 16, 2016. In order to meet the Consent Decree deadline, DPP has granted concurrent processing of the EA, SMP, and SSV (See Appendix F).

5.5 CITY AND COUNTY OF HONOLULU GENERAL PLAN

The General Plan sets forth the long-range objectives and policies for the general welfare and prosperity of the people of Oahu. The proposed project is in compliance with the applicable objectives and policies, which are listed below:

Transportation and Utilities

- Objective B: To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal.
  - Policy 5: Provide safe, efficient, and environmentally sensitive waste-collection and waste disposal services.
- Objective C: To maintain a high level of service for all utilities.

- Policy 2: Provide improvements to utilities in existing neighborhoods to reduce substandard conditions.
- Policy 3: Plan for the timely and orderly expansion of utility systems.

- Objective D: To maintain transportation and utility systems which will help Oahu continue to be a desirable place to live and visit.
  - Policy 1: Give primary emphasis in the capital improvement program to the maintenance and improvement of existing roads and utilities.

5.6 KOOLAU POKO SUSTAINABLE COMMUNITIES PLAN

Oahu is divided into eight planning areas, each of which has a Development Plan or Sustainable Communities Plan adopted by City Council ordinance. The Koolau Poko Sustainable Communities Plan dated August 2000 designates the project area as *low density residential land use*, projected to have limited future population growth. The proposed Kahanahou WWPS upgrades are consistent with maintaining a low-density residential neighborhood in that it is designed to accommodate only a moderate increase in population and it does not oversize its capacity.

The following section describes how this Project will address wastewater management policies identified in the Koolau Poko Sustainable Communities Plan:

- **Direct all wastewater produced within the Community Growth Boundary to municipal or military sewer service systems.**

  The Kahanahou WWPS project is a part of the City sewer system. The upgrades are meant to protect against sanitary sewer overflows, improving the performance of the municipal system.

- **Treat and recycle, where feasible, wastewater effluent as a water conservation measure.**

  The purpose of this project is to improve the transmission of wastewater to the Kailua WWTP, and does not address the treatment of wastewater. It does not preclude wastewater recycling as an option at the treatment plant.

- **Mitigate visual, noise, and odor impacts associated with wastewater collection and treatment systems, especially when they are located adjacent to residential designated areas.**

  The pump station and emergency generator building will be equipped with sound reducing materials, including solid walls and acoustical rated metal doors, to decrease equipment noise transmission to the neighborhood. Exterior light fixtures for the pump station and the new generator building will use effective light shields to shine the lighting downwards to minimize light pollution.

- **Use reclaimed water for irrigation and other uses, where feasible, in accordance with the Guidelines for the Treatment and Use of Recycled Water (May 15, 2002) by the State Department of Health and the No Pass Line established by the Board of Water Supply.**

  The purpose of this project is to improve the transmission of wastewater to the Kailua WWTP, and does not address the treatment of wastewater. It does not preclude wastewater recycling as an option at the treatment plant.

5.7 KANEOHE BAY MASTER PLAN

Pursuant to Act 208, Session Laws of Hawaii 1990, the Legislature established the Kaneohe Bay Master Planning Task Force to develop a comprehensive master plan for Kaneohe Bay (KBMPTF, 1992). The Kaneohe Bay Master Plan (KBMP) was developed through extensive public participation with the assistance of a Kaneohe fisherman, a commercial recreation businessperson, representatives from neighborhood boards and State agencies, as well as non-voting representatives of the KMCAS and the City and County of Honolulu.

In their development of the Master Plan, the Task Force stated the following land use positions that impact the proposed project:

1. Mitigate deteriorating water quality in key watersheds by installing pollution prevention measures.
2. Restrict development in the watershed in accordance with the Koolau Poko Development Plan. Limit development where a sewage collection system does not exist, and restrict use of septic individual waste water systems to residential lots with sufficient size (15,000 square feet or more) for proper disposal.
3. Delay northward extension of the sewage collection system until existing infrastructure deficiencies are rectified. Repair and upgrade the existing sewage collection system to prevent by-passes of raw or partially treated sewage effluent into the Bay and to prevent sewage infiltration through groundwater to the Bay.

The planned improvements to the Kahanahou WWPS and sewer main respond to the above objectives and policies of the Master Plan. The project will help prevent sewage from leaking into surface waters and Kaneohe Bay, thus maintaining water quality and addressing deficiencies in the existing sewage collection system. Undeveloped areas will be able to connect to the Kahanahou tributary eliminating the need for individual wastewater systems.

5.8 FLOOD DISTRICT REGULATIONS

The project is located within FEMA Flood Zone X, outside of the 500-year floodplain. The National Flood Insurance Program, administered by the State Department of Land and Natural Resources Engineering Division, does not regulate developments within Zone X. A section of the force main passes through the tsunami evacuation zone where it passes nearest to Kaneohe Bay; however, the new force main will be installed underground and will therefore be protected where it is located within the tsunami evacuation zone.

5.9 SPECIAL DISTRICTS

The project is not located within any special district as identified in Chapter 21, Article 9 Special District Regulation of the Revised Ordinances of Honolulu: Hawaii Capitol, Diamond Head, Punchbowl, Chinatown, Thomas Square/Honolulu Academy of Arts, Waikiki, and Haleiwa.

5.10 KANEOHE TOWN PLAN (2009)

The Kaneohe Town Plan (2009) planning area includes the neighborhood where the Kahanahou WWPS and force main replacement is proposed. However, the Plan focuses on five areas that exclude the Kahanahou project area: Windward Mall, the Civic Center Neighborhood Park, Windward City Shopping Center, Windward Community College, and the Bay View Golf Course. The vision articulated by this plan is:

"The Kaneohe Town Center is a gathering place that is accessible,
conveniently located, safe, and open to all.
It captures and reflects the beauty of Kaneohe and the surrounding
Koolau Mountains and Kaneohe Bay.
It is both a resource and a place of diverse services and activities for residents and visitors,
and attracts a wide range of people that range in age from the very young to the elderly.
It incorporates the distinctive community culture (i.e. caring, local, small scale, friendly)
and strengthens the spirit of aloha that is Kaneohe."

The Kahanahou WWPS Upgrade and Sewer Improvements will help to protect the beauty of Kaneohe by protecting against sewer overflows and should not negatively impact the vision for Kaneohe as expressed by the Kaneohe Town Plan. The Kaneohe Town Plan had no other specific proposals for the project area or its immediate vicinity.

5.11 CITY AND COUNTY OF HONOLULU ZONING

The Kahanahou WWPS and the existing sewer main are located in the City and County of Honolulu residential district R-10. Portions of the proposed force and gravity main pass through residential district R-5 and R-7.5. The proposed improvements to the Kahanahou WWPS and sewer main are part of a project constituting "public use" under the City and County of Honolulu

LUO, which may occur in any zoning district. The proposed aboveground storage tank will fall within the 30-foot front yard setback requirement; therefore, a Zoning Waiver for front yard setback will be applied for with the City DPP Land Use Permits Division.

6. SPECIAL MANAGEMENT AREA PERMIT AND SHORELINE SETBACK VARIANCE ASSESSMENT APPLICATION

6.1 GENERAL DESCRIPTION

6.1.1 Proposed Project

The City DDC proposes to upgrade the pump capacity of the existing WWPS, construct a new generator building and an aboveground storage tank, conduct other miscellaneous improvements within and around TMK 4-5-047: 095, and upgrade the sewer lines from the WWPS.

The proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements will increase the capacity of the Kahanahou WWPS to meet future projected peak flow rates and increase its reliability. Additionally, the force and gravity main upgrades will increase the capacity to accommodate the projected peak flows and will also redirect wastewater straight towards the Kaneohe Wastewater Preliminary Treatment Facility and away from Waikapoki, thus alleviating the magnitude of upgrade required for the Waikapoki WWPS. See Section 2 for more detailed project description.

6.1.2 Relationship of parcel to Special Management Area and Shoreline Setback

The section of the proposed project that is located within the SMA consists of the Kahanahou WWPS upgrades (within TMK 4-5-047: 095) and sewer improvements along Ka Hanahou Place (refer to Figure 9).

A section of the force main that exits the Kahanahou WWPS and runs along Ka Hanahou Place lies within the Shoreline Setback area. A shoreline setback map was completed and submitted to the City for the certification waiver (see Figure 10). In a comment letter dated December 19, 2016, the City DPP waived the requirement of a certified shoreline survey for this Project (Appendix G).

6.1.3 Land Use Approvals

See Section 7 for a list of land use permits and approvals required for this project.

6.2 TECHNICAL CHARACTERISTICS

6.2.1 Use Characteristics

A new emergency generator building is proposed for construction at the front of the property to house a new diesel fueled generator to replace the existing propane fueled unit. This diesel generator has a larger capacity than the existing propane system, which is needed to accommodate the larger 85 HP pump motors. The new emergency generator building will be 350 square feet (SF) in size to accommodate the new generator and minimum work clearances in front of the electrical panel boxes that are required by code. A new 1,000 gallon fuel storage tank will be needed to power this generator with diesel fuel. An AST will be installed, as it is preferred by the City's CSM Division due to reduced risks of leaks and groundwater contamination, lower costs, and permitting requirements. Also, a new meter vault will be installed to provide a space for flow meter access and to allow operators to direct pump station discharge to either the existing force main or the new force main.

6.2.2 Physical Characteristics

Figure 2 provides a site plan of proposed improvements for Kahanahou WWPS.

6.2.3 Construction Characteristics

The general construction sequence for the project is as follows:

1. New force main work will be completed without connection to the pump station.

2. Temporary bypass piping and pumps will be installed while connections are made to the new sewer line.

3. New emergency generator building will be constructed and pump station upgrades will then be completed.

4. New force main will be connected and new pumps will be started.

5. Temporary systems will be shut off and removed.

The proposed generator building materials and finishes would complement and/or match the existing pump station building, including CMU concrete block walls, metal doors and frames, stainless steel louvers, screened openings and a low sloping concrete roof to match the pump station roof slope. Selected CMU walls, doors and louvers would be acoustically treated to minimize noise impacts.

KAHANAHOU WASTEWATER PUMP STATION AND SEWER MAIN UPGRADES DRAFT ENVIRONMENTAL ASSESSMENT

Figure 9 Special Management Area

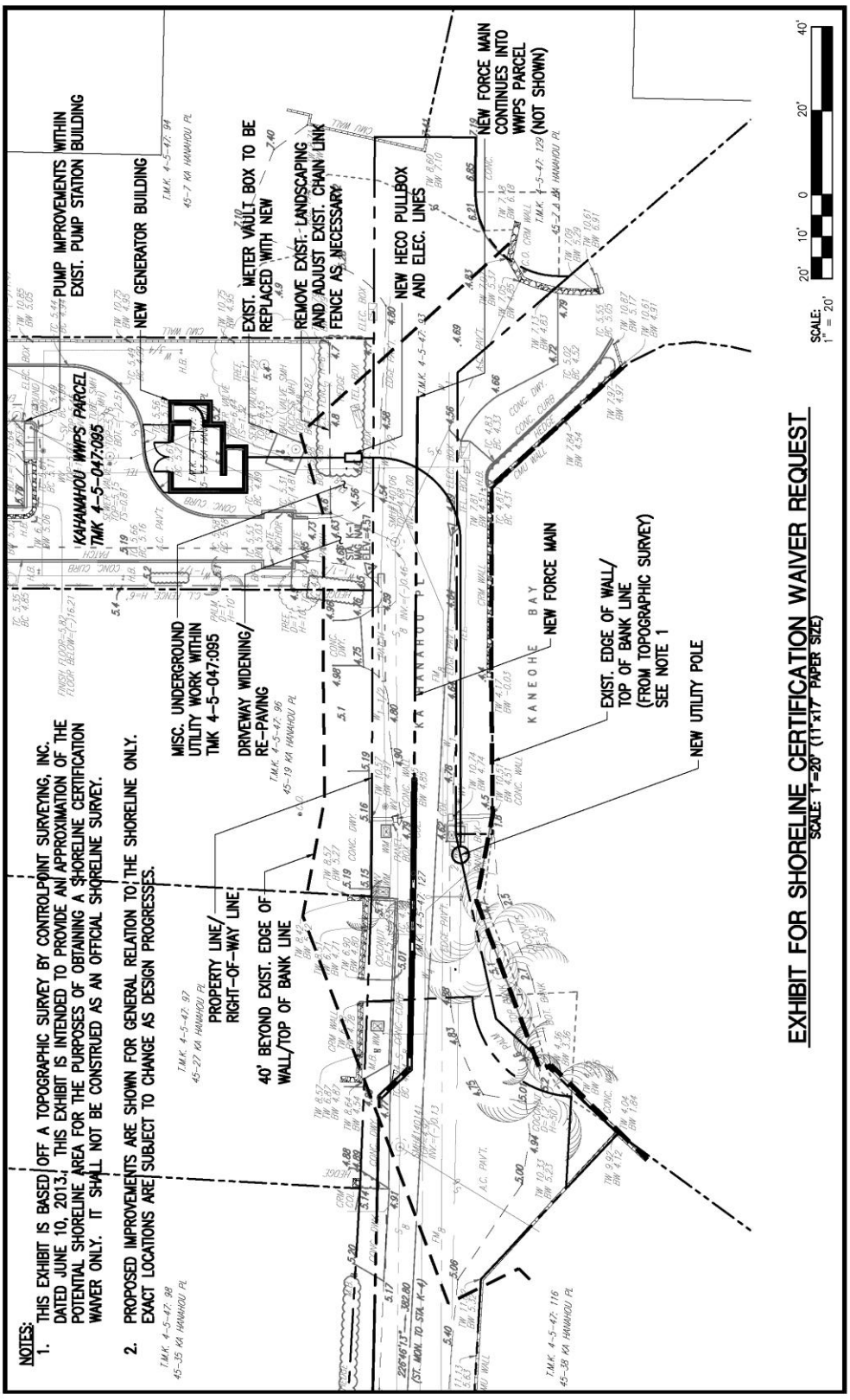


Figure 10 Exhibit for Shoreline Certification Waiver Request

6.2.4 Utility Requirements

Potable water is provided to the Kahanahou WWPS by the Honolulu BWS water line on Ka Hanahou Place. Daily water usage consists of sanitary fixtures, landscape irrigation, washdown and other maintenance purposes. Additional water is needed on an intermittent basis for wet well cleaning and maintenance of the odor control system.

Electrical power is provided to the Kahanahou WWPS by HECO overhead service lines along Ka Hanahou Place and Ka Hanahou Circle. To accommodate the new 3-phase electrical system, underground duct lines will be routed from an existing utility pole on Lilipuna Road to Ka Hanahou Circle and Ka Hanahou Place to service the WWPS. New manholes will be installed along the route and a new transformer will be placed on the WWPS site. In the event of a commercial power outage, the new emergency generator will start and essential loads automatically transfer to emergency power.

6.2.5 Liquid Waste Disposal

There will not be a need for liquid waste disposal, as no waste will be generated.

6.2.6 Solid Waste Disposal

Solid waste from the project area will consist of construction related debris and will be collected by private contractors. There will not be a need for solid waste disposal in the long-term, as no solid waste will be generated.

6.2.7 Access to Site

The WWPS is located on TMK 4-5-047: 095. It is accessible via Ka Hanahou Place, a private access road, which contains an existing City easement. Sewer improvements are located on City-owned roads.

6.3 ECONOMIC AND SOCIAL CHARACTERISTICS

The estimated construction cost for the sewer main improvements is $6.5 million; the estimated construction cost for the WWPS upgrade is $3.6 million. These estimates are for budgetary and preliminary engineering report purposes only, and will be refined during final design. Funding for the project will be provided by the City. Construction is projected to commence in June 2017. The project is estimated to be completed within two years.

As mentioned in Section 5.6, the Koolaupoko Sustainable Communities Plan designates the area in the vicinity of the planned Kahanahou WWPS upgrade project as a low density residential area with a modest projected population growth. The proposed sewer force main and

pump station upgrades will accommodate projected wastewater flows for the current year conditions through the design year 2030, and the anticipated economic life of 15 to 20 years for the electrical equipment. This will provide adequate infrastructure to support the expected population growth in Kaneohe but is not expected to promote growth beyond the modest levels recognized in the Koolaupoko Sustainable Communities Plan (2000), as the increase in WWPS capacity is intended to accommodate the peak wet weather flow due to storm events, and not for the purposes of additional development. Additionally, this neighborhood is already built-out and not expected to incur any more significant development. Overall, this project is expected to benefit the community by minimizing future public health and environmental hazards. It will benefit the City, and thereby taxpayers, via reduced operating costs and by reducing the risk of legal actions and fines against the City for further Clean Water Act violations. The project will also provide employment for contractors and thereby benefit material suppliers and others in the construction industry.

6.4 ENVIRONMENTAL CHARACTERISTICS

6.4.1 Soils

The project area is located on four soil types designated by the U.S. Department of Agriculture Soil Survey of 1972; however, the Kahanahou Wastewater Pump Station and most of the existing sewer main to be replaced are located on “Fill land, mixed (FL)”; areas filled with material dredged from the ocean or hauled from nearby areas, or garbage and general material from other sources.

6.4.2 Topography

The ground topography at the WWPS is generally flat, while the existing ground topography along the proposed sewer main alignment varies from roughly 4.6 feet to 105 feet in elevation. The beginning of the proposed force main at the Kahanahou WWPS is the low point of the line (elevation 4.6 feet). The existing ground generally slopes upward to a high point near the intersection of Lilipuna Road and Wailele Road (elevation 105 feet); the sewer main alignment then ends along Makahio Street at about elevation 64.6 feet.

6.4.3 Surface Runoff, Drainage, and Erosion Hazard

Minimal erosion hazard is anticipated from the WWPS site as the topography is relatively flat. No adverse impacts on surface or ground water quality are anticipated. BMPs will be used during the construction process to avoid dewatering effluent and construction debris from causing runoff problems. Excavated material will be hauled off-site to a site selected by the contractor. If suitable, the excavated material can be used to backfill the trenches. Excavated material will not be discharged into coastal waters. Specific BMPs that will be applied for this

project will be determined during the detailed design phase and are not yet available, but may be reviewed during the permit application process. Generally, measures from the City's Storm Water Best Management Practice Manual, dated November 2011, will be implemented, where appropriate.

6.4.4 Federal FIRM Zone, Land Use Ordinance Flood Hazard District, Other Geological Hazards

The Kahanahou WWPS and a majority of the sewer force/gravity main alignment are in the FEMA DFIRM Zone X (outside the 500-year floodplain). The Kahanahou WWPS is outside of the tsunami evacuation zone.

6.5 AFFECTED ENVIRONMENT

This section discusses both the affected environment and the proposed project's impacts to the various resources.

A. A brief description of subject site in relation to surrounding area and the description of surrounding area.

The Kahanahou WWPS upgrades are located in a residential area in Kaneohe, Oahu. The Kahanahou WWPS is located within a 7,893 square foot parcel in close proximity to Kaneohe Bay; the parcel is bordered on three sides by residential properties and access to the parcel is provided via Ka Hanahou Place, a private access road.

The Koolau Poko Sustainable Communities Plan dated August 2000 designates the project area as *low density residential land use*, projected to have limited future population growth. The proposed Kahanahou WWPS upgrades are consistent with maintaining a low-density residential neighborhood in that it is designed to accommodate only a moderate increase in population and it does not oversize its capacity.

The proposed improvements to the Kahanahou WWPS and sewer mains are part of a project constituting "public use" under the City and County of Honolulu LUO, which may occur in any zoning district. The proposed AST will fall within the 30-foot front yard setback requirement. A zoning waiver will be obtained from the City.

B. Project site in relation to publicly owned or used beaches, parks and recreation areas; rare, threatened, or endangered species and their habitats; wildlife and wildlife preserves; wetlands, lagoons, tidal lands and submerged lands; fisheries and fishing grounds; other coastal/natural resources.

Kaneohe Bay is within the vicinity of the project site, but it is not anticipated to be impacted by the proposed project. Vegetation in and around the immediate vicinity of the project corridor consists mainly of residential and roadway landscaping. The State GIS vegetation maps show that little to no Federal or State listed or candidate threatened or endangered plant or animal species are currently found within the project area. Wildlife in the project area is limited to mammals and birds which have adapted to the urban environment. Estuarine and Marine Deepwater wetlands exist in the vicinity of the project area, extending along the shoreline and up Keaahala Stream; however, no impacts on wetlands are anticipated as the WWPS and proposed sewer main improvements do not pass through any wetlands.

C. Relation to historic, cultural, and archaeological resources.

Only one historic property was found close to the project site: the remnants of an old fishpond wall. This stacked stone wall is the relic of Kalokohanahou Fishpond, which will not be altered by the proposed project. Due to the serpentine nature of the proposed shoreline work and the extensive land modifications that have taken place in modern times, the likelihood of intact cultural deposits being present in the project area is very low. Archaeological monitoring is recommended during construction. The City will comply with recommendations and requirements of the SHPD regarding protection of historic properties. A draft archaeological monitoring plan has been submitted to SHPD for review.

D. Coastal views from surrounding public viewpoints and from the nearest coastal highway across the site to the ocean or to coastal landform.

The coastal views from surrounding public viewpoints will not be adversely affected because the new generator building for the WWPS will be in the vicinity of the existing structures. The generator building will be 350 square feet (SF) in size. Sewer mains will be located underground and will therefore not impact coastal views.

E. Quality of receiving waters and ground water (including potable water) resources. Describe effects on the groundwater recharge cycle within the groundwater control area, show existing and proposed well locations with pumping estimates. Describe effects on receiving waters—streams and ocean waters.

No adverse impacts on surface or ground water quality are anticipated. The proposed project will reduce the risk of wastewater spills by increasing the pump capacity of the Kahanahou WWPS, the capacities of the force main and gravity main delivering wastewater to the Kaneohe Preliminary Treatment Facility, thereby decreasing the risk of spills and groundwater contamination. The long term impacts of the proposed improvements will be beneficial to near shore water quality and marine habitat.

BMPs will be used during the construction process to avoid dewatering effluent and construction debris from causing runoff problems. Excavated material will be hauled off-site to a location selected by the Contractor. If suitable, the excavated material can be used to backfill the trenches. Excavated material will not be discharged into coastal waters.

The AST to store diesel for the emergency generator will meet the NFPA's definition of being a protected aboveground tank, which means that it will have integral secondary containment, a thermal insulation that has been evaluated for resistance to physical damage and for limiting the heat transferred to the primary tank when exposed to a hydrocarbon pool fire, and will comply with American National Standards Institute/UL 2085 (Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids), or an equivalent test procedure.

Prior to construction, compliance with State water quality requirements will be sought. Construction dewatering and storm water permits will be obtained from the City and the State DOH pursuant to City Ordinance and Section 11-55 of the Hawaii Administrative Rules.

As part of the anticipated NPDES Permit, water quality sampling and analyses will be undertaken for potential contaminants which may be anticipated. An effluent discharge control plan will be prepared incorporating BMPs, appropriate structural or non-structural mitigative measures such as containment berms and filtration or detention ponds which would control the discharge of stormwater runoff and effluent resulting from construction activities. Specific BMPs will be determined during the detailed design phase.

6.6 PROJECT IMPACTS

The objectives of the Hawaii Coastal Zone Management Program, as set forth in Chapter 205A, Hawaii Revised Statutes, apply to the protection of valuable coastal resources. Proposed improvements for the Kahanahou WWPS are consistent with the CZM objectives as described in this section.

A. Recreational Resources

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

Discussion: The WWPS upgrades and sewer line improvements will not generate additional demands on existing public parks and beach areas. It will not restrict access to or adversely affect the existing coastal recreation resources or their uses by the public. Increasing the capacity and reliability of the WWPS and sewer lines will reduce the risk of wastewater spills, thus protecting coastal recreational opportunities.

B. 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.*

Discussion: The Kahanahou WWPS is built on a historic fishpond that was filled in decades ago. The remnants of Kalokohanahou Fishpond are still present, but will not be altered by the proposed force main and any work on the WWPS itself is not anticipated to disturb any archaeological features. Due to the serpentine nature of the proposed sewer line work and the extensive land modifications that have taken place in modern times, the likelihood of intact cultural deposits being present in the project area is very low. However, an archaeological monitoring program will be implemented as part of subsurface excavation and for construction activities greater than 12 inches deep. This will identify and protect any potential cultural deposits and/or burials that may be present. If subsurface archaeological materials are encountered during construction, work shall cease in the immediate area and the SHPD will be notified.

C. Scenic and Open Space Resources

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

Discussion: Scenic views will not be adversely impacted by the construction of the new generator building and AST. The proposed generator building will be built completely within the existing WWPS parcel and building materials and finishes would complement and/or match the existing pump station building, including CMU concrete block walls, metal doors and frames, stainless steel louvers, screened openings and a low sloping concrete roof to match the pump station roof slope. Sewer lines will be located underground and will therefore not impact scenic and open space resources.

D. Coastal Ecosystems

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

Discussion: The proposed project will reduce the risk of wastewater spills by increasing both the pump capacity of the Kahanahou WWPS and the capacities of the force and gravity mains delivering wastewater to the Kaneohe Preliminary Treatment Facility, thereby decreasing the risk of spills and groundwater contamination. The long term impacts of the proposed improvements will be beneficial to near shore water quality and marine habitat; therefore, protecting the coastal ecosystems.

Appropriate BMPs and erosion control measures will be implemented to ensure that coastal ecosystems are not adversely impacted as a result of construction activities.

E. Economic Uses

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

Discussion: Overall, this project will benefit the City, and thereby taxpayers, via reduced operating costs and by reducing the risk of legal actions and fines against the City for further Clean Water Act violations. The project will also provide employment for contractors and thereby benefit material suppliers and others in the construction industry.

F. Coastal Hazards

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

Discussion: The proposed new generator building and AST will be located within the FEMA DFIRM Zone X (outside the 500-year floodplain) and outside of the tsunami evacuation zone. A section of the force main passes through the tsunami evacuation zone where it passes nearest to Kaneohe Bay; however, the new force main will be installed underground and will therefore be protected where it is located within the tsunami evacuation zone. If "no action" is taken, there will be possible future environmental and public health impacts as the aging sewer system has a history of leak problems. The City is also legally required by the Consent Decree with the EPA to upgrade the WWPS and sewer mains.

G. Managing Development

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

Discussion: The proposed project will not adversely affect the intensity of land uses. State and City permits and approvals required by the proposed project include provisions for public participation and ensure protection of coastal resources.

H. Public Participation

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

Discussion: State and City permits and approvals required by the proposed project include provisions for public participation and ensure protection of coastal resources. This EA is published in the Office of Environmental Quality Control's Environmental Notice, whereby public agencies and the general public are provided an opportunity to comment.

I. Beach Participation

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

Discussion: Construction of the new generator building and AST will not adversely impact beaches for public use and recreation. Appropriate BMPs and erosion control measures will be implemented to ensure that coastal ecosystems and recreational opportunities are not adversely impacted by construction activities.

J. Marine Resources

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

Discussion: The proposed project is not anticipated to affect marine resources. The long term impacts of the proposed project will be beneficial to near shore water quality and marine habitat. A small portion of the project area along Ka Hanahou Place near the Kahanahou WWPS is within the shoreline setback area. Any proposed construction within the shoreline setback requires review and granting of a variance. In accordance with LUO Section 23-1.8(b)(2), the Director may grant a variance if the proposed construction meets the Public Interest Standard:

> *A variance may be granted for an activity or structure which is undertaken by a public agency or by a public utility regulated under HRS Chapter 269…; provided that the proposal is the practicable alternative which best conforms to the purpose of this chapter and the shoreline setback rules. Public interest shall mean principally of benefit to the general public, as determined by the director.*

A Shoreline Setback Variance will be applied for with the City DPP Land Use Permits Division.

ROH Chapter 25-3.2 provides review guidelines for developments proposed in the SMA.
a) All development in the special management area shall be subject to reasonable terms and conditions set by the council to ensure that:

1. Adequate public access, by dedication or other means, to publicly owned or used beaches, recreation areas and natural reserves is provided to the extent consistent with sound conservation principles;

The proposed project will not adversely affect access to publicly owned beaches, recreation areas, and natural reserves. Improvements for Kahanahou WWPS will not generate additional demands on existing public parks and beach areas.

2. Adequate and properly located public recreation areas and wildlife preserves are reserved;

The proposed project will not adversely affect public recreation areas or wildlife preserves.

3. Provisions are made for solid and liquid waste treatment, disposition and management which will minimize adverse effects upon special management area resources; and

The proposed project will reduce the risk of wastewater spills by increasing the pump capacity of the Kahanahou WWPS and the capacities of the force main and gravity main delivering wastewater to the Kaneohe Preliminary Treatment Facility, thereby decreasing the risk of spills and groundwater contamination. Proper containment, treatment, and disposal methods for solid and liquid waste will be followed during construction in accordance with Federal, State, and local regulations.

4. Alterations to existing land forms and vegetation; except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation or failure in the event of earthquake.

The proposed project will not adversely impact surface or ground water quality. It will reduce the risk of wastewater spills by increasing the pump

capacity of the Kahanahou WWPS and the capacities of the force main and gravity main delivering wastewater to the Kaneohe Preliminary Treatment Facility, thereby decreasing the risk of spills and groundwater contamination. The long term impacts of the proposed improvements will be beneficial to near shore water quality and marine habitat.

BMPs will be used during the construction process to avoid dewatering effluent and construction debris from causing runoff problems. Excavated material will be hauled off-site to a site selected by the Contractor. If suitable, the excavated material can be used to backfill the trenches. Excavated material will not be discharged into coastal waters. Specific BMPs that will be applied to this project will be determined during the detailed design phase and are not yet available, but may be reviewed during the permit application process. Generally, measures from the City's Storm Water Best Management Practice Manual, dated November 2011, will be implemented, where appropriate.

Prior to construction, compliance with State water quality requirements will be sought. Construction dewatering and storm water permits will be obtained from the City and the State DOH pursuant to City Ordinance and Section 11-55 of the Hawaii Administrative Rules.

As part of the anticipated NPDES Permit, water quality sampling and analyses will be undertaken for potential contaminants which may be anticipated. An effluent discharge control plan will be prepared incorporating BMPs, appropriate structural or non-structural mitigative measures such as containment berms and filtration or detention ponds which would control the discharge of stormwater runoff and effluent resulting from construction activities.

b. No development shall be approved unless the council has first found that:

1. The development will not have any substantial adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interest. Such adverse effect shall include, but not limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect and the elimination of planning options;

The proposed project will not adversely impact any environmental or ecological resources. There will not be any significant cumulative impacts from the proposed project; refer to Section 3.11 “Cumulative Impacts” for more information.

2. The development is consistent with the objectives and policies set forth in Section 25-3.1 and area guidelines contained in HRS Section 205A-26;

The proposed project is consistent with the objectives, policies, and guidelines set forth for SMAs, as described in this section.

3. The development is consistent with the county general plan, development plans and zoning. Such a finding of consistency does not preclude concurrent processing where a development plan amendment or zone change may also be required.

The proposed project is consistent with all plans and zoning.

c. The council shall seek to minimize, where reasonable:

1. Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;

The proposed project will not require any of the above activities within the SMA.

2. Any development which would reduce the size of any beach or other area usable for public recreation;

The proposed project will not reduce or impact any beaches or areas usable for public recreation.

3. Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management area and the mean high tide line where there is no beach;

The proposed project will not result in any reductions or restrictions on public access to tidal and submerged lands, beaches, portions of rivers and streams within the SMA and the mean high tide where there is no beach.

4. Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast, and

The proposed project will not substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast.

5. Any development which would adversely affect water quality, existing areas of open water free of visible structure, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.

The proposed project will not adversely affect water quality, existing areas of open water free of visible structure, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land. The proposed project will reduce the risk of wastewater spills by increasing the pump capacity of the Kahanahou WWPS and the capacities of the force main and gravity main delivering wastewater to the Kaneohe Preliminary Treatment Facility, thereby decreasing the risk of spills and groundwater contamination. The long term impacts of the proposed improvements will be beneficial to near shore water quality and marine habitat.

7. PERMITS AND APPROVALS

7.1 CITY AND COUNTY OF HONOLULU PERMITS

PERMIT	AGENCY
Special Management Area (SMA) Use Permit	Department of Planning and Permitting, Land Use Permits Division
Shoreline Setback Variance	Department of Planning and Permitting, Land Use Permits Division
Sewer Connection Application	Department of Planning and Permitting, Site Development Division
Trenching Permit	Department of Planning and Permitting , Site Development Division
Building Permit	Department of Planning and Permitting, Building Division
Grading and Grubbing Permit	Department of Planning and Permitting, Site Development Division
Street Usage Permit	Department of Transportation Services, Street Usage Section
Zoning Waiver for front yard setback	Department of Planning and Permitting, Land Use Permits Division
Application and Permit for Tank Installation	Honolulu Fire Department, Fire Prevention Bureau
Temporary Industrial Wastewater Discharge Permit	Department of Environmental Services, Division of Environmental Quality
Application for a Construction Dewatering Permit	Department of Planning and Permitting , Site Development Division
ROE for private parcel(s)	---

7.2 STATE OF HAWAII PERMITS

PERMIT	AGENCY
Chapter 6E, Hawaii Revised Statues Review – archaeological monitoring plan approval and archaeological inventory survey (if required)	Department of Land and Natural Resources, State Historic Preservation Division
HRS 103-50 Document Transmittal Form	Department of Health, Disability and Communication Access Board
Form 1 – Air Conditioning and Ventilation	Department of Health, Indoor and Radiological Health Branch
Community Noise Permit	Department of Health, Indoor and Radiological Health Branch
Community Noise Variance	Department of Health, Indoor and Radiological Health Branch
National Pollutant Discharge Elimination System permit	Department of Health, Clean Water Branch

8. DETERMINATION

Based on the analysis of information in this EA, it has been determined that the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements project will not have significant impacts to the natural, built, or social environment. Therefore, a Finding of No Significant Impact (FONSI) will be issued and an Environmental Impact Statement (EIS) will not be required.

8.1 FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The potential effects of the proposed project are evaluated based on the significance criteria identified in the Hawaii Administrative Rules, Section 11-200-12. The following is a summary of the potential effects of the project.

1. **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.**
   The project is not expected to involve an irrevocable commitment to loss or destruction of any natural or cultural resource. The project proposes to install a force main in areas that have been previously disturbed by utility lines, residential development, or road construction. Additional proposed work is to take place within an existing pump station facility and will not extend the footprint of the property. There are no known significant biological resources in the area and recommendations by the SHPD will be followed to protect cultural resources, should any be discovered during construction.

2. **Curtails the range of beneficial uses of the environment.**
   The project will not permanently curtail the beneficial uses of the environment. The proposed pipe replacement will be located underground, mostly within existing public roadways. Pump station upgrades will happen within an existing City property and facility.

3. **Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.**
   The project will be in conformance with Chapter 344, HRS. The proposed project will increase the capacity of the Kahanahou WWPS and force main and reduce the flow through the existing gravity main servicing the Waikapoki tributary area 1. This is anticipated to reduce the risk of future wastewater spills.

4. **Substantially affects the economic or social welfare of the community or state.**
   The project is not anticipated to have significant effects on the economic and social welfare of the community or state other than providing an improved wastewater system that would benefit the community it services.

5. **Substantially affects public health.**
   The project will improve WWPS and force main reliability and is not anticipated to have any adverse effects on public health. Rather, it will have a positive impact on public health by reducing the risk of future wastewater spills.

6. **Involves substantial secondary impacts, such as population changes or effects on public facilities.**
   The project is not anticipated to result in substantial secondary impacts. The project is designed only to prevent overflows and accommodate the modest population increase projected in the Koolaupoko Sustainable Communities Plan.

7. **Involves a substantial degradation of environmental quality.**
   The project is not anticipated to degrade environmental quality; it is anticipated to protect environmental quality by preventing sewer overflows. The project is intended to upgrade near-term flow rates in order to reduce the chances of overflow and bring the WWPS and sewer lines into compliance with the EPA consent decree, which mandates that the improvements be completed by 2020.

8. **Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**
   The project is not anticipated to result in cumulative effects or involve a commitment for larger actions. In fact, it will reduce the demands on another existing facility and will therefore help reduce the need for additional actions.

9. **Substantially affects a rare, threatened, or endangered species, or its habitat.**
   The project is not anticipated to affect any rare, threatened, or endangered species or habitat. There are no known significant biological resources in the project area.

10. **Detrimentally affects air or water quality or ambient noise levels.**
    The project is not anticipated to affect long term air quality, water quality, or ambient noise levels. The project may temporarily affect air, water, or noise quality during construction but BMPs will be implemented to minimize any impacts.

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 project is located within the SMA and a section of the proposed force main is within the Shoreline Setback Area. However, the force main will be located underground and is not anticipated to be impacted by a tsunami. Appropriate permits and variances will be obtained for the SMA and shoreline setback. Best management practices will be used

during construction to minimize any impacts on coastal waters. The WWPS is not located within the tsunami zone or Shoreline Setback Area.

12. **Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.**
    The project will not affect any scenic vistas or view planes identified in county or state plans or studies because most of the upgrades will be underground. Aboveground work will not change the height of the existing building or otherwise substantially affect viewplanes.

13. **Requires substantial energy consumption.**
    The project will not require substantial energy consumption. A slight increase in energy use will result from the proposed project and will be accommodated by the new three-phase electrical system.

9. REFERENCES

City and County of Honolulu, Department of Environmental Services. *Storm Water Best Management Practice Manual – Construction* (November 2011)

City and County of Honolulu, Department of Planning and Permitting. *Revised Ordinances of Honolulu (ROH) Chapter 21. Land Use Ordinance* (1990).

City and County of Honolulu. *Oahu General Plan* (2002).

City and County of Honolulu. *Koolau Poko Sustainable Communities Plan* (2000).

Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds. *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program. (2014).

Okahara and Associates, Inc. *Preliminary Engineering Report for Kahanahou Wastewater Pump Station Force Main Sewer Line Study* (October 2013).

State of Hawaii. *Hawaii Administrative Rules. Chapter 11-54 Water Quality Standards*. pp. 54-13. (October 2012)

State of Hawaii. *Hawaii Revised Statutes*.

State of Hawaii Department of Health, Clear Air Branch. *Annual Summary of the 2011 Hawaii Air Quality Data*. (2012)

State of Hawaii Office of Planning. *Geographic Information System Data Downloads* http://planning.hawaii.gov/gis/download-gis-data/. Accessed November 2013.

USACE Sea Level Change Curve Calculator Version 2015.46. http://www.corpsclimate.us/ccaceslcurves.cfm.

United States Department of Agriculture Soil Conservation Service. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. (1972).

Kahanahou Wastewater Pump Station and Sewer Main Upgrades
Kaneohe, Oahu

FINAL
ENVIRONMENTAL ASSESSMENT

APPENDICES

A Digital Flood Insurance Map (DFIRM) (Federal Emergency Management Agency, 2013)

B Pre-Environmental Assessment Consultation

C Letter from SHPD (December 2015)

D Draft Revised Literature Review and Field Inspection Report (LRFI) (Cultural Surveys Hawaii, Inc., August 2016)

E Special Management Area Determination Letter (DPP, March 2010)

F EA, SMA and SSV Concurrent Review (DPP, September 2016)

G Comments to the Draft Environmental Assessment and Responses

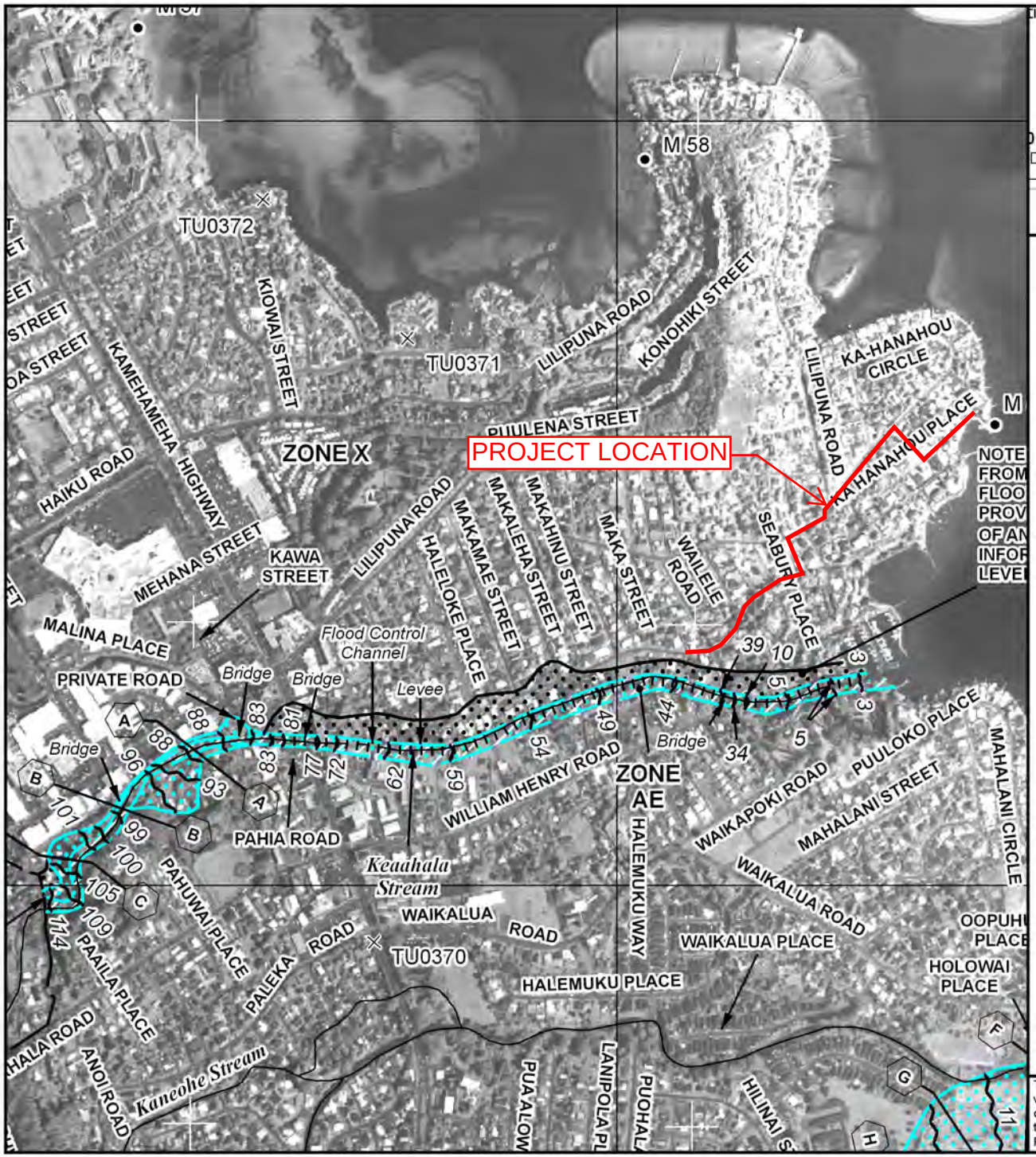
Prepared for:
CITY AND COUNTY OF HONOLULU
Department of Design and Construction
Wastewater Division

January 2017

Prepared by:
Townscape, Inc.

Appendix A

Digital Flood Insurance Map (Federal Emergency Management Agency, 2013)



tional Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

00 0 1000 2000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0270H

FIRM

FLOOD INSURANCE RATE MAP

CITY AND COUNTY OF HONOLULU, HAWAII

PANEL 270 OF 395

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HONOLULU, CITY AND COUNTY OF	150001	0270	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
15003C0270H

MAP REVISED
JANUARY 19, 2011

Federal Emergency Management Agency

Appendix B

Pre-Environmental Assessment Consultation

Kahanahou Wastewater Pump Station and Sewer Main Upgrades
Draft Environmental Assessment

APPENDIX B
Pre-Environmental Assessment Consultation

The following parties were contacted during the preparation of the Draft Environmental Assessment. Those identified with a check mark provided comments.

CITY AND COUNTY OF HONOLULU

Department of Environmental Services
Department of Facility Maintenance
Department of Planning and Permitting
Department of Transportation Services
Honolulu Board of Water Supply
Honolulu Fire Department
Honolulu Police Department
Neighborhood Board #30: Kaneohe
Honolulu City Council, District 3

STATE OF HAWAII

Department of Business, Economic Development & Tourism, Office of Planning
✓Department of Health, Environmental Management Division
Department of Land and Natural Resources
    Commission on Water Resource Management
    ✓Engineering Division
    Office of Conservation and Coastal Lands
State Historic Preservation Division
Department of Transportation, Highways Division
Office of Hawaiian Affairs
University of Hawaii at Manoa
    Environmental Center
    Water Resources Research Center
Hawaii State House of Representatives, District 48
Hawaii State Senate, District 24

UTILITY COMPANIES

Hawaii Gas
Hawaiian Electric Company
Hawaiian Telcom

Kahanahou Wastewater Pump Station and Sewer Main Upgrades
Draft Environmental Assessment

APPENDIX B (continued)
Pre-Environmental Assessment Consultation

The following parties were contacted during the preparation of the Draft Environmental Assessment. Those identified with a check mark provided comments:

PRIVATE LANDOWNERS

Makani Kai Marina townhouse complex
Affected landowners

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LINDA ROSEN, M.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

LUD-1 4 5 047 095-ID1736
Kahanahou WWPS initial Cons

May 23, 2014

Ms. Sherri Hiraoka, Senior Planner
Townscape, Inc.
Environmental and Community Planning
900 Fort Street Mall Suite 1160
Honolulu, Hawaii 96813

Dear Ms: Hiraoka:

Subject: Initial Consultation for the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades – start at TMK (1) 4-5-047: 095 / end at TMK (1) 4-5-002: 001
Kahanahou WWPS – Makani Kai Marina, Kaneohe, Hawaii 96744

We appreciate the opportunity to review the subject initial consultation information for the proposed project and have determined that we have no comments to offer at this time.

Should you have any questions, please contact Mr. Mark Tomomitsu of our branch at 586-4294.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj

c: Ms. Laura McIntyre, DOH-Environmental Planning Office (14-037)
Mr. George I. Atta, C&C of Honolulu, Dept. of Planning & Permitting 7th Floor

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Ms. Sina Pruder, P.E., Chief
Wastewater Branch
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Ms. Pruder:

Thank you for informing us that the Wastewater Branch has no comments on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades at this time. Should you have any questions in the future, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LINDA ROSEN, M.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:
EPO 14-087

May 16, 2014

Ms. Sherri Hiraoka, Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

SUBJECT: Initial Consultation for the Preparation of an Environmental Assessment for the Proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated May 8, 2014. Thank you for allowing us to review and comment on the subject document. The document was routed to the relevant Environmental Health divisions and offices. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/.
You are required to adhere to all applicable standard comments.

You may also wish to review the recently revised Water Quality Standards Maps that have been updated for all islands. The new Water Quality Standards Maps (2013) can be found at:
http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/

The EPO suggests that you examine the many sources available on strategies to support the sustainable and healthy design of communities and buildings, including the following sites:
State of Hawaii, Office of Planning: www.planning.hawaii.gov and the 2013 ORMP;
U.H., School of Ocean and Earth Science and Technology: www.soest.hawaii.edu;
U.S. Health and Human Services: www.hhs.gov/about/sustainability;
U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability; and
Intergovernmental Panel on Climate Change (IPCC):
http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap29_FGDall.pdf

The DOH encourages everyone to apply these sustainability strategies and principles early in the planning and review of projects. We also request that for future projects you consider conducting a Health Impact Assessment (HIA). More information is available at:
www.cdc.gov/healthyplaces/hia.htm; and
www.epa.gov/research/healthscience/health-impact-assessment.htm.

We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.

Mahalo,

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

c: Clean Water Branch, Wastewater Branch

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Ms. Laura McIntyre, AICP
Program Manager, Environmental Planning Office
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Ms. McIntyre:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. The project team has reviewed the DOH's Standard Comments and will address applicable comments during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

OFFICE OF PLANNING
STATE OF HAWAII

NEIL ABERCROMBIE
GOVERNOR

LEO R. ASUNCION
ACTING DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

Ref. No. P-14440

May 29, 2014

Ms. Sherri Hiraoka
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

Subject: Pre-Assessment Consultation Request for an Environmental Assessment for the Proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrade, Honolulu, Oahu, Hawaii; TMK: (1) 4-5-047:095; 4-5-057:15; 4-5-002:01

Thank you for the opportunity to provide comments on the Kahanahou Wastewater Pump Station Force Sewer Line Upgrades project. We have reviewed the documents you submitted to us by letter dated May 8, 2014, and have the following comments to offer:

1. The Office of Planning (OP) provides technical assistance to state and county agencies in administering the statewide planning system in Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Plan. The Hawaii State Plan provides goals, objectives, priorities, and priority guidelines for growth, development, and the allocation of state resources. In particular, the Draft Environmental Assessment (Draft EA) should address how this project meets the principles to promote sustainability, see HRS § 226-108. The Sustainability Guidelines can be viewed or downloaded from the OP website at http://files.hawaii.gov/dbedt/op/docs/OP_TAM_2013-12-03.pdf

2. OP is the lead agency for the Hawaii Coastal Zone Management (CZM) Program. The coastal zone management area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" see HRS § 205A-1 (definition of "coastal zone management area"). The Draft EA should include a discussion of the proposed project's ability to meet the objectives and policies set forth in HRS § 205A-2. These objectives and policies include: recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, and marine resources.

3. The Draft EA should include the Coastal Zone Management Act, HRS Chapter 205A, in a list of "relationships to land use plans, policies, and controls."

4. In the Draft EA, please provide a list of any Federal, State, or county permits required for this project. A listing of required permits will allow the Office of Planning to determine whether a Coastal Zone Management Federal Consistency evaluation is necessary for this project.

5. A portion of the proposed project may lie within the Special Management Area (SMA) delineated by City and County of Honolulu. Please confirm with the City and County of Honolulu's Department of Planning and Permitting to make a determination on where your project lies in relation to the SMA boundaries and if a SMA permit or Shoreline Setback variance is required.

6. Because of the frequent rainy weather patterns for Windward, Oahu, and the close proximity of the project to Kaneohe Bay, this project may have nonpoint pollution implications on coastal waters. Trenching work for the sewer line upgrades and/or grading and clearing work for the pump station may result in erosion and sediment loss and have a negative environmental impact. Please review the Hawaii Watershed Guidance, which provides a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impact. Specifically, please examine page 122 (Site Development Management Measure for urban runoff). The Watershed Guidance can be viewed or downloaded from the OP website at http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI Watershed Guidance Final.pdf

7. Please consider utilizing the OP's *Stormwater Impact Assessment* to identify and evaluate information on hydrology (i.e. proximity to drainage ways, stream channels, sensitive ecosystems in receiving waters), stressors (i.e. water quality and pollutants), sensitivity of resources (i.e. aquatic resources and riparian resources), and management considerations. This guidance document will assist in integrating stormwater impact assessment within your review process.

   The purpose of this document is to provide guidance on assessing stormwater impacts in the planning phase of project development. The goal is to provide a suggested framework and various tools for integrating stormwater impacts assessment. The Appendices include a list of Data Resources, Best Management Practice Techniques and a Reviewers Checklist. The *Stormwater Impact Assessment* guidance document can be found at http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf.

If you have any questions regarding this comment letter, please contact Josh Hekekia of our Hawaii CZM Program at 587-2845.

Sincerely,

Leo R. Asuncion
Acting Director

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Josh Hekekia
Hawaii CZM Program, Office of Planning
Dept. of Business, Economic Development & Tourism
State of Hawai'i
235 South Beretania Street, 6th Floor
Honolulu, HI 96804

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Hekekia:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. Your comments will be addressed either in the Draft Environmental Assessment or during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE SOUKI
FIRST DEPUTY DIRECTOR

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

ENGINEERING DIVISION
POST OFFICE BOX 373
HONOLULU, HAWAII 96809

MAY 2 2 2014

Ms. Sherri Hiraoka, Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

Initial Consultation for the Preparation of an Environmental Assessment for the Proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Thank you for the opportunity to provide comments on any issues that may be identified as important and addressed in the subject environmental assessment.

According to the Flood Insurance Rate Map (FIRM), the project site is located in Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X. A copy of the Flood Hazard Assessment Report, which contains the FIRM, is enclosed for your information and use.

Should you have any questions, please call Mr. Dennis Imada of my staff at 587-0257, or email him at dennis.t.imada@hawaii.gov.

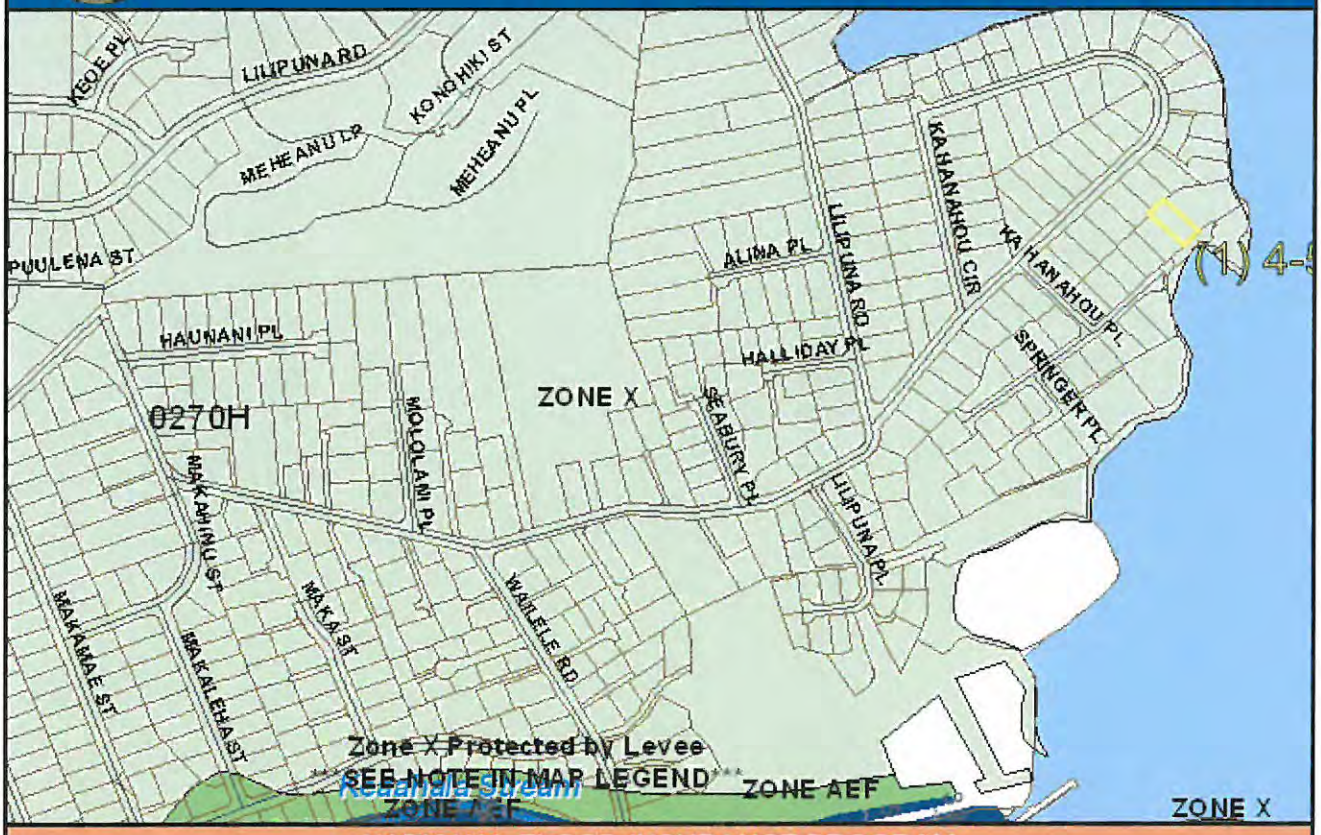
Sincerely,

CARTY S. CHANG
Chief Engineer

DI:et
Enclosure

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A:** No BFE determined.
- **Zone AE:** BFE determined.
- **Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY:	HONOLULU
TMK NO:	(1) 4-5-047-095
PARCEL ADDRESS:	45-13 KA HANAHOU PL KANEOHE, HI 96744
FIRM INDEX DATE:	JANUARY 19, 2011
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL(S):	15003C0270H
PANEL EFFECTIVE DATE:	JANUARY 19, 2011

PARCEL DATA FROM:	APRIL 2014
IMAGERY DATA FROM:	MAY 2006

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
City and County of Honolulu	
Mario Siu-Li, CFM	(808) 768-8098
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Dennis Imada
Engineering Division
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 373
Honolulu, HI 96809

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Imada:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. We understand that the proposed project is in Zone X on the Flood Insurance Rate Map, which the National Flood Insurance Program does not regulate. This will be noted in the Draft Environmental Assessment.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

NEIL ABERCROMBIE
GOVERNOR

FORD N. FUCHIGAMI
INTERIM DIRECTOR

Deputy Directors
RANDY GRUNE
AUDREY HIDANO
ROSS HIGASHI
JADINE URASAKI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
HWY-1920
HWY-PS 2.7310

June 3, 2014

Ms. Sherri Hiraoka
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

Subject: Consultation for Preparation of an Environmental Assessment
Kahanahou Wastewater Pumping Station and Force Main, Kaneohe, Oahu
TMK: (1) 4-5-047:095 (var. parcels)

Thank you for requesting our comments on the proposed improvement to the Kahanahou wastewater pumping station and installation of a new force main. The proposed project will take place in residential areas of Kaneohe in the general vicinity of the Makani Kai Marina.

The roads in this area are under the jurisdiction of the City and County of Honolulu. We have no comment on the proposed project.

If there are any questions, please contact Gary Ashikawa, Systems Planning Engineer, Highways Division, Planning Branch, at 587-6336. Please reference file review number 2014-098 in all contacts and correspondence regarding these comments.

Very truly yours,

Alvin A. Takeshita
Highways Administrator

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Gary Ashikawa
Systems Planning Engineer
Department of Transportation Highways Division
State of Hawai'i
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Ashikawa:

Thank you for informing us that the Department of Transportation has no comments on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades at this time. Should you have any questions in the future, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

Clean Water Branch
Standard Comments

October 22, 2013

Clean Water Branch

The Clean Water Branch (CWB) protects the public health of residents and tourists who enjoy playing in and around Hawaii's coastal and inland water resources. The CWB also protects and restores inland and coastal waters for marine life and wildlife. This is accomplished through statewide coastal water surveillance and watershed-based environmental management through a combination of permit issuance, monitoring, enforcement, sponsorship of polluted runoff control projects, and public education.

Permit Issuance

- Any project and its potential impacts to State waters must meet the State's:
  1) Antidegradation policy, which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected;
  2) Designated uses, as determined by the classification of the receiving State waters; and
  3) Water quality criteria [Hawaii Administrative Rules (HAR), Chapter 11-54].

- A Section 401 Water Quality Certification (WQC) is required:
  - If your project/activity requires a federal license or permit; and
  - May result in a discharge into State waters. The term "discharge" is defined in Clean Water Act, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations (CFR), Section 122.2; and HAR, Chapter 11-54.

  Typical federal license or permits that may trigger a Section 401 WQC include the Department of the Army permits (Tel: 808-438-9258), Federal Energy Regulatory Commission permits (Tel: 202-502-6088), and Environmental Protection Agency permits (Tel: 415-947-8000).

  To request a Section 401 WQC, you must complete and submit the Section 401 WQC application. This application is available on the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/View/home.aspx.

- National Pollutant Discharge Elimination System (NPDES) permit coverage is required for:
  - Storm water associated with construction activities for land disturbances of one (1) acre or more. Land disturbance includes, but is not limited to, clearing, grading, grubbing, excavation, demolition, uprooting of vegetation, equipment staging, and storage areas.

  - Storm water associated with industrial activities for facilities with Standard Industrial Classification Codes regulated in 40 CFR 122.26(b)(14)(i) through (ix) and (xi).

- Storm water and certain non-storm water from a small Municipal Separate Storm Sewer System.

- Discharges of water pollutants into State surface waters. Examples of these discharges include, but are not limited to, cooling water, hydrotesting waters, dewatering effluent, and process wastewater.

- Discharges from the application of pesticides (including insecticides, herbicides, fungicides, rodenticides, and various other substances to control pest) to State waters.

An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge or start of construction activities. To request an NPDES individual permit, you must complete and submit the NPDES individual permit application. This application is available on the e-Permitting Portal website located at:

https://eha-cloud.doh.hawaii.gov/epermit/View/home.aspx.

A Notice of Intent (NOI) for coverage under a specific NPDES general permit must be submitted at least 30 calendar days before the commencement of the discharge or start of construction activities. To request NPDES general permit coverage, you must complete and submit the NOI. The NOI is available on the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/View/home.aspx.

- According to State law, all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards.

Monitoring

- Effluent discharge and/or receiving water monitoring may be required as conditions of Section 401 Water Quality Certifications and NPDES General and Individual permits.

Enforcement

- Noncompliance with water quality requirements contained in HAR, Chapter 11-54 and/or permitting requirements specified in HAR, Chapter 11-55 may be subject to penalties of $25,000 per day per violation.

Polluted Runoff Control Projects

- Projects to address polluted runoff, identified in Watershed Based Plans, which meet EPA and State criteria, may qualify for federal grants administered by our office.

- At a minimum, grant funds must be matched 25% with match funding or in-kind contributions from non-federal sources and are subject to the requirements of EPA 40 CFR Chapter 1 (7-1-98 Edition), Section 31.24 Matching or Cost Sharing.

- Request for Proposals to solicit qualified projects for grant funding are issued on an annual basis and interested parties can request to be placed on a mailing list to receive a copy of the RFP when it is issued. The deadline for submittal of a proposal is usually one (1) month from the date of the RFP. For more information, please read our website at: http://health.hawaii.gov/cwb/.

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Alec Wong, P.E., Chief
Clean Water Branch
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Wong:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. The project team has reviewed the Clean Water Branch's Standard Comments (October 22, 2013) and will address them during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

KIRK CALDWELL
MAYOR

LOUIS M. KEALOHA
CHIEF

DAVE M. KAJIHIRO
MARIE A. McCAULEY
DEPUTY CHIEFS

OUR REFERENCE EO-WS

May 29, 2014

Dear Ms. Hiraoka:

This is in response to your letter dated May 8, 2014, requesting comments on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades project.

The Honolulu Police Department anticipates possible short-term impacts to neighborhood vehicular and pedestrian traffic during the construction phase of the project. The roadways that may be impacted are Springer Place, Ka Hanahou Place, Lilipuna Road, and Makahio Street.

We recommend that adequate personnel be hired to conduct traffic control. Additionally, we recommend that all necessary signs, lights, barricades, cones, and other safety equipment be installed and maintained by the contactor to facilitate the flow of vehicular and pedestrian traffic during certain phases of the construction. The contractor should give adequate notice to inform the public of any construction related road closures in the project area.

If there are any questions, please contact Major Ryan Borges of District 4 (Kaneohe/Kailua/Kahuku) at 723-8639 or via e-mail at rborges@honolulu.gov.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By Randal K. Macadangdang
RANDAL K. MACADANGDANG
Assistant Chief
Support Services Bureau

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Major Ryan Borges
Honolulu Police Department, District 4
City and County of Honolulu
801 South Beretania Street
Honolulu, HI 96813

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Major Borges:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. Your comments regarding short-term traffic impacts will be addressed in the Draft Environmental Assessment or during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

KIRK CALDWELL
MAYOR

MANUEL P. NEVES
FIRE CHIEF

LIONEL CAMARA JR.
DEPUTY FIRE CHIEF

May 29, 2014

Ms. Sherri Hiraoka, Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

Subject: Initial Consultation for the Preparation of an Environmental Assessment
Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

In response to your letter of May 8, 2014, regarding the above-mentioned subject, the Honolulu Fire Department determined that there will be no significant impact to fire department services.

Please notify Battalion Chief (BC) Alan Carvalho of our Fire Operations at 723-7182 or acarvalho@honolulu.gov to discuss possible road closures and alternate routes before the project commences.

Should you have questions, please contact Acting BC Terry Seelig of our Fire Prevention Bureau at 723-7151 or tseelig@honolulu.gov.

Sincerely,

Socrates D. Bratakos

SOCRATES D. BRATAKOS
Assistant Chief

SDB/SY:bh

cc: Fire Operations

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Terry Seeling
Acting Battalion Chief
Honolulu Fire Department, Fire Prevention Bureau
City and County of Honolulu
636 South Street
Honolulu, HI 96813-5007

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Acting Battalion Chief Seelig:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. Coordination with the Honolulu Fire Department regarding possible road closures and alternate routes will occur during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

KIRK CALDWELL
MAYOR

MICHAEL D. FORMBY
DIRECTOR

MARK N. GARRITY, AICP
DEPUTY DIRECTOR

TP5/14-562448R

June 5, 2014

Ms. Sherri Hiraoka
Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

SUBJECT: Initial Consultation for Environmental Assessment
Kahanahou Wastewater Pump Station Force Main
Sewer Line Upgrades; Kaneohe, Oahu, Hawaii

In response to your letter dated May 8, 2014, we have the following comments:

1. The Draft Environmental Assessment should discuss any short-term traffic impacts that the project may have on any surrounding City roadways during construction and measures to mitigate these impacts.

2. The local Neighborhood Board, as well as the area residents, businesses, emergency personnel, Oahu Transit Services, Inc. (TheBus), etc., should be kept apprised of the details of the proposed project and the impacts, particularly during construction, the project may have on the adjoining local street area network.

3. Any construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic on the local streets.

4. Should the project require any temporary lane closure on a City street, a street usage permit will be required from our department. A traffic plan should be submitted to our Street Usage Section for approval.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Renee Yamasaki of my staff at 768-8383.

Very truly yours,

Michael D. Formby
Director

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Ms. Renee Yamasaki
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, HI 96813

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Ms. Yamasaki:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. Your comments regarding short-term traffic impacts will be addressed in the Draft Environmental Assessment or during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

BOARD OF WATER SUPPLY

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

May 29, 2014

Ms. Sherri Hiraoka, Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

Subject: Your Letter Dated May 8, 2014 on the Environmental Assessment Initial Consultation for the Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Thank you for the opportunity to comment on the proposed sewer line upgrades.

The construction drawings should be submitted for our review.

The construction schedule should be coordinated to minimize impact to the water system.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

June 6, 2014

Mr. Robert Chun
Project Review Branch
Water Resources Divsion
Honolulu Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Chun:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. Your comments regarding submission of construction drawings and schedule to the Board of Water Supply will be addressed in the Draft Environmental Assessment or during the design and permitting phases of the project.

Should you have any questions, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

Hawaiian Telcom

June 5, 2014

Townscape, Inc.
Environmental and Community Planning
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813
Attention: Ms. Sherri Hiraoka

Dear Ms. Hiraoka:

Subject: **Initial consultation for the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades**

Thank you for the opportunity to review and comment on the initial consultation phase for the subject project.

In response to your letter dated May 8, 2014, Hawaiian Telcom does not have any comments to offer at this time.

If you have any questions or require assistance in the future on this project, please call me at 546-7761.

Sincerely,

Les Loo
Network Engineer – OSP Engineering
Network Engineering & Planning

cc: File [Kaneohe]

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Les Loo
Network Engineer – OSP Engineering
Hawaiian Telcom
P.O. Box 2200
Honolulu, HI 96841

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Loo:

Thank you for informing us that Hawaiian Telcom has no comments on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades at this time. Should you have any questions in the future, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

Sherri Hiraoka

From: Liu, Rouen <rouen.liu@hawaiianelectric.com>
Sent: Thursday, June 12, 2014 1:34 PM
To: Sherri Hiraoka
Cc: 1.11.136609@ecollab.heco.com
Subject: Initial consultation - request for comments on the Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Ms. Hiraoka,
Thank you for the opportunity to comment on the subject project. Hawaiian Electric Company has no objections to the project. Should HECO have existing easements and facilities on the subject property, we will need continued access for maintenance of our facilities.
We appreciate your efforts to keep us apprised of the subject project in the planning process. As the Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades comes to fruition, please continue to keep us informed. Further along in the design, we will be better able to evaluate the effects on our system facilities.
If you have any questions, please call me at 543-7245.

Sincerely,
Rouen Q. W. Liu
Permits Engineer

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Rouen Q. W. Liu
Permits Engineer
Hawaiian Electric Co.
P.O. Box 2750
Honolulu, HI 96840

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Liu:

Thank you for informing us that HECO has no comments on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades at this time. We will continue to inform you of the project as it progresses to ensure coordination among the utilities.

Should you have any questions in the future, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Ulu`ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 14-500

June 25, 2014

Ms. Sherri Hiraoka, Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

SUBJECT: Initial Consultation for the Preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrade

Thank you for opportunity to review and comment on the subject project. We apologize for the late response. Our comments are as follows:

- Once construction phase commences, install approved Best Management Practice fronting all drainage facilities (catch basin/drainage inlets along the subject sewer line route).
- During construction and upon completion of project; any damages/deficiencies to any City maintained roadway's right-of-ways shall be corrected to City standards and accepted by the City.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance, at 768-3600.

Sincerely,

Ross S. Sasamura, P.E.
Director and Chief Engineer

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Kyle Oyasato
Division of Road Maintenance
Department of Facility Maintenance
City and County of Honolulu
1000 Ulu'ohia Street, Suite 215
Kapolei, HI 96707

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Oyasato:

Thank you for commenting on the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades. Your comments regarding Best Management Practices and damages to City roadway rights of way will be addressed either in the Draft Environmental Assessment or during the design and permitting phases of the project.

Should you have any questions in the future, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

HAWAI'I GAS
THE CLEAN ENERGY COMPANY

June 30, 2014

Ms. Sherri Hiraoka
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Hiraoka:

Subject: Initial Consultation for the preparation of an Environmental Assessment (EA) for the proposed Kahanahou Wastewater Pump Force Main Sewer Line Upgrades

In response to your letter dated June 30, 2014, it has been determined that the area is currently clear of utility gas facilities.

Thank you for the opportunity to review the map. Should there be any questions, or if additional information is desired, please feel free to call Kris Tanner at 596-1425.

Sincerely,

Hawaii Gas

Keith K. Yamamoto
Manager, Engineering

KKY:krs
14-180

TOWNSCAPE, INC.
ENVIRONMENTAL AND COMMUNITY PLANNING

900 Fort Street Mall, Suite 1160, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: mail@townscapeinc.com

July 9, 2014

Mr. Kris Tanner
Hawai'i Gas
P.O. Box 3000
Honolulu, HI 96802-3000

Subject: Response to comments on the preparation of an Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades

Dear Mr. Tanner:

Thank you for informing us that the proposed Kahanahou Wastewater Pump Station Force Main Sewer Line Upgrades project area is currently clear of utility gas facilities. Should you have any questions in the future, please contact the undersigned at (808) 536-6999, extension 6 or via email at sherri@townscapeinc.com.

Sincerely,

Sherri Hiraoka

Sherri Hiraoka
Senior Planner

Appendix C

Letter from SHPD (December 2015)

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

December 8, 2015

Mr. Robert J. Kroning, Director Designate
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

LOG NO: 2015.02139
DOC NO: 1512GC08
Archaeology
History and Culture

Dear Mr. Kroning:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Kahanahou Wastewater Pump Station (WWPS) Force Main Sewer Line
Kaneohe Ahupua'a, Ko'olaupoko District, Island of O'ahu
TMK: (1) 4-5-002:045 and 047 various

Thank you for the opportunity to comment on the city and County of Honolulu, Department of Design and Construction (DDC), Wastewater Division's Kahanahou Wastewater Pump Station (WWPS) Force Main Sewer Line project. We received this submittal on June 2, 2015; we apologize for the delayed review. The proposed project involves replacing a portion of the existing sewer line that extends from the Kahanahou WWPS and discharges at a sewer manhole on Makahio Street. The project will extend on portions of Ka Hanahou Place, Ka Hanahou Circle, Lilipuna Road and Lilipuna place and across Wailele Road.

A review of our records indicates that no archaeological inventory survey has been conducted, that no historic properties have been identified within the proposed project area, and that the project area has been previously altered by the construction of the Kahanahou Wastewater Pump Station. The soils are identified as fill lands (Foote et al. 1972). Our records also indicate that Cultural Surveys Hawaii, Inc. (CSH) prepared an archaeological literature review and field inspection report (O'Hare et al. 2014) for the project in which they recommended archaeological monitoring for all ground disturbance more than 12 inches below current grade.

Based on the information provided, SHPD's determination is **no historic properties affected with archaeological monitoring**.

We look forward to the opportunity to review and accept an archaeological monitoring plan (AMP) that meets the requirements of Hawaii Administrative Rules (HAR) §13-279 prior to issuance of the permit. We will notify your office when the AMP has been accepted and the permit may be issued.

Please contact Ka'ahiki Solis at (808) 692-8031 or at Sheleigh.Solis@hawaii.gov for any questions regarding History and Culture. Please contact me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions regarding this letter.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Archaeology Branch Chief

cc: Megan Inouye, DDC (minouye3@honolulu.gov)

Appendix D

Draft Revised Archaeological Literature Review and Field Inspection,
Kahanahou Wastewater Pump Station Force Main Sewer Line Study,
Kaneohe Ahupuaa, Koolaupoko, Oahu, TMK: [1] 4-5-047:095
Cultural Surveys Hawaii, August 2016

Draft

Archaeological Literature Review and Field Inspection for the Revised Kahanahou Wastewater Pump Station Force Main Sewer Line Study, Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Oʻahu TMKs: [1] 4-5-002, 012, 013, 045, 047, 057, 074, and 075: City Streets

Prepared for
Townscape, Inc.

Prepared by
Constance R. O'Hare, B.A.,
David W. Shideler, M.A.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc.
Kailua, Hawaiʻi
(Job Code: KANEOHE 34)

August 2016

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Management Summary

Reference	Archaeological Literature Review and Field Inspection for the Revised Kahanahou Wastewater Pump Station Force Main Sewer Line Study, Kāne‘ohe Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMKs: [1] 4-5-002, 012, 013, 045, 047, 057, 074, and 075: City Streets (O’Hare et al. 2016)
Date	August 2016
Project Number (s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KANEOHE 34
Investigation Permit Number	CSH conducted the archaeological field inspection for this investigation under state archaeological fieldwork permit numbers 13-06 and 16-26, issued by Hawai‘i State Historic Preservation Division/Department of Land and Natural Resources (SHPD).
Project Location	The project area is located in the Kahanahou Subdivision, on portions of Ka Hanahou Place, Ka Hanahou Circle, Kahanahou Place, Springer Place, Haleloke Place, Lilipuna Road, Wailele Road, and Makahī‘ō Street. The project also includes the City & County of Honolulu Kahanahou Sewer Pump parcel (TMK: [1] 4-5-047:095) on Ka Hanahou Place and a new gravity sewer through TMK parcel [1] 4-5-012:026 off Makahī‘ō Street at the southwest end of the project area. The project area is shown on a portion of 1998 Kaneohe U.S. Geological Survey (USGS) topographic quadrangle.
Land Jurisdiction	City and County of Honolulu
Agencies	SHPD, State of Hawai‘i
Project Description	The City and County of Honolulu, Wastewater Division, is planning to replace a portion of the existing force main served by the Kahanahou Wastewater Pump Station (WWPS). The existing force main to be replaced starts at the WWPS and discharges to a manhole within Springer Place. The proposed conveyance system includes a new force main from the WWPS to the intersection of Lilipuna and Wailele roads, and a new/upsized gravity main from the force main discharge point to a manhole within private TMK parcel [1] 4-5-012:026, where it will connect to the existing sewer gravity main. A new 15-foot (ft) wide sewer easement through the private parcel will be obtained to replace the existing narrower easement. The gravity main along Makahī‘ō Street between Haleloke Place and TMK parcel [1] 4-5-012:026 will also be upsized as part of this project. The existing force main consists of 8-inch high density polyethylene (HDPE). The new force main and gravity main will be 12-inch HDPE fusible pipe. The project also includes repaving of existing roadways not to exceed 12 inches in depth.

Project Acreage	The proposed new force main sewer line is approximately 792.48 linear m (2,600 linear ft) long, covering approximately 0.93 hectare (2.31 acres). The new upsized main line is 1400 ft (426 m) long, covering 1.35 acres. The City & County of Honolulu Kahanahou Sewer Pump parcel (TMK: [1] 4-5-047:095) is 0.07 hectare (0.18 acre) for a total project area estimate, including repaved roadways, of 7.65 acres (3 hectare).
Document Purpose	This investigation is not an archaeological inventory survey, per the requirements of Hawai‘i Administrative Rules (HAR) §13-276; however, through historical, cultural, and archaeological background research and a field inspection of the project area, this investigation was intended to identify any cultural resources that may be affected by the project. This document is intended to facilitate the project’s planning and support the project’s historic preservation compliance. Based on results, cultural resource management recommendations are presented.
Fieldwork Effort	The fieldwork component for this historical resources study was conducted on 9 December 2013 and 9 and 19 July 2016 by CSH archaeologists Constance R. O’Hare, B.A., and David W. Shideler, M.A. This fieldwork consisted of a limited field inspection of the water line area to identify any surface archaeological features, and to investigate and assess the potential for impact to historic properties.
Historic Properties Potentially Affected	This field inspection did not observe any property of cultural significance. However, there is a potential for encountering pre-Contact and post-Contact subsurface cultural deposits related to traditional Native Hawaiian land use and habitation.
Regulatory Context	The SHPD carried out a §6E-8 Historic Preservation Review dated 8 December 2015 (LOG NO.: 2015.02139, DOC. NO.: 1512GC08, included here as Appendix A) for a prior configuration of this project. That 8 December 2015 Historic Preservation Review was informed by and references a prior (O’Hare et al. 2014) archaeological study for the project and agreed with the recommendation in that study (O’Hare et al. 2014:42) for an archaeological monitoring program. Given the presently proposed reconfiguration of the project to include a portion of Wailele Road it seemed appropriate to revisit the project with the SHPD. The purpose of this study is to facilitate a new SHPD §6E-8 Historic Preservation Review of the project as presently proposed. The recommendation of this study is the same as in the prior (O’Hare et al. 2014) archaeological study in favor of an archaeological monitoring program.

Discussion of Project Effect and Recommendations	Based on this study's results, an archaeological inventory survey of the project area (per the requirements of HAR §13-276) does not appear warranted for development within the project area. Depending on the extent and location of ground disturbance during future proposed renovations in the project area, an archaeological monitoring program is recommended as an historic preservation mitigation measure. Should the project proceed with open trench excavation then an archaeological monitoring program with on-site archaeological monitoring is recommended. Early consultation with the SHPD is recommended (to be informed by this study) to determine appropriate cultural resource management.

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Section 1 Introduction

1.1 Project Background

At the request of Townscape, Inc., Cultural Surveys Hawai‘i, Inc., (CSH) has prepared this archaeological literature review and field inspection (LRFI) for the Revised Kahanahou Wastewater Pump Station Force Main Sewer Line Study, Kāne‘ohe Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMKs: [1] 4-5-002, 012, 013, 045, 047, 057, 074, and 075: City Streets, as shown an a U.S. Geological Survey (USGS) topographic map (Figure 1), an aerial photograph (Figure 2), and five tax map plats (Figure 3 through Figure 9).

CSH carried out a prior archaeological study (O’Hare et al. 2014) for an earlier configuration of this project. The State Historic Preservation Division (SHPD) carried out a §6E-8 Historic Preservation Review dated 8 December 2015 (LOG NO.: 2015.02139, DOC. NO.: 1512GC08, included here as Appendix A) for a prior configuration of this project. that was informed by and references that prior (O’Hare et al. 2014) archaeological study. Given the presently proposed reconfiguration of the project to include a new portion of Wailele Road, a significant extension to the southwest down Makahī‘ō Street, a spur down an easement into TMK parcel [1] 4-5-012:026, and repaving component, it seemed appropriate to revisit the project with the SHPD. The purpose of this study is to facilitate a new SHPD §6E-8 Historic Preservation Review of the project as presently proposed. The SHPD 8 December 2015 Review (Appendix A) agreed with that previous CSH recommendation. The recommendation of this study is the same as in the prior (O’Hare et al. 2014) archaeological study in favor of an archaeological monitoring program.

The project area is located in the Kahanahou Subdivision of Kāne‘ohe, on portions of Ka Hanahou Place, Lilipuna Road to Wailele Road, Wailele Road from Lilipuna Road to Makahī‘ō Street, a portion of Makahī‘ō Street extending to just southwest of Makamae Street, and a spur down an easement into TMK parcel [1] 4-5-012:026 adjacent to portions of TMKs: [1] 4-5-002, 012, 013, 045, 047, 057, 074, and 075. Repaving is also proposed along the proposed sewer line roadways and additional roadways namely: Ka Hanahou Circle, Lilipuna Place, Springer Place and a portion of Haleloke Place (see Figure 1 through Figure 9). The repaving work is estimated not to exceed 12 inches below the current grade.

The City and County of Honolulu, Wastewater Division, is planning to replace a portion of the existing force main served by the Kahanahou Wastewater Pump Station (WWPS) and WWPS upgrades at parcel TMK: [1] 4-5-047:095. The WWPS upgrades consist of pump upgrades within the existing pump station building, construction of a new generator building, and other miscellaneous improvements within and around TMK parcel 4-5-047:095. The existing force main to be replaced is 3000 linear ft (914.6 m) and extends between the WWPS and Springer Place where it discharges into a manhole.

The proposed conveyance system includes a new 2,600 ft (792.6 m) long force main, from the WWPS to the intersection of Lilipuna and Wailele roads, and a new/upsized 1,400 ft (426.8 m) long gravity main from the force main discharge point to a manhole within private TMK parcel [1] 4-5-012:026, where it will connect to the existing sewer gravity main. A new 15-foot (ft) wide sewer easement through the private parcel will be obtained to replace the existing narrower

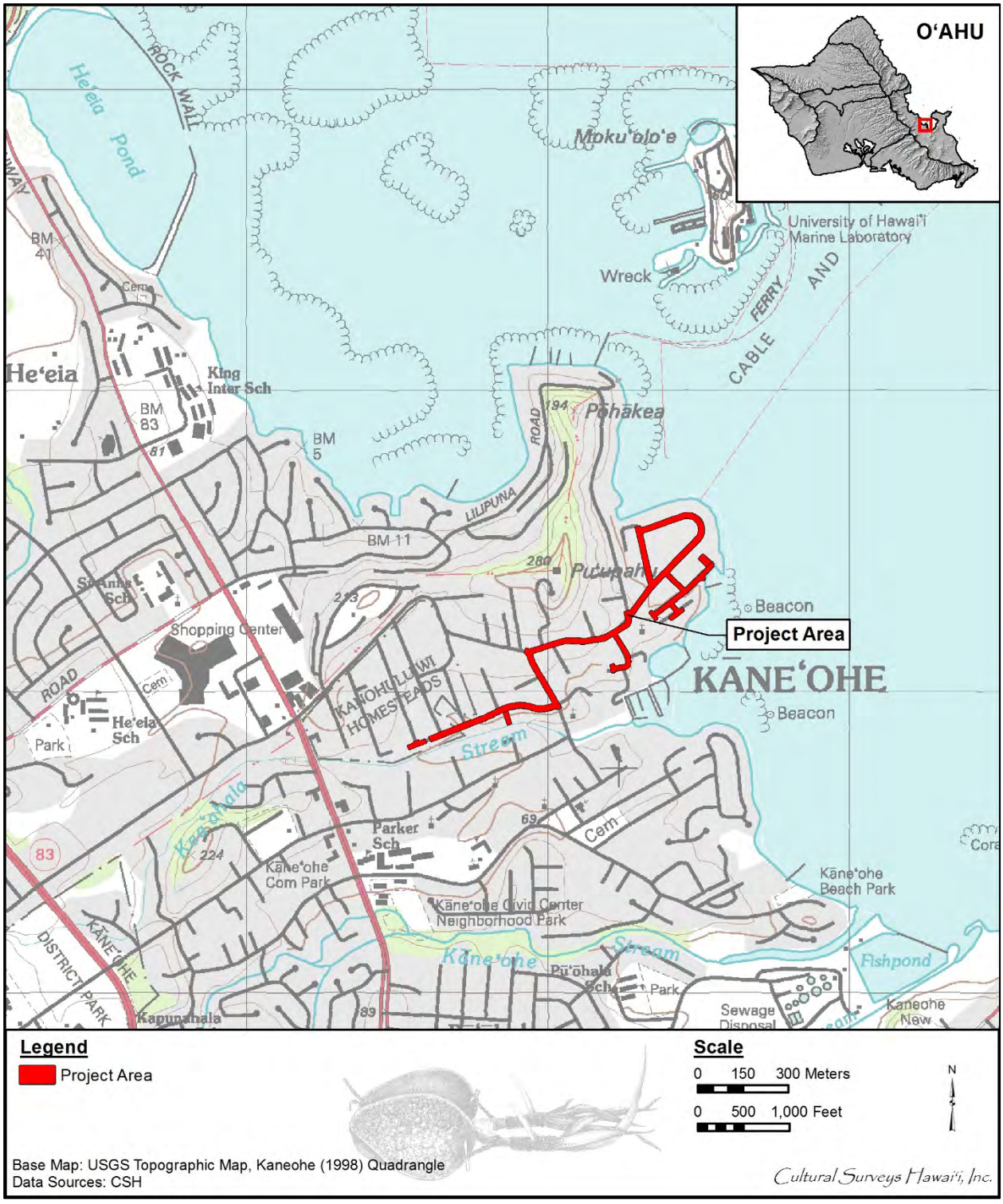

Figure 1. Portion of 1998 Kaneohe USGS topographic quadrangle, showing the project area

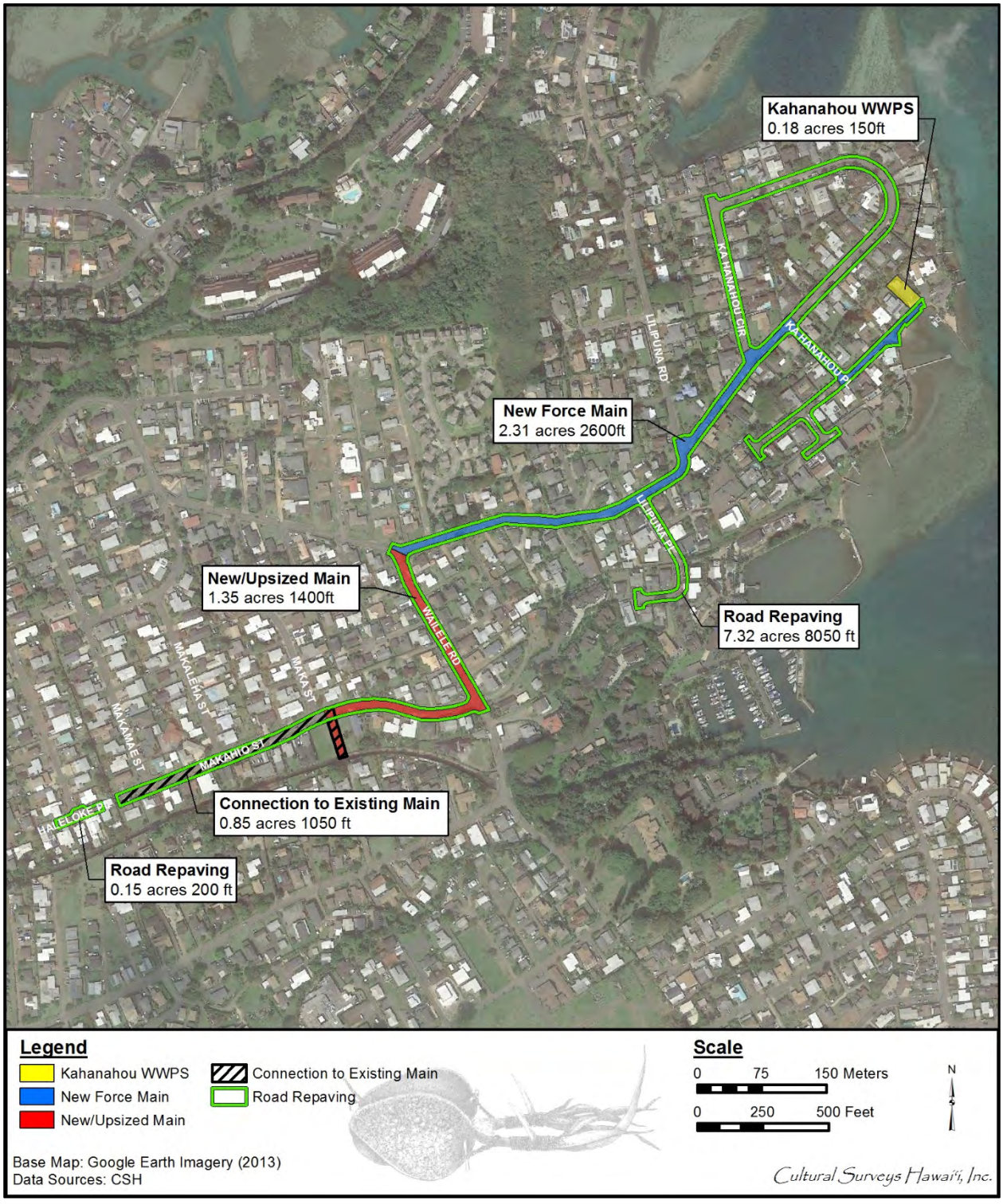

Figure 2. Aerial photograph, showing the project area (Google Earth 2013)

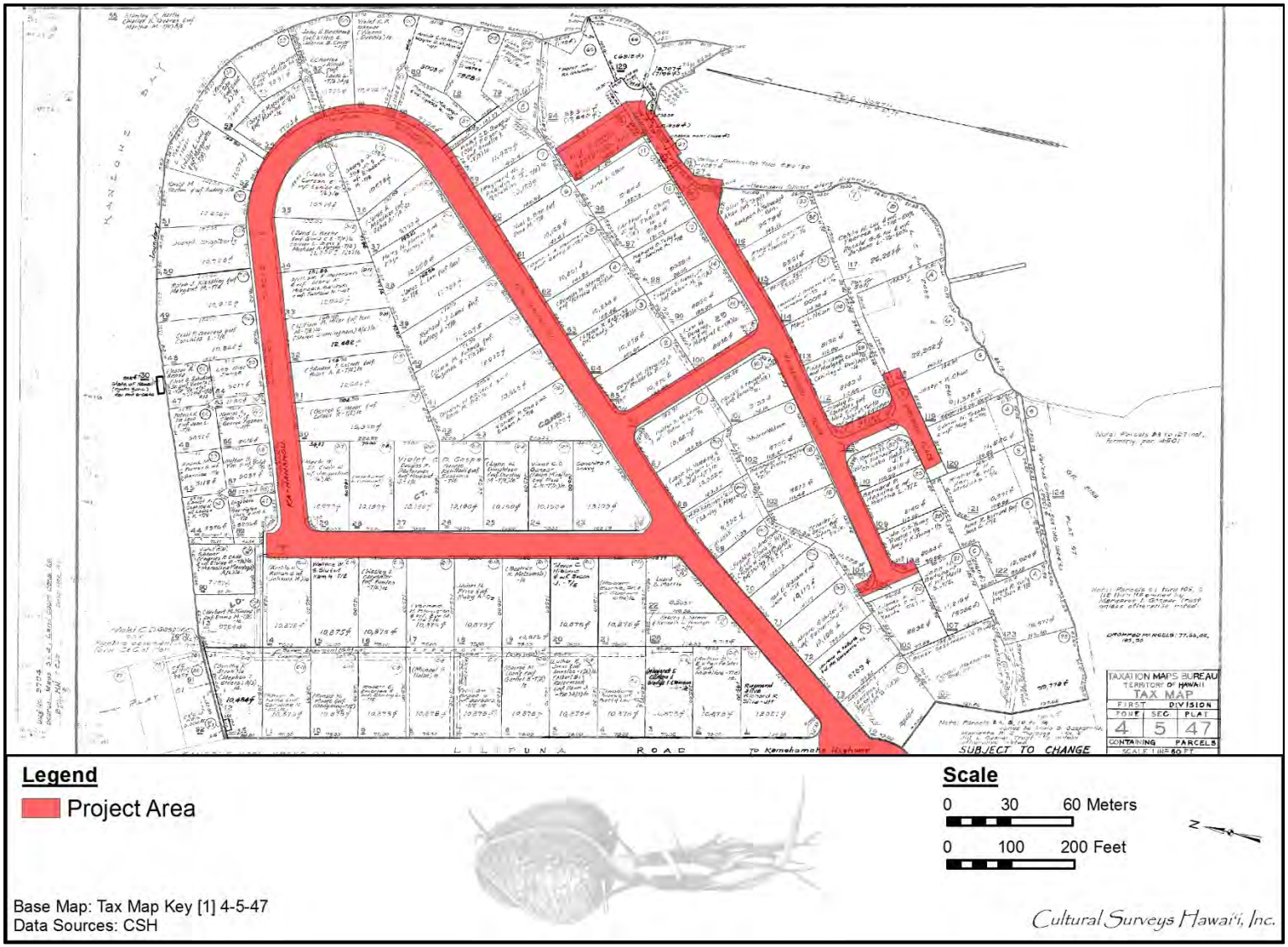

Figure 3. Tax Map Key (TMK) [1] 4-5-047, showing northeastern end of the project area

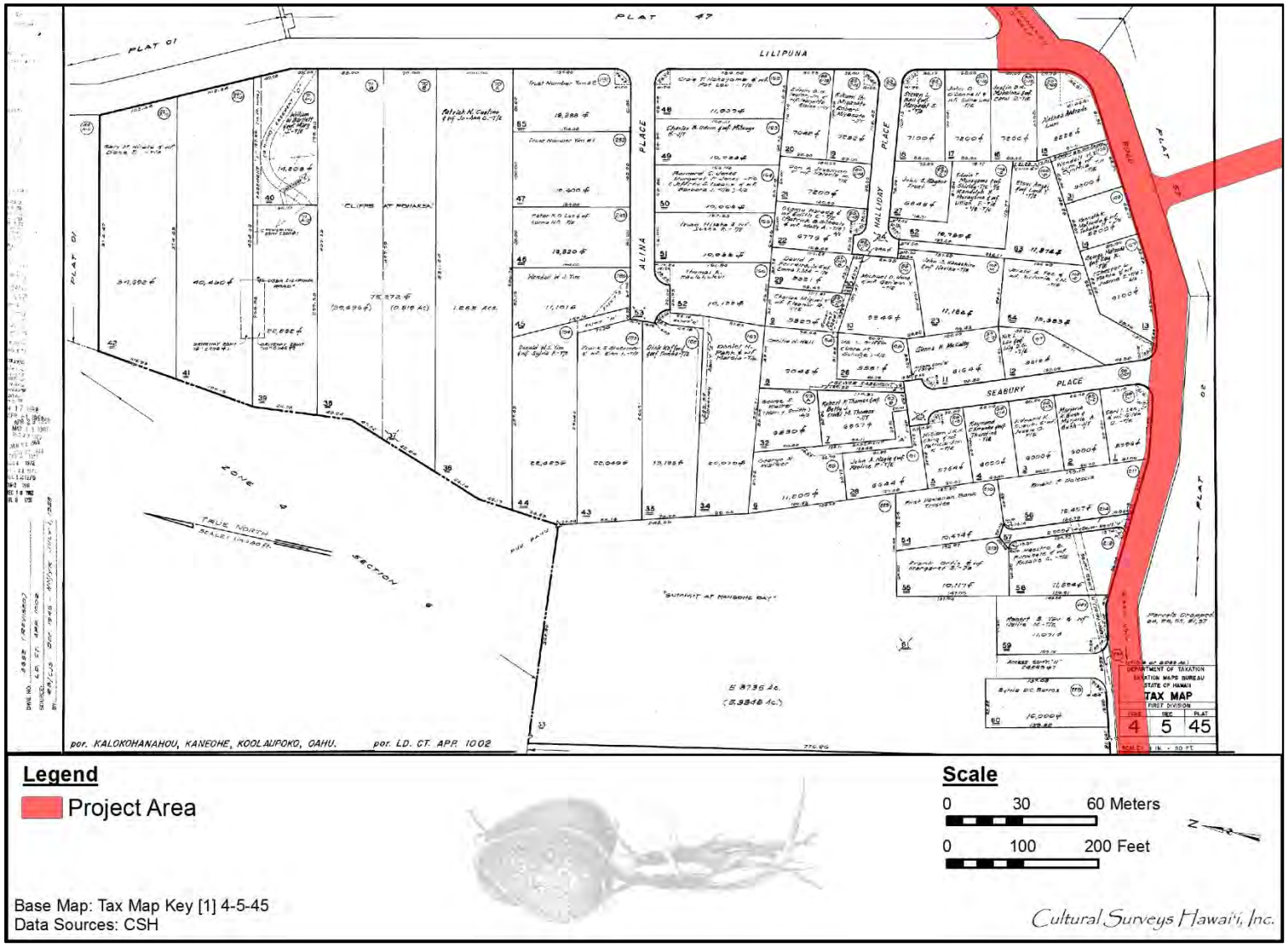

Figure 4. TMK: [1] 4-5-045 showing central section of the project area

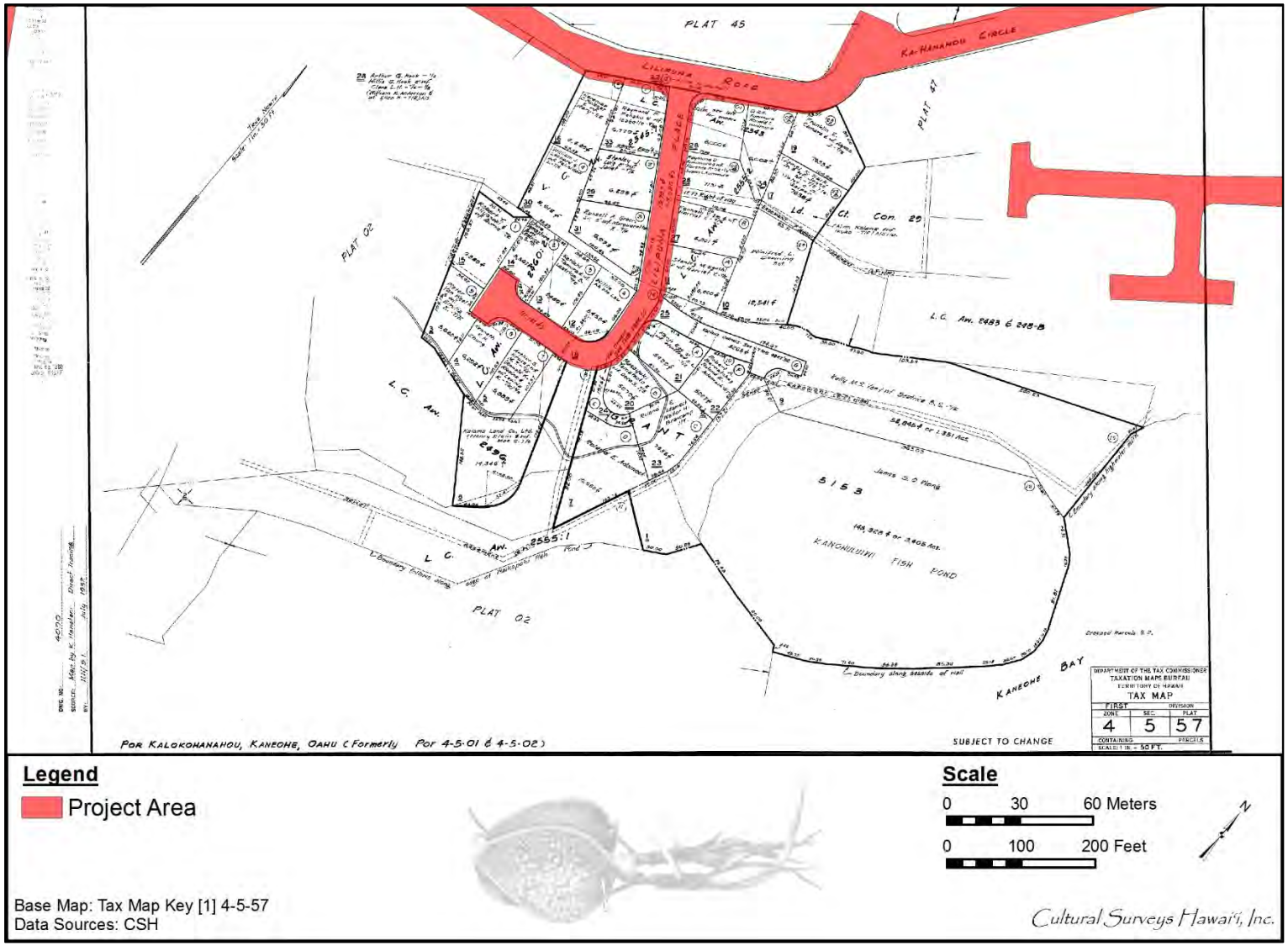

Figure 5. TMK: [1] 4-5-057 showing central section of the project area

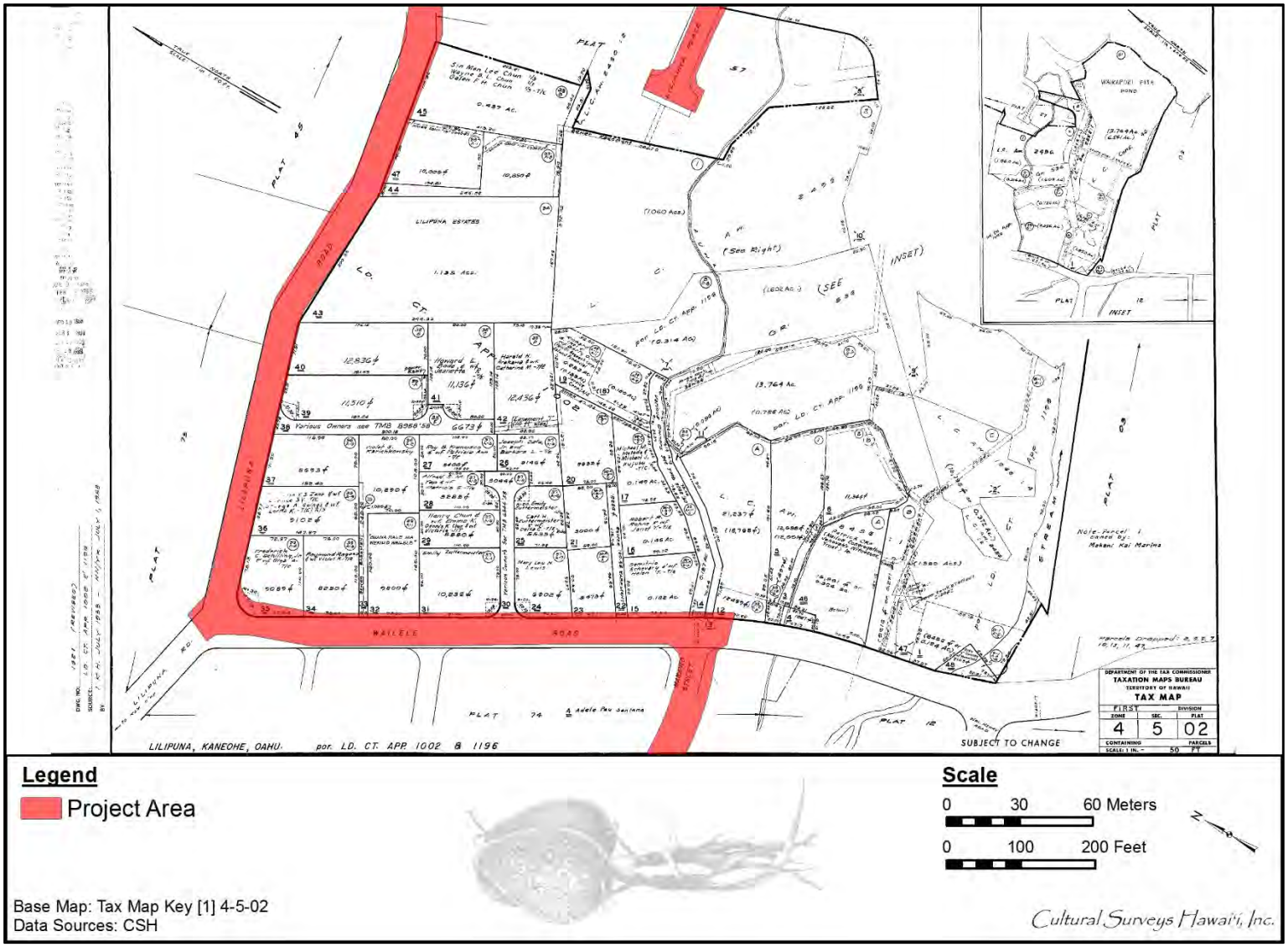

Figure 6. TMK: [1] 4-5-002 showing southern section of the project area

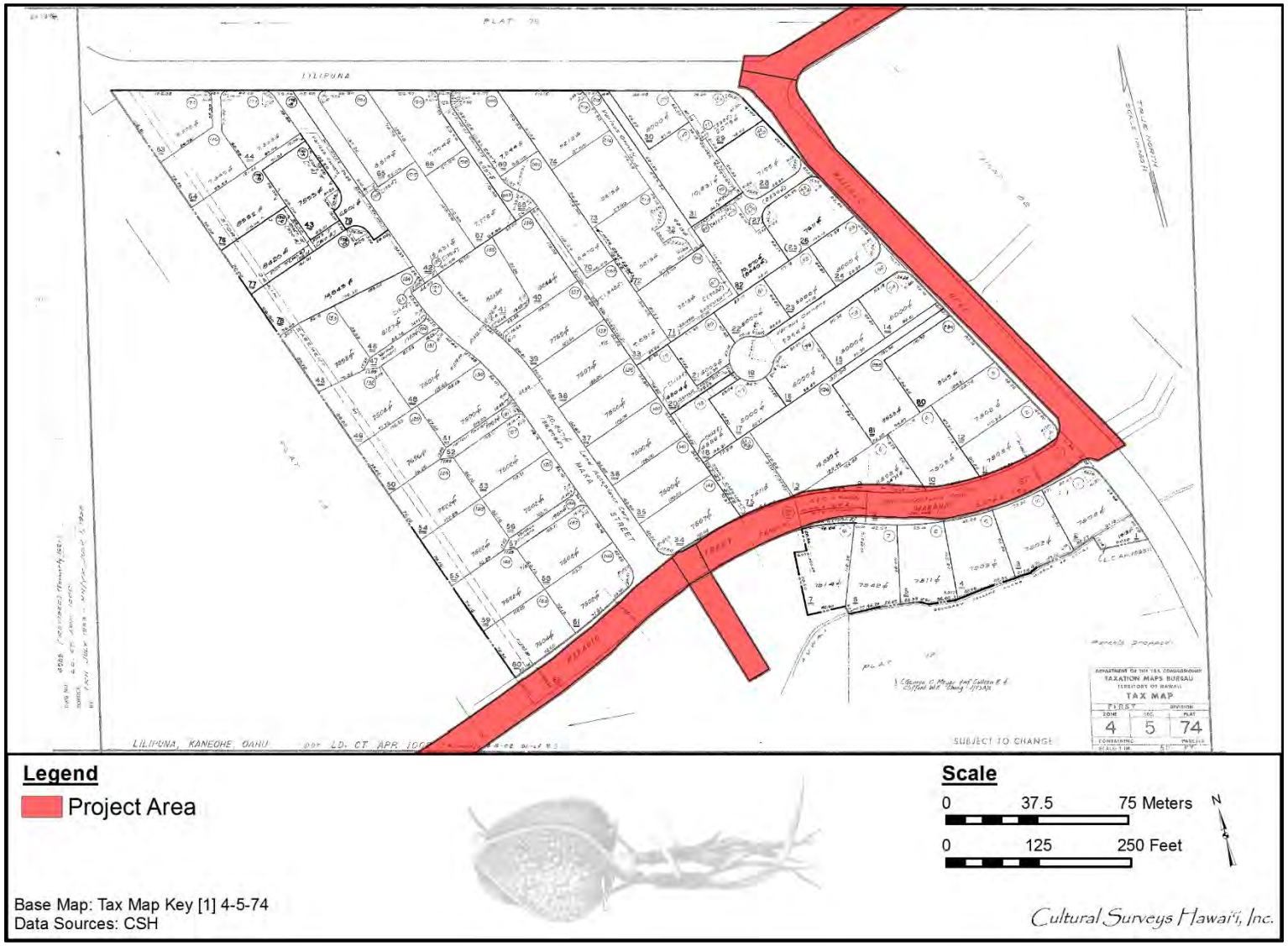

Figure 7. TMK: [1] 4-5-074, showing southern end of the project area

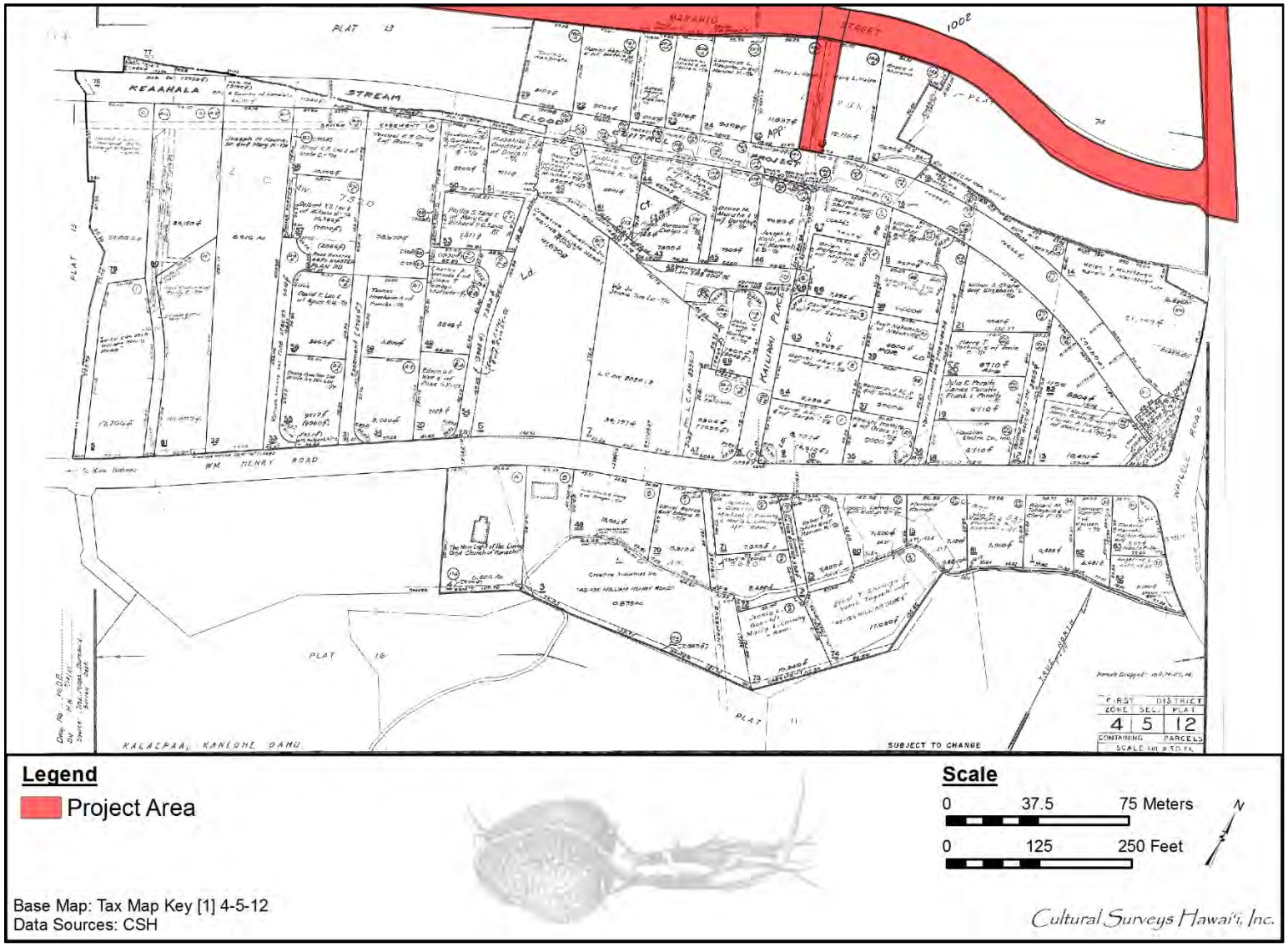

Figure 8. TMK: [1] 4-5-012, showing southern end of the project area

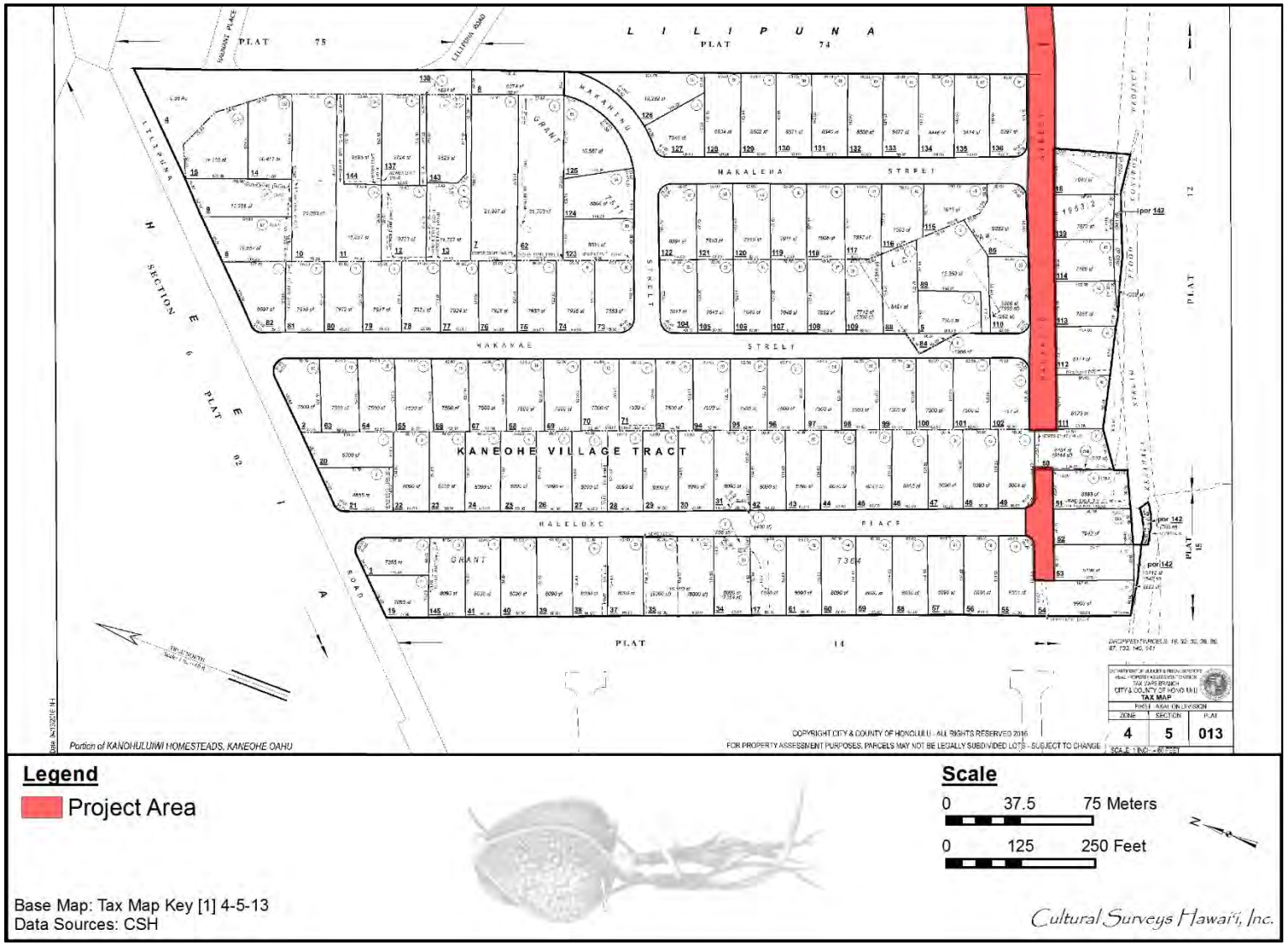

Figure 9. TMK: [1] 4-5-013, showing southern end of the project area

easement. The gravity main along Makahī‘ō Street between Haleloke Place and TMK parcel [1] 4-5-012:026 will also be upsized as part of this project. The existing force main consists of 8-inch high density polyethylene (HDPE). The new force main and gravity main will be 12-inch HDPE fusible pipe.

This investigation is not an archaeological inventory survey, per the requirements of Hawai‘i Administrative Rules (HAR) §13-276; however, through historical, cultural, and archaeological background research and a field inspection of the project area, this investigation was intended to identify cultural resources that may be affected by the project. This document is intended to facilitate the project's planning and support the project's historic preservation compliance. Based on results, cultural resource management recommendations are presented.

1.2 Scope of Work

The scope of work for this project includes the following:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards, and previous reports to construct a history of the project area and vicinity and to determine if there are any historic properties.
2. Limited field inspection of the project area. This assessment will identify any sensitive areas that may require further investigation for this report.
3. Preparation of a report to include the results of the historical research and the limited fieldwork assessment with recommendations for further work, if appropriate. It will also provide mitigation recommendation, if appropriate.

1.3 Environmental Setting

1.3.1 Natural Environment

The lands within the project treatment areas are generally level with elevations ranging from 0 to 12 m (0 to 40 ft) above mean sea level. Rainfall in this portion of Kāne‘ohe averages 1,000 mm (40 inches) per year (Giambelluca et al. 1986).

The northern portion of the project area is within the former offshore fishpond, Kalokohanahou, which was filled to make the Ka Hanahou residential development around 1944. Thus the sediments in this area are predominantly Fill Land, which is a land type of areas filled with slurry from sugar mills, dredged material, and soil from excavations (Foote et al. 1972:31).

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the central portion of the project area extends through an area of Kaneohe silty clay, 8 to 15% slopes (KcG) (Figure 10). Soils of the Keaau Series are described as "well-drained soils on terraces and alluvial fans on the windward side of Oahu. These soils developed in alluvium and colluviums derived from basic igneous rock. . . . These soils are used for pasture, homesites, and urban development" (Foote et al. 1972:59).

Common modern vegetation includes guava (*Psidium guajava*), Boston fern (*Nephrolepis exaltata*), sensitive plant (*Mimosa pudica*), Hamakua *pamakani* (*Ageratina riparia*), glenwoodgrass (*Sacciolepis indica*), and hilograss (*Paspalum conjugatum*).

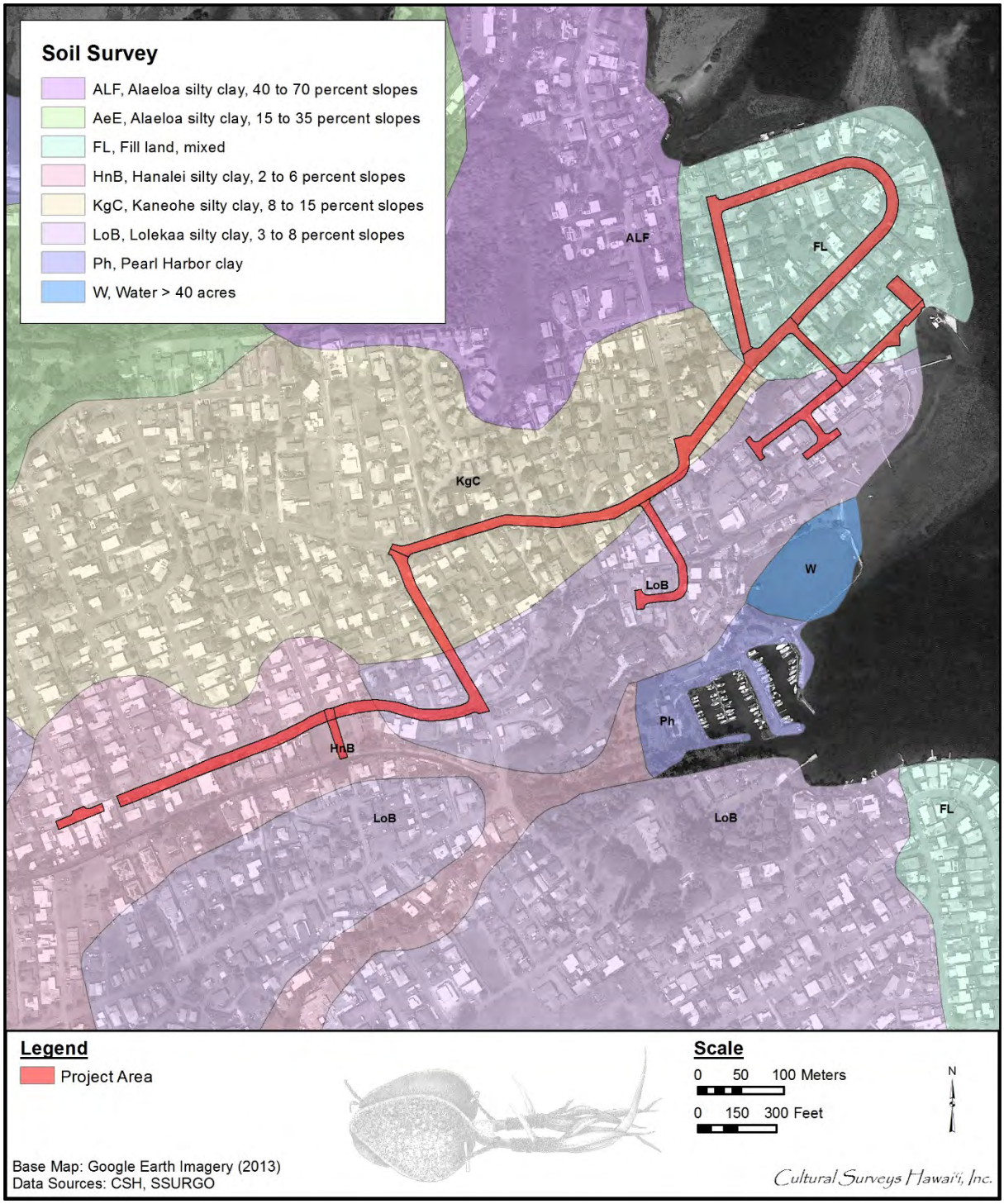

Figure 10. Aerial photograph (Google Earth 2013) with Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001)

The southwestern end of the project area (and a small area at a southern bend of Kahanahou Place) is in an area covered with Lolekaa silty clay, 3 to 8% slopes (LoB) (see Figure 10).

Soils of the Lolekaa series are described as “well-drained soils on fans and terraces on the windward sideof the island of Oahu. These soils developed in old, gravelly colluviums, and alluvium. . . . These soils are used for pasture, homesites, or chards, and truck crops” (Foote et al. 1972:83).

Common modern vegetation includes guava, Christmasberry (*Schinus terebinthifolius*), *koa haole* (*Leucaena glauca*), Californiagrass (*Brachiaria mutica*), ricegrass (*Paspalum orbiculare*), and hilograss.

1.3.2 Built Environment

The project area is in a residential section with houses set on both sides of the roads. The roads are generally two-lane streets with no sidewalks.

1.4 Methods

1.4.1 Field Methods

The field inspection fieldwork was carried out 5 September 2013 by CSH archaeologists David W. Shideler and Constance R. O’Hare with additional field inspections by David Shideler on 9 July 2016 and 19 July 2016. Three hours were required. All fieldwork was done under the general supervision of Hallett H. Hammatt, Ph.D. (principle investigator). CSH conducted the fieldwork component of this study under state archaeological fieldwork permit numbers 13-06 and 16-26 issued by the SHPD, per HAR §13-282. Representative photographs were taken of the project area.

1.4.2 Document Review

Background research included a review of previous archaeological studies on file at the SHPD. Archaeological reports, historic maps, and photographs contained within the CSH library were also consulted.

Section 2 Traditional and Historic Background

2.1 Traditional Accounts

The project area is located within the Windward O‘ahu district of Ko‘olaupoko, in the *ahupua‘a* (land division) of Kāne‘ohe. This report section focuses on the traditional background of the near-coastal locations of the western shore of Kāne‘ohe Bay.

Kāne‘ohe is a large *ahupua‘a* of approximately 8,000 acres, extending from the crest of the Ko‘olau Range to the coast at Kāne‘ohe Bay, and including most of the Mōkapu Peninsula. It is watered by three streams, the Kawā Stream, Kane‘ohe Stream and its tributaries, and Kea‘ahala (“the *Pandanus* root”) Stream. He‘eia Ahupua‘a is to the west and the boundary between these two *ahupua‘a* at the coast extends from the boundary point called Pōhākea (“white stone”) near the shore, inland to the peak called Pu‘u Pahu. The project area is located in the *‘ili* (small land divisions) of Kalokohanahou, Lilipuna, and Kanahulu‘iwi (Figure 11).

The meaning of the place name Kāne‘ohe may come from *kāne* (man), which may be a reference to Kāne, the god of creation, and *‘ohe*, which means “bamboo.” The word *kāne* has also been interpreted as “husband.” The place name Kāne‘ohe has been attributed to a story about a woman who compared her husband’s cruelty to the cutting edge of a bamboo knife (Clark 2002:160-161). Kāne‘ohe may also be derived from *‘ohe*, which is said to be one of the *kinolau* (body forms) of the god Kāne (Abbott 1992:15).

Pu‘u Pahu and Pōhākea are the hills along the boundary and ridgeline that separate Kāne‘ohe Ahupua‘a to the east and He‘eia Ahupua‘a to the west. There was a *kahuna* (priest) named Manuwahi who lived with his sons in Lā‘ie. They controlled the *akua* (gods) of the area. In the early post-Contact period, Kamehameha I sent one of his bodyguards, Kahalaiu, to conquer the family and the land of Mālaekahana. Kahalaiu and his forces surrounded the home of Manuwahi, but the *kahuna* called up all of the *akua* to fight the soldiers, who were all slain except Kahalaiu. After the battle, Manuka, son of Manuwahi, moved to Kāne‘ohe. When he died, the people dug a large grave and placed him in it. Before they could bury him, the *akua* brought red dirt from ‘Ewa in a cloud and filled the grave, making a red hill, the only area with red dirt in the district (Rice 1977:125-126). A *heiau* (ceremonial structure) by the same name as the peak (Pu‘u Pahu) was once located atop the hill, but was destroyed before 1933 (McAllister 1933:177). Nearby is an adjacent peak called Pōhākea. This name is also given to an underwater site off Kualoa Point; it can be translated as “first light of dawn,” according to a local informant. A more prosaic translation of Pōhākea would be “white rock” as might have related to discoloration from the droppings of birds resting on a promontory.

The place name Pu‘u Pahu may also relate to a legendary woman named Lo‘e who was expelled from ‘Ewa along with her three brothers for constantly fighting with their parents. In the story of the Kāne‘ohe peak, Keahiakahoe, Pahu is a fisherman while Kahoe and Kahuauli are farmers living inland (these two names are also adjacent peaks behind Luluku) with their sister Lo‘e. Pahu is the fisherman who withholds his catch from his brother Kahoe even though his brother supplies him with plenty of taro. He betrays the Hawaiian socio-economic tradition of sharing with family in the *ahupua‘a*, but Kahoe finds out when the sister asked him if the *‘ulua* was finished cooking

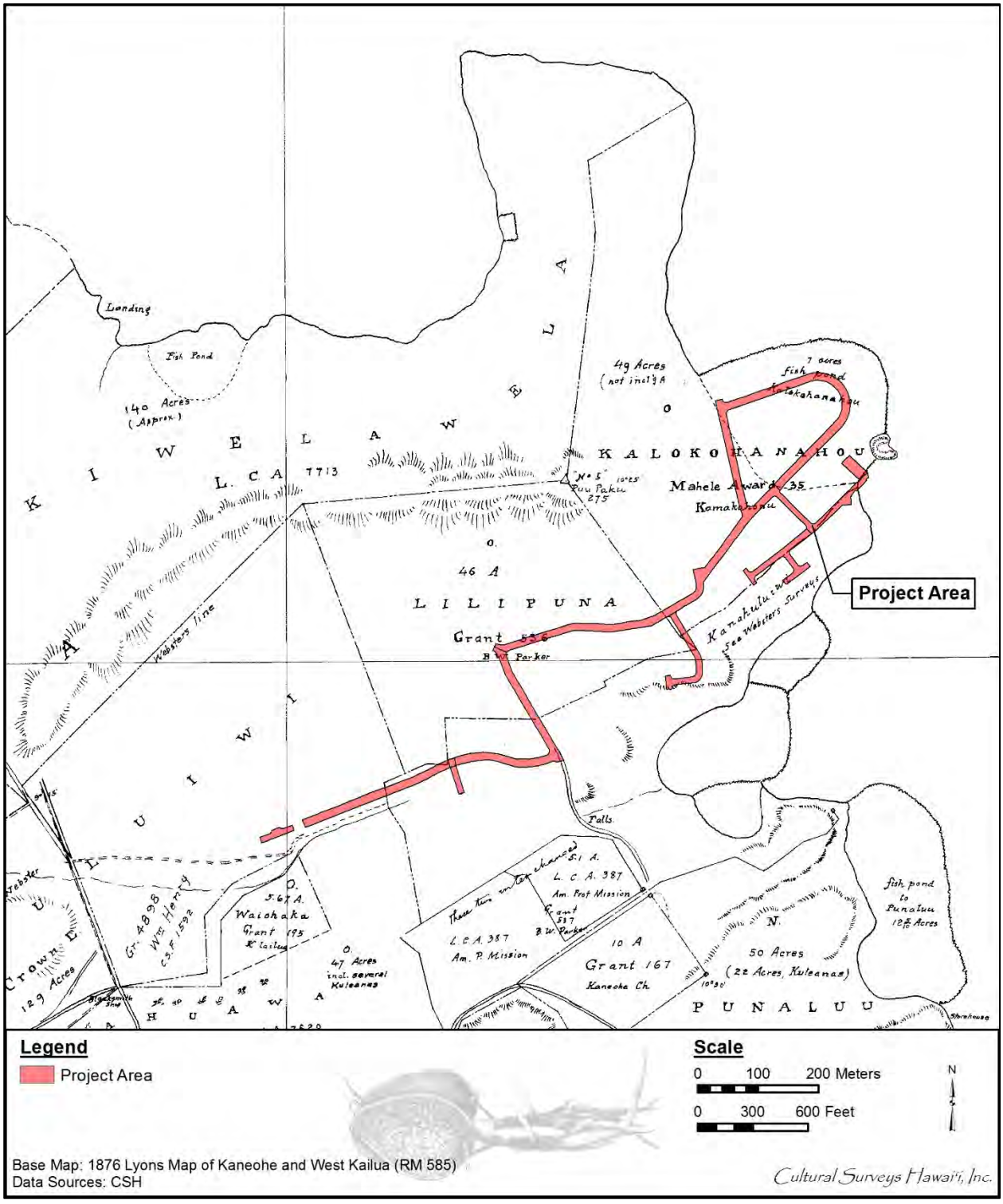

Figure 11. Portion of 1876 Lyons map of Kaneohe and West Kailua, showing names and locations of *‘ili* surrounding the project area; note the project area is within the *‘ili* of Kalokohanahou, Lilipuna, and Kanohuli‘iwi

in the *imu* (earth oven). Then, during a time of famine, Pahu could only stare silently at the smoke from his brother's oven full of *kalo* (taro) because of the guilt he felt from the wrongdoing. Pahu became the hill near his residence, Pu‘u Pahu, and the islet Moku Lo‘e (Coconut Island) was named for Lo‘e. It was said that where Lo‘e's tears fell, they formed a spring in front of the cliff of Keahiakahoe facing Pahu and there it is to this day. Its name is Lo‘e-wai, and it is located near the site of Kukui o Kāne Heiau (Bishop Museum HEN:1:2181 in Sterling and Summers 1978:206).

2.2 Historic Background

2.2.1 Pre-Contact Period

The *ahupua‘a* of Kāne‘ohe was prosperous and densely populated in pre-Contact times. With fresh water from *mauka* (inland) springs and perennial streams, as well as a well-developed fishpond system, Kāne‘ohe was rich in agricultural and aquacultural productivity. It was one of the primary population centers on O‘ahu:

> . . . along the windward coast, beginning with Waikane and continuing through Waiahole, Ka‘alaea, Kahalu‘u, He‘eia, and Kane‘ohe, were broad valley bottoms and flatlands between the mountains and the sea which, taken all together, represent the most extensive wet-taro area on Oahu. These taro lands were irrigated from both streams and springs. Along the shores thereabouts were also some very large salt-water fishponds. This whole region must have supported a dense population . . .
>
> The area that included what is now Kane‘ohe and Kailua, which was rich in fishponds and tillable lands, was the seat of the ruling chiefs of Ko‘olaupoko (Short Ko‘olau) which was the southern portion of the windward coast. [Handy and Handy 1972:271-272]

Nathaniel Portlock, captain of the British vessel *King George*, provided the following description of Kāne‘ohe ca. the late 1780s, shortly after Western Contact:

> The [Kāne‘ohe] bay all round has a very beautiful appearance, the low land and valleys being in a high state of cultivation, and crowded with plantations of taro, sweet potatoes, sugar cane, etc., interspersed with a great number of coconut trees, which renders the prospect truly delightful. [Handy and Handy 1972:455]

Pre-Contact land use in Kāne‘ohe consisted primarily of plantations of *kalo*, bananas, sweet potatoes, and coconut trees, as well as groves of *hala* (pandanus; used for making household furnishings such as mats), and *wauke* (paper mulberry; used for making cloth) (Handy and Handy 1972:456). Handy and Handy (1972) describe how the natural environment of Kāne‘ohe was conducive to development of a complex agricultural system:

> The broken topography of Kaneohe arranges the areas of flatland like chains of pockets connecting along its stream channels between hills. On the north side of the *ahupua‘a* near the boundary of He‘eia, Kea‘ahala Stream flows into Kalimukele, coming out of He‘eia. Some of the best *lo‘i* [taro patches] still in use in 1953, *mauka* of the highway, were irrigated by Kea‘ahala, and a large old *lo‘i* system once extended downstream below the highway. An elaborate system of water rights prevailed in ancient times throughout these sections irrigated from Kea‘ahala.

> The other streams—Wailele (formerly Pani‘ohelele), Hi‘ilaniwai, Kahuaiki, Mamalahoa—likewise watered many taro *lo‘i* . . . Hi‘ilaniwai is a very long stream, with its origin in the slopes that drain Pu‘u Lanihuli, the peak that flanks the northern side of the Nu‘uanu Pali road and the southern boundary of Kaneohe. In fact all of the *ahupua‘a* is like a vast green amphitheater below the serrated sheer cliffs that extend from Pu‘u Lanihuli northward to Ha‘iku Valley and known as the Ke-ahi-a-Kahoe (Fires-of-Kahoe) Cliffs. As the ground rises steeply from the stream beds along their upper courses, there is little evidence of systematic terracing observable in these areas, as might have been expected. The lowland areas were so extensive that evidently the more laborious terracing of the interior slopes was not regarded by the early Hawaiians as necessary.
>
> The kula [pasture, wasteland] lands between the streams were planted in pandanus, *wauke*, bananas, and sweet potatoes. *Kalo malo‘o* (dry-taro) was not planted here. The number of names of *‘ili* and *kuleana* on *kula* lands along the Hi‘ilaniwai and its tributaries, however, indicates intensive cultivation of products other than taro, and the abundant rains sweeping down from the cliffs made such cultivation profitable. [Handy and Handy 1972:455–456]

In general, lands suitable for development of *lo‘i* (irrigated terraces) were located along main streams and coastal lowlands (Devaney et al. 1982:36). *Lo‘i* development required diversion of stream water for irrigation, and construction of terraces to pond the water. Steen Bille, writing in Dutch, describes the system:

> . . . this [taro] root, the principal food of the inhabitants of these Islands, grows only in low, well watered places, and where no such places are provided by nature the natives frequently with great difficulty make excavations so that water may collect in these basins which frequently are several ells deep. [Devaney et al. 1982:35–36]

In addition to the extensive agricultural cultivation, the people of Kāne‘ohe Bay sought the bountiful marine resources:

> The sea adjoining an *ahupua‘a* [Kāne‘ohe] was considered to be an extension of that *ahupua‘a*; its resources were shared by the chief and all of the tenants (*hoa‘āina*) living in the *ahupua‘a*. Access to the sea was part of the *mauka-makai* concept, which made the products of land and sea available to the people living in the *ahupua‘a.* [Devaney et al. 1982:135]

Just as the land-based resources of the *ahupua‘a* were managed through subdivision into *‘ili*, the marine resources of the *ahupua‘a* were also partitioned, with discreet fisheries associated with the *‘ili* along the Kāne‘ohe Bay coast. In addition to shoreline and offshore fishing, fishponds were constructed along the Kāne‘ohe Bay shoreline to provide regular supplies of fish to the inhabitants of the *ahupua‘a*:

> Shoreline fishing is highly susceptible to the vagaries of weather and surf conditions. With walled fishponds, Hawaiians provided for themselves a regular supply of fish when other types of fishing were not possible or yielded an insufficient supply. The fringing reefs along the shoreline of Kaneohe Bay were ideal for the type of walled fishponds that extended out from the land.

> Mullet, one of the world's most important food fishes, was the most common species raised by Hawaiians in their fishponds; *awa* (milkfish) followed a close second. [Devaney et al. 1982:140]

Several *loko* (fishponds) were located in the vicinity of the current project area, including (from west to east) Kalokokahanhou, Kanohului‘wi, Punalu‘u, Waikalua, and Keana. Kamakau relates the number of fishponds in an area to the population that would have been necessary for their construction:

> The making of walls (*kuapa*) of the shore ponds was heavy work, and required the labor of more than ten thousand men. Some of these fishponds covered an area of sixty of seventy acres, more or less. Walls had to be made on the seaward side sometime in deep water and sometime in shallow, and many stones were needed.
>
> Many *loko kuapa* [fishpond walls] were made on Oahu, Molokai and Kauai, and a few on Hawaii and Maui. This shows how numerous the population must have been in the old days, and how they must have kept the peace, for how could they have worked together in unity and make these walls if they had been frequently at war and in opposition one against another? [Kamakau 1976:47]

2.2.2 Early Historic Period to Mid-1800s

In 1795, Kamehameha, at that time the Hawai‘i Island chief, invaded O‘ahu to secure control of the islands of O‘ahu, Moloka‘i, and Lāna‘i after his successful conquest of Maui. The O‘ahu Island chief Kalanikūpule, Moloka‘i Island chief Ka‘iana, and their forces met Kamehameha's army in the valley of Nu‘uanu. The following account describes the final stages of the battle at the Nu‘uanu Pali, the knife-edge ridge of the Ko‘olau Range separating Nu‘uanu from Kāne‘ohe Ahupua‘a:

> The forces of Kamehameha charged; in the onslaught many of the Oahuans were slain, and the rest pursued with great slaughter until they were driven to the end of the valley, which terminates in a precipice of six hundred feet, nearly perpendicular height, forming a bold and narrow gorge between two forest-clad mountains. A few made their escape; some were driven headlong over its brink, and tumbled, mangled and lifeless corpses, on the rocks and trees beneath; others fought with desperation and met a warrior's death, among whom was Kalanikupule, who gallantly contested his inheritance to the last. [Jarves 1872:85]

Kamakau (1992:172) offers an alternate fate for Kalanikūpule, stating he escaped to the mountains with some of his men for several months, but was later discovered and sacrificed to Kamehameha's war god Kūkā‘ilimoku.

Following the conquest of O‘ahu by Kamehameha, the lands of the island were divided between Kamehameha and his followers. Likely due to its agricultural and fishery productivity, Kāne‘ohe Ahupua‘a was seen as the "most valuable part" of the Ko‘olaupoko District (Kamakau 1992:303). Kāne‘ohe Ahupua‘a was retained by Kamehameha as his personal property, and was later inherited by his sons Liholiho and Kauikeaouli, Kamehameha II and III (Kame‘eleihiwa 1992:233).

In the early 1800s, there were three primary routes to Windward O‘ahu from the growing town of Honolulu. These were "around the island by canoe; through Kalihi Valley and over the pali

[cliff] by ropes and ladders [Graham 1826:142]; and over the Nuuanu Pali, the easiest, quickest, and most direct route" (Devaney et al. 1982:163).

The trail over the Nu‘uanu Pali was a heavily utilized transportation corridor since it allowed the people of Windward O‘ahu to bring their agricultural products to Honolulu for sale. The Reverend Reuben Tinker described his trip over the Nu‘uanu Pali in 1831:

> It seemed to me a sublime pass, yet almost too fearful to be enjoyed, for though not unaccustomed to hills, and the ups and downs of life, I suffered from apprehension lest I should fall from the rocky steep. I took off my shoes and by setting my feet in the crevices of the rocks, I worked myself along, assisted by a native, who saw nothing to wonder at but my awkwardness and fear on passing this grand highway, though to them common. The natives do not think it is either wonderful or difficult. It is the main road connecting the opposite sides of the island, and men and women are going up and down with their ordinary burdens on their shoulders, and in their arms, such as bundles of potatoes and taro, calabashes of poi, fowls, goats and swine.
>
> Mothers were passing along the most precipitous places with their children on their shoulders, as careless of danger as if they were on a level plain . . . [Tinker 1900:88]

Traditional agricultural practices, including wetland taro cultivation, continued to dominate land use in Kāne‘ohe in the early years following Western Contact, although to a lesser degree. Introduced diseases dramatically reduced the Native Hawaiian population to a fraction of its pre-Contact level. Native Hawaiian historian David Malo notes, "In the reign of Kamehameha, from the time I was born until I was nine years old, the pestilence (*mai ahulau*) visited the Hawaiian Islands, and the majority (*ka pau nui ana*) of the people from Hawaii to Niihau died" (Devaney et al. 1982:8).

Agricultural lands were subsequently abandoned due to the population decrease. In 1828, the missionary Levi Chamberlain embarked on a tour around the island of O‘ahu to determine the progress occurring at schools established to educate Native Hawaiians. During his tour, Chamberlain (1828:26) made observations of the landscape and people around the island commenting on the "present neglected state" of formerly cultivated agricultural lands:

> [The natives] ascribed it to the decrease in population. There have been two seasons of destructive sickness, both within the period of thirty years, by which, according to the account of the natives, more than one half of the population of the island was swept away. The united testimony of all, of whom I have ever made any inquiry respecting the sickness, has been, that 'Greater was the number of the dead than of the living.'
>
> . . . it may, I think, be safely asserted, that since the discovery of these islands by Cap. Cook there has been a decrease of population, by desolating wars, the ravages of disease and other causes, of at least one half of the number of inhabitants that might have been fairly estimated, at the time that celebrated voyager last visited these islands. [Chamberlain 1828:26]

2.2.3 The Māhele (Land Divisions)

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1958:8). This led to the Māhele, the division of lands among the king of Hawaii, the *ali‘i* (chiefs), and the common people, which introduced the concept of private property into Hawaiian society. In 1848, Kamehameha III divided the land into four categories: Crown Lands to be reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali‘i* and their *konohiki* (supervisors); and *kuleana,* habitation and agricultural plots claimed by the common people (Chinen 1958:8–15).

Kamehameha III inherited Kāne‘ohe and retained the bulk of the *ahupua‘a* during the Māhele. Following the death of Kamehameha III in 1854, his wife, Queen Kalama (Hakaleleponi), retained their Kāne‘ohe lands (Land Commission Award [LCA] 4452). Along with the *ahupua‘a* of Kailua and Hakipu‘u, Kāne‘ohe was seen as "her most valuable *‘Āina* [land] . . . all in the fertile, well-watered district of Ko‘olaupoko" (Kame‘eleihiwa 1992:264). Several *‘ili* in Kāne‘ohe were subsequently awarded as Konohiki Lands to the *ali‘i* and others with close ties to the royal family. The title to the *‘ili* typically included ownership of the *‘ili* fishpond and offshore fishing rights (Devaney et al. 1982:143). High-ranking *ali‘i* were awarded entire *‘ili*, while lesser *konohiki* were awarded half of an *‘ili* each (Kame‘eleihiwa 1992:269, 279). In addition to Queen Kalama, 14 *konohiki* LCA parcels were awarded for Kāne‘ohe lands (Kelly 1976:7).

An 1897 map of Kāne‘ohe (Figure 12) shows the Crown Lands, Government Lands, and large LCA lots distributed to the *ali‘i* and *konohiki* in the vicinity of the current project area.

The lands awarded as Crown Lands and Konohiki Lands, as well as lands designated as Government Lands, were "subject to the rights of native tenants" (Chinen 1958). The Kuleana Act of 1850 "authorized the Land Commission to award fee simple titles to all native tenants who occupied and improved any portion of Crown, Government, or Konohiki Lands" (Chinen 1958:29). Surveyor C.J. Lyons stated:

> Small tenants were permitted to acquire a full title to the lands which they had been improving for their own use. In the true view of the case, this was perfectly a measure of justice, for it was the labor of these people and their ancestors that had made the land what it was. [Lyons 1894:1699]

One hundred seventeen *kuleana* land claims were awarded in Kāne‘ohe Ahupua‘a, with the average award being approximately 2.4 acres (Kelly 1976:8). Testimonies associated with the LCA parcels indicated the primary land use for the claimed lands was *lo‘i*, irrigated fields used for cultivating taro (Kelly 1976:8). Testimonies include other land uses such as growing breadfruit, coconut, *hala* (*Pandanus tectorius*), gourds, melons, *‘ape* (*Alocasia macrorrhiza*), *pia* (*Tacca leontopetaloides*), pineapple, and banana; salt ponds; and *kula* (pasture) for raising animals (Devaney et al. 1982:23).

There are eight LCA claims within the current project area, as listed in Table 1 and shown on the 1897 map (see Figure 12) and on a 1931 map (Figure 13). The full texts of the eight claims are presented in Appendix A.

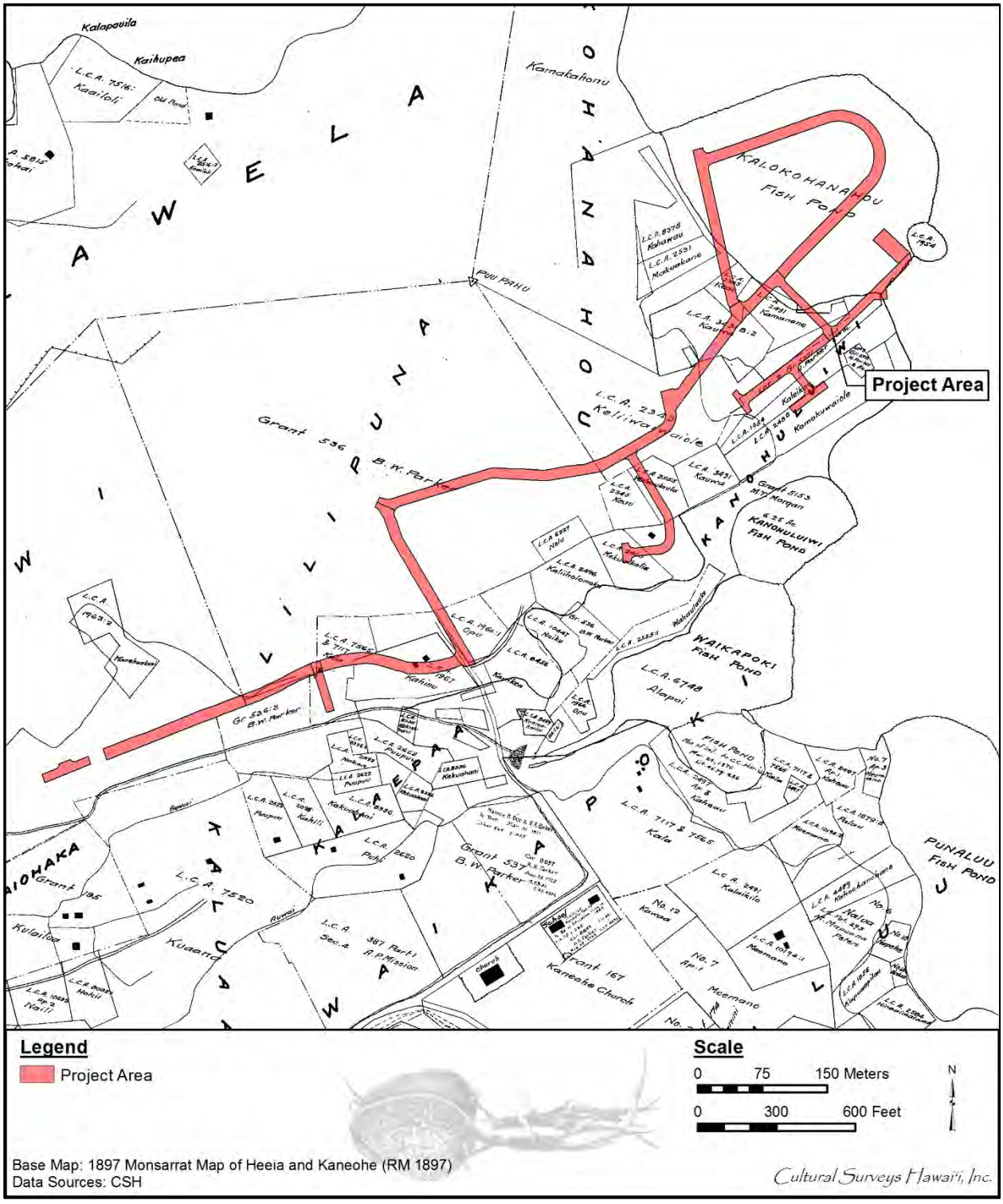

Figure 12. Portion of 1897 Monsarrat map of Heeia and Kaneohe, showing Land Commission Awards near and within the project area

Table 1. Land Commission Awards in or immediately adjacent to the Project Area

LCA #	Claimant	*‘Ili*	Acres	Description
1954	Kalaikau	Kalokohanahou	1.67	Sixteen taro *lo‘i*, a *kula*, a house, and a small island on Kalokohanahou Pond
M.A. 35	Kamakahonu	Kalokohanahou	52.54	Kalokohanahou Fishpond
2491B	Kamanene	Kalokohanahou [Lokohou]	1.00	No information on use of land; bounded by the stone wall of Kalokohanahou Fishpond
2345	Keau	Kalokohanahou [Kalokohou]	0.48	Four taro *lo‘i*, one *kula*, and one house; the house is in a second lot near the project area, but not within it
3431B	Kauwa	Kalokohanahou [Kalokohou]	1.99	Eleven *lo‘i* in a lot near the project area; house lot within the project area
2343	Keliiwai-waiole	Kalokohanahou [Kalokohou]	6.09	Eighteen taro *lo‘i*, one *mo‘o* (garden), *kula*, and a house; mentions a neighbor’s potato (sweet potatoes) patch, a fishpond, a river, and a high hill (probably Pu‘u Pahu) as boundary marks
7565 and 7117	Kala	Waikapoki	– (not awarded)	Seven taro lo‘i, one pond, one kula, and one house site
1967:1	Kahinu	Kailipaa, Waikapoki	2.22	Seven taro *lo‘i*; two houses on a fenced lot; bounded on the west by Wailele Creek

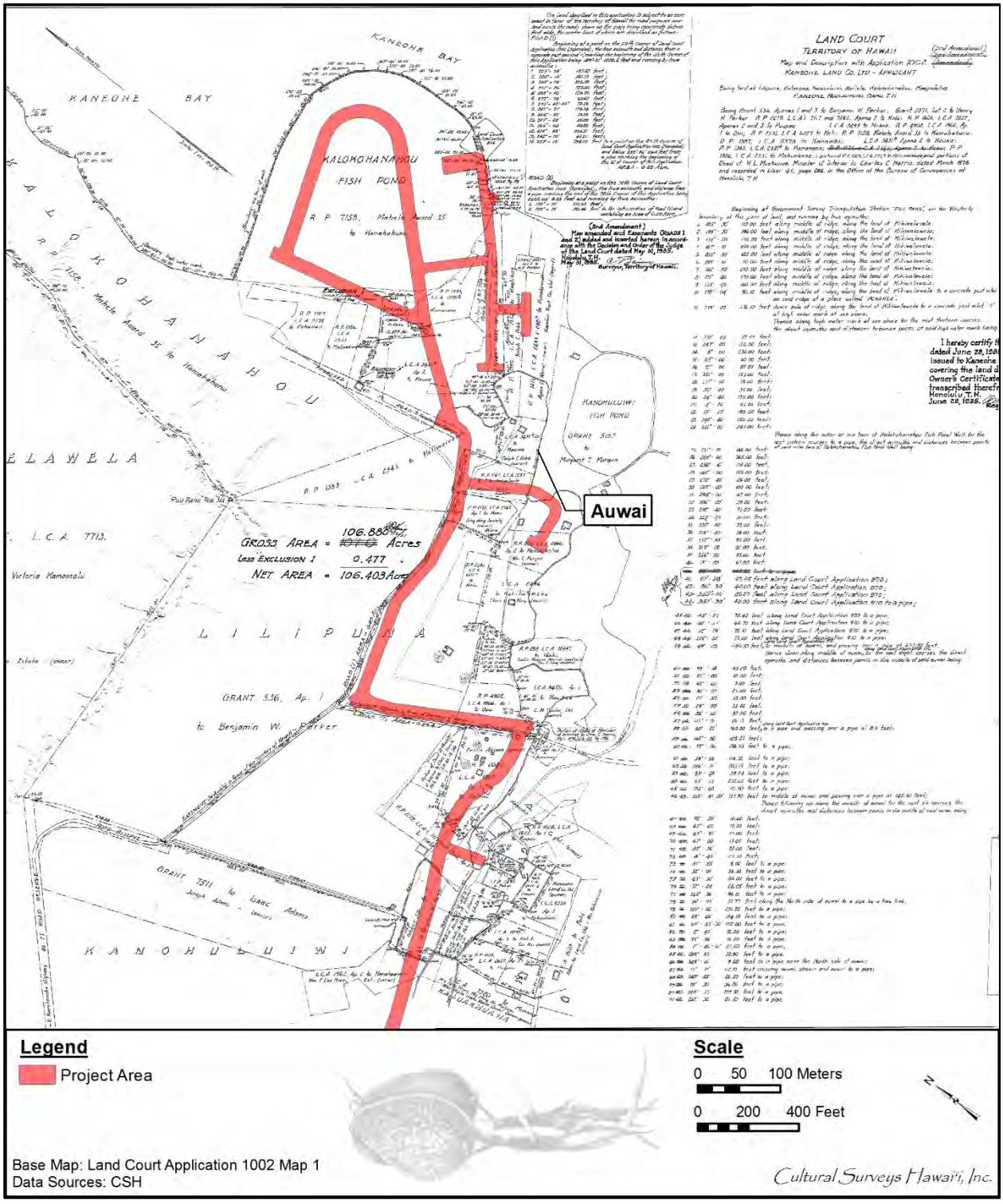

Figure 13. 1931 Land Court Application 1002 Map 1 for land acquisition by the Kaneohe Land Company, Ltd. for lands in the *‘ili* of Lilipuna, Kalaepaa, Kanohulu‘iwi, Wailele, Kalokohanahou, and Kaopulioloa the project area (King 1931)

Most of the awardees claimed several *‘āpana* (lots), at least one for irrigated taro cultivation, a house lot, and upland land (“*kula*”). The testimony of several mention a river or creek called Wailele or Kāne‘ohe, an *‘auwai* (water channel) called Kanohuli‘iwi, the fishponds Kalokohanahou, Kanohuli‘iwi, and Waikapoki, a *pali* (cliff) called Wai‘ape, and a high hill, probably Pu‘u Pahu. The 1897 map indicates the water source for the irrigated taro was a stream, Kane‘ohe Stream, which flows toward the sea, then bends at a 90 degree angle to extend parallel to the coast. On the 1931 map this stream is labeled as an *‘auwai*. When the claims have a separate house lot, it is usually located near the shore or in the uplands. The lots near the stream/*‘auwai* are those used for *lo‘i* (irrigated taro patches). Some of the claims also mention that neighbors have sweet potato patches near the shore. The current sewer line follows the alignment of this ancient stream/ditch, which was filled in later during residential development in the area.

Kalokohanahou was a 7-acre pond (Cobb 1905:748) awarded to the *ali‘i* Kamakahonu as part of his Konohiki Award (M.A. [Māhele Award] 30). It is interesting that the small island (LCA 1954) on the northeast shore of the fishpond was awarded to someone else. LCA 1954 was awarded to Kalaikau, who had a larger lot extending inland from the shore of the pond on which he raised taro and had a house lot. The Māhele information indicates the project area was used for irrigated taro cultivation and for house lots, which were utilized throughout the nineteenth century and into the early twentieth century.

2.2.1 Mid-1800s to Early 1900s

The mid-nineteenth century brought great changes to Kāne‘ohe Ahupua‘a, including private and public land ownership laws during the Māhele, commercial rice, sugar cultivation, and ranching. Agricultural cultivation and ranching established the region as a source of market resources for Honolulu and beyond. Fishponds also became commercial entities during this period. A 1906 map (Figure 14) illustrates the ecological zones for the different types of resources in this section of Kāne‘ohe, with the project area within extensive wetland areas used to grow taro and later rice, but also within the zone used as cattle pasture.

2.2.1.1 Sugar

One of the earliest sugar plantations on O‘ahu was owned by Charles Coffin Harris, who came to Hawai‘i in 1850, planning to practice law. He established the Kaneohe Sugar Plantation Company (ca. 1865) on 7,000 acres of Queen Kalama’s land (Dorrance and Morgan 2000:41). In 1871, Harris bought Queen Kalama’s Ko‘olaupoko properties from her heir, Charles Kana‘ina, as well as some land in Honolulu for $22,448. The sale included “livestock, tools, fishponds, and fishing rights” (Devaney et al 1982:29). The plantation land was used for a variety of purposes, as can be seen in the following 1884 description from McKenney’s Hawaiian Directory:

> Kaneohe Sugar Plantation, Mrs. N.R. Brewer proprietress, M. Rose manager . . . 10,000 acres, 500 acres under cultivation, 200 with sugar and 300 with rice, the remainder grazing land on which are 3,000 head of cattle, capacity of mill three tons per diem, estimated yield for 1884 500 tons, men employed seventy-five. [McCoy et al. 1972:9]

Figure 14. Portion of 1906 Donn map of Oahu Island, with Land Use Survey, showing land use in the project area and vicinity; note the project area is in the wetlands area (diagonal blue lines) used for taro and then rice cultivation, but also partially within the boundary of “pasture land” used for ranching (between two solid yellow lines)

C.C. Harris’s plantation closed in 1891 since the sugar yield was not enough to support the operation (Dorrance and Morgan 2000:41). Harris’s daughter and heir, Mrs. David Rice, incorporated the lands as Kaneohe Ranch and converted them to stock farming. There were also a number of small dairy ranches in the area around the turn of the century (McCoy et al. 1972:9). James B. Castle purchased a large block of their land holdings in 1907 (Dorrance and Morgan 2000:42).

2.2.1.2 Rice

Rice cultivation was to eventually supersede taro and dominate the lowlands of Kāne‘ohe. The ancient taro *lo‘i* and *‘auwai* irrigation systems were used and additional new ditches were built to support rice cultivation. During the height of rice cultivation (ca. 1880-1920), Chinese dominated the business. “To a great extent the rice business, growing and milling was controlled by Chinese *hui* (firms), which recruited laborers from China, handled investment capital from rich absentee landlords, and tallied profits” (Devaney et al. 1982:49). By the late 1880s, virtually the entire floodplain area of Kāne‘ohe was under rice cultivation. In 1892-1893, the Kaneohe Rice Mill was erected and began production on property adjoining Waikalua Stream. A flume brought water from the river to the rice mill. Mrs. Polly Ching related in a 1976 personal interview that about twice a week a steamer came into Kāne‘ohe Bay to pick up and transport rice to market in Honolulu (Devaney et al. 1982:52).

By the 1920s, rice had gradually declined in importance due to a number of factors. Two of the primary reasons for this decline were the beginning of rice production in California and the “annexation of Hawaii by the United States in 1898 [which] resulted in restrictions on the number of Chinese laborers arriving from the Far East” (Devaney et al. 1982:53). However, rice cultivation, as well as some taro cultivation, continued up to ca. 1960.

2.2.1.3 Pineapple

Commercial cultivation of pineapple in Kāne‘ohe began in the 1890s and the first decade of the twentieth century. From approximately 1910 to 1925, pineapple cultivation was a major industry in this area. In 1911, the company of Libby, McNeill and Libby built a pineapple cannery in He‘eia. At its peak, 2,500 acres were under pineapple cultivation on Windward O‘ahu (Harper 1972), stretching from Kāne‘ohe to Kahalu‘u. Most of the pineapple lands in Kāne‘ohe were “located below the Pali where the golf course, Hawaii Loa College, and the Hawaiian Memorial Park are today” (Kelly 1987:295-296). A *heiau*, Kaualauki Heiau in He‘eia, was mostly destroyed by pineapple field clearance during this time—a likely fate of many archaeological sites (Kelly 1987:295-296). In 1919, the Kaneohe Ranch Company and Heeia Agricultural Company, Ltd. leased 1,000 acres of land in He‘eia, Kāne‘ohe, and Kailua, formerly planted in sugar, to the Libby Company for a term of 17 years. The extent of pineapple fields near the project area in the early twentieth century is shown on the 1906 land use map (see Figure 14). In 1917, Libby leased an additional 600 acres in He’eia (Devaney et al. 1982:61). While the rice fields that covered old taro lands were mainly located near streams and near the coast, pineapple was also grown on the slopes of higher lands, usually on land subleased to individual Japanese farmers:

> Pineapples were planted by individual Chinese and Japanese farmers on moderately sloped hill land where rice and taro could not be grown . . . these areas included the

> dissected alluvial terraces and the lower slopes and spurs of the Ko‘olau range. [Miyagi 1963:115]

The change to the Windward landscape due to pineapple cultivation is illustrated by the following passage from H.F. Alexander's 1914 *Mid Pacific Magazine* article on cycling around O‘ahu:

> At last we reached the foot of the Pali . . . Joe and I looked over the surrounding hills, but looked in vain for the great areas of guava through which but a few months ago we had fought and cut our way. As far as the eye could reach pineapple had taken the place of the forest of wild guava. The newest industry in Hawaii was beginning even to press upon the cane fields of this side of the island. [Devaney et al. 1982:62]

The pineapple fields were abandoned when Moloka‘i and Lāna‘i pineapple cultivation began to boom, and Libby dissolved the Ko‘olaupoko enterprise (Kelly 1976:47). The cannery closed in 1923 (Dorrance 1998:95), and most of the former pineapple land went to grass, some of which was used to graze cattle. Several of the small farmers returned to rice cultivation at that time (Kelly 1975:47).

2.2.1.4 Ranching

English Captain George Vancouver introduced cattle and sheep to O‘ahu in 1793 (Henke 1929:8) and by the 1840s, the cattle had multiplied into a large herd (Devaney et al. 1982:70). At its peak, Kaneohe Ranch extended from the ocean in Kailua to the Pali and included 12,000 acres and 2,000 head of cattle (Henke 1929:62). By the mid-1860s, the cattle were so numerous they caused environmental degradation. Alien grasses and other species such as pigeon peas were introduced to the area as cattle fodder (Henke 1929:62). Much of the land modification in the upland and hilly portions of Kāne‘ohe may be the result of heavy cattle grazing over a long period of time. An 1854 visitor to the Islands, standing atop the Pali and looking down at Kāne‘ohe, noted that "hundreds of cattle may be seen feeding on the rich pasture with which these plains are covered, adding to the landscape an exquisite finish" (Bates 1854:104).

By the mid-1860s, we have an indication that livestock were altering the landscape. The undulating plains at the foot of Nu‘uanu Pali were described as "a rich land a while ago but now there are not many plants because animal are permitted there" (Devaney et al. 1982:70). In the post-World War II years, the dairy industry rose to prominence over beef cattle ranching. The shortage of available land due to urban expansion, the shortage of fee simple land, and the high price of land leases forced farmers in the dairy districts near Honolulu (e.g., Koko Head) to relocate to more remote areas of O‘ahu (Durand 1959:241). In the 1950s, Kailua-Kāne‘ohe was an important dairy district of Windward O‘ahu. Dairy farming was dominated by Caucasians particularly of Portuguese and Spanish ancestry, and secondarily by Japanese farmers (Durand 1959:235). "Among the names of island dairymen, illustrating the Portuguese-Spanish-Mainland importance . . . are . . . Brazil, Carlos, Campos, Costa, Ferreria, Foster, Freitas, Knowles, Medeiros, Moniz, Ornellas, Rapoza, Santos, Toledo, Vause and White" (Durand 1959:235). This period, however, was relatively short-lived as the opening of the Pali route, exorbitant land prices in Honolulu, and more automobiles on O‘ahu contributed to rapid urbanization in Kailua-Kāne‘ohe

(Durand 1959:244-245). Many landowners decided to develop their land for suburban housing and terminated leases with farm leaseholders.

By the end of World War II, ranching was no longer economically viable for Kaneohe Ranch, so the ranch became primarily a landlord to farmers. Following the war, residential developments began to change the face of Kāne‘ohe Ahupua‘a. The opening of the Wilson Tunnel and the expansion of the Pali Highway in the 1950s and 1960s, creating an easier passage from Honolulu to windward communities, led the way to a development boom on O‘ahu’s windward side. High tax rates on real estate sales forced many old-time landowners to lease their land to residential developers rather than sell on a fee-simple basis. Kaneohe Ranch at one time leased out their land for over 5,000 single-family residential lots in Kailua and Kāne‘ohe. The vast majority of the leaseholds were later sold to the lessees.

2.2.1.5 Fishponds

As previously mentioned, during the Māhele, fishponds were considered to be part of the land to which they were attached. As such, fishponds were typically designated as Crown or Government Lands, or awarded to the *ali‘i* as Konohiki Lands. Some of the lands owned by the government and *ali‘i*, along with the fishponds, were subsequently sold to entities pursuing commercial agriculture, such as sugarcane and pineapple cultivation, or ranching.

Once fishponds were declared private property, they were taxed by the government along with the rest of the real property. When commercial agriculture brought promises of high profits, few large landowners paid much attention to the fishponds attached to their land holdings. They were satisfied to lease them to Hawaiians or Chinese who had the technical knowledge necessary to properly manage fishponds. Yet when disaster struck, such as a break in the fishpond wall, few lessees could afford the capital required to undertake repairs. As a result, many fishponds deteriorated with the passage of time, and the practice of aquaculture, for all practical purposes, ceased (Devaney et al. 1982:143). By 1901, only 16 fishponds were present within Kāne‘ohe Bay, perhaps less than half the fishponds present in the mid-1800s.

The extensive grazing and agricultural uses of the inland areas of Kāne‘ohe increased erosion and infilling of nearshore marine environments, including fishponds. In addition to being a bountiful source of fish, in 1976 oysters were cultivated in fishponds (Devaney et al. 1982:145). Local Japanese (Little-neck) clams (*V. philipinarum*) were introduced into various ponds along Kāne‘ohe Bay between 1920 and 1939, and some Kāne‘ohe fishponds were well-known as a desirable clamming destinations during the September to October season. However, in 1969 an article in the *Honolulu Star-Bulletin* reported soil erosion caused a “massive wipe-out of the transplanted Japanese little-neck clams” (Devaney et al. 1982:101).

The western shore of Kāne‘ohe Bay was dotted with numerous fishponds—Kalokohanahou near the border with He‘eia Ahupua‘a at Pōhākea Peninsula, Kanohulu‘iwi Fishpond, Waikapoki Fishpond, an unnamed fishpond, and Punalu‘u Fishpond. An older name for Kalokohanahou (“the repaired pond”) was Kahanahou, “the remaking” (Pukui et al 1974:63, 78). The pond was approximately 7 acres in size, with a small island at the northeast end but no ocean-side *mākāhā* (gates). It was filled in the 1940s for the development of the Kahanahou residential neighborhood. Three photographs (Figure 15 through Figure 17) illustrate fishpond evolution. An 1887 photograph shows Kalokohanahou Pond near the tip of a peninsula, with Kanohulu‘iwi Pond

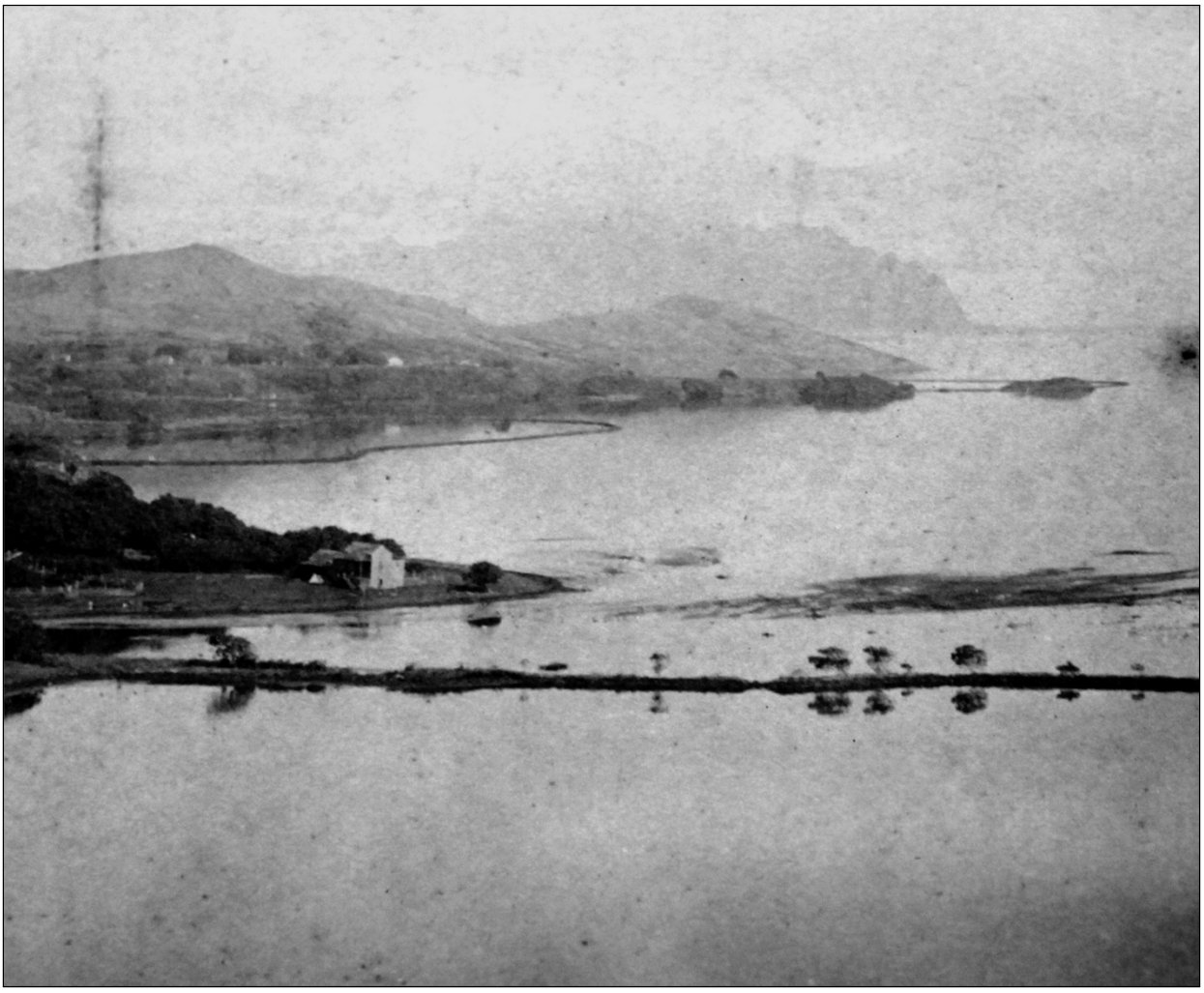

Figure 15. 1887 photograph of Kāne‘ohe fishponds; Kalokohanahou (right background) and Kanohulu‘iwi (left center); ponds are unfilled (Hawai‘i State Archives 1887)

Figure 16. 1930s photograph of west shore of Kāne‘ohe Bay, showing (from right to left) Kalokohanahou, Kanohulu‘iwi, Waikapoki, and Punalu‘u Fishponds (Hawai‘i State Archives 1930s); ponds are silted in

Figure 17. 1940s photograph of western shore of Kāne‘ohe Bay; Kalokohanahou Fishpond (center) has been filled to create the Kahanahou residential neighborhood (Hawai‘i State Archives 1940s)

adjacent. The small island on the northeast side is also clearly visible. A 1930s photograph shows the fishponds from Kalokohanahou to Punalu‘u. The ponds are not filled, but appear to be unused and silted in. The island on Kalokohanahou is still visible. The last photograph is from the 1940s. Although the island on Kalokohanahou is still present, the interior of the pond is in the process of filling. There are already a few structures visible in the interior over a layer of topsoil. The other ponds of Kāne‘ohe on the western shore are filled with sediments and sand.

2.2.1 1900s to the Present

A series of USGS and U.S. Army War Department maps (Figure 18 through Figure 20) and photographs show the residential development of the western shore of Kāne‘ohe Bay in the twentieth century. On a 1919 map (see Figure 18), several ponds on the western shore of Kāne‘ohe Bay are clearly delineated. Most of the inland roads are “unimproved” (not paved, denoted by dotted lines) and have scattered houses on both sides. The shore lands are shown as wetlands. There are cattle paddocks inland and near the shore. The map indicates the land at this time was used for agriculture, ranching, habitation, and fishpond use. The *‘auwai* within the project area is still present. By 1936 (see Figure 19), there are many improved, paved roads in the area branching off from the newly designated coastal highway, and houses are more formally placed and aligned with these main roads. The former cattle paddock area near the shore has been developed into the Coral Gardens residential area. On both the 1914 and 1936 maps (see Figure 18 and Figure 19), Kalokohanahou, Kanohulu‘iwi, and Punalu‘u fishponds are shown as open and unfilled. This is in contrast to the 1943 map (see Figure 20) in which the ponds are shown as partially filled, either by natural sedimentation or by filling with dredged material. By 1954 (Figure 21), Kalokohanahou has been completely filled to develop the Kahanahou residential neighborhood, although the ponds to the east still remain unfilled. The area is densely developed for residences with numerous streets and houses aligned with the streets. In a 1978 aerial photograph (Figure 22), residential development is also shown. The outline of former pond boundaries offshore can also be seen in this photograph.

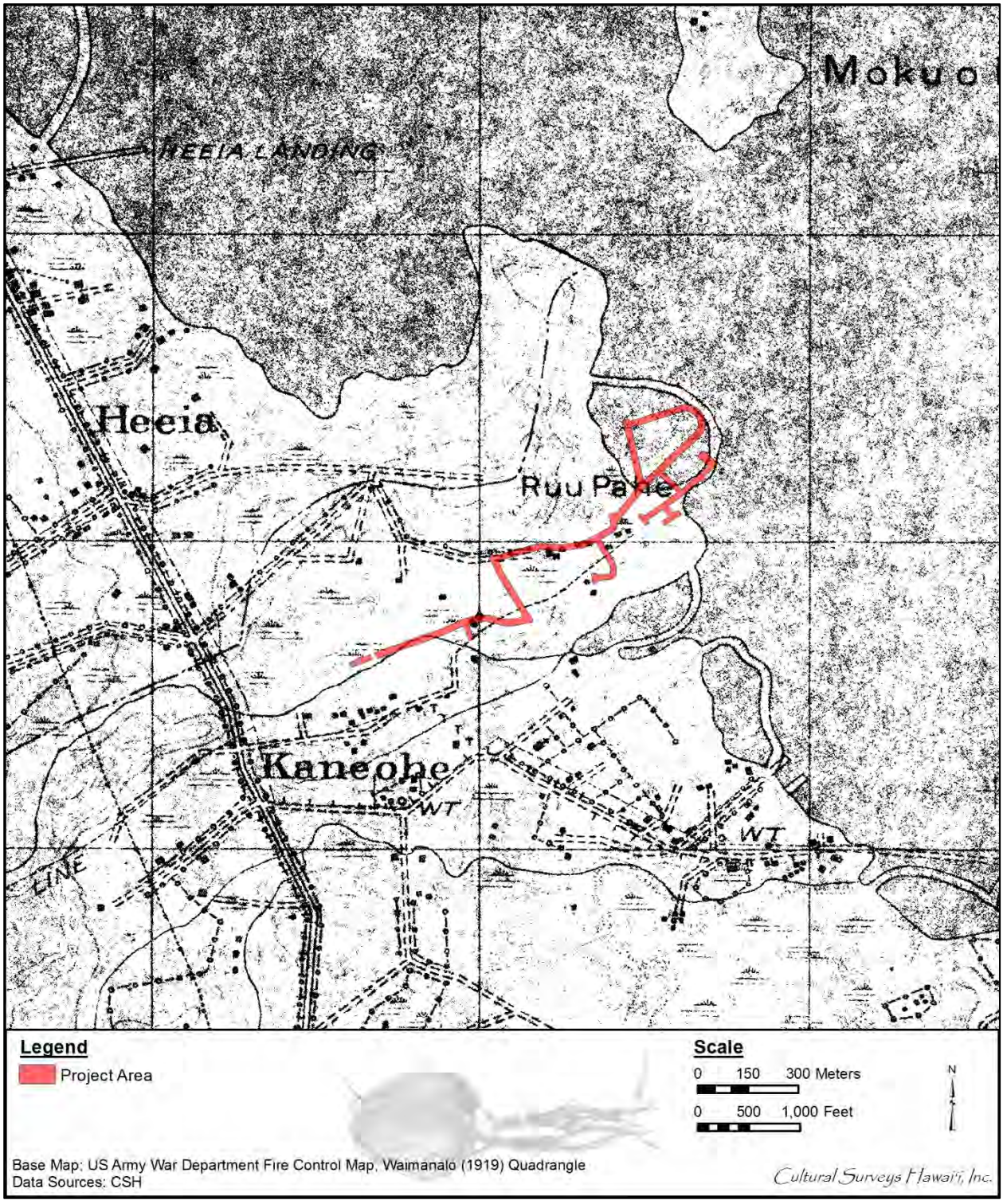

Figure 18. 1919 U.S. Army War Department Fire Control Map, Waimanalo Quadrangle, showing the project area with unfilled Kalokohanahou Pond; note the old *‘auwai* is pictured as a ditch (dotted line)

Figure 19. 1936 U.S. Army War Department Terrain Map, Kaneohe Quadrangle, showing the project area with unfilled Kalokohanahou Pond; there is no longer an *‘auwai* or ditch labeled

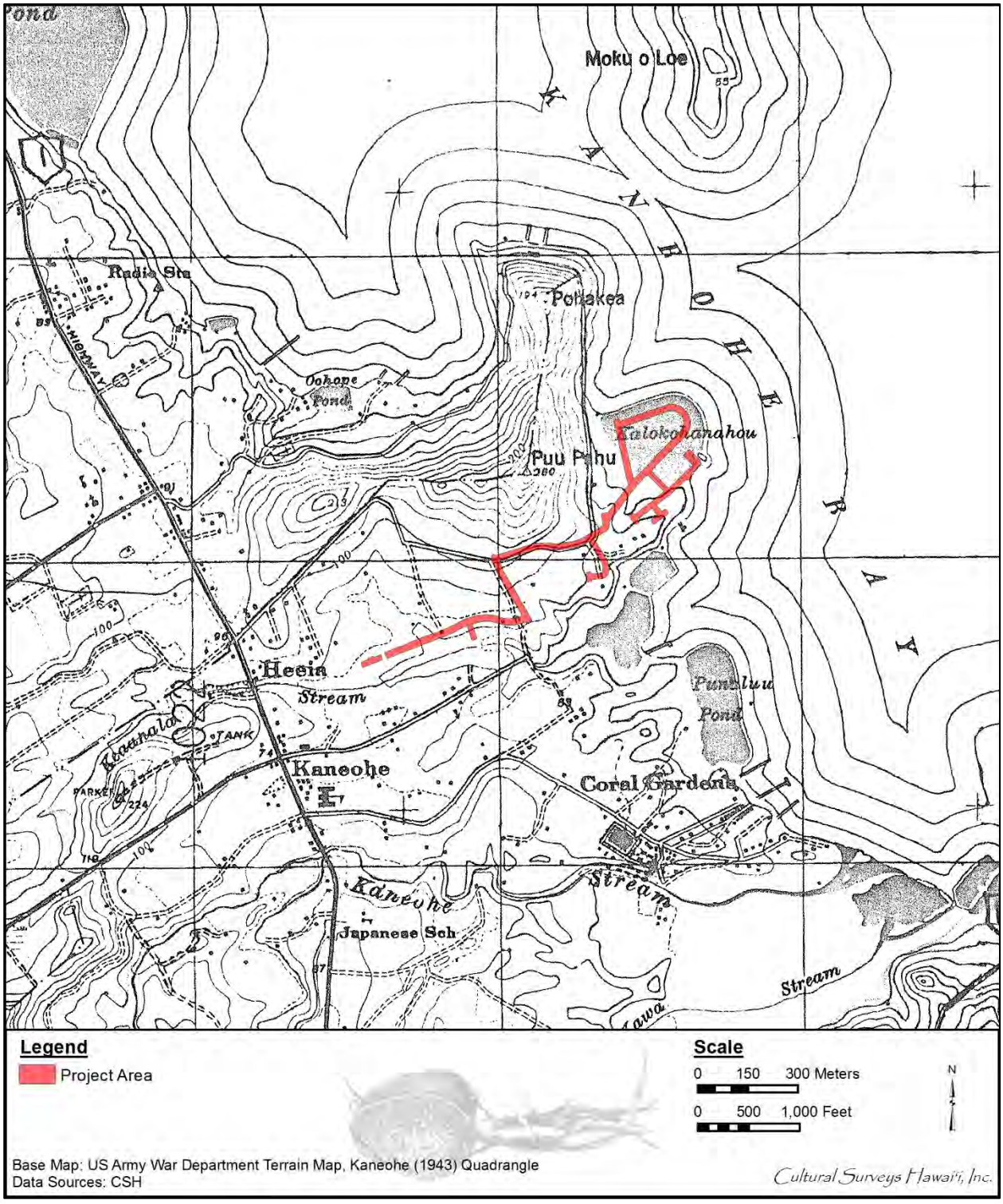

Figure 20. 1943 U.S. Army War Department Terrain Map, Kaneohe Quadrangle, showing the project area with Kalokohanahou and adjacent fishponds partially filled

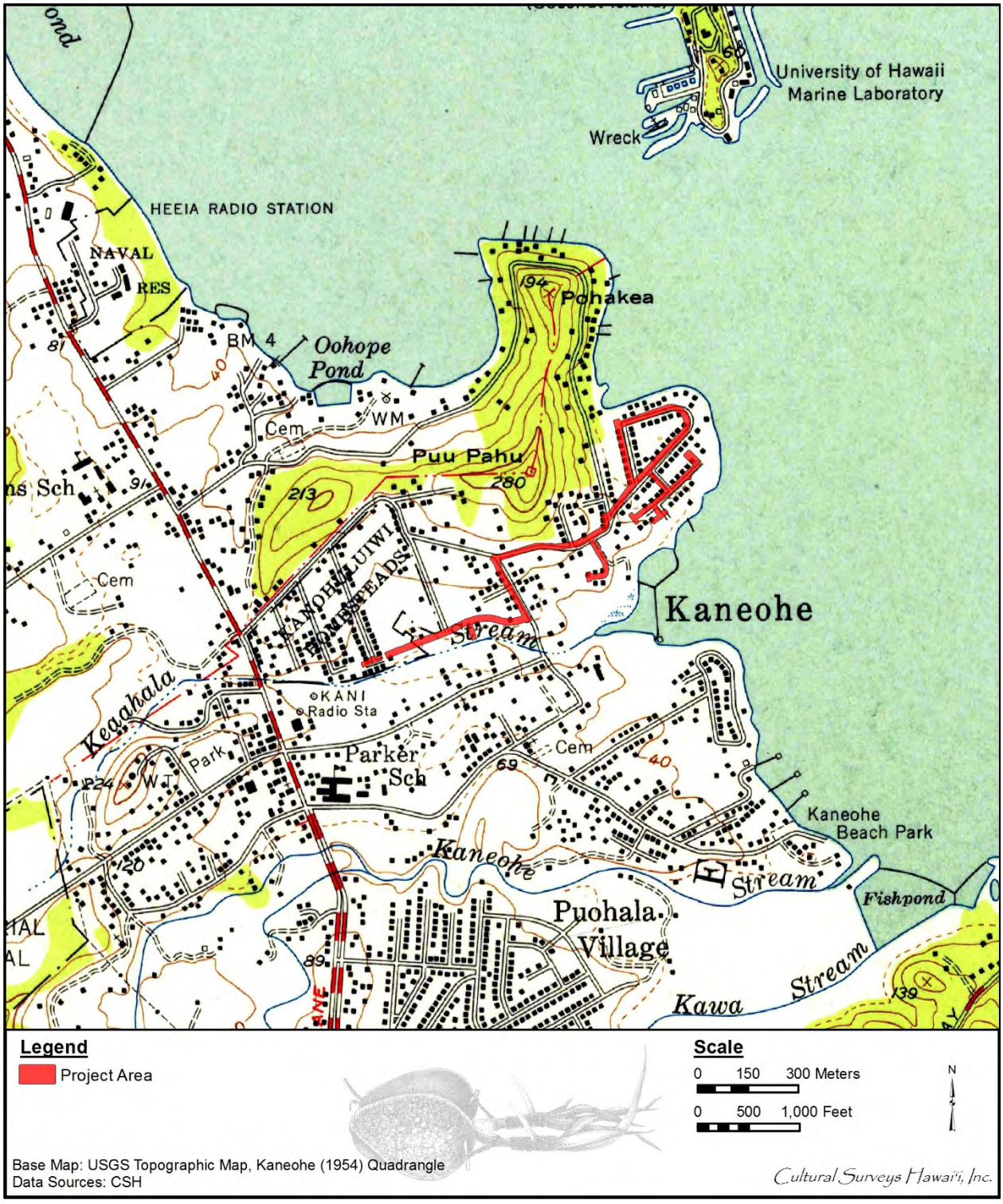

Figure 21. 1954 Kaneohe USGS topographic quadrangle showing the project area; Kalokohanahou has been filled to create the Kahanahou residential neighborhood, while other fishponds to the east remain unfilled but are modified

Figure 22. 1978 USGS Orthophotoquad Aerial Photograph, Kaneohe Quadrangle showing the project area; Punalu‘u Pond at the right of the photo remains untilled

Section 3 Previous Archaeological Research

Archaeological studies conducted in the vicinity of the current project area in Kāne‘ohe Ahupua‘a are summarized in Table 2. The location of previous studies and previously identified sites are shown on Figure 23 and Figure 24. A discussion of archaeological findings relevant to each portion of the project area follows.

3.1 Early Archaeological Surveys

The first systematic archaeological study of the Kāne‘ohe area was conducted by J. Gilbert McAllister of the Bernice Pauahi Bishop Museum in 1930. McAllister (1933) consulted with knowledgeable informants about both physical and legendary sites of each district during his island-wide survey of O‘ahu. McAllister recorded a number of *heiau* and other sites in the vicinity of the current project area. The eight sites he recorded near the project area are sites 331–335 and 338–341. These can be located on Figure 16.

McAllister’s sites:

> **Site 342**. Pu‘upahu Heiau, said to have been located on the elevation called Pu‘upahu Kāne‘ohe. There are no remains now [ca. 1931]
>
> **Site 343**. Kalokohanahou fishpond, adjacent to Kalokohanahou and just beneath Pu‘u Pahu.
>
> According to Bell, this is not the old name, but the one used by Parker when he rebuilt the pond. The walls are but a few feet wide, loosely built of lava stones through which the water seeps. A small island occupies a portion of the wall. There were two watch-houses and no outlet gates (*mākāhā*). According to Cobb, it covered 7 acres.
>
> [Cobb notes that the old name for this fishpond was Kohanahou (Cobb 1903)]
>
> **Site 344**. Kanohuluiwi pond, adjacent to Kanohuluiwi.
>
> The name was given me by John Bell. The pond is small, with narrow lava-rock walls, and covers an area of 2.5 acres. It is apparently still in use. On one of the old maps in the land office there are two adjacent ponds of about the same size. The broken wall of one is still to be seen, the name of which is probably Waiapoki, with an area of 4 acres. The other pond has been obliterated [by ca. 1931].
>
> **Site 345**. Punalu‘u Pond, adjacent to Punalu‘u Kāne‘ohe. Covers 12.5 acres and has a wall length of approximately 1600 feet The walls are of basalt, a few feet in width.
>
> **Site 346**. Deep ditch dividing the lands of Punalu‘u and Waikalua, Kāne‘ohe. Built by the chief of the district in order to keep his pigs from wandering from Waikalua, which seems to have been a land set aside for the royal swine. Occasionally there was built an incline leading from the bottom of the ditch to Waikalua, in order that the pigs that fell into the trench might again gain access to the pen in which they were kept.

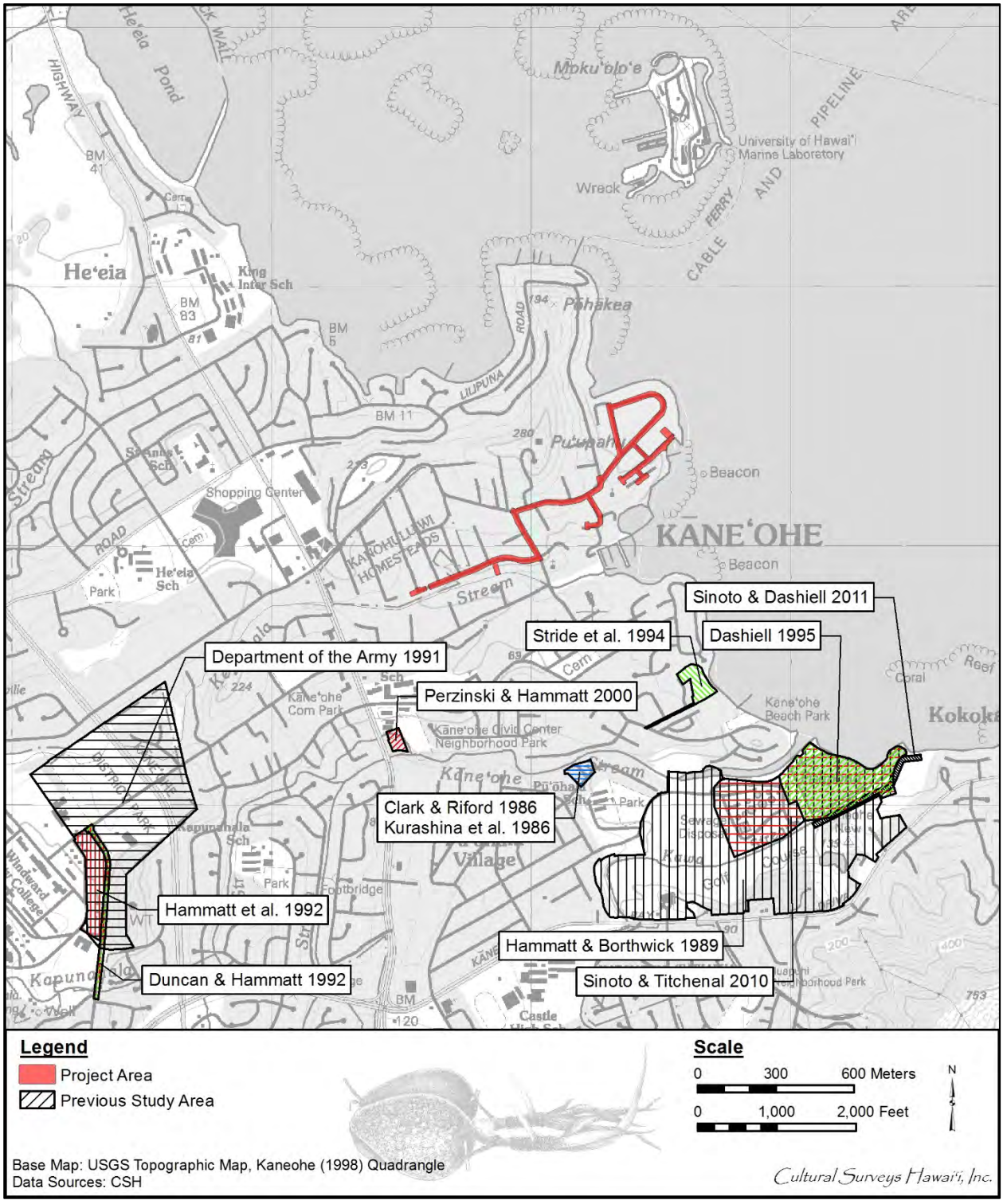

Figure 23. Previous archaeological studies in west coastal Kāne‘ohe near the project area

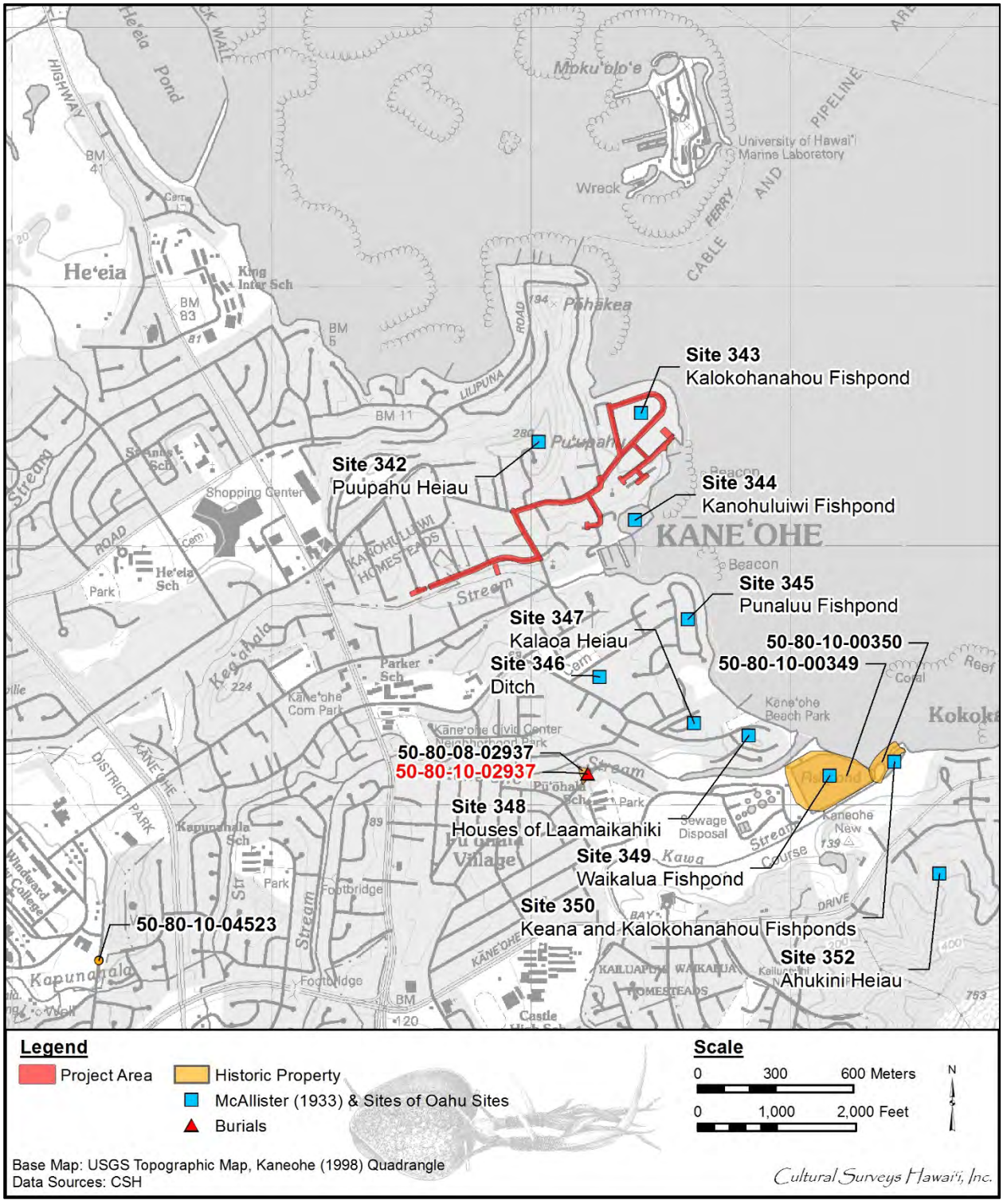

Figure 24. Previously identified archaeological sites in west coastal Kāne‘ohe near the project area

Table 2. Previous Archaeological Studies in Kāne‘ohe near the Project Area

Source	Study	Location	Results
McAllister 1933	Sites 342–352	Island-wide	Identified ten sites near project area within Kane‘ohe Ahupua‘a, five fishponds, three *heiau*, ditch, and chief’s house cluster (State Inventory of Historic Places [SIHP] # 50-80-10-342-352)
Clark and Riford 1986	Archaeological salvage excavations	Nani Pua Gardens II Subdivision	Salvage excavations at Bishop Museum site 50-Oa-G5-101 (SIHP # 50-80-10-2937), pre-Contact Hawaiian habitation site; two human burials and additional fragmentary remains found; reports ^{14}C date of AD 1070-1405; substantial discussion of lithic finds
Kurashina et al. 1986	Reconnaissance survey	Nani Pua Gardens II Subdivision	Identified several sites, including two lithic scatters, former rice field and taro field with stone retaining wall, historic house foundation, two stone platforms, and Italian prisoner-of-war camp, Kane‘ohe rice mill, and SIHP # 50-80-10-2937 (Hawaiian habitation site); preliminary test excavations conducted at SIHP # -2937; pre-Contact artifacts, post-Contact artifacts, and charcoal recovered
Hammatt and Borthwick 1989	Inventory survey and subsurface testing	Bay View Golf Course	No significant findings within eight trenches, excavated at 50-100-ft intervals; each trench averaged 7.5 m long and 230-240 cm deep (to water table)
Department of the Army 1991	Field inspection	Keaahala Military Reservation	No surface features noted; background research indicates area may never have been used by military
Duncan and Hammatt 1992	Archaeological monitoring	Castle Hills access road	During monitoring, one archaeological site recorded, SIHP # 50-80-10-4523; included historic trash pit with bottles and probable water trough
Hammatt et al. 1992	Archaeological inventory survey	Castle Hills access road	No surface features noted; historic bottles recovered from one test excavation
Stride et al. 1994	Archaeological inventory survey	Coral Gardens	No cultural remains noted during excavation of eight backhoe trenches

Source	Study	Location	Results
Dashiell 1995	Preservation plan	Waikalua Loko Fishpond	Recommended preserving, restoring, and maintaining fishpond; establishment of interpretive program also recommended
Perzinski and Hammatt 2000	Archaeological inventory survey	Kāne‘ohe Civic Center playground parking lot	No surface features noted; only fill material noted in excavations
Sinoto and Titchenal 2010	Archaeological assessment	Kāne‘ohe-Kailua Force Main	Pre-construction testing and/or monitoring recommended
Sinoto and Dashiell 2011	Archaeological monitoring	Bay View Golf Course	During monitoring of 125-linear-ft sewer line replacement, fill observed to 5.54 m below surface

Though John Bell pointed out the exact site of this division line, no evidence of the ditch remains; but the idea of such a barrier is worthy of note.

Site 347 Kalaoa Heiau, Waikalua, Kāne‘ohe.

This heiau was located on an elevation to the left of the road leading to the Kāne‘ohe municipal camping grounds just beyond lane which leads to the coral gardens. Nothing remains of the heiau, the stones having been used in the construction of the mill. The *heiau* was built by La‘amaikahiki, according to John Bell, who took me to the site.

Site 348. Site of the houses of Laamaikahiki [a chief], Waikalua, Kāne‘ohe.

. . . On the southeast side of the Trask home is an oval pile of rocks, 20 feet long, 15 feet wide, and 3 feet high, with a great amount of coral scattered throughout. . . A similar pile of coral and stone, though much smaller, is found on the other side of the house. The sands in front of the place are known as Naonealaa and were tapu [tabu] to the commoner when the alii lived there.

On this same elevation Laamaikahiki wanted to build his heiau, Kalaoa (Site 347), but he was advised by his kahuna to place it considerably farther from the chief’s houses, for the women of the household would be too close to the sacred inclosure tapu to them. . . . Naonealaa is listed by Thrum . . . as a heiau.

Site 349. Waikalua fishpond, adjacent to Waikalua, Kāne‘ohe.

The rebuilding of the pond has been completed. The wall was 1420 feet long, of waterworn basalt 3 to 4 feet high but somewhat wider. The pond covers 11 acres.

Site 350. Two ponds, Kailua side of Waikalua.

The pond in use is said to be Keana with an area of 3.5 acres. According to Bell, the name of the other is Kalokohanahou. (See Site 343). Its wall is broken. Both

were built of waterworn basalt. The dirt-filled wall of Keana is wide enough for trees to grow on it.

Site 352. Ahukini heiau, Keana (now known as Kokokahi), Kāne‘ohe

A small structure, 70 by 127 feet, built on the top of an elevation 1200 feet from the sea. The ground slopes away from the heiau in all directions. The only features remaining are the low walls, unusual because they are built of stones a few inches in size. Here and there at the bottom larger stones have been used, and at a few places the wall stands 1 foot in height, but most of the remains are scattered for it is very easy to the cattle to disturb the small stones . . . There appears to have been only this one platform, which was dirt-paved, though on the end toward the mountains there are many scattered stones, also small, which may, at one time, have been used for paving a small area. When the drums at this heiau were beaten they could be heard over Kaneohe, but not just on the other side of the low ridge in Kailua. [McAllister 1933:177–179]

3.2 Modern Archaeological Surveys

3.2.1 Proposed Nani Pua Gardens II Subdivision Project

In 1986, the Bishop Museum conducted archaeological salvage excavations of site G5-101 (SIHP # 50-80-10-2937) within TMK: [1] 4-5-030:043 (Clark and Riford 1986). This pre-Contact Hawaiian habitation site is within the Nani Pua Gardens II Subdivision and was identified during archaeological investigations by the Bishop Museum in 1986 (Kurashina et al. 1986). The 1.7-acre parcel is bordered on the north and east by Kāne‘ohe Stream.

Preliminary investigations revealed a surface layer with lithic artifacts and a buried cultural layer. Additional sites recorded in the area included two lithic scatters (Site 50-Oa-G5-100), a former rice field and taro terrace (Site 50-Oa-G5-104), an Italian prisoner-of-war camp, and the Kaneohe Rice Mill. Subsurface testing recovered a relatively early radiocarbon date of AD 1070-1405. A large assemblage of lithic artifacts suggested the historic property was primarily used by “craftsman specializing in the manufacture of stone tools, primarily adzes” (Clark and Riford 1986:110). Two human burials, discovered in a fully extended position, lacked cultural material. Additional fragmentary remains were encountered in the context of pre-Contact basalt artifacts (Clark and Riford 1986:45, 104). Clark and Riford (1986:110) concluded the historic property housed craftsmen specializing in the production of stone tools, primarily adzes.

3.2.2 Keaahala Military Reservation

In 1990, the Department of the Army (1991) conducted a field inspection of a 21.64-acre inland parcel. This parcel was formerly part of the Keaahala Military Reservation, which was established in 1914 as an artillery range. The Governor requested the return of this property in 1928 as it was not being used. Most of the land was returned to the Hawaiian government, and the land was used for a Territorial Mental Hospital, which became the present Hawai‘i State Hospital (Department of the Army 1991:Supporting Documents). During the field visit, no evidence of the existence of any buildings, structures, or debris related to the Keaahala Military Reservation were observed, and a review of documents indicated the area may never have been used by the military (Department of the Army 1991:2).

3.2.3 Castle Hills Access Road Monitoring

In 1991, CSH conducted an inventory survey for the 500 m Castle Hills access road, located approximately 2 km inland of the present project area (Hammatt et al. 1992). One test excavation was dug on the north side of Kapunahala Stream. Modern bottles were found in the top stratum, possibly incorporated into the soil from recent disturbance, such as plowing. In 1992, CSH (Duncan and Hammatt 1992) monitored all grubbing and grading for the road. One archaeological site was recorded, SIHP # -4523. The site had two features, an historic trash pit with bottles dating to the late 1800s and a cement box, possibly a water trough for livestock (Duncan and Hammatt 1992:29).

3.2.4 Waikalua Road, Kāne‘ohe Bay Project

In 1993, CSH conducted an archaeological inventory survey within 3.2 acres along the shoreline of Kāne‘ohe Bay at Waikalua Road, near Punalu‘u Fishpond (Stride et al. 1994). Research indicated a high probability the project area had been a traditional Hawaiian settlement. The property was also the location of Coral Gardens resort hotel from 1915 to 1940. Eight backhoe trenches were excavated to determine the presence or absence of cultural deposits. No cultural material or human remains were observed during the survey or backhoe testing other than modern trash. No further archaeological work was recommended for the project.

3.2.5 Bay View Golf Course Archaeological Survey and Assessment

Hammatt and Borthwick (1989) conducted an archaeological survey and assessment of the 90-acre Bay View Golf Course. Background research indicated over 40 LCAs granted for this area traditionally used for taro planting and aquaculture within three fishponds along Kāne‘ohe Bay. Modern development of the area including the golf course, sewage treatment plant (Kaneohe WWPTF), surrounding residential subdivisions, and flood control projects had caused extensive modifications of the land.

Waikalua Loko Fishpond and Waikalua Fishpond were the only two archaeological features found within the project area. Waikalua Loko Fishpond has been a continuously functioning fishpond since pre-Contact times. Waikalua Fishpond was in poor condition due to mangrove intrusion, but still showed an intact seawall. Both fishponds were recommended for preservation. Archaeological monitoring during initial clearing and grading was also recommended.

Subsurface testing was conducted between Kāne‘ohe and Kāwā streams in a strip of undeveloped pasture between Kāne‘ohe WWPTF and the Bay View Golf Course on City and County land. The area was thought to be the only possibly undisturbed portion of the floodplain within the project area. The trench was located just west of the western boundary of the Kaneohe WWPTF.

Eight trenches were excavated at 15.2-30.5-m (50-100-ft) intervals with each trench averaging 7.5 m long and 230-240 cm deep (to the water table). Both sides of the trenches were examined for cultural materials and features as well as changes in stratification. A soil profile description was made for each trench and samples of all subsurface deposits were collected. Elevation rise from Trench 1 to Trench 8 was approximately 1 m.

No cultural materials or features were observed within the backhoe trenches. The former *‘auwai* shown on early maps was not discerned in the profiles of any of the trenches, nor was there any

indication of earthen field boundaries. Only “the original ponded, gleyed sediments associated with former taro/rice planting” was found beneath approximately 60-120 cm of fill (Hammatt and Borthwick 1989:40). No terracing or buried cultural material was observed. Archaeological monitoring was recommended during initial grubbing and grading of the property due to the possibility of subsurface cultural material associated with *lo‘i* cultivation.

3.2.6 Waikalua Loko Fishpond Preservation Plan

Dashiell (1995) prepared a preservation plan for the Waikalua Loko Fishpond prior to the mid-1990s expansion of Bay View Golf Course. Two major components of the plan were proposed:

1. Preservation, restoration, and maintenance of the pond based on its present [1995] construction features, environment, and configuration. Actual operation of the pond could take place at any time, dependent on the desires of the owner and the WLFPS [Waikalua Loko Fishpond Preservation Society].
2. Interpretation program, which at a minimum may consist of a booklet and a self-guided tour along the public access route. Under the purview of the WLFPS, additional components of the interpretation program could be added, such as an interpretive center. The interpretive program was proposed to educate students or visitors to Hawai‘i. The possibility that Windward Community College may be interested in establishing some sort of effort was also proposed. [Dashiell 1995:10]

3.2.7 Kāne‘ohe Civic Center Playground Parking Lot

The archaeological inventory survey of the proposed Kane‘ohe Civic Center Playground Parking Lot (Perzinski and Hammatt 2000) involved a surface field survey and limited subsurface testing. There were no pre-Contact or early historic structures visible in the project area. Some walls and rock mounds associated with the drainage canal from Kāne‘ohe Stream were noted at the boundaries of the project area. One test excavation was placed near the canal. All of the soil was a fill material, and it was concluded that intensive land-altering activities had significantly changed the original soil structure of the area.

3.2.8 Kāne‘ohe-Kailua Wastewater Conveyance Alternative Project

Sinoto and Titchenal (2010) prepared an archaeological assessment for an alternative conveyance route of the Kāne‘ohe-Kailua Wastewater Conveyance and Treatment Facilities (WWTP). That project involved the construction of a force main and installation of “nearly 10,000 linear feet of jacketed pipeline” that extended beneath Kāne‘ohe Bay (Sinoto and Titchenal 2010:i). Either micro-tunneling or open trenching was planned for a two segments, a 304.8 linear m (1,000 linear ft) segment leading to the Kāne‘ohe WWPTF and a 762 linear m (2,500 linear ft) segment leading to the Kailua WWTP. No subsurface testing was undertaken as two alternatives were proposed for the project.

Sinoto and Titchenal (2010) recommended “pre-construction spot testing” in the Kailua WWPTF segment if open trenching was planned. If micro-tunneling was planned, pre-construction of the “jacking pit or other access point localities” was recommended. Monitoring was recommended during open trenching of the Kāne‘ohe WWPTF segment due to the presence of the Waikalua Loko Fishpond wall, and the presence of a “manmade embankment.” Additionally, “a buffer zone of roughly 30 feet shall be established along the land-based perimeter of Waikalua-

loko Fishpond to prevent inadvertent intrusions and damage to the structural components of the fishpond" (Sinoto and Titchenal 2010:54).

3.2.9 Bay View Golf Course/YMCA Sewer Line Rehabilitation Project

Sinoto and Dashiell (2011) conducted archaeological monitoring for the Bay View Golf Course/YMCA Sewer Line Rehabilitation project. The location of the sewer line is described as "on the grounds of the existing Bay View Golf Course immediately south of Kāwā Stream and Waikalua-loko Fishpond" (Sinoto and Dashiell 2011:1).

The project entailed open trenching for 38.1 m (125 ft) to replace approximately 487.7 m (1,600 ft) of existing sewer line. The trench measured 3.05 m (10 ft) wide and 4.6-4.9 m (15-16 ft) deep. Trenches contained "vast amounts of fill materials including imported soils and some organic detritus such as *hau* and mangroves to fill marshy areas during original pipeline installation followed by golf course construction" (Sinoto and Dashiell 2011:6).

Section 4 Results of Field Inspection and Recommendations

4.1 Field Inspection

The fieldwork component for this historical resources study was initially conducted on 9 December 2013 by CSH archaeologists Constance R. O'Hare, B.A., and David W. Shideler, M.A. Following the reconfiguration of the project area another feld inspection was conducted by David Shideler on 9 July 2016. This fieldwork consisted of a limited field inspection of the water line area to identify any surface archaeological features, and to investigate and assess potential impact to historic properties. The only surface historic structure noted during the field inspection was the Kalokohanahou Fishpond wall, which has already been designated SIHP # 50-10-10-343.

The field inspection began at the Kahanahou Pump Station (Figure 25) at the coast at the end of Kahanahou Place. A remnant of the old Kalokohanahou Fishpond stacked-rock wall is still evident beneath a dense cluster of *naupaka* (*Scaevola taccada*) to the east of the pump station at the western shore of a private boat harbor (Figure 26 through Figure 28).

The field inspection continued by driving down Kahanahou Place to the intersection with Kahanahou Circle to the west and then down Kahanahou Circle to its junction with Lilipuna Place (Figure 29 through Figure 32). Sewer manholes along this route were noted not only on the edges of the residential roads, but also in the center of the roads. At the intersection of Lilipuna Road and Wailele Road (Figure 31 and Figure 32) the project area turns southeast down Wailele Road to Makahī‘ō Street (Figure 33 and Figure 34). The project area continues along Makahī‘ō Street past the junction with Maka Street (Figure 35) and Makaleha Street (Figure 36) to just past Makamae Street.

4.2 Summary and Recommendations

Only one historic property, the remnants of a stacked stone wall for Kalokohanahou Fishpond, was noted during the field inspection. The plans for the wastewater improvements include excavation near the wall (in Kahanahou Place in the interior of the former fishpond, see Figure 26 for relationship) but do not include any modifications to this wall.

Historical research indicates this area was used intensively in the mid-nineteenth century for taro cultivation (see Figure 12), as ponded fields and perhaps dryland gardens were placed adjacent to both sides of an old *‘auwai* (irrigation ditch) that extended to the coast. Thus, there may be subsurface cultural deposits and/or burials associated with the habitation and agricultural use of the land beneath the modern surface.

Based on the long, serpentine nature of the project area and this study's results that emphasizes the extensive land modification and the seemingly low likelihood of intact cultural deposits in any specific location, an archaeological inventory survey of the project area (per the requirements of HAR §13-276) does not appear warranted for development within the project area. CSH does, however, recommend an archaeological monitoring program with an archaeological monitor to be present during all subsurface excavations greater than 12 inches deep that are needed for the project. This will ensure any subsurface cultural deposits and/or burials as maybe present can be identified. A monitoring program of on-site archaeological monitoring is recommended for all ground disturbance conducted within the project area below the existing ground surface to

Figure 25. Kahanahou Wastewater Pump Station, eastern end of project area, view to northwest (CSH 2013)

Figure 26. Kahanahou Place, view southwest from Pump Station entrance; Kalokohanahou Fishpond wall remnant beneath *naupaka* hedge at left side of road (CSH 2013)

Figure 27. Kalokohanahou Fishpond wall remnant covered by *naupauka* (CSH 2013)

Figure 28. Kalokohanahou Fishpond stacked stonewall remnant beneath *naupauka* (CSH 2013)

Figure 29. Kahanahou Circle, view southeast back to Kahanahou Place (CSH 2013)

Figure 30. Kahanahou Circle (front section) and Lilipuna Road (back section), view southwest toward junction with Lilipuna Place; note manhole in center of roadway (CSH 2013)

Figure 31. Lilipuna Road at Wailele Road, view east toward Kahanahou Circle (CSH 2016)

Figure 32. View of Wailele Road from intersection with Lilipuna Road, view to southeast (CSH 2016)

Figure 33. Wailele Road from intersection with Makahī‘ō Street, view to northwest (CSH 2016)

Figure 34. Junction of Wailele Road and Makahī‘ō Street, southwestern end of project area, view to west (CSH 2016)

Figure 35. Makahī‘ō Street, southwestern end of project area, Maka Street intersection at upper right, view to southwest (CSH 2016)

Figure 36. Makahī‘ō Street, southwestern end of project area, Makaleha Street intersection at center right, view to southwest (CSH 2016)

facilitate the identification and treatment of any historic properties and/or burials that might be discovered during project construction. Any departure from this will require consultation with and written concurrence from SHPD.

Section 5 References Cited

Abbott, Isabella A.
1992 *Lā‘au Hawai‘i: Traditional Hawaiian Uses of Plants.* Bishop Museum Press, Honolulu.

Bates, George Washington
1854 *Sandwich Island Notes by a Haole.* Harper & Brothers, New York.

Bishop Museum, Bernice Pauahi
n.d. *Ke-ahi-a-Kahoe.* Hawaiian Ethnological Notes, HEN Vol. 1, p. 2181. Bishop Museum Archives, Honolulu.

Chamberlain, Levi
1828 *Tour Around Oahu, 1828.* Manuscript on file at Hawaii Mission Children’s Society, Hawaiian Historical Society Library, Honolulu.

Chinen, Jon J.
1958 *The Great Mahele, Hawaii’s Land Division of 1848.* University of Hawaii Press, Honolulu.

Clark, John R.K.
2002 *Hawaii Place Names.* University of Hawai‘i Press, Honolulu.

Clark, Stephan Dane and Mary Riford
1986 *Archaeological Salvage Excavations at Site 50-Pa-G5-101, Waikalua-Loko, Kāne‘ohe, Ko‘olaupoko, O‘ahu Island, Hawai‘i.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Cobb, John N.
1905 *The Commercial Fisheries of the Hawaiian Islands in 1903*. U.S. Fish Commission Report for 1904. Government printer, Washington, D.C.

Dashiell, Eugene P.
1995 *Waikalua Loko Fishpond Preservation Plan, Kāne‘ohe, Hawai‘i.* AICP, Planning Services, Honolulu.

Department of the Army
1991 *Defense Environmental Restoration Program for Formerly-Used Sites, Inventory Project Report, Kaneohe District Park (Keaahala Military Reservation), Kaneohe, Koolaupoko, Island of Oahu, Hawaii. Project No. H09HI017400.* Department of the Army, U.S. Army Engineer District, Pacific Ocean Division, Ft. Shafter, Oahu.

Devaney, Dennis M., Marion Kelly, Polly Jae Lee, and Lee S. Motteler
1982 *Kāne‘ohe: A History of Change.* Bess Press, Honolulu.

Donn, John M.
1906 Based on 1902 map of “Oahu Hawaiian Islands” by Walter E. Wall with data from private surveys by John M. Donn. Land use as of 1906 added to map. Registered Map 2374. Hawai‘i Land Survey Division, Department of Accounting and General Services, Honolulu.

Dorrance, William H.
1998 *Oahu‘s Hidden History: Tours into the Past.* Mutual Publishing, Honolulu.

Dorrance, William H. and Francis S. Morgan
2000 *Sugar Islands: The 165-Year Story of Sugar in Hawai‘i.* Mutual Publishing, Honolulu.

Duncan, Edward D. and Hallett H. Hammatt
1992 *Archaeological Monitoring Results for Castle Hills Access Road, Kāne‘ohe, Ko‘olaupoko, O‘ahu (TMK 4-5-23:3).* Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Durand, Loyal, Jr.
1959 The Dairy Industry of the Hawaiian Islands. *Economic Geography* 35(3):228–246.

Foote, Donald E., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai.* State of Hawaii, U.S. Department of Agriculture, U.S. Government Printing Office, Washington, D.C.

Giambelluca, Thomas W., Michael A. Nullet, and Thomas A. Schroeder
1986 *Rainfall Atlas of Hawai‘i.* Department of Land and Natural Resources, Honolulu.

Google Earth
2013 Aerial photographs of Hawai‘i. Google Inc., Mountain View, California. Available online at www.google.com/earth.html.

Graham, Mrs. Maria (compiler)
1826 *Voyage of the H.M.S. Blonde to the Sandwich Islands, in the Years 1824-25.* John Murray, London.

Hammatt, Hallett H. and Douglas K. Borthwick
1989 *Archaeological Survey and Assessment of a 90-Acre Parcel for the Proposed Expansion of the Bay View Golf Course Kāne‘ohe, O‘ahu*. Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Hammatt, Hallett H., Douglas Borthwick, and William Folk
1992 *Archaeological Inventory Survey of Castle Hills Access Road, Kāne‘ohe, Ko‘olaupoko, O‘ahu.* Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Handy, E. Craighill and Elizabeth G. Handy
1972 *Native Planters of Hawaii: Their Life, Lore, and Environment.* Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

Harper, Joseph
1972 Pineapple, A Major Industry in the Area 50 Years Ago. *Ka Lama* 3(2):3, 8. Kahaluu Printing Company, Kahalu‘u, Hawai‘i.

Hawai‘i State Archives
1887 Photograph of fishponds on west shore of Kane‘ohe Bay. Hawai‘i State Archives, Honolulu.

1930s Photograph of fishponds on west shore of Kane‘ohe Bay. Hawai‘i State Archives, Honolulu.

1940s Photograph of fishponds on west shore of Kane‘ohe Bay. Hawai‘i State Archives, Honolulu.

Hawai‘i TMK Service

1984 Tax Map [1] 4-5-002, 4-5-012, 4-5-013, 4-5-045, 4-5-047, 4-5-057, 4-5-074. Hawai‘i TMK Service, Honolulu.

Henke, Louis A.

1929 *A Survey of Livestock in Hawaii.* University of Hawai‘i Research Publication No. 5. University of Hawai‘i at Mānoa, Honolulu.

Jarves, James Jackson

1872 *History of the Hawaiian Islands: Embracing their Antiquities, Mythology, Legends, Discovery by Europeans in the Sixteenth Century, Re-Discovery by Cook, with Their Civil, Religious and Political History, from the Earliest Traditionary Period to the Year 1846.* Fourth edition. Henry M. Whitney, Honolulu.

Kamakau, Samuel M.

1976 *The Works of the People of Old. Na Hana a ka Po‘e Kahiko.* Bishop Museum Special Publication 61. Bishop Museum Press, Honolulu.

1992 *Ruling Chiefs of Hawaii.* Revised edition. Kamehameha Schools Press, Honolulu.

Kame‘eleihiwa, Lilikalā

1992 *Native Land and Foreign Desires: Pehea Lā E Pono Ai?* Bishop Museum Press, Honolulu.

Kelly, Marion

1975 *Lolo I‘a O He‘eia: Heeia Fishpond.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

1976 *Report 2 Historical Research: The History of the Land of Kaneohe.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

1987 Land Use in the ‘Ili of Luluku, Kaneohe, Koolaupoko, Oahu. In *Five Upland ‘Ili: Archaeological and Historical Investigations in the Kāne‘ohe Interchange, Interstate Highway H-2., Island of O‘ahu*, edited by Jane Allen, pp. 285–294. Bernice Pauahi Bishop Museum, Honolulu.

King, Robert D.

1931 Map and Description for Land Court Application Map 2001, Map 1 for Kaneohe Land Company, Ltd., Applicant. Being land at Lilipuna, Kalaepaa, Kanohuluiwi, Wailele, Kalokohanahou, Kaopulolia, Kaneohe, Koolaupoko, Oahu, T.H. Hawai‘i Land Survey Division, Department of Accounting and General Services, Honolulu.

Kurashina, H., H. Leidemann, and M. Kelly

1986 *Archaeological Survey of Lands at Kane‘ohe, Ko‘olaupoko, Oahu (TMK 4-5-8:1, 4-5-0:1, and 4-5-30:por.1*. Manuscript at Department Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Lyons, C.J.

1876 “Kaneohe O‘ahu With West Kailua” [map]. Surveyed in 1874 by C.J. Lyons. Registered Map 585. Hawai‘i Land Survey Division, Department of Accounting and General Services, Honolulu.

1894 *Land Matters in Hawaii.* In *United States Senate, Report of the Committee on Foreign Relations Hawaiian Islands*, pp. 1695-1703. Originally published 1875. Government Printing Office, Washington, D.C.

McAllister, J. Gilbert

1933 *Archaeology of Oahu*. Bishop Museum Bulletin 104. Bernice Pauahi Bishop Museum, Honolulu.

McCoy, Patrick C., Akihiko Sinoto, and Ranjit Cooray

1972 *Environmental Inventory Study for Kaneohe-Kailua Flood Control Project.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Miyagi, Michichiro

1963 Land Use in Waiahole Valley, Oahu. M.A. thesis, University of Hawai‘i at Mānoa, Honolulu.

Monsarrat, M.D.

1897 “Heeia & Kaneohe Watered from Kalimukele and Kapukauki” [map] by M.D. Monsarrat. Registered Map 1897. Hawai‘i Land Survey Division, Department of Accounting and General Services, Honolulu.

O’Hare, Constance R., David W. Shideler, and Hallett H. Hammatt

2014 *Archaeological Literature Review and Field Inspection, Revised Kahanahou Wastewater Pump Station Force Main Sewer Line Study, Kāne‘ohe Ahupua‘a, Ko‘olaupoko, O‘ahu, TMK: [1] 4-5-047:095.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Perzinski, David and Hallett H. Hammatt

2000 *An Archaeological Inventory Survey of the Kane‘ohe Civic Center Playground Parking Lot (TMK 4-5-18:Por.2, 52).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini

1974 *Place Names of Hawaii.* University of Hawai‘i Press, Honolulu.

Rice, William Hyde

1977 *Hawaiian Legends.* Bishop Museum Special Publication 63. Bishop Museum Press, Honolulu.

Sinoto, Aki and Eugene P. Dashiell

2011 *Archaeological Monitoring Report: Bay View Golf Course/YMCA Sewerline Rehabilitation Project Area, Kane‘ohe ahupua‘a, Ko‘olaupoko District, O‘ahu Island (TMK: (1) 4-5-030: por. 001).* Aki Sinoto Consulting, Honolulu.

Sinoto, Aki and Paul Titchenal

2010 *Archaeological Assessment: Proposed Kane‘ohe-Kailua Force Main No.2, Kane‘ohe, Ko‘olaupoko, O‘ahu*. Aki Sinoto Consulting, Honolulu.

Sterling, Elspeth P. and C.C. Summers

1978 *Sites of Oahu.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Stride, Mark, Douglas Borthwick, Victoria S. Creed, and Hallett H. Hammatt

1994 *Inventory Survey and Subsurface Testing at Waikalua Road, Kaneohe Bay, O‘ahu 3.2 Acres (TMK 4-5-05:1, 2, 12, 13 & 14).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Tinker, R.

1900 Extracts from the diary of Rev. R. Tinker to the American Board, 23 July 1831. Reprinted as “Nuuanu Pali in Olden Time,” in *Hawaiian Almanac and Annual of 1901*, pp. 87–89. Thos. G. Thrum, Honolulu.

U.S. Army War Department

1919 U.S. Army War Department, 1:20,000 scale, fire control map of O‘ahu, Waimanalo quadrangle. USGS Information Services, Denver, Colorado.

1936 U.S. Army War Army Department, 1:20,000 scale, terrain map of O‘ahu, Kaneohe quadrangle. USGS Information Services, Denver, Colorado.

1943 U.S. Army War Department, 1:20,000 scale, terrain map of O‘ahu, Kailua quadrangle. USGS Information Services, Denver, Colorado.

1943 U.S. War Department, 1:20,000 Scale terrain map, Kaneohe quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

USDA (U.S. Department of Agriculture)

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/.

USGS (U.S. Geological Survey)

1954 Kaneohe USGS, 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1978 USGS Orthophoto, Kaneohe quadrangle. USGS Information Services, Denver, Colorado.

1998 Kaneohe USGS, 7.5-minute topographic map of O‘ahu, Kaneohe quadrangle. USGS Information Services, Denver, Colorado.

Appendix A SHPD Chapter 6E Review

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
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BOARD OF LAND AND NATURAL RESOURCES
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BUREAU OF CONVEYANCES
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CONSERVATION AND RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

December 8, 2015

Mr. Robert J. Kroning, Director Designate
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

LOG NO: 2015.02139
DOC NO: 1512GC08
Archaeology
History and Culture

Dear Mr. Kroning:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Kahanahou Wastewater Pump Station (WWPS) Force Main Sewer Line
Kaneohe Ahupua‘a, Ko‘olaupoko District, Island of O‘ahu
TMK: (1) 4-5-002:045 and 047 various

Thank you for the opportunity to comment on the city and County of Honolulu, Department of Design and Construction (DDC), Wastewater Division's Kahanahou Wastewater Pump Station (WWPS) Force Main Sewer Line project. We received this submittal on June 2, 2015; we apologize for the delayed review. The proposed project involves replacing a portion of the existing sewer line that extends from the Kahanahou WWPS and discharges at a sewer manhole on Makahio Street. The project will extend on portions of Ka Hanahou Place, Ka Hanahou Circle, Lilipuna Road and Lilipuna place and across Wailele Road.

A review of our records indicates that no archaeological inventory survey has been conducted, that no historic properties have been identified within the proposed project area, and that the project area has been previously altered by the construction of the Kahanahou Wastewater Pump Station. The soils are identified as fill lands (Foote et al. 1972). Our records also indicate that Cultural Surveys Hawaii, Inc. (CSH) prepared an archaeological literature review and field inspection report (O'Hare et al. 2014) for the project in which they recommended archaeological monitoring for all ground disturbance more than 12 inches below current grade.

Based on the information provided, SHPD's determination is **no historic properties affected with archaeological monitoring**.

We look forward to the opportunity to review and accept an archaeological monitoring plan (AMP) that meets the requirements of Hawaii Administrative Rules (HAR) §13-279 prior to issuance of the permit. We will notify your office when the AMP has been accepted and the permit may be issued.

Please contact Ka‘ahiki Solis at (808) 692-8031 or at Sheleigh.Solis@hawaii.gov for any questions regarding History and Culture. Please contact me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions regarding this letter.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Archaeology Branch Chief

cc: Megan Inouye, DDC (minouye3@honolulu.gov)

Appendix B Land Commission Award Testimony in Vicinity of Project Area

No. 35 M.A., Kanakahonu

No. 7181, Kamakahonu

N.R. 299-300v5

Hear ye, ye Land Commissioners: Here are my lands, given me by Kamehameha III.

Nunulu, Ahupua‘a, Kohala, Hawaii.
Kaiholena, Ahupua‘a, Kohala, Hawaii.
Kamooiki, Ili, Waikiki, Kona, Oahu.
Kalokohou, ‘Ili, Kaneohe, Koolaupoko, Oahu.

That is my share, from the Royal Palace. All the po‘alimas of these lands are for me. That is my claim.

KAMAKAHONU

N.T. 312v10

No. 7181, Kamakahonu, 31 August 1853

Kamakahonu’s lands in Mahele Book.
Kalokohanahou ili of Kaneohe, Koolaupoko, Oahu.
Kamooiki ili of Waikiki, Kona, Oahu.
Numelu ahupuaa, Kohala, Hawaii
Kaiholewa ahuuaa, Kohala, Hawaii.

TRUE COPY

A.G. Thruston, Clerk

[Award 35 M.A.; R.P. 7158; Kalokohanahou Kaneohe Koolaupoko; 1 ap.; 52.54 Acs; no. 7181 not awarded]

No. 1954, Kalaikau

N.R. **305v3**

To the Land Commissioners: I, the undersigned, hereby state my claim for land at Kāne‘ohe in the ‘lli of Kalokohuluiwi. There are sixteen lo‘i, a kula and a house, bounded on the east by the sea, on the north by the lands Laakuaa, on the west, the land of Keliiwaiwaiole, on the south, the land of Kamokuwaiole.

KALAIKAU X His mark

December 17, 1847

F.T. 451v14

Helu 1954, Kalaikau, See 458 page

Makuakane, hoohiki‘ia, Ua ‘ike au i kona aina ma Kāne‘ohe, Ko‘olaupoko.

‘Āpana 1. 16 lo‘i kalo & pāhale ma ka ‘ili o Kanohuluiwi.

Panei na palena:

Mauka, ka ‘ili o Lipuna

Ko‘olauloa, ka ‘ili o Kalokohou

Makai, he kahakai

Kailua, ka mo‘o ‘āina o Mokuwaiole.

No Puhalaha mai kona aina i ka wa e ola ana o Liliha, mamua i ka M.H. 1839. A ua mau kona noho ma malaila, ‘A‘ole mea keakea.

N.T. 458v14

No. 1954 Kalaikau, claimant, from page 451

Makuahine, the witness, says the land is in the ‘ili of Kanoholuiwi, 16 taro patches.

No. 1. 16 taro patches and house lot. It is bounded:

Mauka, the ‘ili Lipuna

Koolauloa, the ‘ili Kalokohau

Makai, sea beach

Kailua, taro land of Makuwaiole.

His land is from Puhalahua in the time of Liliha. No one has ever disputed his title.[Award 1954; R.P. 1390; Kawaihae Kāne‘ohe Ko‘olaupoko; 1 ‘āp.; 1.67 Acs]

No. 1967, Kahinu

N.R. 309v3

Greetings and Peace: I hereby state the boundaries of my land in Kaneohe in the ‘ili of Kailipaa, consisting of seven lo‘i. On the east is a pali, on the north is the land of Kala, on the west is a kula, on the south is the land of Kuaana. There are two houses with a big fence. One lo‘i is in the ‘ili of Waikapoki.
KAHINU
December 18, 1847

F.T 66v11

No. 1967, Kahinu

Kekuahani, Hoohikiia, Ua ike au i kona aina ma Kalaepaa 6 loi kalo, a hookahi loi ma Waikapoki a me ka pahale iloko o Waikapoki a me Wailele, Kaneohe Koolaupoko.

6 loi kalo ma ~~Waikapoki~~ Kalaepaa

Mauka, ko Kuaana aina

Koolauloa, ko Kala aina

Makai, ko Puupuu aina

Kailua, pela no

1 loi kalo

Mauka, ko Keliiholomoku aina

Koolauloa, ko Kala aina

Makai, ko Kauikea aina

Kailua, kahawai o Wailele

Pahale
Mauka, ko Kula aina

Koolauloa, ko Kanehoalani & Keliiholomoku pahale

Makai, ka alanui Aupuni

Kailua, ko Kauikea ainaua paa hapa i ka pa, 2 aoao i paa

No‘u aku kona aina i ka M.H. 1836, a na noha oia malaila a hiki i keia wa, aole mea keakea

Kumuhonua Hoohikiia, Ua like no ko maua ike me ka Kekuahani i hai ae nei, a ua oiaio kana hoike ana.

F.T. 3v11

No. 1967, Kahinu

Kekuahane, sworn says, I am a son of Kaneohe and know the claimant’s land. It consists of six lois in the Ili of Kalaepaa, Kaneohe, and one loi adjoining these six lois, but in the Ili of Waikapoki. Also a House lot partly in Waikapoki and partly in Wailele.

The piece of 6 lois is bounded:

Mauka by Kuaana's lois

Koolauloa by the Wailele Creek

Makai by Puupuu’s lois

Kailua by Puupuu’s lois.

No. 2 (one loi) is bounded:

Mauka by Keliiholomoku’s lois

Koolauloa by Kala’s land

Makai by the Ili of Wailele

Kailua by Wailele Creek.

No. 3 (House Lot) is bounded:

Mauka by the kula of Waikapoki

Koolauloa by Kanehoalani’s house lot

Makai by the government road

Kailua by the kula of Wailele, Kauikea’s land.

The claimant received these lands from me 14 years since, and has possessed them ever since in peace.

Kumuhonua, sworn, says, I am a son of Kaneohe and know the land of claimant. The testimony of Kekuahane is true.

[Award 1967; R.P. 2042; Kalaepaa Kaneohe Koolaupoko; 1 ap.; 2.22 Acs]

No. 2343, Keli‘iwaiwai‘ole

N.R. 460v3

To the Land Commissioners, Greetings: I hereby state my claim for land in the ‘ili at Kokokohou in Kāne‘ohe, Island of Oahu. 1 mo‘o, 18 taro lo‘i, 2 taro lo‘i adjoining the mo‘o of Makuakane, 1 lo‘i adjoining with the lo‘i of Kahawaii, 1 kula adjoining Kikiwelawela. My house claim is in the same ‘ili. I got it in the year 1841.

KELIIWAIWAIOLE X his mark

F.T. 36v14

Helu 2343, Keli‘iwaiwaiole, See 165 page

Kapule, ho‘ohikiia, Ua ike au I kona aina ma ka ili o Kalokohou ma Kaneohe.

‘Āpana 1. 16 lo‘i me kahi kula

‘Āpana 2. 2 loi.

‘Āpana 3. kula.

‘Āpana 4. pāhale.

‘Āpana 1:

Mauka, aina o Keliiholomoku

Koolauloa, aina o Kauwa

Makai, moo o konohiki

Kailua, aina o Laahanu.

‘Āpana 2:

Mauka, ‘āina o Makuakane

Ko‘olauloa, kahawai

Makai, loko poalima

Kailua, aina o Kapala.

‘Āpana 3:

Mauka, pali o Kekiwelawela

Ko‘olauloa, kula o Kauwa

Makai, kai

Kailua, kula o Makuakane.

‘Āpana 4:

Mauka, Kahuahale o Keau

Ko‘olauloa, kula o Kalokohou

Makai, ‘auwai me ka ‘āpana mua

Kailua, pāhale o Kauwa & Wahaulaula.

No Kamakahonu mai kona aina I ka M.H. 1843. Ua noho me ka maluhia. Aole mea keakea. Kahinu, hoohikiia, Ua oiaio no.

F.T. 165v14

No. 2343, Keli‘iwaiwai‘ole, claimant, from 36 page

Kapule, sworn say, claimant land is in the ‘ili Kalokohou at Kāne‘ohe & is as follows:

No. 1. 16 lo‘is taro

No. 2. 2 lo‘i taro.

No. 3. Upland.

No. 4. House lot.

No. 1 is bounded:

Mauka by the ‘ili of Lipuna

Ko‘olauloa by the taro land of Kauwa

Makai by a poalima

Kailua by taro land of Lahanu.

No. 2 is bounded:

Mauka by the taro land of Makuakane

Ko‘olauloa by the taro land of Kahawaii

Makai by fish pond

Kailua by the taro land of Kapela.

No. 3 is bounded:
Mauka by high hill
Ko‘olauloa by upland of Kauwa
Makai by sea beach
Kailua by potato patch of Makuakane.

No. 4 is bounded:
Mauka by the house lot of Keau
Ko‘olauloa by upland of Kalokohou
Makai by a river
Kailua by the house lot of Wahaulaula.

Claimant land is from Kamakahonu in the year 1843 and has had it in peace.

Kahinu, sworn, testifies to the truth of the above statement.

[Award 2343; R.P. 1389; Kaimihana Kaneohe Ko‘olaupoko; 1 ‘āp.; 6.09 Acs]

No. 2345, Keau,

N.R. 461v3

To the Land Commissioners, Greetings: I hereby state my claim for land in the ‘ili of Kalokohou in Kaneohe, Island of Oahu. There are 4 taro lo‘i together in one place, one kula adjoining a kula of Kahawaii. My house claim is in this one ‘ili. I acquired my interest before the law was published.
KEAU X, his mark

F.T. 15v14

Helu 2345, Keau, continued page 149

Makuakane, hoohikiia, Ua ike au Ikona mau aina ekolu mau Apana ma ka ili of Kalokohou ma Kaneohe.
Apana 1 4 loi ili of Kalokohou.
Apana 2 kula ili of Kalokohou.

Apana 3 Kulanahale ili of Kalokohou.

Apana 1:
Mauka, na loi o Kauwa
Koolauloa, no loi o Kapela
Makai, loko Poalima
Kailua, aina o Manene.

Apana 2. Ua puni I ke kula o he konohiki ma na aoao a pau.

Apana 3:
Mauka, Ili of Lipuna
Koolauloa, kula o Kipuna & Kalokohou
Makai, Kulanahale o Keliiwaiwaiole
Kailua, Ili o Kanohuluiwi.

No Kumeheua mai kona aina I ka wa o Kamakahonu oia ka M.H. 1841 aole mea keakea ia ia.

Kahawaii, hoohikiia, Ua oiaio kana.

F.T. 148-149v14
No. 2345, Keau, claimant, from 15 page

Makuakane, sworn say, I know claimant’s land is in the ili of Kalokohou, Kaneohe.

No. 1 is 4 taro patches.
No. 2 is a piece of upland, a potatoe field.
No. 3 is a house lot.

No. 1 is bounded:
Mauka by the taro land of Kauwa
Koolauloa by the taro land of Kapela
Makai by the fish pond
Kailua by the taro land of Manene.

No. 2 is bounded: On all sides is the upland of Kalokohou. It is a small potatoe field.

No. 3 is bounded:

Mauka by the upland of Kipuna.

Koolauloa by the upland of Lipuna & Kalohohou

Makai by house lot of Keliiwaiwaiole

Kailua by ili of Kanohouluiwi.

Claimant received his land from Kumeheua about the year 1841. No one disturbed claimant in his possessing the above land.

Kahawaii, sworn, testifies to the truth of the above.

[Award 2345, R.P. 1375, Kaopulolia Kaneohe Koolaupoko; 2 ap.; 1.09 Acs]

No. 2491B, Kamanene

No. 2471, Kamanene

N.R. 514v3

To the Land

Commissioners: I, the one whose name is below, hereby state my claim in the ‘ili of Lokohou, in Kamakahonu. On the north is the stone wall, on the east is a po‘alima, on the sough is a kula mo‘o, on the west is the land of Kumeheua. I also have a kula. I got this land in the time before the publishing of the law.

KAMANENE
Kaopulolia, Kaneohe, Oahu, December 18, 1847

F.T. 17v14

Helu 2417!, Kamanene, Continued page 150

[should be 2471]

Kuaikolia,

hoohikiia, Ua ike au i kona aina ma ka ili of Kalokohou. Elima loi one ke kula a hiki aku i kahi loi 1. E pili ana me ka Poalima ma Kaneohe nei.

Mauka, aina o Kauwa

Koolauloa, aina o Keau

Makai, lokoia poalima

Kailua, moo poalima.

Nau aku kona aina, no Kamakahonu mai ko‘u i ka M.H. 1844. Ua noho me ka maluhia. Aole mea keakea.

Kauwa, hoohikiia, Ua oiaio kona hoike ana.

F.T. 150v14

No. 2471, Kamanene, Claimant, from page 17

Kekuaikolia, sworn, say claimant’s land is in the ili of Kalokohou.

It is bounded:

Mauka by the taro land Kauwa, Kumupali

Koolauloa by the taro land Kauwa, Keau

Makai by fish pond

Kailua by the poalima land of Kalekohou.

His land was given him by myself in the year 1844. No one has disturbed him.

Kauwa, swear to the truth of the above.

[Award 2491B; R.P. 1398; Kalokohanahou Kaneohe Koolaupoko; 1 ap.; 1 Ac.; no document yet located for 2491B]

No. 3431B, Kauwa (Kaule)

Helu 3431B, Kauwa (Kaule) See page 157, No. 4244B

F.T. 27v14

Ko‘ohikiia, ka mea kuleana a ‘ōlelo mai la ua ho‘okomo au. I ko‘u kuleana a ua kakau ia e Kamali‘i o Kaauwai a ua lilo ku‘u kapaha ia lākou. ‘A‘ole nae puka mei nei, ua haule ma Honolulu paha. Ma ka Hale Hoona.

Kuaikalia, hoohikiia, Ua ike au I kona aina ma ka ili o Kaluakau ma Kaneohe he 11 loi me na kumu ulu elua a me kahi kula.

‘Āpana 1. 11 lo‘i & ulu me kula Kalokohou.

‘Āpana 2. Pāhale ma Kanohuiwi.

‘Āpana 1:

Mauka, Mo‘o Keliiwaiwaiole

Ko‘olauloa, Mo‘o Keliiwaiwaiole

Makai, Mo‘o Manene

Kailua, Mo‘o poalima.

‘Āpana 2:

Mauka, pāhale o Wahaulaula

Ko‘olauloa, ‘Ili o Kalokohou

Makai, pāhale o Mokuwaiole Kailua, ‘Auwai o Kanohuiwi.

No Kamakahonu mai ka ‘āpana mua I ka wā o Liliha no Puhalahua mai ka ‘Āpana 2 ia wā. ‘A‘ole mea keakea.

Pa, ho‘ohikiia, Ua oiaio na ‘ōlelo.

F.T. 157v14]

[No. 3431B], Kauwa, claim not found, This claim is awarded under No. 3431B, page 27

[Listed under No. 4244B!]

Kauwa, sworn, say he sent his claim to the Land Commission. It is not found among the claims. He paid for the writing to an individual who came from Honolulu to take the claims.

Kauaiholeia, sworn, says I know the land of claimant in the ‘ili of Kalokohou.

No. 1 is bounded:

Mauka by the taro land of Keliiwaiwaiole

Ko‘olauloa by the taro land of Keliiwaiwaiole

Makai by the taro land of Manene

Kailua by a poalima taro patches [sic].

No. 2 is bounded:

Mauka by the house lot of Wahaulaula

Koolauloa by ‘ili of Kalokohou

Makai by house lot of Mokuwaiole

Kailua by a brook.

Claimant's land is from Kamakahonu in the time of Liliha. The house lot is from Pualahua. No one has disturbed the claimant to the present time.

Pa testifies to the truth of the above.

[Award 3431B; Kalokohanahou Kaneohe Koolaupoko; 1 ‘āp.; 1.998 Acs]

No. 7565 & 7117, Kala

N.R. 354v5

To the Land Commissioners, Greetings to you all: I hereby state my claim for land in the Ili of ‘Ili of Waikapoki, in the Ahupua‘a of Kaneohe, District 6, Division 3, Island of Oahu. There are seven taro lo‘i, one pond, one kula, and one house site. It is a true right from Kamehameha III. That is my petition on this 31st day of December, year of our Lord 1847, at Kaneohe, Koolaupoko.

KALA X

Appendix E

Special Management Area Determination Letter
City and County of Honolulu Department of Planning and Permitting, March 2010

2010/ELOC-449

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
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Web site: www.honolulu.gov

MUFI HANNEMANN
MAYOR

CRAIG I. NISHIMURA, P.E.
DIRECTOR

COLLINS D. LAM, P.E.
DEPUTY DIRECTOR

WW.P10-046

March 3, 2010

MEMORANDUM

TO: DAVID K. TANOUE, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: for CRAIG I. NISHIMURA, P.E., DIRECTOR
DEPARTMENT OF DESIGN AND CONSTRUCTION

SUJBECT: KAHANAHOU WASTEWATER PUMP STATION UPGRADE PROJECT
SPECIAL MANAGEMENT AREA (SMA) USE PERMITS

We are requesting your concurrence that the above mentioned project is exempt from the SMA Use permit.

The Kahanahou Wastewater Pump Station Upgrade Project has been initiated by the Department of Environmental Services to upgrade/replace pumps, piping, mechanical and electrical equipment, emergency power system, structures, ventilation system, and miscellaneous site improvements. The wastewater pump station site is identified by TMK: 4-5-047:95 (See enclosed plan).

It is our understanding that repair and maintenance of appurtenant structures such as sewer pump stations are exempt from SMA Use permits. The scope of this project will be limited to upgrading the sewer pump station. Upon completion of project, all adjacent ground features disturbed during construction will be restored to its original or better condition.

If you have any questions or require additional information to make your determination, please feel free to call Roy Tamashiro of the Wastewater Division at 768-8760

I hereby concur with the SMA exemption for Kahanahou Wastewater Pump Station Upgrade Project.

_____

David K. Tanoue, Director Date
Department of Planning & Permitting

Enclosure

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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MUFI HANNEMANN
MAYOR

DAVID K. TANOUE
DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

2010/ELOG-449(AA)

March 10, 2010

MEMORANDUM

TO: CRAIG I. NISHIMURA, P.E., DIRECTOR
DEPARTMENT OF DESIGN AND CONSTRUCTION

ATTENTION: WASTEWATER DIVISION

FROM: DAVID K. TANOUE, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

SUBJECT: SPECIAL MANAGEMENT AREA DETERMINATION
KAHANAHOU WASTEWATER PUMP STATION UPGRADE PROJECT
45-13 KA HANAHOU PLACE - KANEOHE
TAX MAP KEY: 4-5-47: 95

This responds to your request, received on March 3, 2010, for information on the Special Management Area (SMA) use permit requirements to upgrade an existing wastewater pump station facility in the SMA.

The project will entail miscellaneous site improvements, and the repair and/or replacement of pumps, piping, mechanical and electrical equipment, emergency power system, structures, and ventilation system within an existing building. The project site is in the SMA; however, we confirm that the project will not require an SMA use permit pursuant to Sections 25-1.3(2)(D) and (M), Revised Ordinances of Honolulu. The proposed work is not expected to have any significant environmental or ecological effect on the SMA.

The project is subject to the environmental compliance law of Chapter 343 HRS. The applicant indicates that the project is exempt pursuant to Exemption Class #2 (Item 7) of the Department of Environmental Services Comprehensive Exemption List.

If you have any questions, please contact Ann Asaumi of our staff at 768-8020.

DKT:nw

Comprehensive Exemption List
for the
City and County of Honolulu
Department of Environmental Services

HISTORICAL NOTE

This exemption list for the Department of Environmental Services was reviewed and concurred upon by the Environmental Council on May 17, 2012.

GENERAL NOTE

Section 343 of the Hawaii Revised Statues (HRS) authorizes the Environmental Council to establish procedures to exempt specific types of action from the need to prepare an environmental assessment because the action will have minimal or no significant effect on the environment.

The following types of projects will not be exempt:

1. Projects requiring detailed analysis as provided in an environmental assessment under §343-5. These include, but are not limited to, places listed on the Federal or State registers of historic places.

2. Projects in statutorily defined areas, including but not limited to: critical habitats, special management areas, special design districts, registered view planes or scenic corridors, wet lands, sanctuaries, special habitats, shoreline areas, tsunami inundation areas, or other designations; except where the work is eligible for exemption and there is no negative impact on the conditions that define these areas.

3. Major projects without an Environmental Impact Statement (EIS); an Environmental Assessment with a Finding of No Significant Impact (EA/FONSI); or major projects that were never presented at a public meeting concerning site selection, master plan report, or any phase of incremental construction.

4. Major projects without a program to encourage public input into the design or siting of the project.

Pursuant to HAR Section 11-200-8 (B), all exemptions under the classes in this section are inapplicable when the cumulative impact of planned, successive actions of the same type, in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment, as expressed in #2 above.

Pursuant to the administrative rules promulgated under authority of Section 343-6(7) of the Hawaii Revised Statutes (HRS), specifically Section 11-200-8; the Department of Environmental Services has determined that the following types of actions, where they fall within the given classes of action, shall generally be exempt from the preparation of an environmental assessment.

Exemption Class #1:

Operations, repairs or maintenance of existing structures, facilities, equipment or topographic features involving negligible or no expansion or change of use beyond that previously existing.

1. Clearing and grubbing
2. Construction staging areas, temporary
3. Drainage structures (e.g., culverts, outlets, inlets)
4. Earth berms, drainage swales, and stream banks
5. Equipment installations, including but not limited to pumps; motors; electrical transformers, cabinets, panels, and vaults; power, light, and telephone pole systems; heating, ventilation, and air conditioning (HVAC); supervisory control and data acquisition (SCADA); irrigation controllers; telephone stations; emergency electrical generators; and cathodic protection systems
6. Essential utilities, including but not limited, to wastewater systems, drainage systems, water systems, electrical systems, communication systems, SCADA systems, and fuel systems, except where a State Department of Health permit is required
7. Existing individual wastewater systems (cesspools, septic tanks, aerobic units)
8. Existing public facility structures, facilities, or equipment involving negligible or no expansion or change of use beyond that previously existing
9. Existing topographical features involving negligible or no expansion or change or use beyond that previously existing (e.g., maintenance dredging including dewatering; stream bank restoration; maintenance of vegetated and/or lined swales, wet ponds, and/or other water quality features in parks and golf courses)
10. Exterior stems and stairways
11. Fencing, curbing, walls, and gates
12. Fumigation and treatment of buildings for termites, cockroaches, ants, vermin, and other pests using pesticides registered by the State Department of Agriculture and the United States Environmental Protection Agency (EPA)
13. Landfill erosion control
14. Landfill gas and leachate system
15. Landscaping
16. Maintenance/storage sheds
17. Minor underpinning
18. On-site street cleaning
19. Operations, repairs or maintenance actions for compliance with Occupational Safety and Health Administration (OSHA) requirements
20. Painting of existing buildings
21. Pavements (and striping, as needed), including but not limited to, roadways, driveways, parking lots, walkways, bikeways, jogging paths, or multi-use pathways
22. Planter boxes
23. Refuse collection schedule changes
24. Reroofing or roofing
25. Retaining walls and embankment/slope and erosion repairs
26. Roadways and right-of-way within the confines of a wastewater treatment plant, a wastewater pump station, or a landfill
27. Security lighting for public grounds, structures, and parking lots
28. Signs, posts, flag/banner poles
29. Temporary storage of construction equipment and materials on street remnant properties
30. Trash compactors
31. Trash enclosures and litter containers

32. Wastewater Force Mains (FMs) and associated appurtenances (including but not limited to, air relief valve, flow tube, gate valve, manual air relief valve or air bleeder, check valve, blow off valve, testing station)
33. Wastewater lines (mains and laterals)
34. Wastewater outfalls
35. Wastewater Pump Stations (WWPSs)
36. Wastewater spills
37. Wastewater Treatment Plants (WWTPs)
38. Operation of City vehicles on existing City, State and private roads and roadway easements, including cars, trucks and trailers, but excluding operations that result in significant traffic impacts.
39. Loading, delivery and unloading operations for liquid and solid materials to and from vehicles at existing wastewater treatment plants and pump stations, but excluding operations that add nuisance odors at the property lines.
40. Loading, delivery and unloading operations for municipal solid waste and/or recyclable materials to and from vehicles at landfills, waste-to-energy facilities, transfer stations, convenience centers, and disposal, processing or recycling facilities. "Municipal solid waste" is defined in accordance with Hawaii Revised Statutes section 342G-1. "Recyclable materials" are defined in accordance with Revised Ordinances of Honolulu section 9-1.2.

Exemption Class #2

Replacement or reconstruction of existing structure and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced.

1. Accessible ramps and handrails
2. Bridge replacement
3. Bollards and vehicular access barriers
4. Clearing, grading, and grubbing
5. Drainage structures (e.g., culverts, outlets, inlets)
6. Earth berms, drainage swales, and stream banks
7. Equipment installations, including but not limited to pumps; motors; electrical transformers, cabinets, panels, and vaults; power, light, and telephone pole systems; heating, ventilation, and air conditioning (HVAC); supervisory control and data acquisition (SCADA); irrigation controllers; telephone stations; emergency electrical generators; and cathodic protection systems
8. Essential utilities, including but not limited, to wastewater systems, drainage systems, water systems, electrical systems, communication systems, SCADA systems, and fuel systems, except where a State Department of Health permit is required
9. Existing individual wastewater systems (cesspools, septic tanks, aerobic units)
10. Existing public facility structures, facilities, or equipment involving negligible or no expansion or change of use beyond that previously existing
11. Existing topographical features involving negligible or no expansion or change of use beyond that previously existing (e.g., reconfiguration of paved parking lots to redirect drainage flow to vegetated areas, demolition and/or regarding areas to provide storm water detention for water quality)
12. Exterior stems and stairways
13. Fencing, curbing, walls, and gates
14. Footbridge

15. Fuel tank modification, repair or replacement in compliance with Federal and State regulations and with concurrence of the State Department of Health
16. Fueling stations
17. Fumigation and treatment of buildings for termites, cockroaches, ants, vermin, and other pests using pesticides registered by the State Department of Agriculture and the United States Environmental Protection Agency (EPA)
18. Guardrails
19. Landfill erosion control
20. Landfill gas and leachate system
21. Landscaping
22. Maintenance/storage sheds
23. Pavements (and striping, as needed), including but not limited to, roadways, driveways, parking lots, walkways, bikeways, jogging paths, or multi-use pathways
24. Planter boxes
25. Replacement or reconstruction actions for compliance with Occupational Safety and Health Administration (OSHA) requirements
26. Retaining walls, embankment/slope, swale, and/or erosion control replacement and reconstruction
27. Roadways and right-of-way within the confines of a wastewater treatment plant, a wastewater pump station, or a landfill
28. Sanitary sewer line modification or replacement in generally the same alignment, or an adjacent parallel alignment, and with the same diameter pipe.
29. Sanitary sewer line rehabilitation, including linings, inserts and coatings applied to existing pipelines and manholes.
30. Sanitary sewer line replacement, with a pipe that is no larger than the next largest nominal diameter size than the existing pipe, in generally the same alignment, or an adjacent parallel alignment, due to the need to increase to a minimum diameter standard for maintenance purposes or to accommodate wet weather peak flows. For the purposes of this item, increasing to the next largest nominal diameter size is considered to be a minor change, and is substantially the same dimensions. Upsizing to larger diameter pipe to service new facilities or structures is precluded.
31. Sanitary sewer relief line, in an adjacent parallel alignment, due to the need to accommodate wet weather peak flows or to restore flow capacity decreased by defect in the existing sewer.
32. Sanitary sewer relief line, in an adjacent parallel alignment, to restore flow capacity for a section of existing sewer that experienced loss of capacity from original design.
33. Sanitary sewer temporary bypass incidental to sewer line rehabilitation, modification, or replacement.
34. Security lighting for public grounds, structures, and parking lots
35. Signs, posts, flag/banner poles
36. Trash compactors
37. Trash enclosures and litter containers
38. Vegetated and/or lined swales, wet ponds, or other water quality features in parks, golf courses, or other recreational areas
39. Wastewater facility/structures (to include, but not be limited to, manholes, junction boxes, tanks, incinerators, etc.)

<u>Exemption Class #3</u>

Construction and location of single, new, small facilities or structures and the alteration and modification of the same and installation of new, small, equipment and facilities and the alteration and modification of same, including but not limited to:

a. Single-family residences less than 3,500 square feet not in conjunction with the building of two or more such units;
b. Multi-unit structures designed for not more than four dwelling units if not in conjunction with the building of two or more such structures;
c. Stores, offices, and restaurants designed for total occupant load of 20 persons or less per structure, if not in conjunction with the building of two or more such structures; and
d. Water, sewage, electrical, gas, telephone, and other essential public utility services extension to serve such structure or facilities; accessory or appurtenant structure including garages, carports, patios, swimming pools, and fences; and acquisition of utility easements.

1. Accessible ramps and handrails
2. Acquisition of utility easements
3. Auxiliary generators for emergency use
4. Bollards and vehicular access barriers
5. Carports
6. Cathodic protection of pipelines and equipment
7. Clearing, grading, and grubbing
8. Comfort facilities at public facility properties
9. Community recycling bin program expansion, limited to not more than a total bin footprint of 1,000 square feet within the same site.
10. Construction and location of a single, new, small public facility structure, including but not limited to those intended for recreational, meeting, administration, maintenance, operations, and safety and protection (e.g., police, fire, emergency medical, and wastewater spill response) less than 3,500 square feet in floor area not in conjunction with the building of two or more such units
11. Construction of ball wash facilities for golf courses
12. Construction of concrete pads and roofs at existing fueling stations
13. Construction of concrete pads and roofs for heavy equipment areas at selected maintenance facilities
14. Construction of small vehicle wash equipment for recycling water at select City facilities
15. Construction of roofs over existing outdoor showers at select park sites to allow connections to the wastewater system
16. Construction of vehicle wash facilities for golf carts
17. Construction or installation of an underground fuel tank with a maximum capacity of 4,000 gallons at fire and police stations
18. Construction or installations of cesspools that require State Department of Health and Board of Water Supply approvals
19. Creation of temporary staging areas during periods of City and County construction
20. Earth berms and drainage swales
21. Equipment installations, including but not limited to pumps; motors; electrical transformers, cabinets, panels, and vaults; power, light, and telephone pole systems; heating, ventilation, and air conditioning (HVAC); supervisory control and data acquisition (SCADA); irrigation controllers; telephone stations; emergency electrical generators; and cathodic protection systems

22. Essential utilities and new, small equipment, including but not limited to wastewater systems, drainage systems, water systems, electrical systems, communication systems, and irrigation systems
23. Expansion of existing groundwater monitoring wells
24. Expansion of existing landfill gas and leachate systems expansion (e.g., pipelines, flares, vacuumed/condensate/leachate pumps, monitoring wells, etc.)
25. Expansion of existing wastewater pump station and force main facilities (e.g. additional pumping equipment, pipe and appurtenances) within the existing footprint.
26. Extensions, modifications, or additions to existing buildings and new, small equipment less than 3,500 square feet in floor area not in conjunction with the building of two or more such additions
27. Facility improvements to comply with Federal and State requirements with concurrence with the State Department of Health (e.g., National Pollutant Discharge Elimination System (NPDES) requirements such as covered truck parking, surface water diversions swales, permanent structural Best Management Practices (BMPs), etc.)
28. Fencing, curbing, walls, and gates
29. Field office
30. Installation and construction of flare screens, safety barriers, guardrails, energy attenuators, and other appurtenances designed to protect the motoring public
31. Landscaping
32. Loading areas
33. Maintenance/storage sheds
34. Minor street widening and improvements within existing or future City and County street rights-of-way
35. Minor modification of incinerator as directed by EPA or other authorized governmental agencies
36. Modifications of existing facilities to conform to Federal, State and local regulations or codes as directed by authorized governmental agencies
37. Modifications at energy facilities to comply with Federal and State requirements with concurrence with the State Department of Health (e.g., pollution control equipment)
38. Pavements (and striping, as needed), including but not limited to roadways, driveways, parking lots, walkways, bikeways, jogging paths, or multi-use pathways
39. Pedestrian bridges within public facility properties
40. Planter boxes
41. Recycling collection bins
42. Retaining walls, except within the shoreline area
43. Security lighting of public grounds, structures, and parking lots
44. Sewer Improvement District project
45. Sewer lateral extension, involving the extension of an existing lateral to a new property line for road improvement projects or for existing laterals that were inadvertently installed short of the property line
46. Sewer manholes with or without concrete apron to accommodate pumper trucks (septage receiving station)
47. Sewer service installation for existing residential properties, including:
    a. The construction of a sewer lateral from an existing sewer main located in an easement or street right-of-way to the abutting property line of lots without sewer service
    b. The construction of additional laterals or the replacement of existing laterals to accommodate other utility lines or to facilitate connections from house sewer connection on the premise to laterals

c. The extension of an existing sewer main together with a lateral to serve lots without sewer service in areas where no significant environmental or historical resources exist

48. Sidewalks and covered walkways
49. Signs, posts, and flag/banner poles
50. Steps and stairways
51. Storm drain line extensions within wastewater treatment plant, wastewater pump station, refuse transfer station, and landfill sites
52. Storm drain line modifications
53. Trash compactors
54. Trash enclosures and litter containers
55. Utility connections (electrical, gas, water, wastewater)
56. Water tanks, not more than 75,000 gallons in capacity, developed to serve individual public facility needs

Exemption Class #4

Minor alterations in the conditions of land, water, or vegetation.

1. Berms
2. Chemical control of vegetation using herbicides and pesticides registered by the State Department of Agriculture and the EPA
3. Clearing, grubbing, or grading of less than 100 cubic feet within existing parks and public facility property boundaries
4. Ground improvements (e.g. driveways, parking areas, walls, sidewalks, etc.)
5. Landscaping and sprinkler system
6. Lining short sections of stream banks for erosion control and slope stability
7. Removal of unhealthy trees that endanger life or property and non-significant trees
8. Shoulders

Exemption Class #5

Basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.

1. Basic data collection, research, experimental management, and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource, including but not limited to, archaeological surveys, bioassays, biological and ecological studies and surveys, chemical and bacteriological laboratory analysis, fish surveys, fresh and saline water sampling and analysis, industrial waste sampling and analysis, monitoring device installation, oceanographic surveys, receiving water monitoring programs, recycling wastewater and wastewater reuse studies, sediment studies and surveys, storm water runoff sampling and analysis, stream studies and surveys, topographical surveys, virus studies and surveys, exploratory soil boring, reconnaissance, testing, or data recovery

Exemption Class #6

Construction or replacement of minor structures accessory to existing facilities.

1. Accessible ramps and handrails

2. Air conditioning enclosures
3. Construction field offices, temporary
4. Drinking fountains
5. Guard shacks
6. Hose bibbs
7. Emergency generator structure
8. Exterior lighting
9. Heating ventilation and air conditioning (HVAC) systems for existing wastewater treatment plant, pre-treatment plant, lift station, and pump station buildings
10. Lighting of driveways, streets, and roadways
11. Maintenance/storage sheds
12. Outdoor showers
13. Pedestrian bridges within public facility properties
14. Planter boxes
15. Portable buildings for temporary use of 5 years or less
16. Relocation of buildings within existing facilities
17. Retaining walls, except in shoreline areas
18. Security lighting
19. Signs
20. Solar water heating systems that include exterior solar collectors, nonreflective panels, and storage tanks not greater than 120 gallons each, and associated accessories
21. Steps and stairways
22. Trash compactors
23. Trash enclosures and litter containers
24. Underground fuel tanks and dispensers, except where a State Department of Health permit is required
25. Ventilation and odor control systems for existing wastewater treatment plant, pre-treatment plant, lift station, and pump station buildings
26. Water tanks, not more than 75,000 gallons in capacity, to serve existing facilities

Exemption Class #7

Interior alterations involving things such as partitions, plumbing, and electrical conveyances.

1. Interior alterations and renovations to wastewater treatment plant, pre-treatment plant, lift station, and pump station buildings, including but not limited to partitions, doors, counters, cabinets, shelving, plumbing, electrical systems, heating ventilation and air conditioning (HVAC) systems, ventilation and odor control systems, and electrical conveyances

Exemption Class #8

Demolition of structures, except those structures located on any historic site as designated in the national register or Hawaii register as provided for in the National Historic Preservation Act of 1966, Public Law 89-665, 16 U.S. C. Sec. 470, as amended, or Chapter 6E, HRS.

1. Demolition of structures at wastewater treatment plant and pump station locations, except those structures located on any historic site

Exemption Class #9

Zoning variances except shoreline setback variances.

1. Zoning variances of wastewater facility properties, except shoreline setback variances

Exemption Class #10

Continuing administrative activities including, but not limited to, purchase of supplies and personnel-related actions.

1. Acquisition, but not improvement of property, for public use (including easements) and minor subdivision and consolidation of parcels necessary for acquisition of property for public use (including rounding corners and minor street widening)
2. Subdivision/consolidation of public lands to facilitate their transfer between the City and State for continuing public use without change in existing land use
3. Continuing government administrative activities, including but not limited to purchase of supplies and personnel-related actions
4. Operation of initial or continuing public programs consistent with established land use (for example, but not limited to, stream debris clean-ups, storm drain stenciling, beach debris clean-ups)

Appendix F

EA, SMA and SSV Concurrent Review (DPP, September 2016)

6666732

6669906

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
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RECEIVED
'16 SEP 23 P1:26
DESIGN & CONSTRUCTION
WASTEWATER DIVISION

16 SEP 22 AM 9:14
CITY & COUNTY OF HONOLULU

KIRK CALDWELL
MAYOR

ARTHUR D. CHALLACOMBE
ACTING DIRECTOR

KATHY K. SOKUGAWA
ACTING DEPUTY DIRECTOR

2016/ELOG-2322(ASK)

September 21, 2016

RJK Dir
Dep
WD

MEMORANDUM

TO: Robert J. Kroning, P.E., Director
Department of Design and Construction

FROM: AF Arthur D. Challacombe, Acting Director
Department of Planning and Permitting

SUBJECT: Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements – Special Management Area and Shoreline Setback Variance Confirmation

This respond to your memorandums of August 23 and 30, 2016, regarding permit processing for the Kahanahou Wastewater Pump Station (WWPS) Upgrade and Sewer Improvement Project.

You requested approval to concurrently process the Environmental Assessment (EA), Special Management Area (SMA) Use Permit and Shoreline Setback Variance (SSV) associated with the Project. The Revised Ordinances of Honolulu (ROH) Section 25-3.3(c)(1) allows for concurrent processing of those permits, and we are willing to do that for this Project. We advise you, however, that concurrent processing requires close coordination to take full advantage of abbreviated process while ensuring deadlines are met. The timing of the Public Hearing, required by the SMA Ordinance, and the issuance of the Finding of No Significant Impact (FONSI), are particularly important (see ROH Section 25-5.4.). Because the Department of Planning and Permitting (DPP) will not be the accepting agency for the EA, we recommend that the SMA Use Permit and SSV applications be submitted to the DPP for processing after the Draft EA has been published in The Environmental Notice, and that the Department of Design and Construction share any comment letters received on the Draft EA as quickly as possible.

Your memorandum of August 23, 2016, also asks that we waive the requirement for a certified shoreline survey pursuant to DPP Rules Section 13-5(8), (Waiver of Certified Shoreline). Before we can grant a waiver of the certified shoreline for public improvement projects that are specifically intended to address matters of public health and safety or to protect the environment, we need a site plan showing the proposed work relative to the location of the surveyed shoreline. (The plan you provided showed only the existing conditions.) The location of the proposed work is important so we can determine our jurisdictional boundaries. If any work is makai of the anticipated shoreline, that portion of the Project may be in State jurisdiction. Please provide an updated site plan so we can determine whether we are authorized to waive the shoreline survey requirement.

Our staff is ready to work with you and your agents to coordinate assessment and permitting requirements for this much needed Project. Should you have any questions, please contact Ardis Shaw-Kim at 768-8021.

Appendix G

Comments to the Draft Environmental Assessment and Responses

675145

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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KIRK CALDWELL
MAYOR

ARTHUR D. CHALLACOMBE
ACTING DIRECTOR

KATHY K. SOKUGAWA
ACTING DEPUTY DIRECTOR

2016/ELOG-2934(JD)

December 19, 2016

Ms. Gabrielle Sham
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Sham:

SUBJECT: Draft Environmental Assessment (EA)
Chapter 343, Hawaii Revised Statutes (HRS)
Kahanahou Wastewater Pump Station (WWPS) Upgrade and
Sewer Improvements - Kaneohe
Tax Map Keys 4-5-12: 26 and 4-5-47: 95

This is in response to your letter, received on November 1, 2016, requesting comments on the Draft EA for the above-mentioned Project. The Department of Planning and Permitting (DPP) has the following comments:

1. Certified Shoreline Survey – The State Office of Conservation and Coastal Lands (OCCL) has deferred to the DPP to determine whether a certified shoreline survey will be required. Pursuant to the DPP Part 2 Rules of Practice and Procedures Section 13-5(a)(8), the Director of the DPP may waive the certified shoreline requirement if the Project involves public improvements which implement Federal, State, or City programs and policies specifically intended to address matters of public health and safety, to protect the environment, or to improve environmental conditions. We have found the proposed Project is intended to address matters of public health and safety by responding to a Consent Decree of the Environmental Protection Agency. Therefore, the DPP is waiving the requirement of a certified shoreline survey.

2. Accepting Agency – The Draft EA lists the City and County of Honolulu as the accepting agency. The Department of Design and Construction should be listed as the accepting agency.

3. Land Use Permits – We agree that a Special Management Area Use Permit is required for the new generator building, a Shoreline Setback Variance is required for the portion of the Project that will encroach into the shoreline setback, and a Zoning Waiver is needed to allow the emergency generator building to encroach into the 30-foot front yard setback.

4. Sea Level Rise - The Final EA should include an analysis of the possible impact of sea level rise on the Project. If it is likely that sea level rise will increase the risk of flooding during the life of the Project structures, the Final EA should discuss how the design of the Project and proposed operations at the Project site will address that risk and provide resilience in recovering from any flooding.

   The national standard for making such project assessments has been developed by the U.S. Army Corps of Engineers (USACE). On December 13, 2013, the USACE issued an Engineering Regulation (ER 1100-2-8162), to provide "guidance for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects." The guidance in the regulation can be used as the basis for assessing the "potential relative sea level change" that might be experienced by projects in shoreline areas, and is required to be used for all USACE civil works.

5. General Plan and Koolaupoko Sustainable Communities Plan - Section 4.3 of the Koolaupoko Sustainable Communities Plan (SCP) identifies proposed measures for wastewater treatment facilities within the Kailua-Kaneohe-Kahaluu Wastewater Service Area. Please identify in the Final EA how the Project will address the policies and guidelines identified in the Koolaupoko SCP.

Should you have any questions, please contact Jordan Dildy of our Zoning Regulations and Permits Branch at 768-8027 or by email at jdildy@honolulu.gov.

Very truly yours,

FOR Arthur D. Challacombe
Acting Director

cc: Department of Design and Construction (Robert J. Kroning)

TOWNSCAPE, INC.
Environmental & Community Planning

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January 23, 2017

Ms. Kathy K. Sokugawa, Acting Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Subject: **Response to comments on the Draft Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements**

Dear Ms. Sokugawa:

Thank you for reviewing the Draft Environmental Assessment (EA) for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, published in the November 8, 2016 edition of the Environmental Notice and for your comment letter dated December 19, 2016. We offer the following responses to your comments:

1. Certified Shoreline Survey

   We acknowledge that DPP is waiving the requirement of a certified shoreline survey.

2. Accepting Agency

   We acknowledge your suggestion that the accepting agency should be the Department of Design and Construction (DDC) rather than the City and County of Honolulu. However, we have revised the EA to include the City and County of Honolulu DDC as the "Proposing and Determining Agency," rather than the "Applicant" or "Approving Agency" as suggested in a comment letter from the Office of Environmental Quality Control (OEQC). The OEQC has clarified that there is no "Approving Agency" in the case of an Agency Action.

3. Land Use Permits

   We acknowledge that a Special Management Area (SMA) Use Permit is required for the new generator building and a Shoreline Setback Variance (SSV) is required for the portion of the Project that will encroach into the shoreline setback. A joint SMA Use Permit and SSV application has been submitted to your office for review. We also acknowledge that a Zoning Waiver is needed; however, the Zoning Waiver will be needed for the Aboveground Storage Tank

(AST) rather than the emergency generator building. The Zoning Waiver for the emergency generator building was incorrectly listed in the Draft EA. We will revise the EA to include the Zoning Waiver for the AST in the list of required City permits.

4. Sea Level Rise

We acknowledge your request to include an analysis of the possible impact of sea level rise on the Project. The proposed pump station and conveyance system are designed to handle, at minimum, flows for the year 2030 5-year 24-hour storm. These flows are provided by the City and include inflow and infiltration (I/I) from the properties being serviced per City wastewater design standards. The increase in the capacity of the pump station is intended to accommodate the peak wet weather flow due to storm events for the current year conditions, through the design year 2030 and the anticipated economic life of 15 to 20 years for the electrical equipment.

There are two relevant factors to be aware of in regards to the issue of peak flow design and the design year 2030. First, there is no significant additional development planned in the area, and the population projections for the area show no significant increase. Second, per the City's standards, the rating of WWPS capacity is done assuming the largest pump is a standby pump, and its additional capacity is not included. The rating also assumes the wet well level is low, using a point on the pump curve that represents a conservative estimate of the capacity. The design of the pump capacity is based on these assumptions. During actual operations, additional capacity is available as the pump operates at higher points on the curve as the wet well level rises, although this is not considered in the rating per the standards. Also, there is peak flow storage capacity in the wet well itself and also in the collection system that may help to shave wet weather peaks which have a short duration. The possibility for the second pump to turn on provides additional capacity that can be available to handle conditions that surpass the design conditions. These factors provide additional reserve capacity which allow operations to manage more flow, including possible intense rain events due to changing climate conditions.

The estimate of the peak wet weather flow is based on the City's analysis during 2009 to 2012, and hydraulic modeling to determine the appropriate level of peak flow for the design of the project. The City intends to perform re-assessments through additional flow analysis and modeling in the future. This will provide periodic updates to the design conditions and a means of measuring changes and predicting future trends. The future analysis updates will provide revised design flows for the next upgrade project, which is anticipated for when the electrical equipment needs to be replaced as it nears the end of its economic life in about 20 years. Sea level rise is not expected to significantly impact flooding during these next 20 years, but the rate of rise should become clearer as the time

for the planning for the next upgrade project approaches, and as new policies and regulations are developed.

As State and City policies and regulations on sea level rise mitigation are developed, long-term improvements to the Kahanahou WWPS and conveyance system will be required. The City DDC recognizes the threat of sea level rise and the need to plan for future impacts. The City DDC will provide full support and coordination towards ongoing efforts to establish State-wide policies and regulations.

We also acknowledge your referral to the U.S. Army Corps of Engineers' Engineering Regulation (ER 1100-2-8162) and will consult it for any applicable information, and will revise the EA to provide the applicable information on the possible impacts of sea level rise.

5. General Plan and Koolaupoko Sustainable Communities Plan (SCP)

   We acknowledge your reference to Section 4.3 of the Koolaupoko SCP that identifies measures for wastewater treatment facilities within the Kailua-Kaneohe-Kahaluu Wastewater Service Area. We similarly acknowledge your request to identify how the Project will address the policies and guidelines identified in the Koolaupoko SCP and will revise the EA to address your request.

A copy of your comment letter, as well as this response, will be included in the Final Environmental Assessment. Should you have any questions, please contact me at (808) 536-6999, or via email at gabrielle@townscapeinc.com.

Sincerely,

Gabrielle Sham
Environmental Planner

To: Megan Inouye
City & County of Honolulu
Dept. of Design and Construction,
Wastewater Division
650 S. King St.
Honolulu, HI 96813
minouye3@honolulu.gov

Gabrielle Sham
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813
gabrielle@townscapeinc.com

From: David Simpson
Theresa Dean
University of Hawai`i at Manoa
Saunders Hall 107
2424 Maile Way
Honolulu, HI 96822
cc: Sara Bolduc

SENT VIA EMAIL TO: minouye3@honolulu.gov; gabrielle@townscapeinc.com
CC: sbolduc@hawaii.edu

Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements
Draft Environmental Assessment (AFNSI)

The current WWPS system has been experiencing disturbances of high infiltration and inflow of rainwater into the sewer system. The proposed improvements involve upgrades in capacity for the pump from 0.654 million gallon per day to 1.26 million gallons per day. In addition, other improvements proposed include pump station renovations and construction of a new emergency generator building. Sewer improvements include installing new force and gravity mains and will re-route sewer to bypass the Waikapoki WWPS and connect to the Kaneohe Wastewater Preliminary Treatment Facility. The proposed project will cost $5.2 million for the upgrades to the WWPS and an additional $6.5 million for improvements to the force and gravity mains. The project is expected to have short term impacts on noise, traffic and air quality during construction and efforts are planned to minimize the impacts.

This review of the City and County of Honolulu's Draft Environmental Assessment (AFNSI) is a course activity conducted by graduate students in the Urban and Regional Planning Department at the University of Hawaii at Manoa to help determine and maintain the optimum quality of the environment. It does not reflect the official views of the University of Hawaii. We have reviewed the Draft Environmental Assessment (DEA) submitted to the Office of Environmental Quality Control for public comment and have provided the following observations and remarks for your consideration:

General Comments:

1. *Short Term Scope of Project*
    a. Provide explanations of project best management practices:

The document referenced best management practices as the main strategy employed to mitigate potential temporary hazards associated with pipe construction. However, best management practices are only outlined in detail under the 'Air Quality and Noise' section. It would be helpful if best management practices are cited as a mitigation measure with detailed practices in each section and any applicable laws or permits required to comply with these practices conveniently cited for reference. While BMPs are industry standard they are not infallible practices. We suggest that it would be beneficial for the public to have access to a detailed outline of the proposed BMPs and include inherent risks associated with those practices.

b. Provide justification for short term scope of project:

It is noted in the executive summary that one of the main purposes of the proposed system upgrade is to address increased rates of rainwater inflow and infiltration by increasing system capacity. However, the document also notes that the modest improvements will not greatly increase capacity and are to address projected wastewater flows until 2030. Considering the significant amount of public investment that is required for this improvement project, the scope of the project seems to only focus on a short term solution. Precipitation rates are projected to increase due to climate change[1] therefore considering possible inflow and infiltration rate increases due to increased precipitation rates would be beneficial.

2. *Considerations for Sea Level Rise*

a. Consider climate change alternatives:

While the DEA references that there is "no significant inundation of the project area" with projections demonstrating sea level rise of 3 feet, it would be helpful to provide more information for consideration of long term climate variations. These climate change induced variations include sea level rise above 3 feet as well as changes in precipitation and groundwater that will influence infiltration and inflow rates. Due to the proximity of the project to the coastline and existing conditions of infiltration prompting the upgrades to the WWPS and sewer lines, sea level rise and subsequent impacts on groundwater inundation should be highlighted more prominently in the EA.

In addition to marine inundation of coastal areas, the vulnerability of low-lying coastal areas to groundwater inundation often is not as well recognized[2]. Recent research by Charles Fletcher and Kolja Rotzoll on Oahu has noted the impact that sea level rise will have on increasing localized coastal-plain

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[1] Chu et al., (2009). Extreme Rainfall Events in the Hawaiian Islands. *Journal of Applied Meteorology and Climatology*. Vol. 48(3), 502-516.

[2] Rotzoll, K., & Fletcher, C. H. (2013). Assessment of groundwater inundation as a consequence of sea-level rise. *Nature Climate Change*, *3*(5), 477-481.

flooding due to the rising groundwater table corresponding with rising sea levels[1]. Their findings show that sea-level rise of 2 feet will cause substantial flooding and that groundwater inundation more than doubles the areas affected beyond marine inundation zones[1]. These findings are particularly important since the proposed upgrades to the WWPS and sewer lines were motivated by existing infiltration and inflow concerns. Increased rates of inflow and infiltration can cause secondary treatment inefficiencies due to dilution[1]. In addition, the Environmental Assessment should consider climate change projections for inflow rates that could exceed capacity and decrease treatment at Kailua WWTP.

b. Consider impacts within the Special Management Area (SMA) and implications for coastal waters

HAR 11-200-12 Significant Impact Criteria #11: "Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a floodplain, tsunami zone, beach erosion prone area, geologically hazardous land, estuary, freshwater or coastal waters."

As noted in the DEA, an environmental assessment is triggered due to the proposed project falling within the special management area boundary and portions of the proposed force main are within the Shoreline Setback Area. While the DEA notes that appropriate permits and variances will be obtained, it would be helpful to acknowledge potential future requirements and revisions prompted by long term climate change impacts. Long term climate change impacts can potentially create spills or other failures that violate criteria within newly expanded estuaries or floodplains. Due to the sensitivity of the project location and health implications of wastewater, we recommend that long term climate change and sea level rise projections be considered with assessment of how future SMA requirements could impact the proposed project. These projections could help alleviate the need for costly upgrades in the future and allow for a more sustainable system.

Thank you for considering our comments on the draft environmental assessment. Please contact us at dahs@hawaii.edu and td33@hawaii.edu if you have any questions about this review. We look forward to reviewing the final environmental assessment when it is published.

Kind Regards,

Dave Simpson and Theresa Dean

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Environmental & Community Planning

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January 23, 2017

Mr. David Simpson and Ms. Theresa Dean
University of Hawai'i at Manoa
Saunders Hall 107
2424 Maile Way
Honolulu, HI 96822

Subject: Response to comments on the Draft Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements

Dear Mr. Simpson and Ms. Dean:

Thank you for reviewing the Draft Environmental Assessment (EA) for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, published in the November 8, 2016 edition of the Environmental Notice and for your comment letter sent on December 8, 2016. We offer the following responses to your comments:

1. Short term scope of Project

    a. We acknowledge your suggestion to provide explanations of best management practices (BMPs) for the Project in the EA. The specific BMPs that will be applied for this project will be determined during the detailed design phase and are not yet available, but may be reviewed during the permit application process. Recommended BMPs are provided for some of the permits that must be applied for, including air quality, noise, and water pollution.

        In order to comply with EPA rules on water pollution, an NPDES Stormwater Permit from the State of Hawaii Clean Water Branch will be required for this Project. The City is developing a Storm Water Pollution Prevention Plan to comply with EPA's Stormwater Phase II Final Rule requirements, where more specific BMPs for the Project are being developed. Generally, measures from the City's Storm Water Best Management Practice Manual, dated November 2011, will be implemented, where appropriate. We will revise the EA to reflect this.

    b. We acknowledge your suggestion to provide justification for the short term scope of the project. While the long-term impacts of climate change are worth considering, the project is intended to upgrade near-term flow rates in order to reduce the chances of overflow and bring the WWPS and

sewer lines into compliance with the EPA consent decree, which mandates that the improvements be completed by 2020. The project is designed to accommodate flows in the year 2030, providing an opportunity to reassess the impacts of climate change when the facilities are up for renewal and/or replacement at or near that time.

For this project, the proposed pump station and conveyance system are designed to handle, at minimum, flows for the year 2030 5-year, 24-hour storm. These flows are provided by the City and include inflow and infiltration (I/I) from the properties being serviced per City wastewater design standards. The increase in the capacity of the pump station is intended to accommodate the peak wet weather flow due to storm events for the current year conditions, through the design year 2030 and the anticipated economic life of 15 to 20 years for the electrical equipment.

There are two relevant factors to be aware of in regards to the issue of peak flow design and the design year 2030. First, there is no significant additional development planned in the area, and the population projections for the area show no significant increase. Second, per the City's standards, the rating of WWPS capacity is done assuming the largest pump is a standby pump, and its additional capacity is not included. The rating also assumes the wet well level is low, using a point on the pump curve that represents a conservative estimate of the capacity. The design of the pump capacity is based on these assumptions. During actual operations, additional capacity is available as the pump operates at higher points on the curve as the wet well level rises, although this is not considered in the rating per the standards. Also, there is peak flow storage capacity in the wet well itself and also in the collection system that may help to shave wet weather peaks which have a short duration. The possibility for the second pump to turn on provides additional capacity that can be available to handle conditions that surpass the design conditions. These factors provide additional reserve capacity which allows operations to manage more flow, including possible intense rain events due to changing climate conditions.

The estimate of the peak wet weather flow is based on the City's analysis during 2009 to 2012, and hydraulic modeling to determine the appropriate level of peak flow for the design of the project. The City intends to perform re-assessments through additional flow analysis and modeling in the future. This will provide periodic updates to the design conditions and a means of measuring changes and predicting future trends. The future analysis updates will provide revised design flows for the next upgrade project, which is anticipated for when the electrical equipment needs to be replaced as it nears the end of its economic life in about 20 years.

2. Sea Level Rise

    a. We acknowledge your suggestion to consider long term impacts from climate change. As stated earlier, the proposed pump station and conveyance system are designed for the year 2030, and future analysis updates will provide revised design flows for the next upgrade project, which is anticipated for when the electrical equipment needs to be replaced as it nears the end of its economic life in about 20 years. Sea level rise is not expected to significantly impact flooding or the ground water table during these next 20 years, but the rate of rise should become clearer as the time for the planning for the next upgrade project approaches, and as new policies and regulations are developed. We will revise the EA to provide the applicable information on the possible impacts of sea level rise, including information on the estimates of the potential rise within the life of the project.

    We acknowledge your comment on possible increased localized coastal-plain flooding and rising groundwater table corresponding with rising sea level. It is important to recognize a key difference in the resulting impact of this to the storm drain system compared to the sanitary sewer system. In the design of the sanitary sewer system there is consideration that some level of I/I is present, and this is accounted for in the design standards. However, the overall concept is that the sanitary system is intended to be sealed against excessive I/I. Higher groundwater due to rising sea level will cause increased rates of I/I to the sewer system. When I/I becomes excessive for this or any other reason, then rehabilitation or replacement of the sewers may be needed. The City has a significant sewer rehabilitation program on-going with one benefit being reduction of excessive I/I. Sewer rehabilitation methods include spot repairs, installing pipe liners, pipe replacement, and manhole sealing and rehabilitation. Sewer rehabilitation in the Kahanahou service area was done in 2006 to 2009, and a post-rehabilitation study showed evidence of a 60% reduction in the dry weather flow at the pump station. Although sewer rehabilitation efforts cannot fully eliminate all I/I, it has proven to be an effective mitigation measure for reducing and minimizing I/I. It is expected that by continuing an effective sewer rehabilitation program, excessive I/I can be controlled and impacts due to a rising groundwater table in the future can be mitigated through such measures.

    As State and City policies and regulations on sea level rise mitigation are developed, long-term improvements to the Kahanahou WWPS and conveyance system will be required. The City DDC recognizes the threat of sea level rise and the need to plan for future impacts. The City DDC will

provide full support and cooperation towards ongoing efforts to establish State-wide policies and regulations for climate change mitigation.

b. We acknowledge your suggestion to consider climate change and sea level rise projections when assessing how future SMA requirements may impact the proposed project. As mentioned earlier, the City DDC recognizes the threat of sea level rise and the need to plan for future impacts for long term improvements for the pump station and conveyance system. The City DDC will support and cooperate in ongoing efforts to establish State-wide policies and regulations for climate change mitigation.

A copy of your comment letter, as well as this response, will be included in the Final Environmental Assessment. Should you have any questions, please contact me at (808) 536-6999, or via email at gabrielle@townscapeinc.com.

Sincerely,

Gabrielle Sham
Environmental Planner

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

EPO 16-385

November 25, 2016

Ms. Garbrielle Sham
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813
Email: gabrielle@townscapeinc.com

Dear Ms. Sham:

SUBJECT: Draft Environmental Assessment (DEA) for Proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, Kaneohe, Oahu
TMK: 4-5-047: 095

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEA to our office via the OEQC link:
http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Oahu/2010s/2016-11-08-OA-5B-DEA-Kahanahou-Wastewater-Pump-Station.pdf

We understand from the OEQC publication form project summary that *"the City and County of Honolulu, Department of Design and Construction, Wastewater Division, proposes to upgrade the Kahanahou Wastewater Pump Station (WWPS) and the sewer conveyance system in Kaneohe, Oahu. The WWPS, built in 1966, was found to experience high infiltration and inflow of rainwater into the sewer system. Proposed improvements to the WWPS include upgrades in pump capacity from 0.654 million gallons per day (mgd) to 1.26 mgd, renovations to the existing pump station, construction of a new emergency generator building, and other associated on-site improvements.*

The proposed sewer improvements include installation of new force and gravity mains along Ka Hanahou Place, Ka Hanahou Circle, Lilipuna Road, Wailele Road, and Makahio Street. This project will re-route sewer to bypass the Waikapoki WWPS and connect to another area of the collection system that will eventually flow into the Kaneohe Wastewater Preliminary Treatment Facility. The proposed project is expected to cost $5.2 million for the WWPS upgrade and $6.5 million for the force/gravity main improvements. The proposed project will have short term impacts on traffic, noise, and air quality during construction. Efforts to minimize these impacts will be implemented to the extent practicable."

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments and available strategies to support sustainable and healthy design are provided at: http://health.hawaii.gov/epo/landuse. Projects are required to adhere to all applicable standard comments.

EPO has recently updated the environmental Geographic Information System (GIS) website page. It now compiles various maps and viewers from our environmental health programs. The eGIS website page is continually updated so please visit it regularly at: http://health.hawaii.gov/epo/egis.

EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: https://eha-cloud.doh.hawaii.gov. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (HAR, Section 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: http://health.hawaii.gov/cwb. If you have any questions, please contact the Clean Water Branch, Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

Please note that all wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems". We reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please review online guidance at: http://health.hawaii.gov/wastewater and contact the Planning and Design Section of the Wastewater Branch at (808) 586-4294.

EPO recommends you review the need and/or requirements for a Clean Air Branch permit. The Clean Air Branch can be consulted via e-mail at: Cab.General@doh.hawaii.gov or via phone: (808) 586-4200.

You may also wish to review the draft Office of Environmental Quality Control (OEQC) viewer at: http://eha-web.doh.hawaii.gov/oeqc-viewer. This viewer geographically shows where some previous Hawaii Environmental Policy Act (HEPA) {Hawaii Revised Statutes, Chapter 343} documents have been prepared.

In order to better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: http://www.epa.gov/ejscreen.

The Department of Health encourages the application of sustainability strategies and principles early in the planning, review and funding of projects. We also request that you consider conducting a Health Impact Assessment (HIA). More information is available on line at:

- World Health Organization (WHO) HIA information: http://www.who.int/hia/en
- U.S. Centers for Disease Control (CDC) HIA information: https://www.cdc.gov/healthyplaces/hia.htm
- U.S. Environmental Protection Agency (EPA) HIA information: https://www.epa.gov/healthresearch/health-impact-assessments

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

We request a written or electronic response confirming your receipt of this DOH EPO comment letter. You may mail your response directly to EPO at 919 Ala Moana Blvd., Suite 312, Honolulu, Hawaii 96814. However, we would prefer an electronic reply to DOH.EPO@doh.hawaii.gov. We expect that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me by calling (808) 586-4337.

Mahalo nui loa,

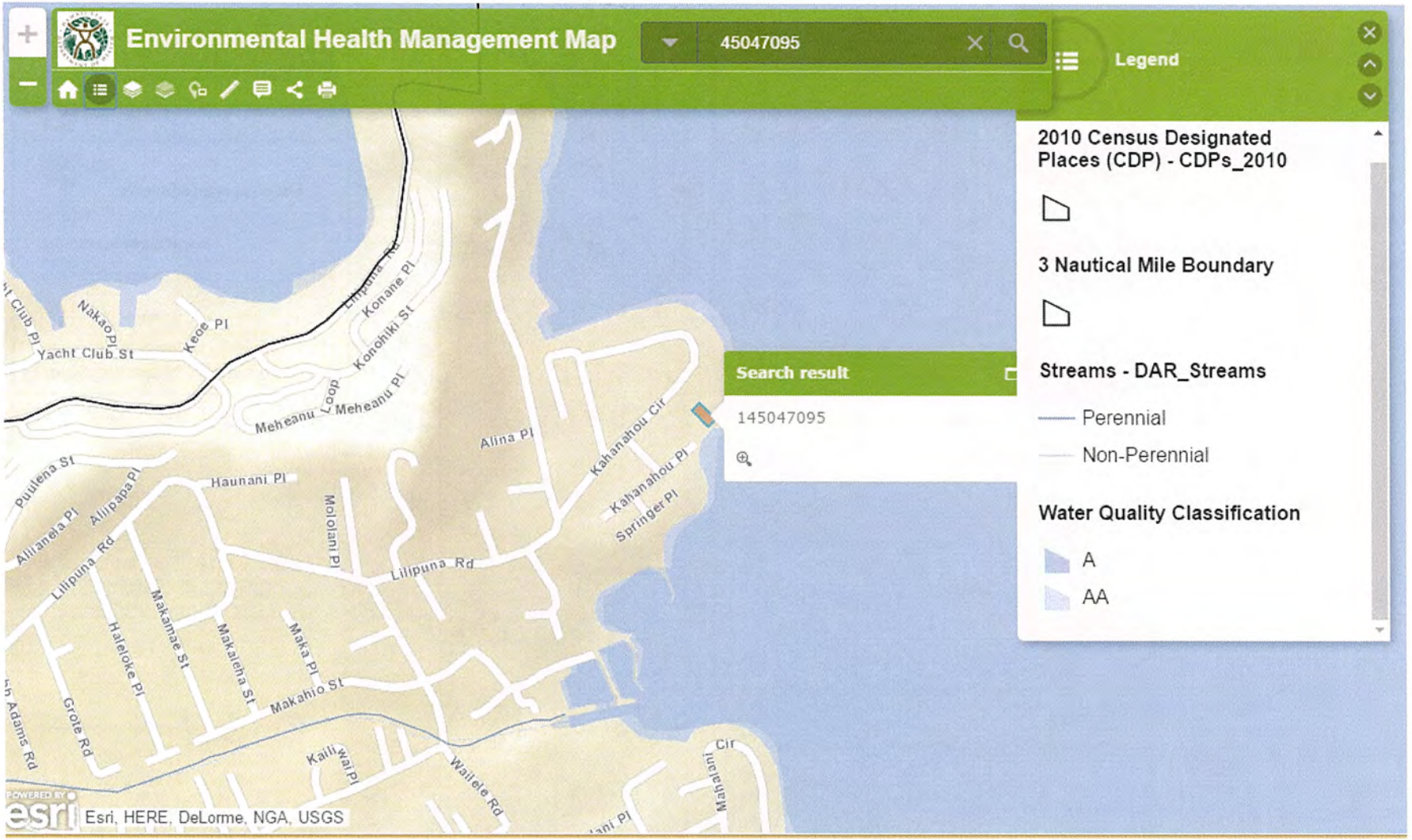
Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

LM:nn

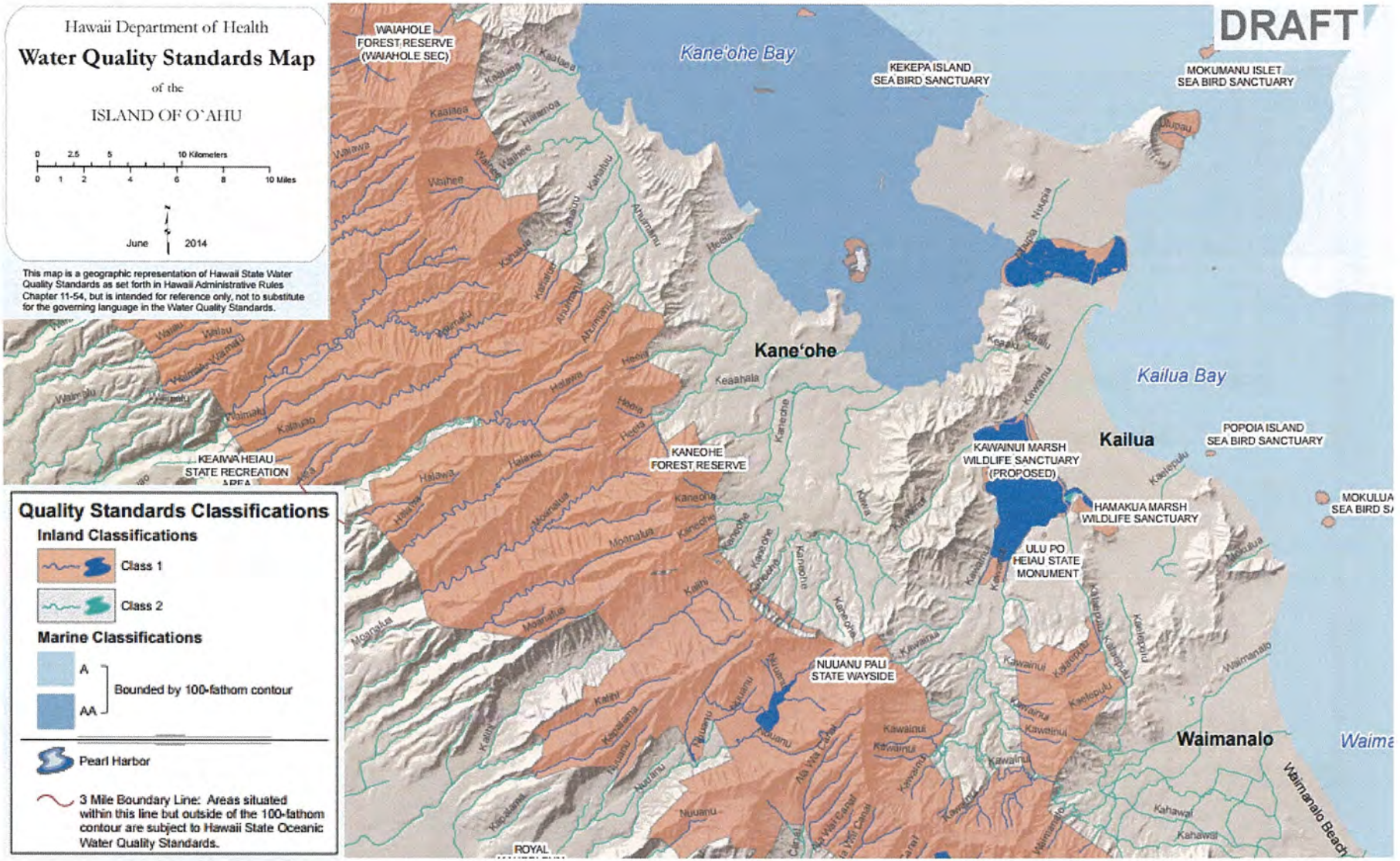
Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis
Attachment 2: Clean Water Branch: Water Quality Standards Map
Attachment 3: Wastewater Branch: Recycled Water Use Map of Project Area
Attachment 4: U.S. EPA EJSCREEN Report for Project Area

c: Megan Inouye, City & County of Honolulu, Dept. of Design and Construction {via email: Minouye3@honolulu.gov}
DOH: DDEH, EMD, CAB, CWB, WWB {via email only}

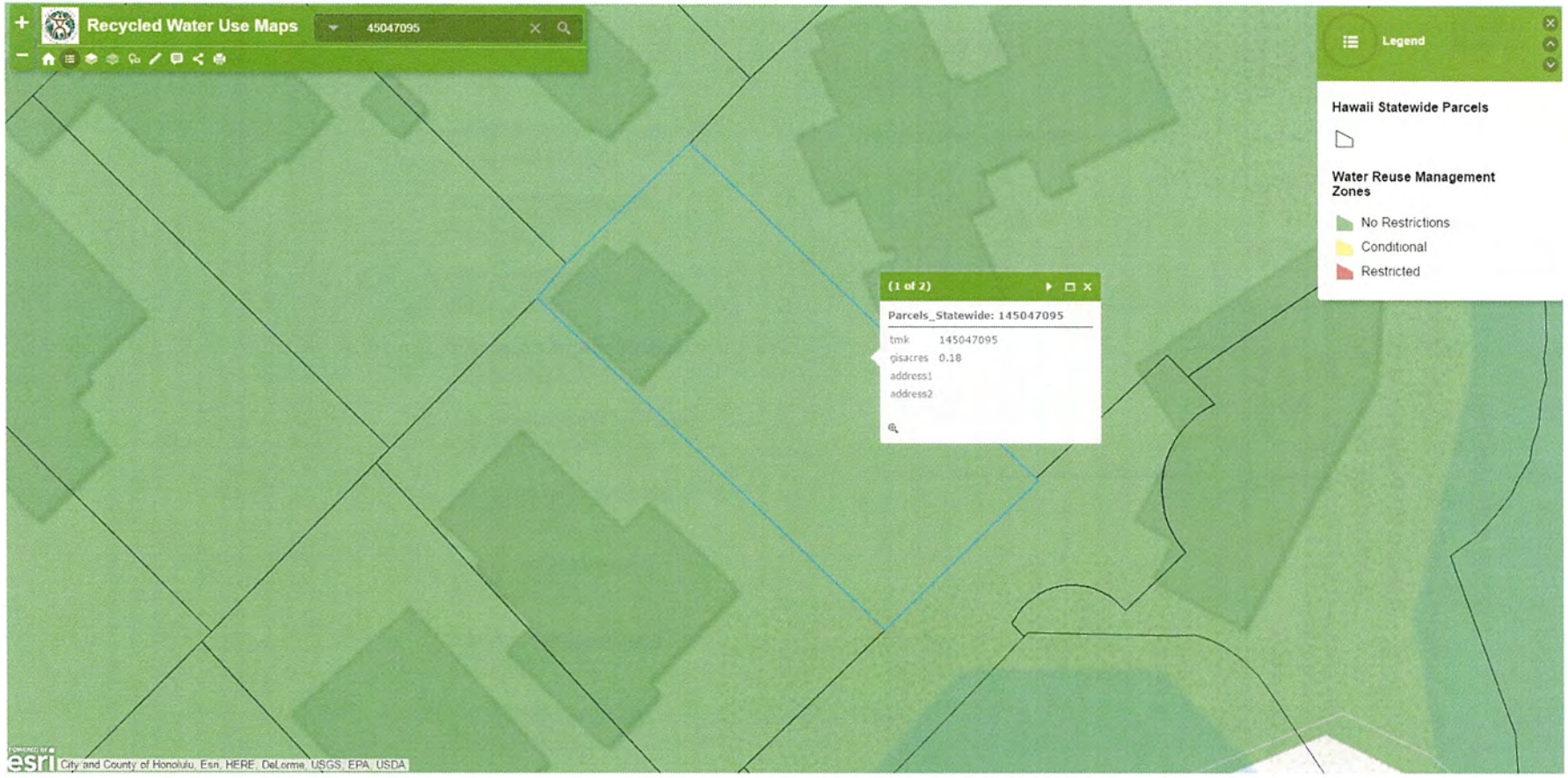
Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis



Attachment 2: Clean Water Branch: W ater Qua lity Standards Map



Attachment 3: Wastewater Branch: Recycled Water Use Map of Project Area



Attachment 4: U.S. EPA EJSCREEN Report for Project Area

EJSCREEN Report (Version 2016)

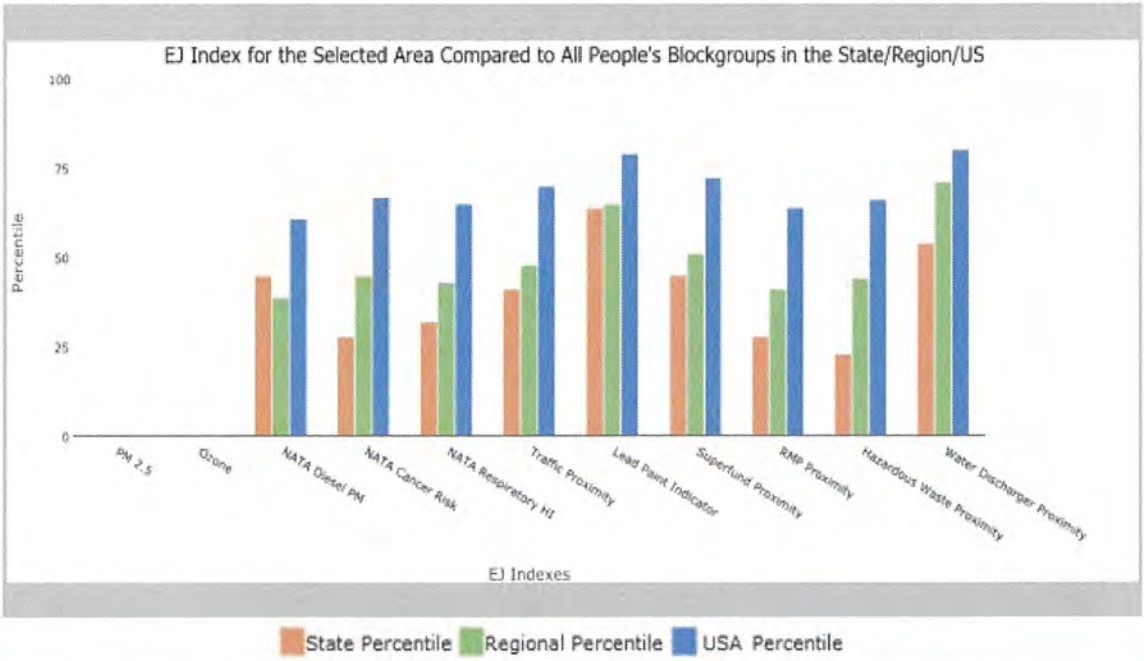
1 mile Ring Centered at 21.423409,-157.790300, HAWAII, EPA Region 9

Approximate Population: 8,812

Input Area (sq. miles): 3.14

3 Pump Station Upgrade and Sewer Improvements (The study area contains 1 blockgroup(s) with

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	45	39	61
EJ Index for NATA* Air Toxics Cancer Risk	28	45	67
EJ Index for NATA* Respiratory Hazard Index	32	43	65
EJ Index for Traffic Proximity and Volume	41	48	70
EJ Index for Lead Paint Indicator	64	65	79
EJ Index for Superfund Proximity	45	51	72
EJ Index for RMP Proximity	28	41	64
EJ Index for Hazardous Waste Proximity*	23	44	66
EJ Index for Water Discharger Proximity	54	71	80



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 21.423409,-157.790300, HAWAII, EPA Region 9

Approximate Population: 8,812

Input Area (sq. miles): 3.14

S Pump Station Upgrade and Sewer Improvements (The study area contains 1 blockgroup(s) with

November 25, 2016

Digitized Point

1:2,257

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 21.423409,-157.790300, HAWAII, EPA Region 9

Approximate Population: 8,812

Input Area (sq. miles): 3.14

S Pump Station Upgrade and Sewer Improvements (The study area contains 1 blockgroup(s) with

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	N/A	N/A	N/A	9.37	N/A	9.32	N/A
Ozone (ppb)	N/A	N/A	N/A	51	N/A	47.4	N/A
NATA* Diesel PM (µg/m³)	0.108	0.149	61	0.978	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	32	34	53	43	<50th	40	<50th
NATA* Respiratory Hazard Index	0.91	1	51	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	59	990	39	1100	30	590	43
Lead Paint Indicator (% Pre-1960 Housing)	0.28	0.16	75	0.24	63	0.3	59
Superfund Proximity (site count/km distance)	0.051	0.098	45	0.15	36	0.13	43
RMP Proximity (facility count/km distance)	0.066	0.19	28	0.57	10	0.43	14
Hazardous Waste Proximity+ (facility count/km distance)	0.058	0.14	27	0.14	37	0.11	42
Water Discharger Proximity (facility count/km distance)	0.41	0.34	71	0.2	89	0.31	80
Demographic Indicators							
Demographic Index	46%	52%	32	47%	50	36%	70
Minority Population	77%	77%	38	58%	67	37%	83
Low Income Population	15%	26%	30	36%	20	35%	21
Linguistically Isolated Population	1%	6%	28	9%	21	5%	48
Population With Less Than High School Education	7%	9%	50	17%	32	14%	37
Population Under 5 years of age	5%	6%	41	7%	38	6%	42
Population over 64 years of age	21%	15%	77	13%	86	14%	83

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

TOWNSCAPE, INC.
Environmental & Community Planning

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January 23, 2017

Ms. Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office
State of Hawai'i Department of Health
919 Ala Moana Boulevard, Suite 312
Honolulu, HI 96814

Subject: **Response to comments on the Draft Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements**

Dear Ms. McIntyre:

Thank you for reviewing the Draft Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, published in the November 8, 2016 edition of the Environmental Notice and for your comment letter dated November 25, 2016. We offer the following responses to your comments:

1. State and Federal environmental health land use guidance

   We acknowledge your comment to review the State and Federal environmental health land use guidance and thank you for your referral to the State standard comments and strategies to support sustainable and healthy design. Applicable standard comments will be consulted and adhered to during final design.

2. Environmental Geographic Information System (GIS) website

   We acknowledge your reference to the Environmental Planning Office's (EPO's) updated environmental GIS website page and will consult it for any applicable information.

3. Hawaii Environmental Health Portal

   We acknowledge your reference to EPO's Hawaii Environmental Health Portal and will consult it for any applicable information.

4. Requirements of the Clean Water Branch, National Pollutant Discharge Elimination System (NPDES) permit, and U.S. Army Corps of Engineers Regulatory Branch.

   We acknowledge your referral to the Clean Water Branch and NPDES program and will review their requirements when preparing the NPDES permit application.

   The project does not involve waters of the U.S. Thus, a U.S. Army Corps of Engineers permit will not be necessary.

5. Department of Health (DOH) Administrative Rules, Chapter 11-62, "Wastewater Systems"

   We acknowledge that wastewater plans must conform to applicable provisions of the DOH's Administrative Rules, Chapter 11-62, "Wastewater Systems" and understand that DOH will review wastewater plans for compliance to applicable rules.

6. DOH Clean Air Branch permit

   We have reviewed the need and/or requirements for a Clean Air Branch permit. According to DOH's Administrative Rules, Chapter 11-60.1, "standby generators used exclusively to provide electricity, standby sewage pump drives, and other emergency equipment used to protect the health and welfare of personnel and the public" are exempt from requirements of a Clean Air Branch permit. Thus, a Clean Air Branch permit will not be needed for this project.

7. Office of Environmental Quality Control (OEQC) viewer

   We acknowledge your referral to the OEQC viewer of previous Hawaii Environmental Policy Act documents and have consulted the viewer for documents that have been prepared in the vicinity of this project.

8. Environmental Protection Agency (EPA) environmental justice mapping and screening tool (EJSCREEN)

   We acknowledge your referral to the EPA's EJSCREEN tool. We have explored this tool for applicable use in planning this project, however, this project was selected and sited based on the need to improve the capacity of the existing wastewater system and meet the requirements of the EPA consent decree.

9. Sustainability strategies and principles and Health Impact Assessment (HIA)

   We acknowledge your suggestion of applying sustainability strategies and principles early in the planning, review, and funding of projects.

   We similarly acknowledge your request to conduct an HIA for the project. Per the standards for the Screening Step provided in the *Minimum Elements and*

Practice Standards for Health Impact Assessment, version 3 (September 2014) by the North American HIA Practice Standards Working Group in April 2009 and revised in November 2010, we believe that a HIA is not warranted due to the following reasons:

a. The potential for the decision to result in substantial effects on public health, particularly those effects which are avoidable, involuntary, adverse, irreversible, or catastrophic;
This project will improve public health by improving the reliability of the wastewater system and reducing spills.

b. the potential for unequally distributed impacts;
This project seeks to bring this wastewater pump station and system up to EPA requirements, bringing it up to par with other WWPSs.

c. the potential for the HIA to add new information that would be useful to decision-makers;
The City is under consent decree by the EPA to implement the proposed improvements. Any new information will not change this requirement.

d. the availability, application, and effectiveness of alternative opportunities or approaches to evaluate and communicate the decision's potential health impacts.
The City has developed an Environmental Assessment that has disclosed potential environmental impacts of the project. Additionally, the project will be securing approvals and permits from various State and City agencies to ensure any potential impacts are addressed.

A copy of your comment letter, as well as this response, will be included in the Final Environmental Assessment. Should you have any questions, please contact me at (808) 536-6999, or via email at gabrielle@townscapeinc.com.

Sincerely,

Gabrielle Sham
Environmental Planner

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

DEPARTMENT OF HEALTH | 235 South Beretania Street, Suite 702, Honolulu, HI 96813 | oeqchawaii@doh.hawaii.gov

DAVID Y. IGE
GOVERNOR

SCOTT GLENN
DIRECTOR

(808) 586-4185

December 5, 2016

Robert J. Kroning, P.E.
Director
Department of Design and Construction
City & County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Kroning,

Subject: Draft Environmental Assessment (EA) for Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements

The Office of Environmental Quality Control (OEQC) has reviewed the Draft EA for the subject project and offers the following comments:

1. The Project Summary states that your Wastewater Division is the "Applicant" for this project, and the City and County of Honolulu is the "Approving Agency;" further, Page 1 states environmental review of the project is required by Chapter 343, Hawai'i Revised Statutes (HRS), because it involves the following two statutory triggers: (1) use of County lands and funds and (2) use within the Special Management Area (SMA).

   Firstly, Chapter 343, HRS establishes that agencies such as your Department of Design and Construction are considered to be the "Proposing and Determining Agency" rather than an "applicant" when they are reviewing and processing their own projects. There is no Approving Agency in the case of an Agency Action. Secondly, "Use within the SMA" is not a trigger under Chapter 343, HRS. However, it may require compliance with the environmental review provisions of Chapter 25, Revised Ordinances of Honolulu. Please check with the Honolulu Department of Planning and Permitting to ensure compliance. Finally, "use within the shoreline setback area" (as indicated on page 28) is a trigger under Chapter 343, HRS, but is not listed.

2. Please consider repaving roads (as shown on page 8) as complete streets to enable safe, convenient, multimodal access for users of all ages and abilities. Please also consider using pervious pavement to reduce stormwater runoff and help groundwater recharge. Resources for low-impact development can be found here: http://planning.hawaii.gov/lud/.

3. In the event that vegetation is removed (as mentioned on page 22), please consider revegetation using native species (to ensure compliance with Act 233, Session Laws of Hawai'i) and xeriscape species, as appropriate.

Thank you for the opportunity to comment on the Draft EA. We look forward to a response that will also be included in the Final EA. If you have any questions, please contact our office at (808) 586-4185.

Sincerely,

Scott J. Glenn

Scott Glenn, Director

cc: Gabrielle Sham, Townscape, Inc.

17-222

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January 23, 2017

Mr. Scott J. Glenn, Director
Office of Environmental Quality Control
State of Hawai'i
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Subject: **Response to comments on the Draft Environmental Assessment for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements**

Dear Mr. Glenn:

Thank you for reviewing the Draft Environmental Assessment (EA) for the proposed Kahanahou Wastewater Pump Station Upgrade and Sewer Improvements, published in the November 8, 2016 edition of the Environmental Notice and for your comment letter dated December 5, 2016. We offer the following responses to your comments:

1. Technical inaccuracies with agency identification and triggers

   We acknowledge your correction that the City and County of Honolulu Department of Design and Construction (DDC) Wastewater Division is considered a "Proposing and Determining Agency," rather than the "Applicant" or "Approving Agency," and have revised any referral to DDC as such.

   We acknowledge that "Use within the SMA" is not a trigger under HRS Chapter 343, but that "use within the shoreline setback area" is a trigger and will revise the EA to reflect this.

2. Road repaving

   We acknowledge your request to consider complete streets and pervious pavement in the repaving of roadways. The project roads being repaved included consideration of Complete Streets elements via the Complete Streets Checklist and reviews by the City's Bikeway Coordinator, Department of Transportation Services and Department of Planning and Permitting Site Development Division.

3. Revegetation

   We acknowledge your request to consider using native species and/or xeriscape species for any revegetation needed as a result of this project. Should vegetation

need to be replaced, use of native species and/or xeriscape will be considered. We will revise the EA to reflect this.

A copy of your comment letter, as well as this response, will be included in the Final Environmental Assessment. Should you have any questions, please contact me at (808) 536-6999, or via email at gabrielle@townscapeinc.com.

Sincerely,

Gabrielle Sham
Environmental Planner