DEPARTMENT OF ENVIRONMENTAL SERVICES
KA ʻOIHANA LAWELAWE KAIĀPUNI
CITY AND COUNTY OF HONOLULU

1000 ULUʻŌHIʻA STREET, SUITE 308 • KAPOLEI, HAWAIʻI 96707
PHONE: (808) 768-3486 • FAX: (808) 768-3487 • WEBSITE: honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

ROGER BABCOCK, JR., Ph.D., P.E.
DIRECTOR
PO'O

DANIEL BRIECK, P.E.
DEPUTY DIRECTOR
HOPE PO'O

IN REPLY REFER TO:
WEC.PE 25-031

September 16, 2025

Ms. Mary Alice Evans, Director
Office of Planning and Sustainability Development
State of Hawaiʻi
235 South Beretania Street, 6th Floor
Honolulu, Hawaiʻi 96813

Dear Ms. Evans:

SUBJECT: Kūkanono Wastewater Pump Station - Fuel Storage Tank Improvement
TMK 4-2-013: 038
Kailua, Oʻahu

The City and County of Honolulu, Department of Environmental Services is transmitting the subject Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the subject project. The DEA-AFONSI has been prepared pursuant to Chapter 343, Hawaiʻi Revised Statues, and Chapter 11-200.1, Hawaiʻi Administrative Rules.

We respectfully request that the DEA-AFONSI be published in the next available issue of the Environmental Notice. Materials required for the publication are being provided via the Environmental Review Program's online form.

Should you have any questions, please contact Audrey Uyema Pak from our Division of Wastewater Engineering and Construction at (808) 768-8766.

Sincerely,

Digitally signed by
Babcock, Roger W
Date: 2025.09.17
12:02:36 -10'00'

Roger Babcock, Jr., Ph.D., P.E.
Director

Enclosure

cc: ENV/OAS

From: dbedt.opsd.erp@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Monday, December 15, 2025 12:01:35 PM

Action Name

Fuel Storage Tank Improvements Kukanono Wastewater Pump Station

Type of Document/Determination

Draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds

Judicial district

Koʻolaupoko, Oʻahu

Tax Map Key(s) (TMK(s))

(1) 4-2-013:038

Action type

Agency

Other required permits and approvals

SMA

Proposing/determining agency

Department of Environmental Services

Agency jurisdiction

City and County of Honolulu

Agency contact name

Audrey Uyema Pak

Agency contact email (for info about the action)

audrey.uyemapak@honolulu.gov

Email address for receiving comments

comments@townscapeinc.com

Agency contact phone

(808) 768-8766

Agency address

1000 Uluohia Street, Suite 308
Kapolei, HI 96707
United States
Map It

Is there a consultant for this action?

Yes

Consultant

Townscape, Inc.

Consultant contact name

Gabrielle Sham

Consultant contact email

gabrielle@townscapeinc.com

Consultant contact phone

(808) 536-6999

Consultant address

900 Fort Street Mall, Suite 1160
Honolulu, HI 96813
United States
Map It

Action summary

The Kukanono Wastewater Pump Station has an underground storage tank that supplies fuel to a standby generator. The generator automatically activates during a power outage and provides electricity for the entire pump station, including the sewage pump, support equipment, and lighting. To comply with current fuel storage
regulations and strengthen environmental protection, the City Department of Environmental Services, Division of Wastewater Engineering and Construction, is proposing to replace the existing 1,000-gallon underground fuel storage tank with a new 1,000-gallon aboveground tank. The project also includes replacing the underground fuel piping, fuel monitoring panel, associated sensors, and connecting the new fuel monitoring panel to the supervisory control and data acquisition (SCADA) system.

Reasons supporting determination

Refer to Section 6.

Attached documents (signed agency letter & EA/EIS)

- Kukanono-Draft-EA_12_11_2025_Submittal.pdf
- WEC.PE-25-029_Kukanono_Ada.pdf

ADA Compliance certification (HRS §368-1.5):

The authorized individual listed below certifies that documents submitted are unlocked, searchable, and ADA compliant. Audio files include transcripts, captions, or alternative descriptions.

Action location map

- Project-Site.zip

Authorized individual

Gabrielle Sham

Authorized individual email

gabrielle@townscapeinc.com

Authorized individual phone

(808) 536-6999

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

Draft Environmental Assessment for the Fuel Storage Tank Improvements Kūkanono Wastewater Pump Station in Kailua, Island of O‘ahu, Hawai‘i

Prepared For:

City and County of Honolulu
Department of Environmental Services

CITY AND COUNTY OF HONOLULU

ENV Community. Commitment. Continuity.

Prepared By:

TOWNSCAPE, INC.
Environmental & Community Planning

December 2025

This page intentionally left blank.

Draft Environmental Assessment
Fuel Storage Tank Improvements
Kūkanono Wastewater Pump Station
in Kailua,
Island of Oʻahu, Hawaiʻi

Tax Map Key (1) 4-2-013:038

This environmental document has been prepared pursuant to
Chapter 343, Hawaiʻi Revised Statutes.

Prepared For:

City and County of Honolulu
Department of Environmental Services
1000 Ulu'ōhi'a Street Suite 308
Kapolei, Hawaiʻi 96707

Prepared By:

Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaiʻi 96813

December 2025

This page intentionally left blank.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

Abbreviation	Definition
AST	Aboveground Storage Tank
ATS	Automatic Transfer Switch
BMPs	Best Management Practices
BWS	Board of Water Supply
CRB	Coconut Rhinoceros Beetle
DLNR	Department of Land and Natural Resources
DOFAW	Division of Forestry and Wildlife
DPP	Department of Planning and Permitting
EA	Environmental Assessment
ENV	Department of Environmental Services
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HECO	Hawaiian Electric Company, Inc.
HFD	City and County of Honolulu Fire Department
HPD	City and County of Honolulu Police Department
HRS	Hawai‘i Revised Statutes
LUO	Land Use Ordinance
MCC	Motor Control Center
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
ROH	Revised Ordinances of Hawai‘i
SCADA	Supervisory Control and Data Acquisition
SCP	Sustainable Communities Plan
SHPD	State of Hawai‘i, Historic Preservation Division
SLR	Sea Level Rise
SMA	Special Management Area
UST	Underground Storage Tank
USFWS	U.S. Fish and Wildlife Service
WWPS	Wastewater Pump Station
WWTP	Wastewater Treatment Plant

PROJECT SUMMARY

Project Name:	Kūkanono Wastewater Pump Station
Proposing and Determining Agency:	City & County of Honolulu Department of Environmental Services 1000 Ulu'ōhi'a Street Suite 308 Kapolei, Hawai‘i 96707
HRS, Chapter 343 Trigger	Use of County lands and funds.
Location:	Kailua, O‘ahu, Hawai‘i
Tax Map Keys:	(1) 4-2-013:038
Project Address:	705 Manu-O‘o Street Kailua, Hawai‘i 96734
Land Area:	19.508 acre (or 849,768 square feet) parcel area
Recorded Fee Owner:	State of Hawai‘i (Fee Owner) City & County of Honolulu (Lessee)
Existing Use:	Wastewater Pump Station
Proposed Use:	Wastewater Pump Station
Community Plan Region:	Ko‘olau Poko Sustainable Communities Plan
Land Use Designations:	
State Land Use	Urban
County Zoning	P-2 General Preservation
Special Management Area:	In Special Management Area
Proposed Action:	The proposed project involves replacing the existing underground fuel storage tank with a new 1,000-gallon aboveground fuel storage tank. Additionally, the project includes replacing the underground fuel piping, fuel monitoring panel, and all associated sensors, as well as connecting the new fuel monitoring panel to the supervisory control and data acquisition system.
Agency Determination:	Anticipated Finding of No Significant Impact

This page intentionally left blank.

1. SETTING AND PROJECT DESCRIPTION

1.1. Background and Need

The Kūkanono Wastewater Pump Station (WWPS), owned and operated by the City and County of Honolulu, has been in service since 1988. It serves a service area of approximately 54 acres, consisting of residential neighborhoods, a church, the Windward YMCA, and the Castle Medical Center. The WWPS has a 1,000-gallon Underground Storage Tank (UST) that stores fuel for the backup generator. In the event of a power outage, the generator provides full operational power to the pump station, including the sewage pump, support equipment, and lighting.

To comply with current fuel storage regulations and to strengthen environmental protection efforts, the City Department of Environmental Services (ENV) Division of Wastewater Engineering and Construction is proposing to upgrade the existing UST along with making other related improvements. Pursuant to Hawai‘i Administrative Rules (HAR) 11-280.1, all USTs and piping must be upgraded to include secondary containment and must use interstitial monitoring to detect releases from tanks and piping by July 15, 2028.Without the emergency backup power system, the WWPS could experience system downtime and sewage backups, both of which are costly and environmentally harmful.

In addition to improving the existing UST, upgrades to the fuel monitoring panels are needed. The fuel monitoring panels detect fuel levels and inform the City when fuel is low. Monitoring fuel levels allows for timely refueling, which helps to ensure the generator is ready to use. The new panel will include fuel level sensors that provide real-time data on fuel levels within the storage tanks.

Environmental review of this project is required by Chapter 343, Hawai‘i Revised Statutes. The statutory trigger for preparation of this Environmental Assessment (EA) is the use of State and County funds and lands. Given the parcel’s proximity to the shoreline, the proposed project must comply with Revised Ordinances of Honolulu (ROH) Chapter 25 (Special Management Areas).

1.2. Proposed Action

To meet the State’s mandate, the City proposes replacing the existing UST system with a new 1,000-gallon Aboveground Storage Tank (AST). Additionally, the project includes replacing the underground fuel piping, fuel monitoring panel, and all associated sensors, as well as connecting the new fuel monitoring panel to the Supervisory Control and Data Acquisition (SCADA) system.

1.3. Site Location and Description

The project site is located at 705 Manu-Oʻo Street in the ahupuaʻa of Kailua, district of Koʻolaupoko, on the island of Oʻahu in the state of Hawaiʻi. The site is located on the southern edge of the Kawainui marsh, bordering the Kūkanono neighborhood (see Figure 1).

Surrounded by a chain-link fence with a vehicle gate and access, the project site is located on an approximate 19.6-acre parcel owned by the State of Hawaiʻi. Vehicular access to the project site is via a paved driveway which connects to Manu-Oʻo Street.

The State land use designation for the project site is Urban (see Figure 2), which is characterized by city-like concentrations of people, structures and services. Urban land uses are subject to the City's land use policies and controls. The City's Land Use Ordinance (LUO) classifies the project site as P-2 General Preservation (see Figure 3). P-2 is the General Preservation District and according to LUO §21-3.40, are "lands designated urban by the State, but well-suited to the functions of providing visual relief and contrast to the City's built environment, or serving as outdoor space for the public's use and enjoyment" and for "areas unsuitable for other uses because of topographical considerations related to public health, safety, and welfare concerns."

1.4. Existing Facility

1.4.1. Pump Station Description

This section is based on information described in the Kukanono WWPS Operations Manual prepared by Fukunaga & Associates, Inc. (2012) and the Draft Preliminary Engineering Report prepared by Okahara and Associates, Inc. (2025). Refer to Figure 4 for a layout of the existing site plan.

With an average design flow of 0.19 million gallons per day (mgd) and a peak flow of 1.08 mgd, the Kūkanono WWPS collects wastewater from a low point of its service area and pumps it to a higher elevation along Manu-Oʻo Street via a 10-inch polyvinyl chloride pipe and a ductile iron force main. The force main extends 1171 linear feet to manhole #65537, where the wastewater then flows by gravity to the Kailua Road WWPS, and eventually to the Kailua Regional Wastewater Treatment Plant (WWTP).

The pump station is a two-story structure with CMU walls, consisting of a pump floor and a ground floor. The ground floor, which includes the Motor Room and Generator Room, is approximately 688 square feet and has a finished floor elevation of 29 feet above mean sea level. The pump floor is approximately 604 square feet, and has a

finished floor elevation of 15.45 feet above mean sea level. The Generator Room contains the generator, day tank and fuel monitoring system.

1.4.2. Power and Fuel Systems

The Kukanono WWPS facility is served by electricity provided by Hawaiian Electric Company, Inc (HECO). In the event of a loss of power by HECO, the facility contains a backup power system which includes a standby generator and an automatic transfer controller.

Fuel is supplied to the 65 kW, 480-volt, diesel standby generator from a 1,000-gallon single walled, fiberglass UST located to the east of the Generator Room to a 50-gallon day tank located above ground in the Generator Room. The UST is approximately 20 feet above mean sea level at its invert. It is equipped with a sump leak sensor and a fuel inventory sensor. The supply and return piping runs underground from the UST to the outside of the generator room. From there, the fuel piping transitions to aboveground routing and into the day tank. Existing aboveground fuel oil piping is black steel, while the underground fuel oil piping is double containment fiberglass.

In the event of the loss of commercial power, the Automatic Transfer Switch (ATS) signals the power for the pump station to shift from the normal power source to the standby generator. The ATS monitors when power from HECO is restored and then transfers the WWPS back to normal service.

1.4.3. Electrical and Monitoring Systems

The facility is powered by a motor control center (MCC), located on the first floor of the Motor Room. The utility service to the MCC is provided by HECO. The MCC serves sewage pumps, exhaust fans, and a 10 kVA dry-type transformer. A fuel monitoring panel (Veeder Root Model TLS-450PLUS) tracks the sensors within the fuel storage tank to gauge fuel levels and detect leaks. The SCADA cabinet, located on the first floor of the Motor Room, monitors signals from various equipment including the fuel monitoring panel and the day tank. It has an existing conduit path and wiring for the day tank and fuel monitoring control panel. The existing fuel monitoring panel and day tank are both fed by Panel A, a 120/240V, 1-Phase, 3-wire power panel with a 2P80A main circuit breaker.

1.5. Project Details

The proposed project includes the following actions (see Figure 5 to 9)

Civil

- Excavate area to remove the existing UST, including associated fuel lines, conduit, and vent line. Backfill to the bottom of the surface restoration layer.
- Replace the existing concrete pavement above the UST with a two-inch layer of asphalt over a six-inch compacted aggregate base to match the surrounding environment.
- Excavate area to install the new 1,000 gallon AST, housing pad, underground fuel lines, and pipe bollards. Restore the surfaces of the excavated areas to match adjacent surfaces.
- Restore all asphalt sections of the site that will be damaged from construction activities including excavation and trenching. All restored areas to be repaved to match existing conditions, but must be repaved with no less than two-inch asphalt pavement over six-inch compacted aggregate base course.
- Install eight new concrete-filled steel pipe bollards to protect the AST from vehicular traffic.

Architectural

- Paint existing exterior masonry walls and miscellaneous surface incidental to scope using existing colors.
- Paint a minimum of one prime coat and two finish coats on all interior surfaces incidental to scope, conforming to existing standard color palette.

Structural

- Install concrete pads for the new AST and new day tank. The concrete pads for the AST will be installed at a minimum, five-foot six-inches clear from the edge of the existing retaining wall. The AST requires 14-inch pedestals at the tank supports.

Mechanical

- Replace the existing 1,000-gallon UST with a new 1,000-gallon ConVault AST on the vacant area west of the WWPS building. The area was selected as the most suitable location due to its ideal elevation level and ability to accommodate aboveground fuel piping without crossing driveways or introducing tripping hazards. The AST will be a double wall steel tank

encased in concrete measuring 11 feet long, four feet four inch high, and five feet eight inches wide.

- Install fuel supply and fuel return piping (1-inch Type 316 Stainless Steel) from the AST to the day tank aboveground. Existing piping penetrations will be reused where feasible, otherwise, a new penetration will be made.
- Install SCADA compatible fuel monitoring panel and connect to existing SCADA cabinet.
- Install interstitial monitoring and inventory sensors on the AST and integrated with the fuel monitoring panel.
- Replace the existing 50-gallon fuel oil day tank and associated piping/wiring and conduit in the generator room with a new 60-gallon day tank with two supply pumps, one return pump, and one hand pump.

Figure 1 Location and Vicinity Map

Figure 2 State Land Use Map

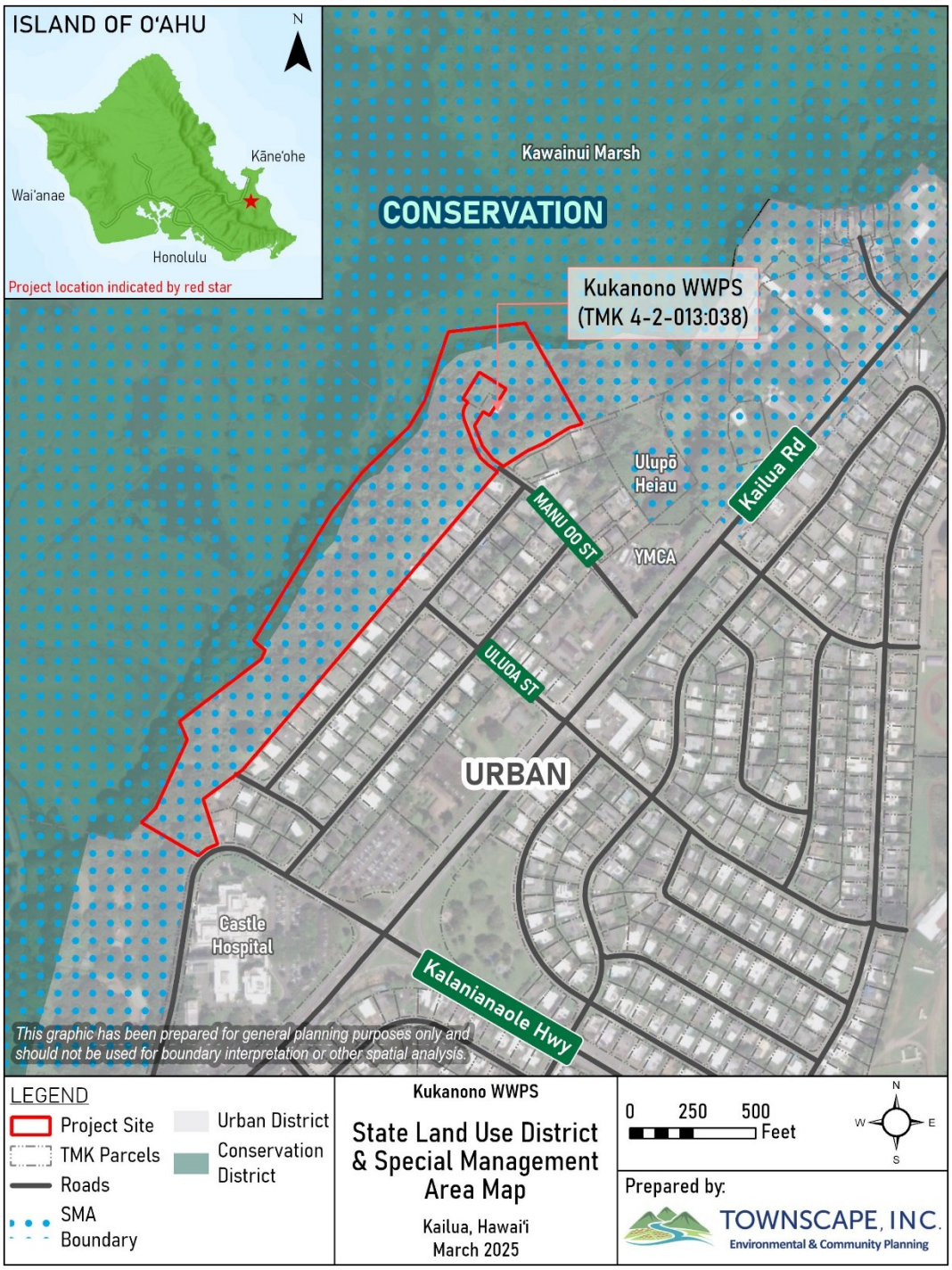


Figure 3 City Zoning Map

Figure 4 Existing Site Plan (Fukunaga and Associates Inc., 2012)

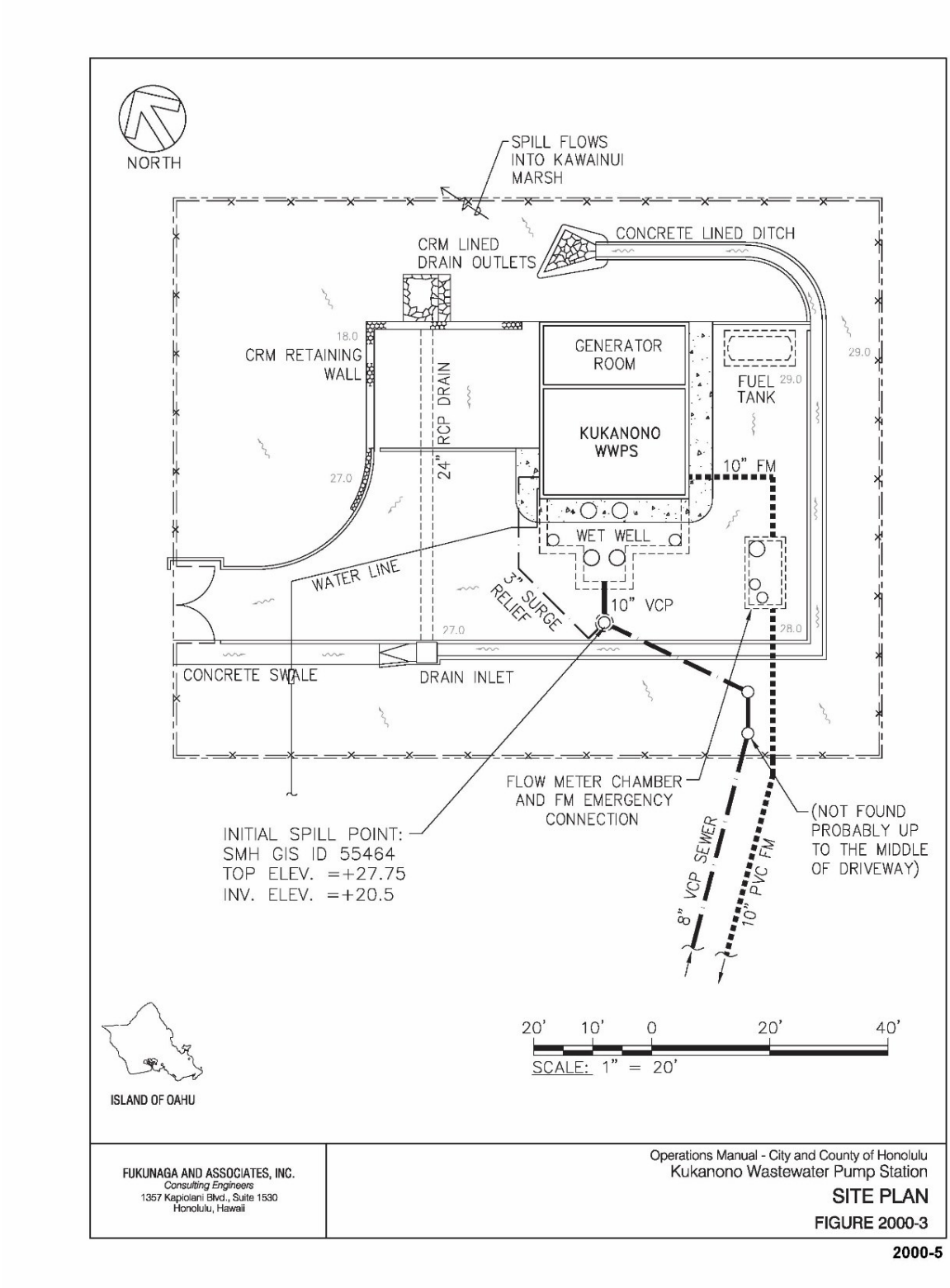


Figure 5 Mechanical Demolition Plan

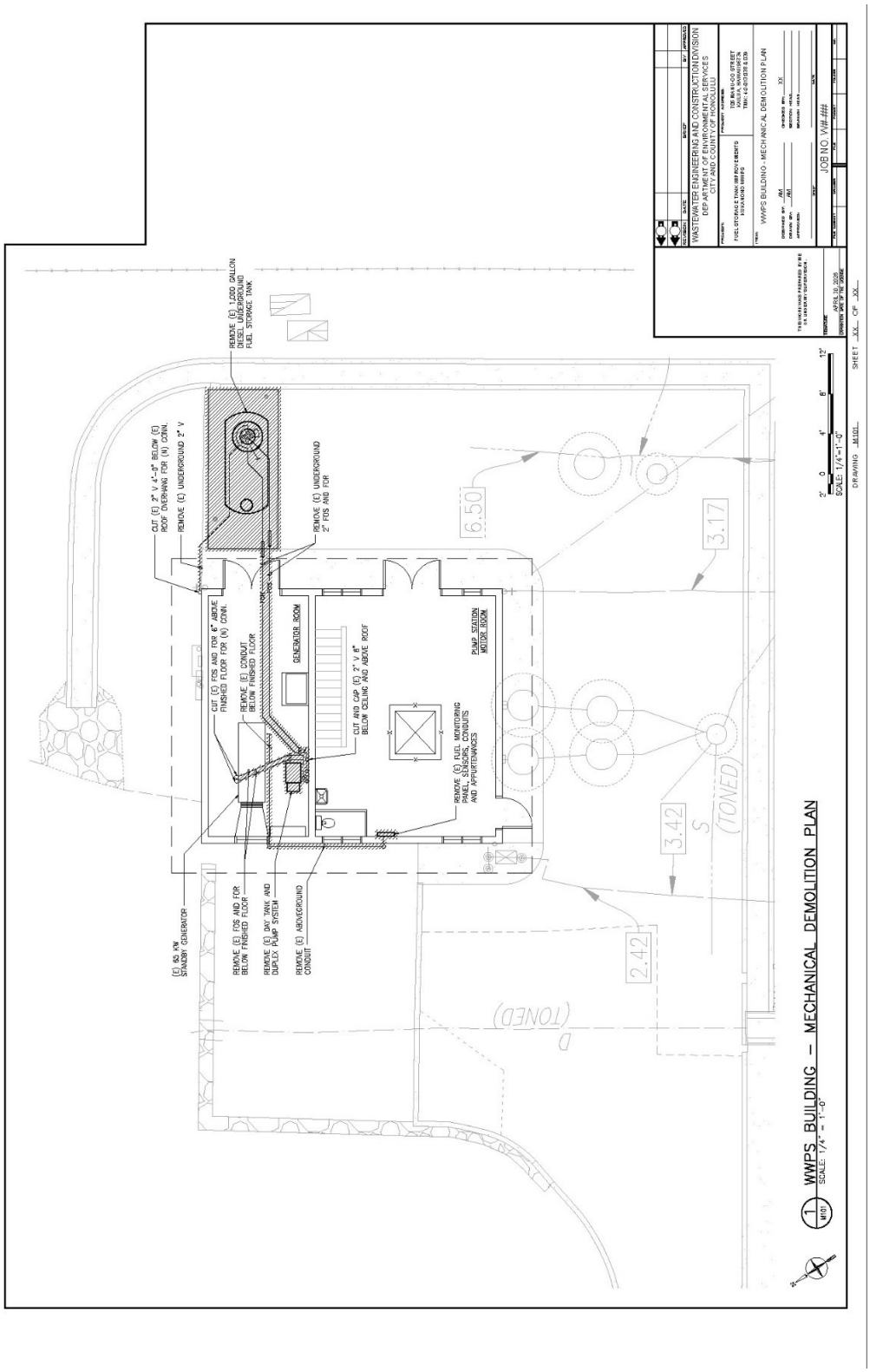


Figure 6 Demolition Floor Plan

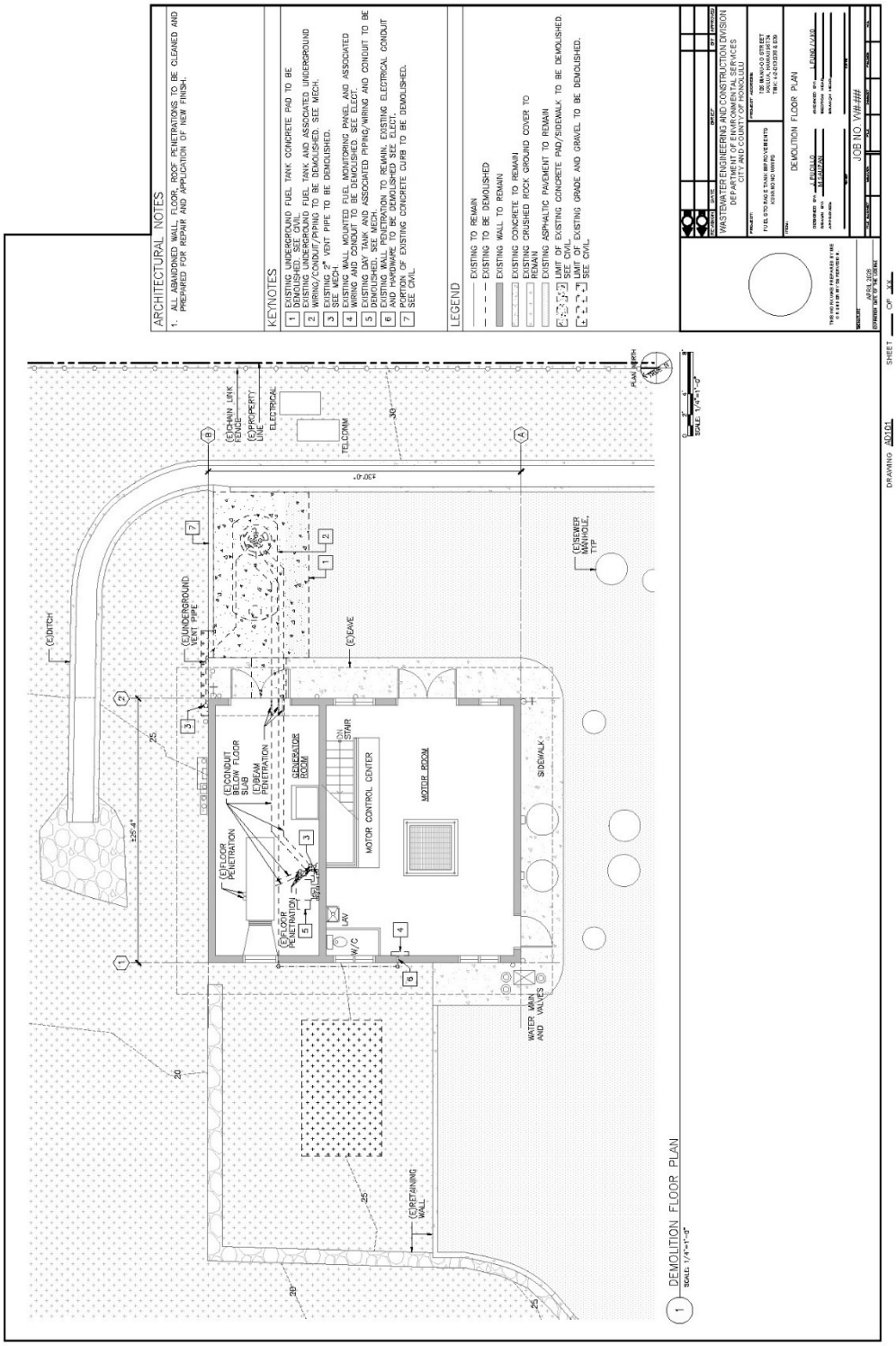


Figure 7 Mechanical Plan

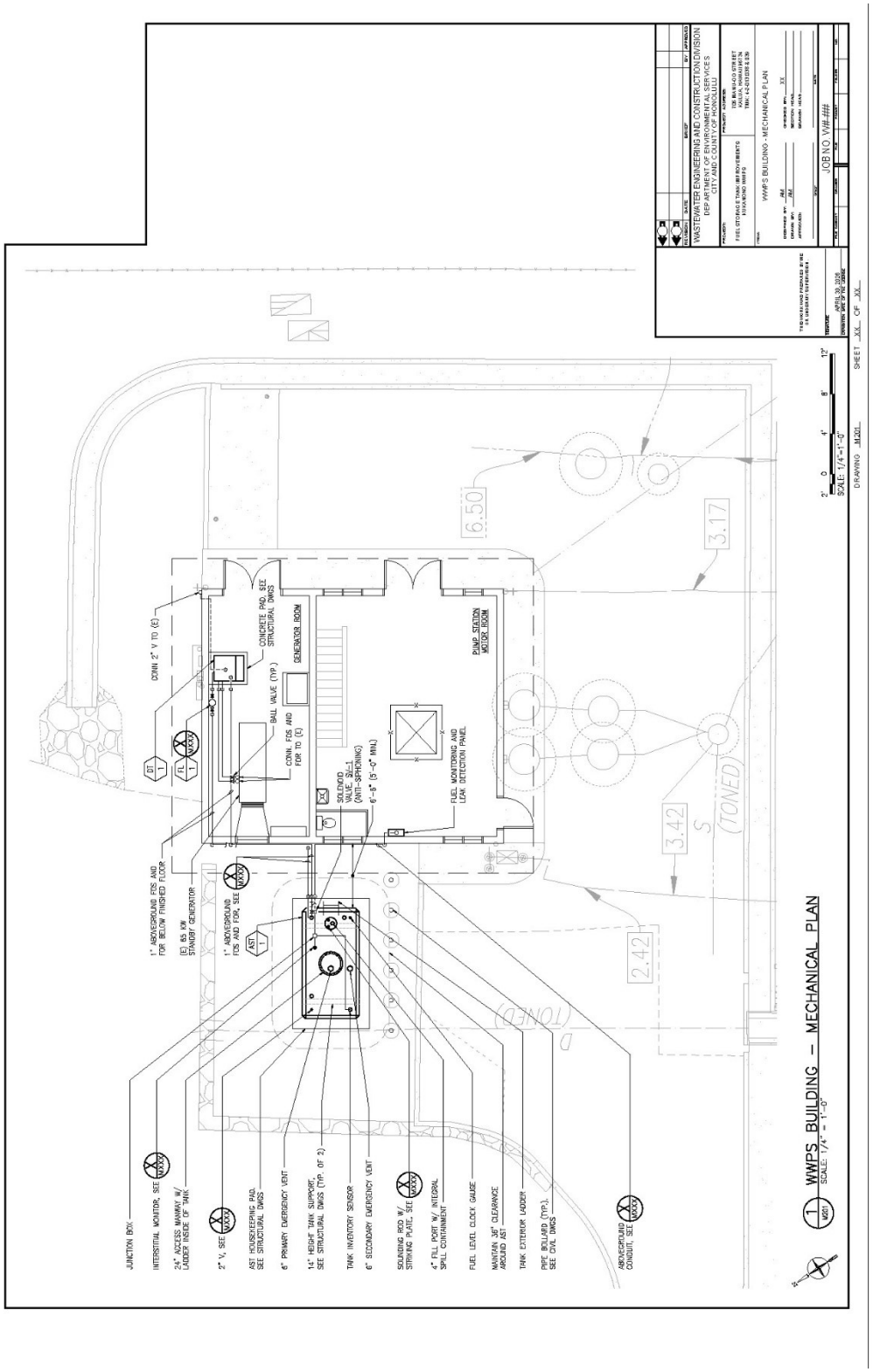


Figure 8 Floor Plan

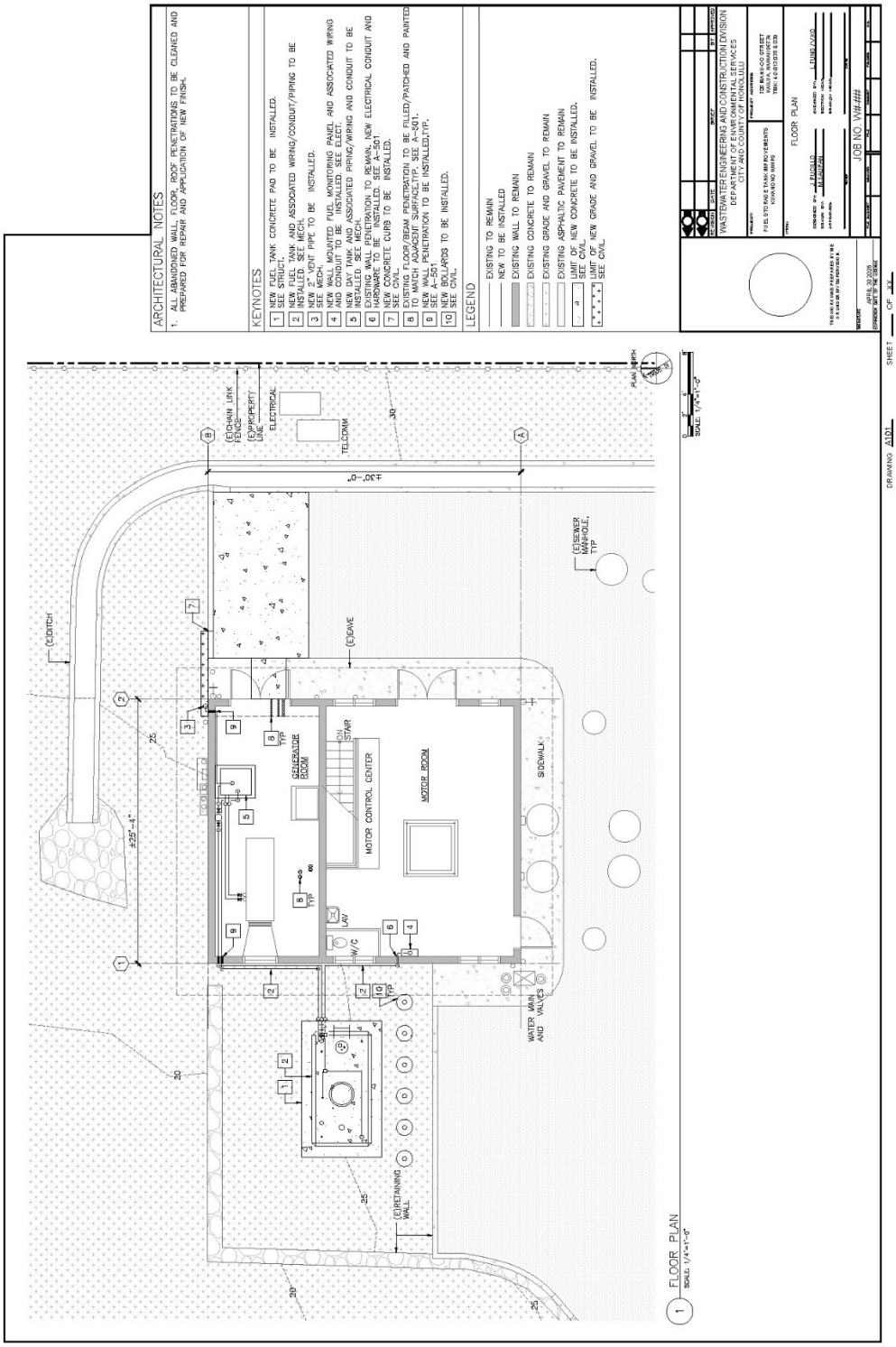
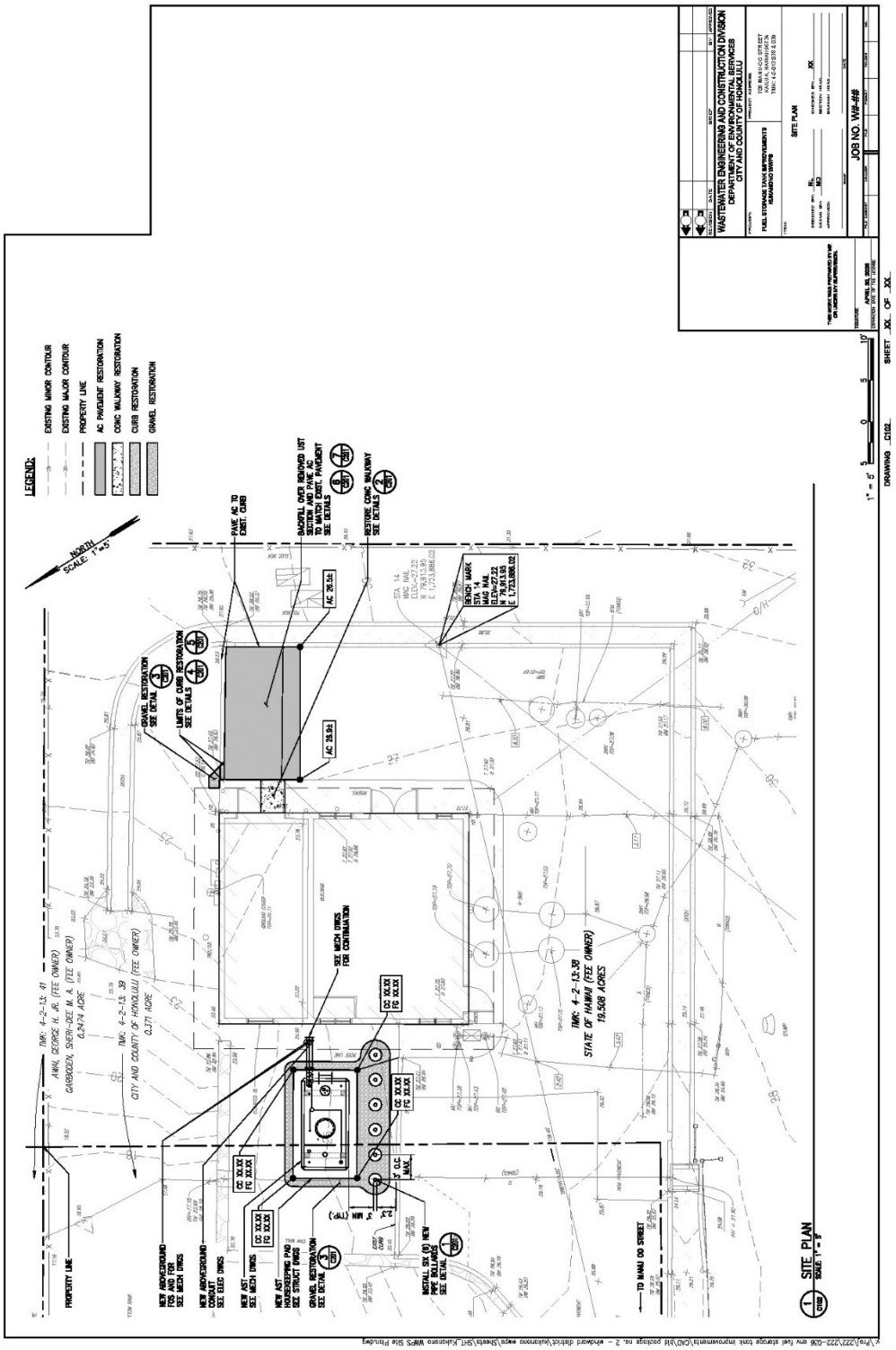


Figure 9 Site Plan with Proposed Actions



1.6. Project Schedule and Cost

The project will be executed in multiple phases with other WWPSs, with construction expected to start in April 2027 for 12 months.

View of the WWPS (from the driveway)

This page intentionally left blank.

2. DESCRIPTION OF EXISTING ENVIRONMENT, PROJECT IMPACTS, AND MITIGATION

2.1. Physical Environment

2.1.1. Climate and Rainfall

The climate in the State of Hawai‘i is generally characterized by a two-season year: the summer period is warm and dry whereas the winter season is cool and wet. Rainfall distribution across Hawai‘i varies greatly according to geographic conditions, elevation, and long-term climatic cycles.

The project site is located inland of the coast of Kailua, which has a mild semi-tropical climate similar to the rest of the State of Hawai‘i. Temperatures at the project site range from 80°F in January to 86°F in September (Giambelluca et al., 2014). The average annual rainfall is estimated to be between 33.1 to 48.0 inches (Longman et al., 2020). Trade winds in the project vicinity are generally from the northeast. Strong winds are known to occur in connection with storm systems that disrupt climatic patterns. During the winter months, the trade winds become less frequent and are replaced by the lighter southwest Kona winds.

Impacts and Mitigation Measures

The proposed project is not anticipated to affect or be significantly affected by the existing climatic conditions of the area and region. No mitigation is proposed.

2.1.2. Topography, Geology and Soils

The Island of O‘ahu contains the Wai‘anae and Ko‘olau mountain ranges, which are connected by a central plateau. The older Waianae mountain range spans a distance of about 20 miles across the western third of O‘ahu. The younger Ko‘olau mountain range extends for 37 miles in a northwest to southeast alignment across the eastern two thirds of the island.

The project site is located on the Windward side of the Ko‘olau Mountains at an elevation of approximately 24 feet above mean sea level. The surrounding area is a hillside which drops from southeast to northwest into a low-lying wetland called Kawainui.

According to a soil survey of the islands of O‘ahu, Maui, Moloka‘i, Kaua‘i, and Lana‘i (US Department of Agriculture, 1972), the predominant soil composition of the 19-acre parcel area and the project site within it is of Stony steep land (rSY) (see Figure

10). This category of soil is described as one found at elevations between 100-1,500 feet and in areas of rainfall between 20 to 45 inches. It is not prime farmland. Slopes range from 40 to 70 percent, it is well drained and a runoff class of medium, with a depth to water table typically over 80 inches.

Impacts and Mitigation Measures

Project actions are expected to retain the overall topographic profile of the site. Minimal soil erosion and runoff is expected as the project site is relatively flat.

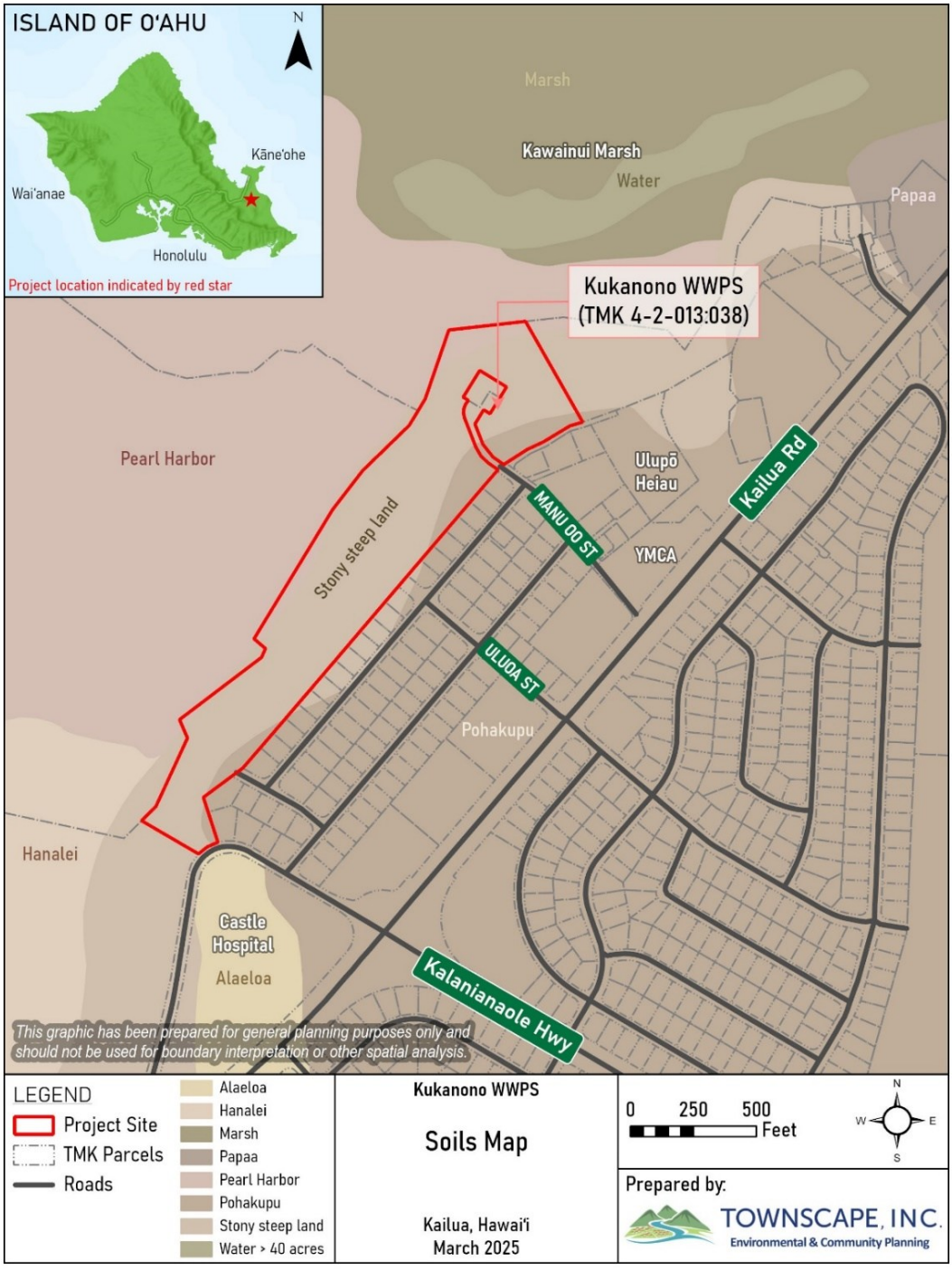
The project will adhere to Erosion and Sediment Control measures in accordance with HAR 11-55 and the City's Storm Water Best Management Practice Manual, Construction, Draft, dated August 2017.

The following erosion prevention Best Management Practices (BMPs) will be required by the Contractor to prevent any runoff, sediment, soil and debris potentially resulting from associated construction activities from adversely impacting the coastal ecosystems and State waters:

- All exposed disturbed areas are to be permanently stabilized with ground covering such as vegetation, gravel, or pavers.
- Sediment fences or barriers will be used at the perimeter of all disturbed areas where there is potential for runoff from the project site.
- Utilize environmentally inert construction materials, to the extent practicable.
- Consider the weather when timing construction, preferably during low rain conditions. All construction should halt during storm conditions or when storm conditions threaten the watershed. Secure the site during storm conditions so that runoff is minimized.

In a letter dated April 25, 2025, the Honolulu Police Department (HPD) recommended minimizing environmental impact by establishing a long-term plan to mitigate the tracking of dirt, gravel, and debris.

Figure 10 Soils and Topography



2.1.3. Natural Hazards

Tsunami

The project site lies within the Extreme Tsunami Evacuation Zone (See Figure 11), indicating that it is vulnerable to major tsunami events due to its proximity to the coast and elevation (Hawai‘i State Civil Defense, 2025). The tsunami evacuation zone maps identify low lying areas where evacuation is recommended since extensive damage to life and property may occur from seismic sea waves. Note that “extreme” refers to areas that would be impacted only by an extreme tsunami event, not an area of extreme risk for inundation.

Hurricanes

The project area, similar to the rest of Hawai‘i, is susceptible to hurricanes, particularly during the Pacific hurricane season from June through November. The State of Hawai‘i has a 68.5 percent chance of a hurricane of any magnitude occurring within 60 nautical miles in any given year (Hawai‘i Emergency Management Agency, 2023). While direct hits are relatively rare, hurricanes can bring strong winds, heavy rainfall, and storm surges, which could impact the region.

Sea Level Rise

Sea level rise (SLR) poses a potential threat to life and property in coastal and low lying areas. The *Hawai‘i Sea Level Rise Vulnerability and Adaptation Report* (Hawai‘i Climate Change Mitigation and Adaptation Commission, 2017) identify the Sea Level Rise Exposure Area at 3.2 feet of SLR. According to the State of Hawai‘i’s *Sea Level Rise Viewer* (Hawai‘i Climate Change Mitigation and Adaptation Commission, 2021), the project site is not located within this zone.

The City also created a guidance document titled *Sea Level Rise II* (Climate Change Commission, 2022), recommending that the Intermediate High sea level rise scenario be used as the benchmark for planning and policy projects. The Intermediate High is a projection created by NOAA that predicts approximately 1.78 meters or 5.8 feet of SLR by 2100. Under this scenario the Kūkanono WWPS and the surrounding area are also not located within this zone.

Flooding

According to the Flood Hazard Assessment Tool available from Department of Land and Natural Resources (DLNR), the project site is entirely located within Flood Zone X (See Figure 12). This flood zone is classified as an area of minimal to moderate flood risk according to the Federal Emergency Management Area’s (FEMA’s) flood insurance rate maps. A narrow strip of the parcel located on the north side fronting the wetlands are located within Flood Zone A, an area of high risk of flooding. The project site sits inland of this area at a higher elevation.

Wildfires

The Fire Management Program created by the Division of Forestry and Wildlife (DOFAW) classifies the project area as having a low wildfire risk (Division of Forestry and Wildlife, 2007).

Impacts and Mitigation Measures

The threats to people and property from unpredictable natural events will always be present. The likelihood and potential severity of tsunami and hurricane-related impacts will be no greater than elsewhere in the region, and the planned activities will not exacerbate their associated hazards. The location and planned activities do not introduce any significant factors that would elevate the likelihood of wildfire or flooding in the area. The proposed project is not expected to affect or exacerbate the occurrence of naturally occurring hazards.

In a letter dated May 2, 2025, DOFAW responded to a request for comment with a list of recommendations for impacts and mitigation, which included coordinating with the Hawai‘i Wildfire Management Organization, at (808) 850-0900 or admin@hawaiiwildfire.org to address wildfire prevention in the project area. They list several BMPs for when engaging in activities that have a high risk of starting a fire in/near tall grasses:

1) Wet down the area of work before starting a task.
2) Continuously wet down the area.
3) Have a fire extinguisher on hand during construction.
4) In the event that vision is impaired (i.e. welding goggles), have a spotter to watch for fire starts.

Additionally, it is recommended not to park vehicles in or near tall grass as heat from the engine or exhaust may ignite vegetation.

Figure 11 Tsunami Evacuation Zones

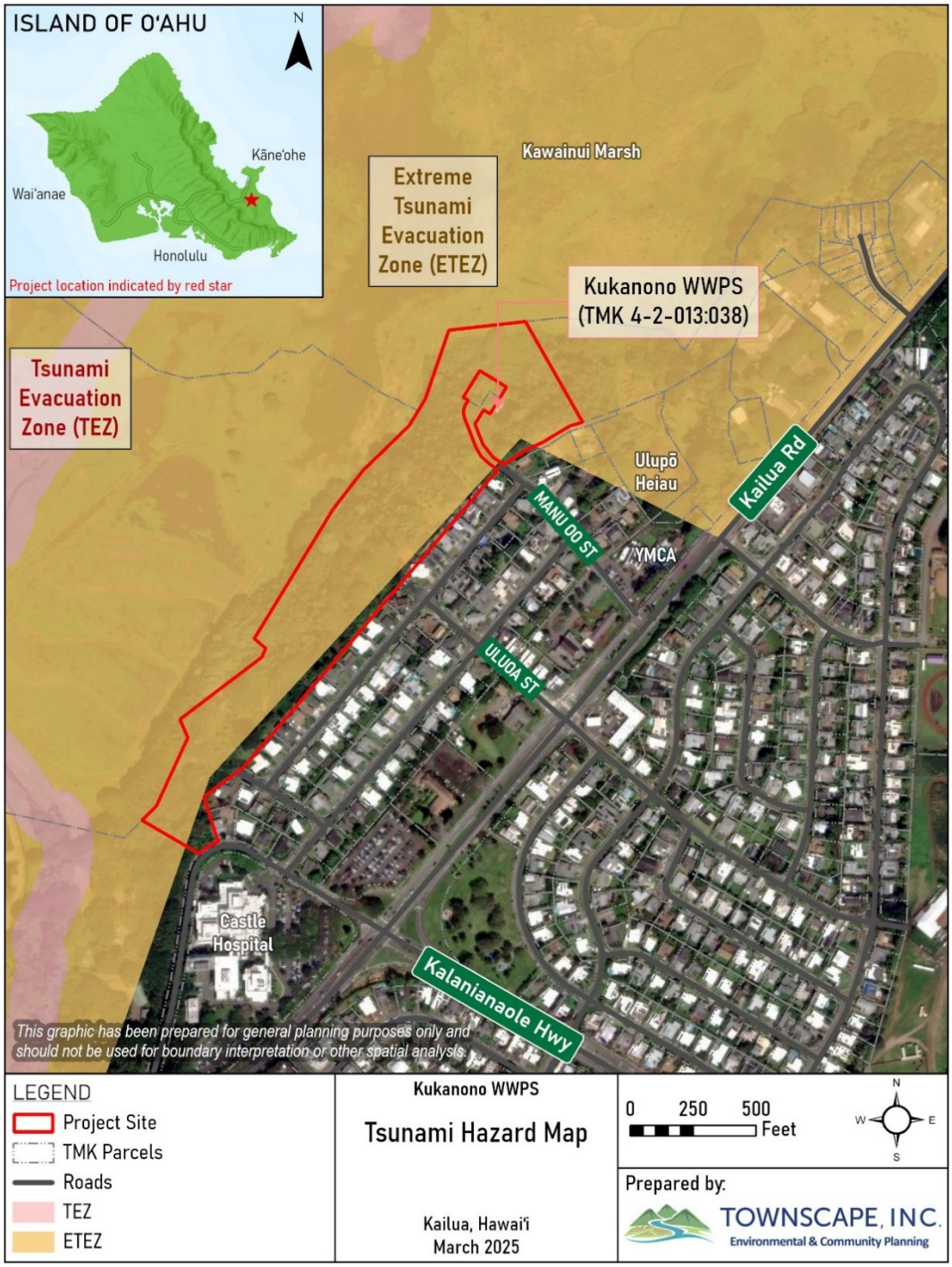


Figure 12 Flood Zone and SLR

2.2. Archaeological, Architectural and Cultural Resources

The Kūkanono WWPS is located within the ahupuaʻa of Kailua in the Koʻolaupoko district of Oʻahu. The readily available freshwater sources and fertility of the land on the windward side of Oʻahu made it the choice location for the earliest settlement of Hawaiians to the island. By the 15th century AD, Kailua and the greater Koʻolaupoko district were densely populated and extensively cultivated with loko iʻa (fishponds) and loʻi kalo (pondfield taro patches) that were found up to 1.5 miles inland. The loʻi were irrigated by the many perennial streams and springs throughout the district, which also provided freshwater and nutrients to the fishponds (Handy and Handy, 1972). Kailua was the ruling seat of power for the Koʻolaupoko district due to its abundant food supply and numerous canoe landing sites. Sports fields and recreation sites for the ancient chiefs were also dotted throughout Koʻolaupoko (Shideler and Hammatt, 2025). Therefore, there are many sites of cultural and historical significance surrounding the Kūkanono WWPS project vicinity.

The Kūkanono WWPS project site is located directly on former loʻi that were present during the 1848 Māhele, on the southeast periphery of the Kawainui marsh (Shideler and Hammatt, 2025). Historically, Kawainui was a 400-acre fishpond fed by the Maunawili, Kahanaiki, and Kapaʻa streams, and it was guarded by the moʻo (reptilian water deity) called Hauwahine (Clark, 2002; DLNR, n.d.). Aside from the abundance of freshwater, a supernatural tree called Makalei was responsible for attracting fish to the pond (McAllister, 1933). Other important food crops, including kalo (taro), maiʻa (banana), ʻuala (sweet potato), and kō (sugarcane) were cultivated along the perimeters of the pond. Although a shortage of food was not common in a productive area like Kailua, the Kawainui fishpond was famous for its pristine lepo ʻai ʻia (edible mud), which was described as having the texture of haupia pudding and was eaten by Kamehameha I and his warriors during a famine (Sterling and Summers, 1978). Despite a decrease in water supply and quality in Kawainui today, the marsh still serves as an important floodplain ecosystem and habitat for endemic waterbirds, including the aeʻo (Hawaiian stilt), ʻalaeʻula (red-billed mudhen), ʻalae keʻokeʻo (white-billed coot), and the kōloa maoli (Hawaiian duck). Today, Kawainui is the largest remaining wetland in Hawaiʻi (Shideler and Hammatt, 2025).

Although no historic properties have been found directly within the Kūkanono WWPS project site, previous archaeological studies have identified many cultural structures and items surrounding the project area. These archaeological findings include heiau (temples), loʻi terraces, fishponds, dwellings, and remnants of ancient hand tools (Shideler and Hammatt, 2025). A total of eight heiau were found across Kailua (McAllister, 1933), with the Ulupō heiau being the closest to the Kūkanono project site, immediately to the east of it (Shideler and Hammatt, 2025). This heiau was designated as a historical property on both the State Inventory of Historic Places

(SIHP) and the National Register of Historic Places (NRHP). The Ulupō heiau may have originally been used to promote agricultural fertility of the region and may have later been used as a heiau luakini (human sacrifice temple) for success in war (DLNR, n.d.). Most of the other archaeological findings in the area were identified within the Kawainui marsh and mauka hillside.

Impacts and Mitigation Measures

A field inspection was completed by Cultural Surveys Hawai‘i in April 2025 to identify the likelihood of historic properties being present within the project area. No historic properties were observed at the Kūkanono WWPS facility, though the site is located in the vicinity of a historical agricultural hub of the ahupua‘a of Kailua, on a hillside fronting the former 400-acre fishpond of Kawainui. The proposed project is not anticipated to damage any historic properties nor disturb subsurface archaeological deposits. The Literature Review and Field Inspection report by Cultural Surveys Hawai‘i supports a City determination as per HAR §13-275- 7(a)(1) of “No historic properties affected” and for no further historic preservation study.

2.3. Floral and Faunal Resources

According to the U.S. Fish and Wildlife Service’s (USFWS) map for the Information for Planning and Consultation (IPaC), the impact area contains no critical habitats for endangered species (USFWS, 2025).

The USFWS lists several species which may occur or pass through the vicinity of the project area:

Fauna

- Hawaiian Hoary Bat – *Lasiurus cinereus semotus*
- Band-Rumped Storm-petrel – *Hydrobates castro*
- Hawaiian Common Gallinule – *Gallinula galeata sandvicensis*
- Hawaiian Coot (Ke‘oke‘o) – *Fulica alai*
- Hawaiian Duck – *Anas wyvilliana*
- Hawaiian Petrel – *Pterodroma sandwichensis*
- Hawaiian Stilt – *Himantopus mexicanus knudseni*
- Newell’s Shearwater – *Puffinus newelli*
- Hawksbill Sea Turtle – *Eretmochelys imbricata*

Flora

- ‘Akoko – *Euphorbia celastroides var. kaenana*

- ʻEnaʻena – *Pseudognaphalium sandwicensium var. molokaiense*
- Carter's Panicgrass – *Panicum fauriei var. carteri*
- Ihi – *Portulaca villosa*
- Kamanomano – *Cenchrus agrimonioides*
- Ohai – *Sesbania tomentosa*
- Popolo – *Solanum nelsonii*
- Oʻahu Cowpea – *Vigna o-wahuensis*
- Palapalai – *Microlepia strigosa var. Mauiensis*

Impacts and Mitigation Measures

In a letter dated May 2, 2025, DOFAW responded to a request for comment on the proposed project with a list of recommendations for impacts and mitigation:

Native Birds:

- Nighttime work requiring outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15.
- If nighttime work is required during this season, a qualified biologist should be present at the project site to monitor and assess the risk of seabirds being attracted.
- Permanent lighting should be minimized or eliminated to protect seabird flyways.
- If state-listed waterbirds such as the aeʻo (Hawaiian stilt), ʻalae keʻokeʻo (Hawaiian coot), ʻalae ʻula (Hawaiian Gallinule), or koloa maoli (Hawaiian duck), are to appear on site, all activities within 100 feet (30 meters) should cease until the birds leave the area on their own.
- Action should be taken to minimize the presence of predators such as cats, rodents, and mongoose, which pose a threat to vulnerable bird species.

Flora and Fauna:

- The movement of plant or soil material between worksites should be minimized to prevent the spread of fungal pathogens (e.g., rapid ʻohiʻa death), vertebrate and invertebrate pests (e.g., little fire ants, coconut rhinoceros beetles, etc.) or invasive plant parts (e.g., miconia, pampas grass, etc.).
- Soil and other plant material should be sourced on-island, and not imported, due to the risk of the carrying of fungi and other pathogens.

- DOFAW recommends consulting the Oʻahu Invasive Species Committee at (808)266-7994 to help plan, design, and construct the project. To prevent the transportation of pests, invasive species, or pathogens, DOFAW recommends the BMPs of cleaning all tools and equipment with 70% rubbing alcohol, washing clothes with hot water and soap, tire and undercarriages of vehicles with high-pressure water, and avoiding movement of soil between sites.
- The invasive Coconut Rhinoceros Beetle (CRB) is widespread on Oʻahu. The Hawaiʻi Department of Agriculture interim rule 24-1 restricts the movement of CRB-host material from the island of Oʻahu. When such material is moved, there is a risk of spreading CRB. Inspection and/or treatment is mandatory before inter-island transport.
- For any landscaping work, it is recommended that native plants are used as opposed to non-native or invasive species. Appropriate species for the area may be found on www.plantpono.org

2.4. Environmental Quality

2.4.1. Visual Resources

The Kūkanono WWPS is located along the outer edge of a residential neighborhood. The facility is on a slope, and the surrounding forest serves as a visual barrier blocking the site from the public visual corridor. It is separated from Manu-Oʻo Street by a narrow access road.

Impacts and Mitigation Measures

The proposed project is not anticipated to negatively impact public views beyond the extent of the existing development. From the street, the project site is completely enclosed by the surrounding forest. Construction activities will take place within the project parcel, and thus, in the short term, the presence of workers and equipment may create minor visual impacts.

2.4.2. Acoustic Characteristics

Surrounding the project site is a forested area on the slopes of a hill, providing an immediate sound barrier separating it from the nearby neighborhood located to the south. To the north of the project site are the Kawainui wetlands, which are uninhabited.

Impacts and Mitigation Measures

Audible noise from the removal and installation process is expected to be intermittent and unavoidable since construction vehicles, heavy equipment, and impact tools generate noise as part of normal operations. The mitigation of all construction noise is not feasible due to the nature of the work. Ambient noise during the construction process from work vehicles is expected to increase briefly.

To mitigate anticipated temporary noise impacts, construction work will be scheduled during daytime hours to minimize construction noise during nighttime hours. The Contractor will be required to follow BMPs to control noise levels at all times. Temporary noise reduction measures during construction may include but are not limited to the use of sound-walls, sound blankets and curtains, equipment mufflers and low-noise generators.

2.4.3. Air Quality

The air quality at the WWPS is consistent with ambient conditions in the surrounding area, where prevailing trade winds typically help disperse odors and maintain good air circulation. Due to the location of the WWPS away from major roadways and commercial/industrial areas, it is exposed to a lower concentration of air pollutants typically generated by nearby human activity.

Impacts and Mitigation Measures

No significant impacts to air quality nor measurable adverse effect on climatic conditions is anticipated from the project. Ambient air quality may be temporarily affected by construction-related vehicles, equipment, and activities that would generate fugitive dust and emissions. To prevent air pollution and dust control because of the demolition of structures, the Contractor shall sprinkle exposed soils with water to maintain moistness.

2.4.4. Hazardous Materials

The proposed AST will store up to 1,000 gallons of diesel fuel for the WWPS facility operations. Stored fuel is regulated under National Fire Protection Association (NFPA) 30 (Flammable and Combustible Liquids Code), the Honolulu Fire Code, ROH Chapter 66, and Clean Water Act Spill Prevention, Control and Counter Measures or Spill Prevention, Control and Countermeasure rule (40 CFR 112).

Impacts and Mitigation Measures

The AST will be constructed out of steel and encased by secondary containment with interstitial monitoring. A minimum of 36 inches of clearance

will be maintained around the AST. The double walled tank of the AST will be encased in concrete to ensure corrosion, fire, and impact resistance.

The proposed fuel storage tank will be designed, installed, and maintained in accordance with all applicable federal, state, and county regulations. With appropriate containment and emergency measures in place, the project is not expected to result in significant adverse impacts related to hazardous materials. The upgrades of the storage tank system shall be in strict accordance with the guidelines and requirements set forth in the Federal Register 40, CFR PART 280 and the American Petroleum Institute recommended practice 2015 "safe entry and cleaning of petroleum storage tanks" and shall adhere to all required safety precautions.

If there are any fuel spillages or existing leaks found as a result of construction, the Contractor shall report it to the Hazard Evaluation and Emergency Response Unit of the Department of Health.

Eight steel pipe bollards will be installed around the AST to protect it from accidental vehicle collisions to reduce the risk of spills, leaks, or structural damage. The bollards will be constructed of Schedule 40 steel pipe filled with 2,500 psi concrete to provide structural strength and impact resistance and will be painted in occupational safety and health administration (OSHA) approved safety yellow. Pipe bollards will be sized and spaced with proper clearances to meet the minimum NFPA requirements, including:

- Three feet minimum horizontal clearance between the edge of the AST and the outer edge of the pipe bollard.
- Three feet maximum spacing, on-center, between adjacent pipe bollards.
- Three feet minimum height of bollard, as measured from finish grade to the top of the bollard.

A letter dated April 15, 2025 from the HFD requires the project to follow all applicable requirements of the ROH Chapter 20 regarding Flammable and Combustible Liquid Storage Tanks, be in effect at the time the building permit application for the project is issued.

2.5. Public Infrastructure & Services

2.5.1. Site Access, Circulation and Traffic

Vehicular access to the WWPS is via a paved driveway fronting Manu-Oʻo Street, a roadway owned and maintained by the City and County of Honolulu. Manu-Oʻo is a narrow residential street used primarily by residents of the surrounding neighborhood. Access to the site is restricted for security and operational purposes. The parcel is fully enclosed with a chain-link fence and secured by a locked gate. Entry to the WWPS property is limited to authorized City personnel and contractors. On-site circulation is minimal and consists of a small paved area extending from the gate to the front of the facility, which is sufficient for maneuvering maintenance vehicles and equipment. Due to the nature of the facility, traffic generation is minimal and predominately involves City staff conducting inspections, routine maintenance, and emergency responses.

Impacts and Mitigation Measures

Construction vehicles hauling workers and materials to and from the WWPS may temporarily increase traffic along Manu-Oʻo Street during the construction period. To minimize disruption to nearby residents, construction traffic should avoid peak commuting hours. In a letter dated April 25, 2025, HPD recommended that the contractor install and maintain necessary lights, signs, and barricades during construction. HPD also advised notifying area businesses and residents in advance of any road closures or traffic disruptions.

2.5.2. Potable Water and Wastewater

Water service is supplied by the Board of Water Supply (BWS). It provides potable water for the facility, which is used for sink and restroom, hose connections, and air gap flushing. There is a backflow preventer located on the south side of the building, and a one and a half inch waterline that enters the facility along the southeastern end of the site.

Influent wastewater to the WWPS is conveyed via a 10-inch polyvinyl chloride pipe, and effluent is conveyed uphill via a 10-inch force main along Manu-Oʻo Street to a gravity fed system that eventually leads to the Kailua Road WWPS.

Impacts and Mitigation Measures

Both the waterline and sewer utilities are outside the scope of the project and are not anticipated to be impacted by the proposed actions.

In a letter dated April 28, 2025, the BWS indicated that the existing water system is adequate to accommodate the proposed development. However, the proposed project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the building permit application. Final decision on the availability of water will be confirmed when the building permit application is submitted for approval. BWS also requests a copy of the construction drawings for approval.

The proposed upgrades will not alter the capacity or operations of the WWPS, but will improve the reliability of service so the community can expect continued reliable wastewater services, which support the economic and social welfare of the communities served by the WWPS. Since no significant impacts to the utilities are anticipated, no mitigation is proposed.

2.5.3. Power and Communications

HECO provides power to the pump station. The standby power system, which the proposed project aims to support, is used to provide backup power when normal HECO service fails. See Section 1.4.

Communication systems consist of the following: Telemetry and SCADA, and telephone service. The telemetry and SCADA system provides local and remote monitoring of the facility. Telephone service is used for normal telephone communications and as a mechanism for telemetry to SCADA.

Impacts and Mitigation Measures

No significant adverse impacts to power and communications are anticipated. In a letter received on April 24, 2025, Hawaiian Electric Company requested that coordination be maintained during the construction process so that they may be informed of a need for additional service upgrades or modifications. Access to HECO facilities within or adjacent to the site will need to be maintained at all times for safe operation, maintenance, and emergency response.

2.5.4. Emergency Service Facilities

Law enforcement services are provided by HPD. The nearest HPD station is the HPD Kailua Substation, located at 219 Kuulei Road, approximately 1.6 miles away.

The Honolulu Fire Department (HFD) provides fire protection and first responder emergency services. The nearest fire station is Olomana Fire Station 39, located at 42 Kalaniana‘ole Highway, approximately one mile away.

The Adventist Health Castle Hospital, located at 640 Ulukahiki Street, is approximately 0.5 miles away from the project site.

Impacts and Mitigation Measures

No significant adverse impacts to police, fire, or medical services are anticipated to occur from the proposed project.

2.5.5. Recreational Resources

The Kūkanono WWPS is located in the vicinity of the culturally significant Ulupō Heiau State Historic Site. Community members and visitors alike access the site for educational, cultural, and historic purposes. The site is accessible via an access road adjacent to the Windward YMCA, located on the opposite end of Manu-Oʻo Street. The park contains its own parking lot and utilizes additional spaces provided by the Windward YMCA during large community events.

Impacts and Mitigation Measures

No major impacts on access to or quality of existing recreational resources, are expected from the proposed project.

2.6. Socio-Economic Characteristics

The census-designated place of Kailua as of 2023 is listed as having a population of 39,762 (Datausa, 2023). It has a median household income of $146,615 compared to $98,317 in the State overall, and a poverty rate of 4.12%. The area is characterized largely by suburban neighborhoods, with many commuters and businesses targeting the tourism sector.

Impacts and Mitigation Measures

The project will involve construction activities that will create short-term jobs in design and construction. The project will not affect population levels or housing. The proposed upgrades will not alter the capacity or operations of the WWPS. The community can expect continued reliable wastewater services, which support the economic and social welfare of the community served by the WWPS.

3. RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

3.1. Hawai‘i State Plan

The Hawai‘i State Plan, found in Chapter 226 of the Hawai‘i Revised Statutes (HRS), outlines broad goals, policies, and objectives to serve as guidelines for the future growth and development of the State. It also provides a basis for determining priorities, allocating limited resources, and improving coordination of State and County plans, policies, programs, projects, and regulatory activities. The Hawai‘i State Plan establishes a set of themes, goals, objectives, and policies that are meant to guide the State’s long-range growth and development activities. Applicable sections of HRS Chapter 226 to the proposed project are discussed below.

§226-13 Objectives and policies for the physical environment--land, air, and water quality.

Objective 1. Maintenance and pursuit of improved quality in Hawai‘i’s land, air, and water resources.

Policy 2. Promote the proper management of Hawai‘i’s land and water resources.

Policy 3. Promote effective measures to achieve desired quality in Hawai‘i’s surface, ground, and coastal waters.

Policy 5. Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.

§226-14 Objective and policies for facility systems--in general.

Policy 1. Accommodate the needs of Hawai‘i’s people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

§226-15 Objectives and policies for facility systems--solid and liquid wastes.

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

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

Discussion:
The proposed project complies with the elements of the Hawai‘i State Plan by providing essential upgrades to critical public infrastructure and enhancing its resiliency against future disruptions or disasters. By upgrading the fuel tank storage infrastructure to reduce the risk of fuel leaks into the environment, the project supports the State’s objectives to maintain sewage facilities that meet public health and sanitation standards.

3.2. State Land Use District

The State Land Use Law (Chapter 205, HRS) is intended to preserve, protect, and encourage the development of lands in the State for uses which are best suited to the public health and welfare for Hawai‘i’s people. All lands in the State are classified into four land use districts by the State of Hawai‘i, Land Use Commission: Urban, Rural, Agricultural, and Conservation.

The project site is entirely located within the Urban District, which is regulated by county zoning (see Section 3.7. City and County of Honolulu LUO). The proposed project is a permissible public use and structure within the Urban District, which has residential neighborhoods, commercial enterprises, industrial development, and community facilities such as public buildings.

3.3. State Coastal Zone Management Program

In 1977, Hawai‘i enacted HRS Chapter 205A, Hawai‘i Coastal Zone Management Program, to implement the state’s coastal policies and regulations. The program was designed to coordinate federal, state, and county agency efforts in the comprehensive management of Hawai‘i’s coastal resources. It is administered by the State of Hawai‘i, Office of Planning and Sustainable Development, while the four individual counties are responsible for local implementation through the Special Management Area (SMA) permit.

The objective of the act is to protect, preserve, and restore recreational, historic, and scenic resources as well as implement the State’s ocean resources management plan and protect coastal ecosystems. Provided below are the objectives and policies from HRS Chapter 205A-2, along with a discussion of how the project conforms to these objectives and policies.

Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

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

(ii) Requiring replacement of coastal resources that have significant recreational and ecosystem, including but not limited to coral reefs, surfing sites, fishponds, sand beaches and coastal dunes, when these resources will be unavoidably damaged by development; or requiring monetary compensation to the State for recreation when replacement is not feasible or desirable;

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

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

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

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

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

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

Discussion:

The proposed project will not impact coastal recreational access to the shoreline.

Historic Resources

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

Policies:

(A) Identify and analyze significant archaeological resources;

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

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

Discussion:

There are no known cultural or historic resources within the site boundary. The proposed project is located near a few historic properties and historic resources, such as the 400-acre Kawainui fishpond and Ulupō Heiau State Historic Site but is not expected to have any effect on them, given the limited nature of the project. Recommendations by the SHPD will be followed to protect cultural resources, should any be discovered during construction.

Scenic and Open Space Resources

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

Policies:

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

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

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

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

Discussion:

The potential for adverse visual impacts is anticipated to be minimal. The proposed project involves replacing an existing UST with an AST, which will be located within a visually enclosed space screened from the primary public view corridor. Site grading will be minimized to preserve the natural contours of the land.

The project preserves the existing open space by limiting the development footprint to a previously disturbed area, thereby avoiding new encroachment into pristine land. While the AST is not directly coastal-dependent, its location is determined by the presence of the existing WWPS infrastructure and the critical role it plays in ensuring the continued operation of the WWPS during emergencies.

Coastal Ecosystems

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

Policies:

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

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

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

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

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

Discussion:

This project replaces outdated infrastructure with a new fuel storage system that complies with current state regulations. The proposed AST will provide improved monitoring, maintenance and containment capabilities, thereby reducing the risk of fuel leaks that could impact coastal waters and marine ecosystems. The AST will be equipped with built-in secondary containment systems to capture any potential spills and minimize the risk of environmental contamination.

In addition, the project enhances accessibility and monitoring capability, which supports a more proactive and data-driven approach to resource management. The AST will include leak detection sensors and meet the latest standards for fuel storage safety, which is particularly important near sensitive coastal areas.

Economic Uses

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

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize

exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area; and

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

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

(ii) Adverse environmental effects are minimized; and

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

Discussion:

The proposed project supports a coastal-related public utility facility that is essential for conveying wastewater to the Kailua Regional WWTP. By upgrading the infrastructure, the project ensures continued operation during power outages, thus supporting public health, safety, and economic stability.

Coastal Hazards

Objective: Reduce hazard to life and property from coastal hazards.
Policies:

(A) Develop and communicate adequate information about the risks of coastal hazards;

(B) Control development, in planning and zoning control, in areas subject to coastal hazards;

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

(D) Prevent coastal flooding from inland projects.

Discussion:

The AST includes secondary containment to control potential fuel leaks and protect against point source pollution. In addition, eight new concrete-filled steel pipe bollards will be installed to protect the AST from vehicular traffic. Together, these measures are intended to limit hazardous situations associated with storing large amounts of diesel fuel.

Managing Development

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

Policies:

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

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

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

Discussion:

The project will require several permits and regulatory approvals, including compliance with the Coastal Zone Management Act, Department of Health requirements for fuel storage, floodplain management standards, and the Chapter 343 Environmental Review process. The project team has coordinated with relevant regulatory agencies and provided public access to project information through the EA, which outlines potential short-term impacts and long-term benefits of the project. The EA review process will provide an opportunity for the public to review and comment on the proposed project.

Public Participation

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

Policies:

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

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

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

Discussion:

The proposed project fosters public awareness and publication by promoting communication and engagement through the EA review process.

Beach Protection

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

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

(B) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches at sites where shoreline hardening structures interfere with existing recreational and waterline activities;

(C) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;

(D) Minimize grading of and damage to coastal dune;

(E) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and

(F) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Discussion:

The proposed project is not located near beaches nor public shoreline access.

Marine Resources

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

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

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

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

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

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

Discussion:
See discussion above Coastal Ecosystems.

3.4. Special Management Area

The purpose of the Special Management Area (SMA) is to "preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai‘i" (HRS §205A). Any action defined as "development," pursuant to HRS §205A-22, requires an SMA (minor or major) Use Permit. On O‘ahu, the SMA permit is administered by Department of Planning and Permitting (DPP). The project area is in the SMA and an SMA permit is required.

3.5. Shoreline Setback Area

The Shoreline Setback Area is a buffer zone inland from the certified shoreline, within which development is restricted or regulated to prevent adverse impacts. ROH Chapter 26 regulates the location and type of development allowed within shoreline setback areas to minimize hazards, protect coastal ecosystems, and preserve public shoreline access. The proposed project is not located in the shoreline setback area, as it is located more than 60 feet inland from the shoreline.

3.6. City and County of Honolulu General Plan

The O‘ahu General Plan (2021) contains aspirational objectives and policies that address the physical, social, cultural, economic, and environmental concerns affecting the City. The Honolulu City Council adopted the General Plan on December 1, 2021 and the Mayor signed it on January 14, 2022. Applicable objectives and policies from the General Plan relevant to the project are provided below.

III. Natural Environment and Resource Stewardship

Objective A: To protect and preserve the natural environment.

Policy 1: Protect Oʻahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.

Policy 7: Protect the natural environment from damaging levels of air, water, and noise pollution.

V. Transportation and Utilities

Objective C: To maintain a high level of service for all utilities.

Policy 1: Maintain and upgrade utility systems in order to avoid major breakdowns and service interruptions.

Policy 2: Provide improvements to utilities in existing neighborhoods to reduce substandard conditions, and increase resilience to fluctuations, natural hazards, extreme weather, and other climate impacts.

Objective D: To maintain transportation and utility systems which will help Oʻahu 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.

Policy 4: Evaluate the social, economic, and environmental impact of additions to the transportation and utility systems before they are constructed.

IX. Health and Education

Objective A: To protect the health and well-being of residents and visitors.

Policy 3: Coordinate City and County health codes and other regulations with State and Federal health codes to facilitate the enforcement of air, water, and noise pollution controls.

Discussion:

The proposed project aligns with the objectives and policies of the City General Plan. The project aims to minimize negative impacts on the natural environment and to maintain a high level of wastewater service for residents by replacing outdated equipment to meet current regulations and protect public health. The proposed improvements are designed to be compatible with the surrounding area.

3.7. Koʻolau Poko Sustainable Communities Plan

The City and County of Honolulu has divided Oʻahu into eight planning areas by ordinance, each with a Development Plan or a Sustainable Communities Plan (SCP)

that outlines the vision, objectives, and goals for future development in the area. These community-oriented plans are intended to help guide land use planning and development on Oʻahu. The Koʻolau Poko SCP encompasses the area from Makapuʻu Point to Kaʻōʻio Point, which includes the Kūkanono WWPS.

The Koʻolau Poko SCP incorporates input from representatives and leaders from the community with the wider objectives of public and private interests in the state. An update to the plan is currently in progress.

The key elements of the vision for the Koʻolau Poko SCP (City and County of Honolulu, 2017) are summarized below:

- Adapt the concept of ahupuaʻa in land use and natural resource management
- Preserve and promote open space and agricultural uses
- Preserve and enhance scenic, recreational and cultural features that define Koʻolaupoko's sense of place
- Emphasize alternatives to the private passenger vehicle as modes for travel
- Protect and enhance residential character while adapting to changing needs
- Define and enhance existing commercial and civic districts
  Maintain the Community Growth Boundary to protect agricultural, open space, and natural resources.

The plan outlines several policies principles for sustainability to promote the long-term health of the land and its people, and its community resources for current and future generations. These principles include:

- Require planning, development, and construction technologies that minimize negative environmental impacts.
- Guide the process of change. Strive to make decisions based on an understanding of the effects such decisions will have on the land and community resources.
- Strive for balance between economic prosperity, social and community well-being, and economic stewardship.
- As an integral part of the planning process, consider the long-term impact of proposed actions and prepare plans that can accommodate the needs of future generations accordingly.

The City's plan prioritizes the preservation of Koʻolaupoko's natural, cultural, and historic resources, working in tandem with members of the community. It also seeks to accommodate very little population growth and preservation of the character and lifestyle of the Koʻolaupoko District.

Discussion:

The Kūkanono WWPS project, which aims to replace the existing UST with an AST, supports the vision and policies outlined in the plan by upgrading vital community infrastructure to prevent future risk to the land and surrounding coastal resources, which include those directly connected to wetland ecosystems such as Kawainui. The AST allows for easier access to the fuel tanks for necessary maintenance and repairs and avoids the risk of leakage into the soil.

3.8. City and County of Honolulu Land Use Ordinance

The LUO regulates land use in accordance with adopted land use policies, including the City's General Plan and the Development/Sustainable Community Plans. The project site is located within the P-2 General Preservation District, and is considered a public use and structure, which are permitted in the P-2 District. No discretionary land use permit is required for uses conducted by or structures owned or managed by the federal government, the State of Hawai‘i or the city to fulfill a government function, activity or service for public benefit and in accordance with public policy.

Wastewater system infrastructure is a utility installation that is a permitted use. The definition of utility installations includes uses or structures, including all facilities, devices, equipment, or transmission lines, used directly in the distribution of utility services, such as water, gas, electricity, telecommunications other than broadcasting antennas, and refuse collection other than facilities included under waste disposal and processing. Pursuant to §21-2.130 of the City's LUO, the Director of DPP may waive the strict application of development or design standards for public or public/private uses and structures, and utility installations.

4. POSSIBLE ALTERNATIVES

4.1. No Action

The no action alternative would maintain the status quo. No improvements would be made to the WWPS. However, since this project aims to provide important upgrades to the standby fuel storage system as required by the passage of HAR Chapter 11-280.1, this option is not feasible. The City is legally required to upgrade the fuel storage tank. To forestall this action would increase the risk to the environment and public health due to non-compliant equipment.

4.2. Delayed Action

A delayed action implies that a project of similar scope and size to the proposed action would occur at an unspecific future date. As with the “no action” alternative, this would increase the risk for long term harm to the environment and public health of the surrounding community. In addition, as stated in HAR Chapter 11-280.1, these improvements must be completed before July 15, 2028. Postponing the construction would result in not meeting this deadline; therefore, this is not a feasible option.

This page intentionally left blank.

5. PERMITS AND APPROVALS

The exact permitting and approval requirements will be determined during the design phase, and the following list contains permits and approvals that may be required for the proposed project.

State of Hawai‘i

- AST Notification
- Community Noise Permit
- Non-Covered and/or Covered Source Permit
- Disability and Communication Access Board Review
- State Historic Preservation Division Review

City and County of Honolulu

- Application and Permit for Tank Installation
- Building Permit
- Grubbing, Grading, and Stockpiling Permit
- Erosion Control Plan/Best Management Practices
- Flammable/Combustible Liquid Permit
- Special Management Area Use Permit

This page intentionally left blank.

6. DETERMINATION

According to HAR §11-200.1-13, an agency must determine whether an action may have a significant impact on the environment, considering all phases of the project, its expected primary and secondary impacts, cumulative effects with other projects, and its short- and long-term effects. In making this determination, the rules establish "significance criteria" to guide the consideration of potential environmental effects.

The proposed project is not likely to have a significant impact on the physical or human environment based on the analysis presented in this document. The City's Department of Environmental Services anticipates that the appropriate determination is a Finding of No Significant Impact (FONSI). The supporting rationale for this finding as set forth in HAR §11-200.1-13 is discussed below.

(1) Irrevocably commit a natural, cultural, or historic resource;

The proposed project is not expected to result in the loss of or damage to natural or cultural resources. Instead, it aims to provide protection against the harmful effects to the environment and public health that would occur as a result of deterioration or malfunction if the project were not undertaken. The project proposes to upgrade an existing UST to an AST system with mandated secondary containment and interstitial monitoring in an area that has been previously disturbed by grading, utility lines and road construction. The proposed work is to take place within an existing pump station facility and will not extend the footprint of the property. Biological resources may exist in the area and recommendations by the DLNR-DOFAW will be followed to mitigate any impact on these resources.

(2) Curtail the range of beneficial uses of the environment;

The proposed project does not limit nor prevent future beneficial uses of the surrounding environment for recreational, cultural, or preservation use. Its scope is limited to land which has already been developed and does not entail the expansion of that area beyond the existing boundaries.

(3) Conflicts with the State's environmental policies or long-term environmental goals established by law;

The project does not conflict with the State's environmental policies or long-term environmental goals. Rather, it aligns with Hawai'i's environmental goals by reducing the risk of fuel leakage to the surrounding soils. Provision of the AST will ensure that the facility is operable during an emergency power outage to prevent wastewater backup.

(4) Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community or State;

The project is not expected to have an adverse effect on economic, social, or cultural welfare. Through the use of BMPs during construction, disturbances to the surrounding community are expected to be minimal. The upgrades to the WWPS prevent future system failures that would cause significant disruptions to the local infrastructure. The ability to better monitor and administer needed repairs to the fuel storage system will help to protect the general welfare of the community.

(5) Have a substantial adverse effect on public health;

The project is not projected to have an adverse effect on public health. Instead, it aims to safeguard public health by reducing the possibility of system failure within the WWPS. Through the use of BMPs, temporary impacts such as traffic, noise and fugitive dust during the construction process are expected to be negligible.

(6) Involve adverse secondary impacts, such as population changes or effects on public facilities;

No major adverse secondary impacts are expected because of the proposed project. Construction work will occur within the site boundaries and is not expected to significantly disrupt surrounding traffic. Upgrades are expected to positively impact the environmental sustiability of the existing public facility.

(7) Involves a substantial degradation of environmental quality;

No major degradation of environmental quality is expected as a result of the proposed project. The installation of the AST and removal of the existing UST will occur in a previously developed area. Through the use of BMPs, construction work will limit impacts such as erosion or runoff. The project will serve the purpose of protecting the environment by reducing the risk of fuel spillage and malfunction.

(8) Be individually limited but cumulatively has substantial adverse effect upon the environment or involves a commitment for larger actions;

The project is limited in scope. No larger or cumulative impact on the environment is expected from the project.

(9) Have a substantial effect on rare, threatened, or endangered species, or its habitat;

The project area is not located within any critical habitats. No major impact on rare, threatened, or endangered species, or critical habitats is expected. Through the use of BMPs, construction work is expected to mitigate any disturbances to regional species to a minimal effect.

(10) Have a substantial adverse effect on air or water quality or ambient noise levels;

No substantial adverse effect on air or water quality or ambient noise levels are expected. Any potential impacts will be temporary and limited to construction-related disturbances, which will be mitigated through BMPs.

(11) Have a substantial adverse effect or are 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 not expected to have a substantial adverse effect on an environmentally sensitive area. It has been carefully planned to avoid these sensitive areas.

(12) Have a substantial adverse effect on scenic vistas and view planes identified in county or state plans or studies; or

No substantial adverse effect on scenic vistas or view planes is expected because of the project.

(13) Require substantial energy consumption or emit substantial greenhouse gas.

The project will not involve substantial energy consumption or emit substantial greenhouse gases. Installation of the AST and piping would take place during a limited time period and would not require substantial energy consumption. Greenhouse gas emissions from diesel powered equipment and generators would occur during the temporary construction period. No mitigation measures are proposed for this temporary impact. In the long term, the permanent fuel tank system infrastructure will support the ongoing operation of the facility.

This page intentionally left blank.

7. PUBLIC AGENCY REVIEW AND CONSULTATION

An Early Consultation Letter and Handout was sent on April 4, 2025 to initiate the environmental review process. A list of consulted agencies, organizations, and interest groups are listed below. There were 11 formal responses to the early consultation letter, as indicated by the ✓ below. A copy of the Early Consultation Letter and Handout are included in Appendix F.

State of Hawai‘i

Department of Hawaiian Homelands

Department of Land and Natural Resources, Land Division ✓

Department of Land and Natural Resources, Engineering Division ✓

Department of Land and Natural Resources, Division of Forestry and Wildlife ✓

Department of Land and Natural Resources, Commission on Water Resource Management ✓

Department of Health

Department of Transportation

Hawai‘i Emergency Management Agency

Office of Hawaiian Affairs

Office of Planning and Sustainable Development ✓

Senate District 24 (Senator Jarret Keohokalole)

House District 50 (Representative Mike Lee)

City and County of Honolulu

Board of Water Supply ✓

Department of Climate Change, Sustainability, and Resiliency

Department of Design and Construction ✓

Department of Emergency Management

Department of Land Management

Department of Facilities Maintenance

Department of Planning & Permitting ✓

Department of Transportation Services

Honolulu Fire Department ✓

Honolulu Police Department ✓

Honolulu City Council District 3 (Esther Kiaʻāina)

Kāneʻohe Neighborhood Board No. 30

Office of the Mayor (Mayor Rick Blangiardi)

Organizations and Associations

Hawaiian Electric Company ✓

8. REFERENCES

City and County of Honolulu. (2021). *Oʻahu General Plan*

City and County of Honolulu. (2017). *Koʻolaupoko Sustainable Communities Plan.*

Clark, J. (2002). Hawaiʻi place names. University of Hawaiʻi Press.

Climate Change Commission, City and County of Honolulu. (2022). *Sea Level Rise II – Guidance Document* (Updated July 29, 2022)

Datausa. *Profile for Kailua, HI* (2023). Retrieved from https://datausa.io/profile/geo/kailua-hi

Department of Land and Natural Resources Division of State Parks. Ulupō heiau state historic site. Retrieved June 30, 2025. https://dlnr.hawaii.gov/dsp/parks/oahu/ulupo-heiau-state-historic-site/.

Department of Land and Natural Resources, State of Hawaiʻi. (2025). *Flood Hazard Assessment Tool*. Available from: https://fhat.Hawaiʻi.gov/

Division of Forestry and Wildlife. (2007). *Fire Management Program*. Department of Land and Natural Resources. Available from: https://geoportal.hawaii.gov/datasets/HiStateGIS::fire-risk-areas/about

Fukunaga & Associates, Inc. (December 2012). *Kūkanono Wastewater Pump Station, Operations Manual*.

Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger. (2014). *Evapotranspiration of Hawaiʻi.* Final report submitted to the U.S. Army Corps of Engineers - Honolulu District, and the Commission on Water Resource Management, State of Hawaiʻi. “Interactive Map.” Accessed May 20, 2022. Available from: http://evapotranspiration.geography.Hawaiʻi.edu/.

Handy, E. S. C. and Handy, E. G. (1972). Native planters in old Hawaii: Their life, lore, and environment. Bishop Museum.

Hawaiʻi Climate Change Mitigation and Adaptation Commission. (2017). Hawaiʻi Sea Level Rise Vulnerability and Adaptation Report. Prepared by Tetra Tech, Inc. and the State of Hawaiʻi Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawaiʻi Department of Land and Natural Resources Contract No: 64064

Hawai‘i Climate Change Mitigation and Adaptation Commission. *(2021). State of Hawai‘i Sea Level Rise Viewer* Version 1.07. Prepared by the Pacific Islands Ocean Observing System for the University of Hawai‘i Sea Grant College Program and the State of Hawai‘i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, with funding from National Oceanic and Atmospheric Administration Office for Coastal Management Award No. NA16NOS4730016 and under the State of Hawai‘i Department of Land and Natural Resources Contract No. 64064. Available from: http://Hawai‘isealevelriseviewer.org.

Hawai‘i Emergency Management Agency. (2023). *Hazard Mitigation Plan*, “Section 4.9 Hurricane”. Hawai‘i Department of Defense. Available from: https://dod.hawaii.gov/hiema/files/2023/01/2023_Hawaii_SHMP_4.9_RA-Hurricane.pdf

Hawai‘i State Civil Defense. n.d. *Tsunami Evacuation Zone Mapping Tool*. Accessed April 7, 2025. Available from: https://dod.Hawai‘i.gov/hiema/public-resources/tsunami-evacuation-zone/.

Land Use Commission, State of Hawai‘i. (2010). *Chapter 226 Hawai‘i State Planning Act.* Available from: https://luc.Hawai‘i.gov/wp-content/uploads/2012/09/Chapter-226HRS.pdf

McAllister, J. (1933). Archaeology of O‘ahu. Bishop Museum.

National Oceanic and Atmospheric Administration. (2025). *Sea Level Rise Viewer*. Available from: https://coast.noaa.gov/slr/#

Shideler, D. W. and Hammatt, H. H. (2025). *Draft archaeological literature review and field inspection for the Kūkanono Wastewater Pump Station improvements project, Kailua ahupua‘a, Ko‘olaupoko district, O‘ahu, TMK:(1) 4-2-013:038 por.* Cultural Surveys Hawai‘i, Inc.

Sterling, E. P. and Summers, C. C. (1978). *Sites of O‘ahu.* Bishop Museum.

U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai‘i Agricultural Experiment Station. *Soil Survey of the Islands of Kaua‘i, O‘ahu, Maui, Moloka‘i, and Lana‘i, State of Hawai‘i* (1972). Accessed April 7, 2025. Available from: https://websoilsurvey.nrcs.usda.gov/app/

U.S. Fish and Wildlife Service, *IPAC - Information for Planning and Consultation*. (2025). U.S. Department of the Interior. Available from: https://ipac.ecosphere.fws.gov/

This page intentionally left blank.

Appendix A

Archaeological Literature Review and Field Inspection Report

Draft

Archaeological Literature Review and Field Inspection for the Kukanono Wastewater Pump Station Improvements Project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu TMK: (1) 4-2-013:038 por.

Prepared for
Townscape, Inc.
on behalf of the
City and County of Honolulu (C&C) Department of Environmental Services

Prepared by
David W. Shideler, M.A.,
and
Hallett H. Hammatt Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KAILUA 163)

May 2025

O‘ahu Office
P.O. Box 1114
Kailua, Hawai‘i 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
1860 Main St.
Wailuku, Hawai‘i 96793
Ph.: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Literature Review and Field Inspection for the Kukanono Wastewater Pump Station Improvements Project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMK: (1) 4-2-013:038 por. (Shideler and Hammatt 2025)
Date	May 2025
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAILUA 163
Investigation Permit Number	CSH completed the fieldwork component of this study under archaeological fieldwork permit number 25-04, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	SHPD, City and County of Honolulu (C&C) Department of Environmental Services (ENV)
Project Proponent	C&C ENV
Project Funding	C&C
Project Location	The project is located at the Kukanono Wastewater Pump Station (WWPS) at 705 Manu ‘Ō‘ō Street, Kailua, Hawai‘i 96734 in the Kūkanono area of Kailua Ahupua‘a, Ko‘olaupoko District on the windward side of the Island of O‘ahu (TMK: [1] 4-2-013:038 por.). The WWPS is located north of the Kūkanono residential subdivision on the southeast margin of Kawainui Marsh. The WWPS is surrounded by state-owned preservation land associated with the Ulupō Heiau State Historic Site. The 0.68-acre Kukanono WWPS is depicted on portions of the 2017 Koko Head and Mokapu Point U.S. Geological Survey (USGS) 7.5-minute series topographic quadrangles (Figure 1), a tax map plat (Figure 2), and a 2016 aerial photograph (Figure 3). Two different areas are presently under consideration for the “project location” which involves the installation of a new diesel fuel storage tank (Figure 4 through Figure 7). The preferred location is to install an aboveground storage tank (AST) on the northwest side of the Kukanono WWPS building, on a terrace retained by two walls that meet at a right angle, with a short fuel pipe connection into the north corner of the WWPS building. Both walls are cracked and may not be appropriate for the placement of a fuel AST at this location. Alternatively, a new fuel storage tank may be placed at the location of the present underground storage tank (UST) located southeast of the east corner of the WWPS building. Regardless, the project area (area of ground disturbance) will be very small (on the order of 20 square meters [sq m] or less).

Land Jurisdiction	C&C
Project Acreage	The Kukanono WWPS is approximately 0.68 acres (0.28 hectares). The project area of subsurface impacts will be approximately 20 sq m (or less).
Project Description and Ground Disturbance	The C&C ENV will be replacing the existing fuel UST at the east corner of the Kukanono WWPS building with a new storage tank which may be placed on a terrace on the northwest side of the building or may be placed at the same location as the existing UST (Figure 4 through Figure 7). Construction of a concrete pad and cradle to support the new AST is anticipated with minimal excavation. Reconstruction of the terrace retaining walls may be indicated. The fuel supply/return pipe routing is anticipated to be largely above ground involving minimal excavation (Figure 4 through Figure 6).
Historic Preservation Regulatory Context	This is a state/municipal “governmental” project needing review under Hawai‘i Revised Statutes (HRS) §6E-8 and HAR §13-275.
Document Purpose	This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the project and based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project’s planning and support the project’s historic preservation environmental review compliance. This investigation does not fulfill the requirements of an archaeological inventory survey investigation, per HAR §13-276.
Natural and Built Environment	The Kawainui (and neighboring Hāmākua Marsh) Complex was designated as a Ramsar Convention Wetland of International Importance in 2005. Kawainui Marsh is the largest remaining wetland in the Hawaiian Islands, measuring 414 hectares. The annual rainfall at the neighboring Hawaii Youth Station of 1,137 mm (44.8 inches) is suggested to be representative for the Kukanono WWPS improvements project area (Giambelluca et al. 2013). The elevation within the project area is approximately 15 m (49 feet [ft]) above mean sea level. The project area is approximately 2.5 km (1.6 miles) inland from the sea. 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 Kukanono WWPS improvements project area (Figure 8) is Stony steep land (rSY). Stony steep land is described as follows: > Stony steep land (rSY) consists of a mass of boulders and stones deposited by water and gravity on side slopes of drainageways. It occurs on the island of Oahu. The slope ranges from 40 to 70 percent. Elevations range from 100 to 1,500 feet. […]

	> Stones and boulders cover 50 to 90 percent of the surface. There is a small amount of soil among the stones that provides a foothold for plants. Rock outcrops occur in many places. > This land type is used for wildlife habitat and recreation. The natural vegetation consists of kiawe, koa haole, and grasses. [Foote et al. 1972:121] Conrad Erkelens master's thesis on archaeological investigations of the Kūkanono slope notes, > Since the sediment at Kūkanono is relatively stable geomorphologically and was farmed continuously until the early 1900s, the ground surface visible today represents a mixture of historical and prehistoric artifacts within the 'plow zone'. This explains the presence of golf balls, pull-top tabs from soda cans, 19th century bottles, and discarded adze blanks in close proximity on the present surface. The surface at this site contains artifacts from at least the last 200 years of Hawaiian history. [Erkelens 1993:38] The Kukanono WWPS improvements project area is at the northwest end of residential Manu ‘Ō‘ō Street at the north corner of the Kūkanono residential neighborhood and is approximately 250 m northwest of Kailua Road, the main vehicular approach to Kailua Town (Figure 1 and Figure 3). Kawainui Marsh, which bounds much of the northwest side of the Kukanono WWPS improvements project area, is relatively undeveloped. The Ulupō Heiau State Monument is approximately 150 m to the east.
Background Research Methods	Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Accounting and General Services. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2025).
Cultural Context	Along with a sunny, dry beach area and sheltered productive seas, the well-watered interior lands, including the two marsh/pond areas of Ka‘elepulu and Kawainui, and the many springs and streams of Maunawili, provided bountiful agricultural and resource gathering areas. During the fifteenth and sixteenth centuries, Kailua, O‘ahu was the center of a large royal complex with ample playgrounds for sports and physical training, and recreation (Sterling and Summers 1978:231–232). Supporting this large complex was a bountiful garden hinterland where fish, fowl, and vegetables were plentiful (Sterling and Summers 1978:227–228).

	While Kailua Ahupua‘a, and the Kawainui marsh area in particular, are rich in traditions, historic accounts of Kailua before the 1850s are rare. Maui high chief Kahekili, who conquered O‘ahu about 1783 (Cordy 2002), settled with his supporting chiefs in Kailua (Fornander 1919:290). Hawaiian historian Kamakau (1992:192) wrote that Kamehameha I, who was known to spend time in Kailua, worked at the Kawainui and Ka‘elepulu fishponds “with his own hands.” It is also reported that during one of Kamehameha’s stays in Kailua there was a shortage of taro. He and his men went to Kawainui to collect the *lepo‘ai‘ia*, or edible mud that was like pudding. The mud was originally from Kahiki, indicating it had been brought to Kawainui many years before (*Ka Na‘i Aupuni* 4 September 1906 in Sterling and Summers 1978:231–232). Population counts from the 1830s place the population of Kailua at a seemingly low 760 individuals (Schmitt 1973:19), even though the productivity of the region could have supported a higher population. Westerners passing through Ko‘olaupoko, the district in which Kailua is located, in the mid-1840s made note of the cold and flu symptoms among the Native Hawaiians and that much formerly productive land appeared abandoned (Wyllie 1848:20).
Land Commission Awards (LCAs)	There are two Native Tenant Land Commission Awards (LCA) within the immediate Kukanono WWPS improvements project area: LCA 6099:2 and LCA 7147:2 (Figure 9). There were several other LCAs in the vicinity. Miomio’s 1854 LCA 6099 claim at Kailua included two parcels. Clearly the ‘Āpana 1(parcel 1) claim for ten ponded taro patches (*lo‘i*) was at Kūkanono and the indication is that the ‘Āpana 2 claim near the present Kukanono WWPS improvements project for a house lot (*pā hale*) was also at Kūkanono (which fits the location). Kahele’s claim for LCA 7147 included two parcels at Kūkanono. The claim of concern here was LCA 7147 ‘Āpana 2 for a “*Mo‘o Oha*” or possibly a “*Mo‘o Ohu*” “*Mo‘o*” is a very common word in LCA claims typically meaning an elongated strip of land. The meaning here is unclear. A “*Mo‘o Oha*” could be a reference to a strip of taro-growing land (“*‘ohā*” “Taro growing from the older root,” “tender plant”; Pukui and Elbert 1984:254). A “*Mo‘o Ohu*” could be a reference to a strip of land on an *‘ōhū* (“hillock,” “elevation”; Pukui and Elbert 1984:256). The description starts at the north corner and proceeds counter-clockwise. To the northwest is *‘aka‘akai* or bullrushes, to the southwest is land of the sovereign (“*no ka Mō‘ī*”), to the south is dry land (possibly pasture or fallow land) of the headman of the *ahupua‘a* (traditional land division) (“*Kula o Konohiki*”), to the southeast is a land boundary fence or wall (*pā ‘āina*), and to the northeast (on the map) is the annotation “*Kuniu*” which is uncertain but may be a reference to an upright coconut tree (*kūniu*) located there.
Historical Background Focused on a Review of	For nearly 100 years following the Māhele, Kailua grew into an important area of commercial agriculture. Until the early 1900s, rice was the major crop in Kailua’s numerous abandoned *lo‘i*. The former taro lands of Maunawili, Kawainui, and the area around Ka‘elepulu Pond provided perfect areas for the

Historic Maps and Aerial Photographs	expansion of rice. By the early 1900s, the majority of the taro *lo‘i* in Kawainui marsh were converted to rice paddies, leaving little to no physical evidence of previous *lo‘i* cultivation (Drigot 1982:29). The Reciprocity Treaty between the United States and the Kingdom of Hawai‘i allowed for the duty-free exportation of Hawaiian sugar to the U.S. This 1876 treaty greatly fanned the flame of the already smoldering Hawaiian export sugar industry. The duty-free export of rice was also covered under the treaty (Kelly and Nakamura 1981:52). However, it was the growing Asian population, first Chinese and later Japanese who were brought to Hawai‘i to supply labor to the escalating export sugar industry, that provided the main impetus for the expansion of rice growing. With local consumption steadily growing and duty-free export, rice growing in Hawai‘i had a boom period of its own (Kelly and Nakamura 1981:55). Unlike the adjacent *ahupua‘a* of Waimānalo, Kailua’s main cash crop at this period was rice rather than sugar. In 1880, Bowser (1880) describes rice fields in “one-fourth” of the “valley of Kawainui” and plans for additional rice fields in “the remainder”: > In this neighborhood, from a knoll or plateau about a quarter of a mile square on which Mr. Kahuhu has a farm, I got another magnificent view quite equal to anything I had yet seen. All around were towering peaks and lofty mountains. To my left, as I looked eastward, was the valley of the Kawainui, about one-fourth of which is already laid out in rice plantations. The remainder will be brought under cultivation during the coming season for the same purposes. [Bowser 1880:408] Despite the conversion of taro lands around Kawainui Marsh to rice, areas *mauka* (inland, toward the mountains) of the marsh continued to be cultivated in taro as shown in an 1885 photograph (Figure 14). McAllister (1933:377) also reports the presence of “taro patches” along Hāmākua Stream in the past that almost certainly would have been converted to rice fields. Kailua continued to be remarkably rural to the end of the 1800s. The 1884 Bishop map of Kailua (Figure 10) and the 1894 Wall map of Maunawili Ranch (Figure 11) show traditional land divisions and LCA areas focused on traditional taro production but no other development within the vicinity of the project area. With the 1899 Wall map of Kailua (Figure 12), we see a network of roads including a road along the northeast side of Kawainui extending toward the coast and the new Kailua Ditch, 600 m *makai* (seaward; northeast), moving Kailua water toward Waimanalo Sugar Company (1878-1947; Dorrance and Morgan 2000:41) fields. The lack of development into the twentieth century is striking. The 1900 King map of Kailua (Figure 13) shows the route into coastal Kailua as nothing more than a trail. No other development within the vicinity of the project area is depicted. By the first part of the twentieth century, rice growers in California were using more modern production methods to reduce their costs. This competition led to

	the rapid decline in rice farming in Hawai‘i (Kelly and Nakamura 1981:51–63) and abandonment of these marshy lands. Coulter and Chun (1937:53) also mention that the prohibition of Chinese immigration to Hawai‘i beginning in 1876 was another reason for the decline in rice cultivation. Rice was followed by truck farming of taro and western crops. The truck farming gave way to suburbanization as Kailua became the premier bedroom community for growing Honolulu. At one time, there were multiple rice mills functioning in Kailua Ahupua‘a, one of which was located in the vicinity of the present-day Castle Medical Center (Figure 16 and Figure 17). “The principal landowners at this time were N.R. Rice, Wong Leong, and W.G. Irwin, the Crown and heirs of J.S. Ellis” (Ewart and Tuggle 1977:8). Rice still dominated Kawainui in 1906 (Figure 16). By 1913, Wong Leong had sold his various parcels, land, leaseholds, and rice mill to N.R. Rice and by this time, only five LCAs remained with their original claimant or heirs (Ewart and Tuggle 1977:9). Truck farming of taro, avocado, papaya, and western crops followed the decline of rice agriculture. The Kūkanono slopes along Kailua Road and extending toward Kawainui Marsh were utilized for cultivation, raising chickens, and pig farming. The Kailua Fruit Stand, owned and operated by the Nishikawa family, was the most successful of the Kūkanono truck farms (Figure 15 and Figure 18). The stand was in the location of today’s Christ Church Uniting Disciple and Presbyterians on Kailua Road. The family worked and leased the lands for 25 years until the development of the Kūkanono neighborhood (Hollier 2011). The 1928 USGS map (Figure 20) shows the development of a small community at Kūkanono which is believed to have been mostly people of Japanese ancestry. An unimproved road is shown extending to the present Kukanono WWPS driveway. In the 1930s, Kenzo Matsuda leased land adjacent to the old Pali Road where he and his family constructed a building that was well known in Kailua. Matsuda Store was also the family home for many years. The store was adjacent to Kawainui Marsh (Figure 19), just west of the current location of Castle Medical Center on today’s Ulukahiki Street. Matsuda’s Store was a general store that provided the local farmers with all their needs including gasoline and livestock feed (Hollier 2011). In the early 1900s Kaneohe Ranch came to dominate land holdings in the Kailua and Kāne‘ohe area. Included within this acreage is much ranch land that was bought, sold, let, and used as ranch land by numerous parties since the mid-1850s. Kelly and Nakamura’s (1981:34–35) history mentions Government land sales amounting to 3,000 acres sold to 21 buyers in Kailua between the years 1849 and 1863. The largest parcel went to William Jarrett of the *‘ili* (traditional land division smaller than an *ahupua‘a*) of Maunawili in 1849. The second largest was 399.5 acres to T. Cummins in Mokulua. Both parcels were used for ranching. Other land holdings that were turned into ranch land in the mid-1850s

	included the *‘ili* of Puanea and ‘Ohua‘uli (by the son of Paula Marin, Paul F. Manini). These large land holdings were used for years as ranch lands before becoming part of the Castle’s Kaneohe Ranch. Cattle, sheep, and horses were thus allowed to roam at will through many parts of Kailua as reported by Bowser (1880:408) and would have destroyed many gardens and abandoned habitation areas. Kelly and Nakamura (1981:69) point out that although specific records are not available, based on tax information, it is not unreasonable to estimate that several thousand head of cattle were grazing in Kailua by 1875. A Kaneohe Ranch report of a roundup relates that 300 cattle were driven from Maunawili to their main corrals in Oneawa. Their route was Kapa‘a Road (today’s Kapa‘a Quarry Road). “Cattle that strayed into Kawainui marsh were driven out of the marsh and back to the road by Japanese helpers following on foot” (Brennan and Drigot 2009:183). It has also been reported that a portion of Ulupō Heiau was used as a cattle pen in the 1900s (McAllister 1933:187). Kaneohe Ranch eventually acquired much of the land in Kailua. In addition to ranching, Kaneohe Ranch grew pineapple and sugarcane. With the decline of rice farming around the margins of Kawainui, cattle stock moved onto the abandoned agricultural lands (Kaneohe Ranch 2013). A 1906 Hawaiian Government Survey map (Figure 16) shows all of Kailua, extending into Kāne‘ohe, as grazing lands (yellow highlighted boundary) with the southeasternmost portion of Kawainui Marsh as rice and taro lands (blue striped area). Ranching in Kailua has only ceased in the last few years. In 1919 (Figure 17), coastal Kailua had hardly any homes, but the relatively rapid development of streets and homes in coastal Kailua is shown in the 1936 (Figure 21) and 1943 (Figure 22) maps. The unimproved road extending northwest off improved Kailua Road connecting with the access driveway to the Kukanono WWPS is prominent on these maps with several houses on the northeast side of that road. While Harold Castle grazed cattle and horses throughout Kailua including Kawainui and Hāmākua marshes for many years, the Campos Dairy was established in 1925. Cattle grazed throughout Kailua for decades, and in the Hāmākua Marsh area until recently. In the 1940s the military conducted training exercises within the Kawainui Marsh margin according to Martin Knott, a rancher who resided in the area (Kelly and Clark 1980:24). Troop maneuvers and small arms usage were permitted and conducted in the vicinity of Nā Pōhaku o Hauwahine south to the current location of Castle Medical Center. Mortars were also fired although areas designated for mortar firing were unknown (Clark 1980:15). Evidence of “live-fire training,” consisting of used and unused 50-caliber shells from large machine guns was found on the Kūkanono slope during an archaeological investigation (Erkelens 1993:10). This military training may have been associated with the Pali Training Area in Maunawili and Makali‘i valleys (O’Hare et al. 2014), although no mention of such training outside the valleys is

reported. Kelly and Clark's (1980:24) research indicated Army activities "were limited in geographic extent."

From 1952 (Figure 23) Kailua Road is depicted as a major vehicular artery serving a substantial coastal community on the east side of the Kukanono WWPS improvements project area. By the late 1950s, the truck farms that had flourished since the turn of the century within the bounds of present-day Kailua Town and the margins of Kawainui Marsh were slowly replaced by housing, municipal, and retail developments. Kailua was promoted as the bedroom community for Honolulu businessmen, only "8 miles and 20 minutes" from downtown. Residential developments were planned for more outlying areas of Kailua Town such as Olomana, Pōhākapu, and Oneawa Hills (Hall 1997:141). By the early 1950s, a dike was installed on the *makai* edge of Kawainui Swamp (visible on the 1959 aerial photograph; Figure 24) to protect Kailua from flooding. However, the dike did little to prevent flooding during the 1950s. Thus, construction of the Oneawa Channel was undertaken, particularly since residential development was on the rise. The levee later failed to prevent severe damage that occurred in the Coconut Grove subdivision, east of Kawainui Marsh, during the 1987–1988 New Year's flood. The levee was raised and a concrete 4-ft high floodwall was installed. The levee extends 6,300 ft north/south from Kailua Road to the Oneawa Channel, which extends 9,470 ft to Kailua Bay (U.S. Army Corps of Engineers 2013). By the late 1950s, suburban growth extended *mauka* of the coastal sandbar with the development of the Pōhākapu community and Kailua High School on the southeast side of Kailua road across from Kūkanono (as shown in the 1959 aerial, Figure 24).

The very rapid development of the southeast slope of Kawainui is evident in comparing the 1952 USGS (Figure 23) with the 1968 USGS map (Figure 25). The establishment of "Church Row" on the northwest side of Kailua Road and the hospital (present-day Adventist Health Castle) accompanied the development of the Pōhākupu residential neighborhood (adjacent to the project area) in this decade. A comparison of the 1959 aerial (Figure 24) with the 1968 aerial (Figure 26) shows the explosive suburban development in the vicinity of the project area in this decade. In contrast, a comparison of the 1968 aerial with the 1978 aerial (Figure 27) shows relatively little further development in the project area vicinity.

In 1979, the U.S. National Register for Historic Places (NRHP) issued a "Determination of Eligibility Notification" finding that Kawainui Marsh area was eligible for listing in the NRHP (U.S. Heritage Conservation and Recreation Service 1979). According to the determination, "Kawainui Marsh is important as a major component of a larger cultural district which would include […] the ponding/wet agricultural area […] remains of extensive terracing systems, ceremonial sites, burial sites, and habitation areas associated with this agricultural complex" (U.S. Heritage Conservation and Recreation Service 1979). Kawainui Marsh is not, however, listed on the NRHP or the Hawai‘i Register of Historic Places (HRHP).

	Ulupō Heiau, adjacent to the marsh and designated as State Inventory of Historic Places (SIHP) # 50-80-11-00371, has been listed on the NRHP since 9 November 1972, and on the HRHP since 21 September 1981. The 1998 USGS map (Figure 28) notes Ulupō Heiau as a “State Monument.” The Matsuda Store, which had been the general store for Kailua in the first half of the twentieth century, was also the residence of the Knott family for many years during their cattle grazing period. In 2000, the former Matsuda Store had to be demolished due to extensive termite damage. The only remnant of the store was a small concrete slab that formerly held the gas pumps (Hollier 2011). In 2005, the Kawainui and Hāmākua Marsh Complex was designated as a Ramsar Convention Wetland of International Importance. The designation is given to ensure “conservation and sustainable use of wetlands and their resources, for the benefit of humankind” (Ramsar Convention of Wetlands 2013). The complex was designated as Ramsar site number 1460.
Synopsis of Previous Archaeological Work in the Vicinity	Previous archaeological studies in the vicinity are depicted in Figure 29 and summarized in Table 1. Previously identified historic properties in the vicinity are located on Figure 30 and summarized in Table 2. The work of Cordy 1977a, 1977b and 1978, Ewart and Tuggle 1977, and Clark 1980 reported a wealth of archaeological sites on the Kūkanono slope of Kawainui marsh which were associated with some very early radiocarbon dates (which have subsequently been largely discounted). A very large number of archaeological features were designated in the immediate vicinity of the present Kukanono WWPS (see present Figure 35 and Figure 36 for an overview). These studies typically show a disturbed area extending out from the edge of the Kukanono WWPS. Clark (1980:37) writes, “The Kukanono plant and areas of land disturbance created by its construction separate Cluster 4 from Clusters 2 and 6.” He suggests the present-day clusters of archaeological features were more or less continuous until grading within the project area separated the area of remaining archaeological resources. On the other hand, it must be noted that when Bill Barrera (1984) provided a brief report on his archaeological survey that included the Kukanono WWPS and 1,200 ft of force main largely following Manu-‘Ō‘ō Street (presumably long after the grading activity reported previously), he concluded no historic properties had been recorded previously at either pump station location; and no surface historic properties were observed during the archaeological survey. He does, however, conclude regarding the Kukanono WWPS: “Although no surface remains were found during our field inspection, there is a distinct possibility that archaeological deposits may be buried beneath the surface” (Barrera, Jr. 1984:2). Archaeological monitoring (Barnes and Hammatt 2007) for the replacement of approximately 180 ft of the Kukanono WWPS force main piping extending within the sewer easement southwest from the pump station encountered only

	fill deposits even to a depth of 270 cmbs. How extensive these deep fill deposits are over the Kukanono WWPS improvements project area is unclear.
Fieldwork Effort	A brief field inspection of the project area was conducted by CSH archaeologist David W. Shideler, M.A., on 21 March 2025. An archaeologist's track log with a key to the following photographs showing their general location and orientation is provided in Figure 31. The entire Kukanono WWPS was traversed and representative photographs were taken providing general views. Views are provided of the driveway at the entrance gate (Figure 32), from the northeast corner (Figure 33), and then clockwise from the southeast corner (Figure 34), west corner (Figure 35), and northwest corner (Figure 36). At the time, there was uncertainty regarding the age of the Kukanono WWPS Building and photographs are supplied of the front or southwest side (Figure 37), southwest side (Figure 38), northwest side (Figure 39), and northeast side (Figure 40) to aid in any consideration of the building as a historic property. The project area was very clear with photographs supplied of the location of the existing 1,000-gallon UST (Figure 41 and Figure 42), of the proposed location of the new AST (Figure 43 and Figure 44), and of the new area for proposed fuel supply and return pipe routing (Figure 45 and Figure 46). Concerns were indicated for the integrity of the L-shaped terrace wall defining the area for the proposed new AST and views are provided of the northwest retaining wall (Figure 47 and Figure 48), of the northeast retaining wall (Figure 49 and Figure 50), and of the corner where the retaining walls meet (Figure 51). It was noted that cracks in the central portion of both retaining walls extend from top to bottom (Figure 48 and Figure 50). The Kukanono WWPS is quite small (approximately 0.68 acres) and is mostly covered with asphalt, gravel, and the existing building. The entire WWPS appears to have been previously graded. No historic properties were observed within the WWPS facility. The prospect for subsurface historic properties within the WWPS facility was evaluated in the field as low.
Historic Properties Potentially Affected	No historic properties have been previously identified at the Kukanono WWPS and none were identified in the present fieldwork. With the understanding that the "Date Built" and "Year in service" for the Kukanono Wastewater Pump Station is 1988, and in the absence of any particularly notable qualities, the Kukanono WWPS is not regarded as a historic property in and of itself.
Historic Preservation Next Steps	This study would support a C&C ENV determination as per HAR §13-275-7(a)(1) of "No historic properties affected" and for no further historic preservation study. Early consultation with the SHPD archaeology branch (with submittal of this study to the SHPD's Hawai‘i Cultural Resources Information System (or HICRIS system) is recommended.

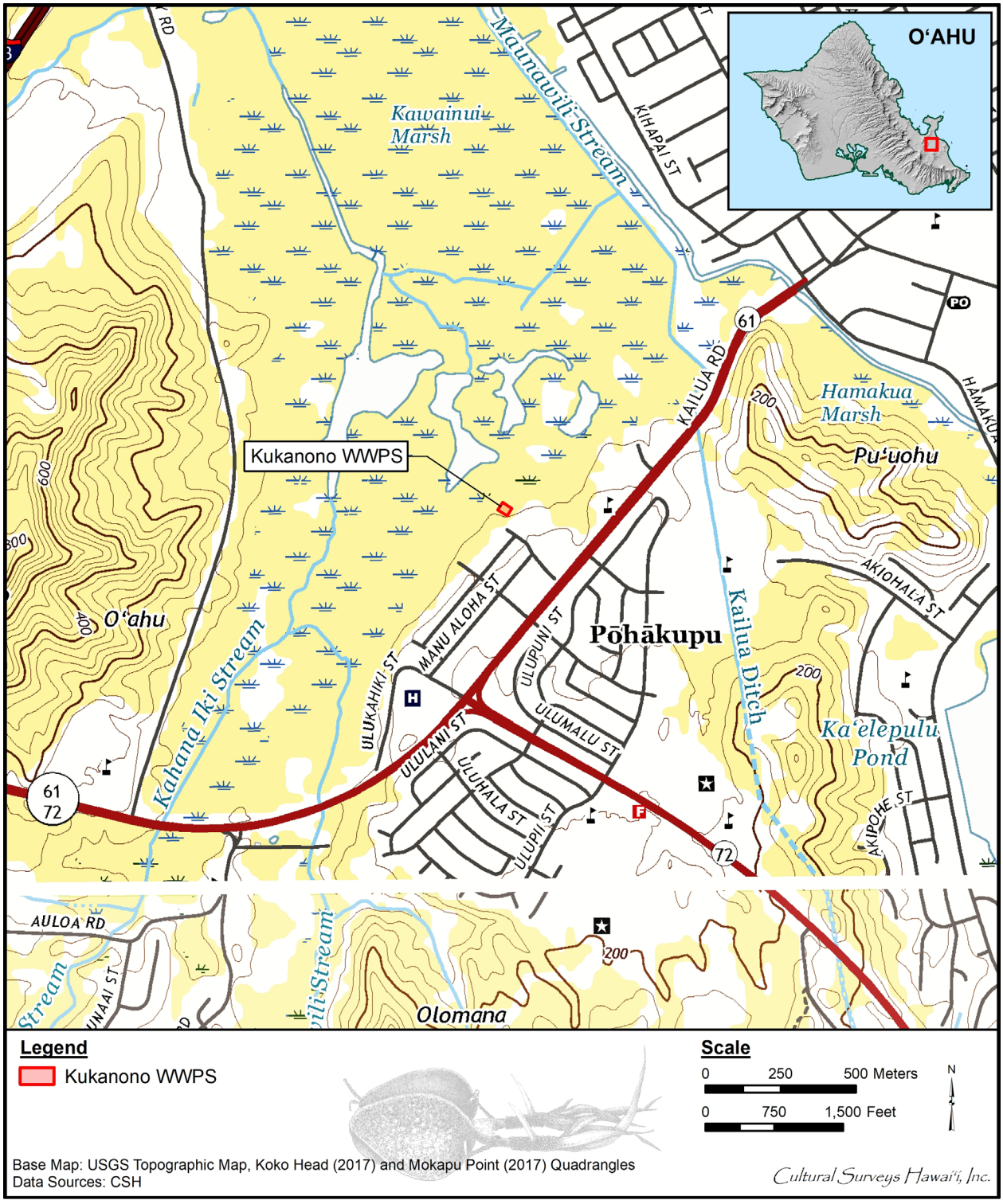


Figure 1. Portions of the 2017 Koko Head and Mokapu Point USGS 7.5-minute topographic quadrangles showing the location of the Kukanono WWPS

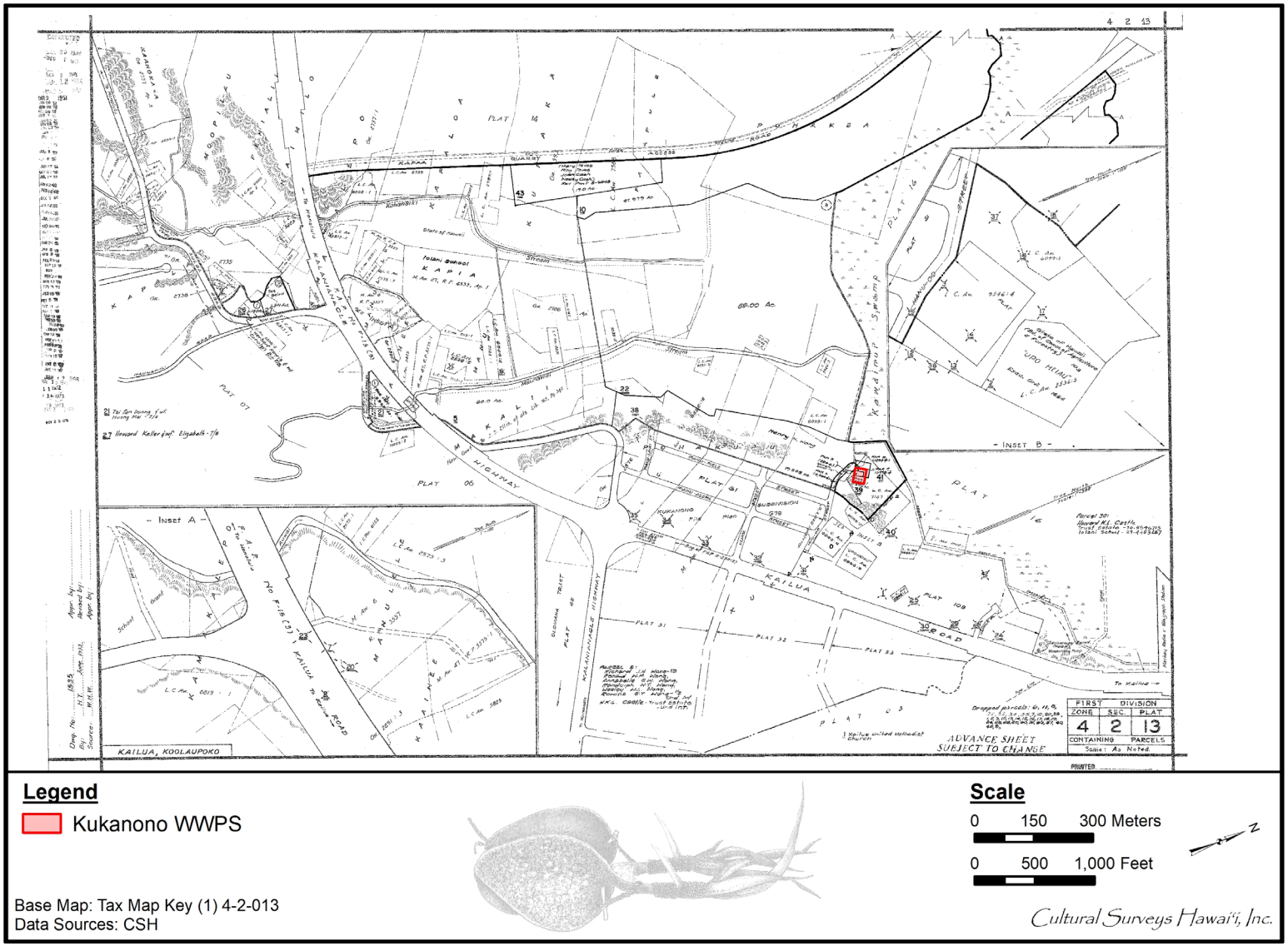


Figure 2. TMK: (1) 4-2-013 showing the location of the Kukanono WWPS improvements project area (Hawai‘i TMK Service 2022)

Figure 3. Aerial photograph showing the location of the Kukanono WWPS improvements project area (ESRI 2016)

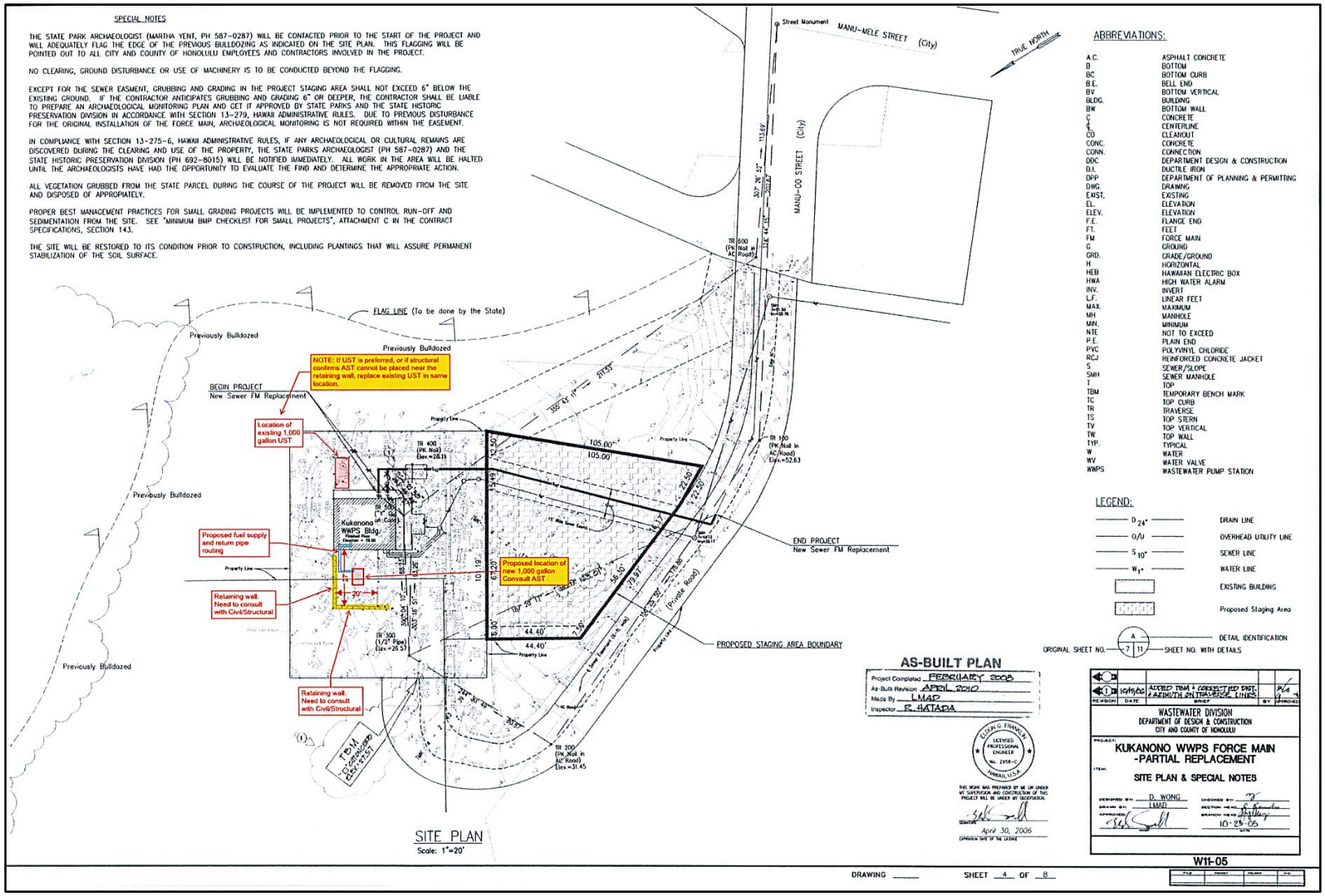


Figure 4. Indicated proposed location of new 1,000-gallon Convault AST and proposed fuel supply and return pipe routing at the Kukanono WWPS (Okahara and Associates, Inc.; courtesy of client)

Figure 5. Photo showing proposed location of the proposed 1,000-gallon AST and proposed fuel supply and return pipe routing at the Kukanono WWPS (Okahara and Associates, Inc.; courtesy of client)

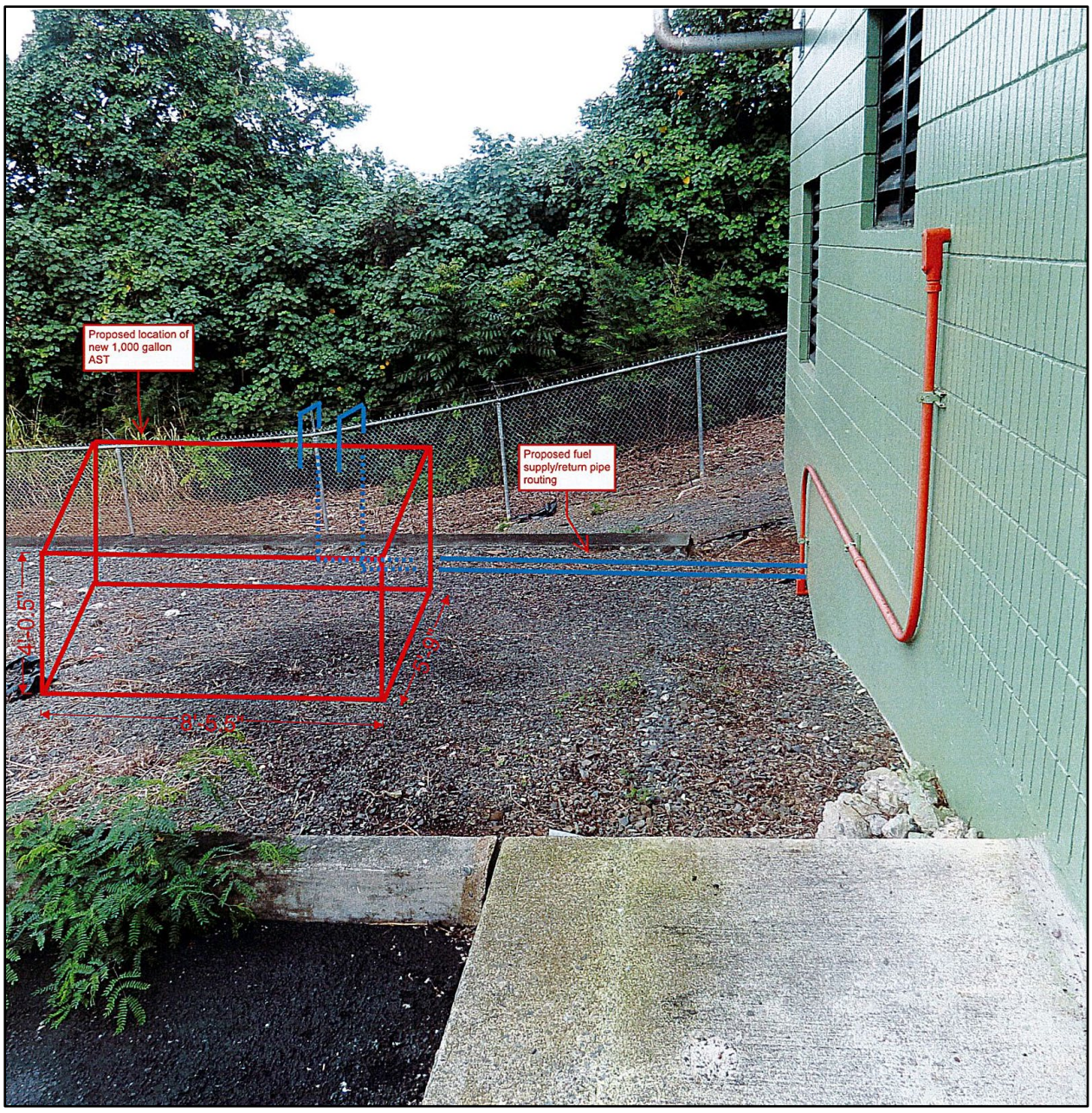


Figure 6. Photo showing proposed location of the 1,000-gallon AST and proposed fuel supply and return pipe routing at the Kukanono WWPS (Okahara and Associates, Inc.; courtesy of client)

Figure 7. Photo showing proposed location if AST does not work and the alternative is to replace the existing UST with a new 1,000-gallon UST in the same location at the Kukanono WWPS (Okahara and Associates, Inc.; courtesy of client)

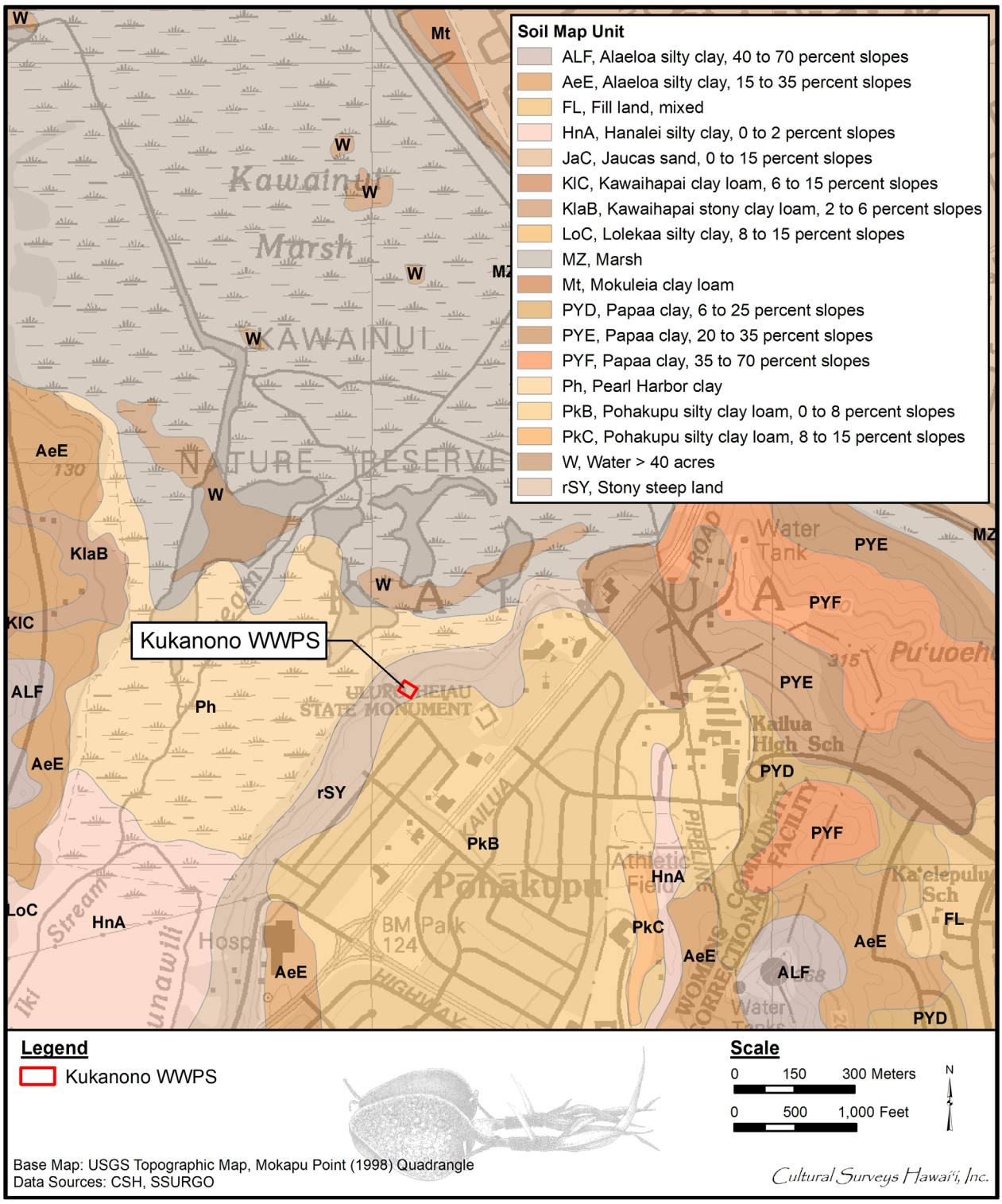


Figure 8. 1998 Mokapu Point USGS topographic quadrangle with overlay of *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* (Foote et al. 1972; USDA SSURGO 2001), indicating soil types within and surrounding the Kukanono WWPS improvements project area

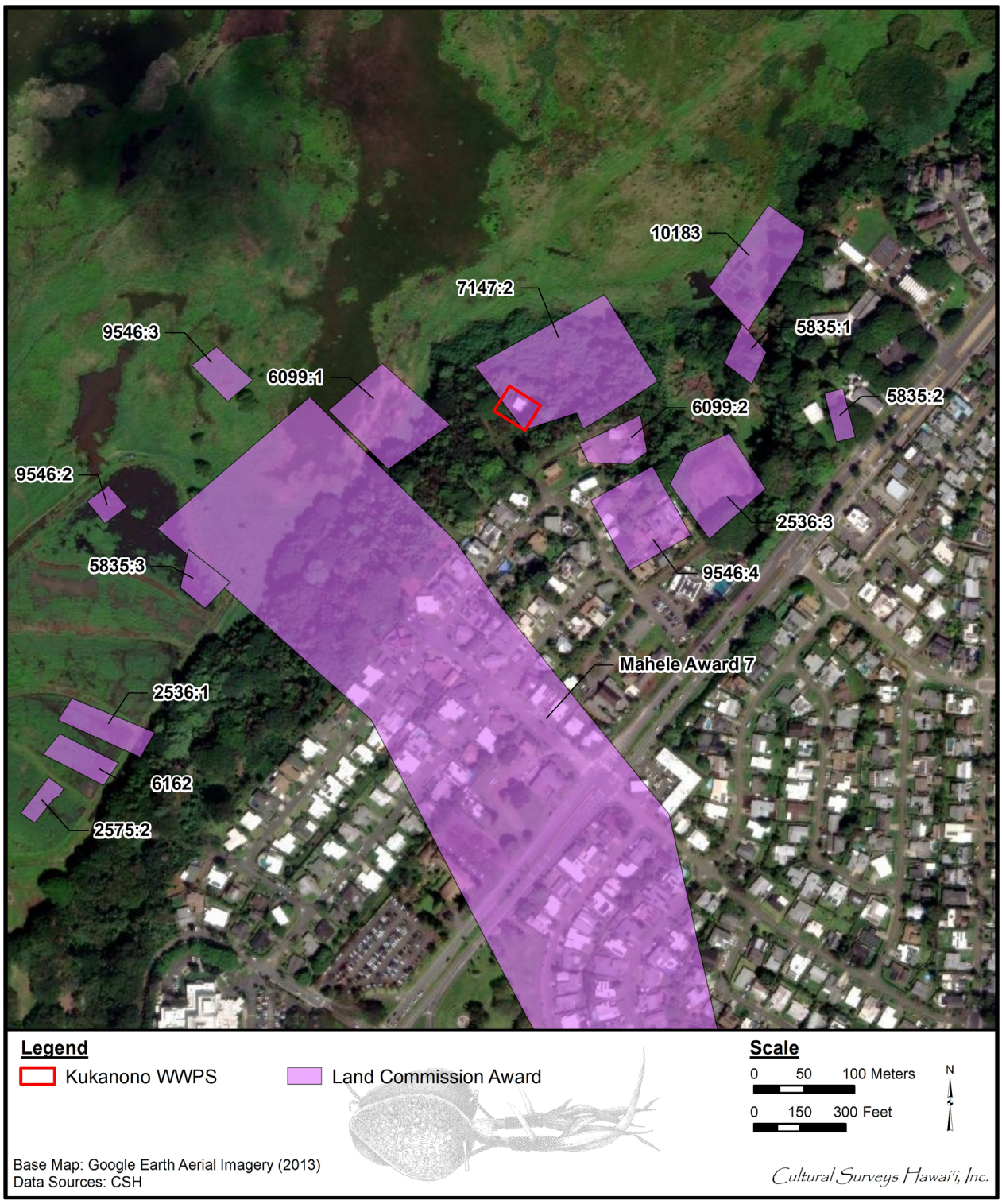


Figure 9. Aerial photograph (Google Earth 2013) with overlay of LCAs in the vicinity of the Kukanono WWPS improvements project area

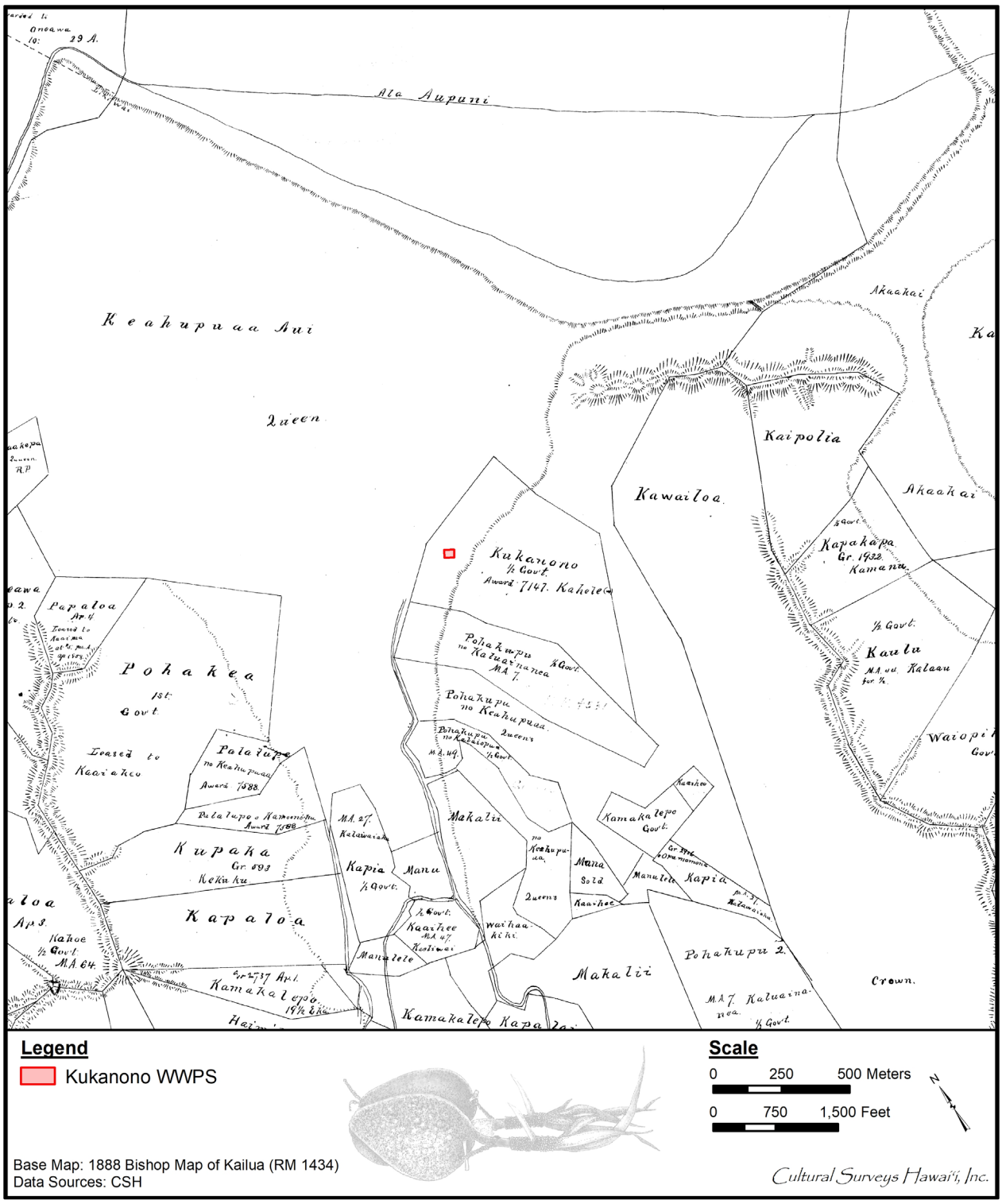


Figure 10. Portion of the 1888 Bishop map of Kailua (RM 1434) showing the location of the Kukanono WWPS as within LCA 7147 to Kahole (this 1888 map appears to conflate LCA 7147 with the entirety of the *‘ili* of Kūkanono; see following 1894 map and Kahole’s claim in Appendix B)

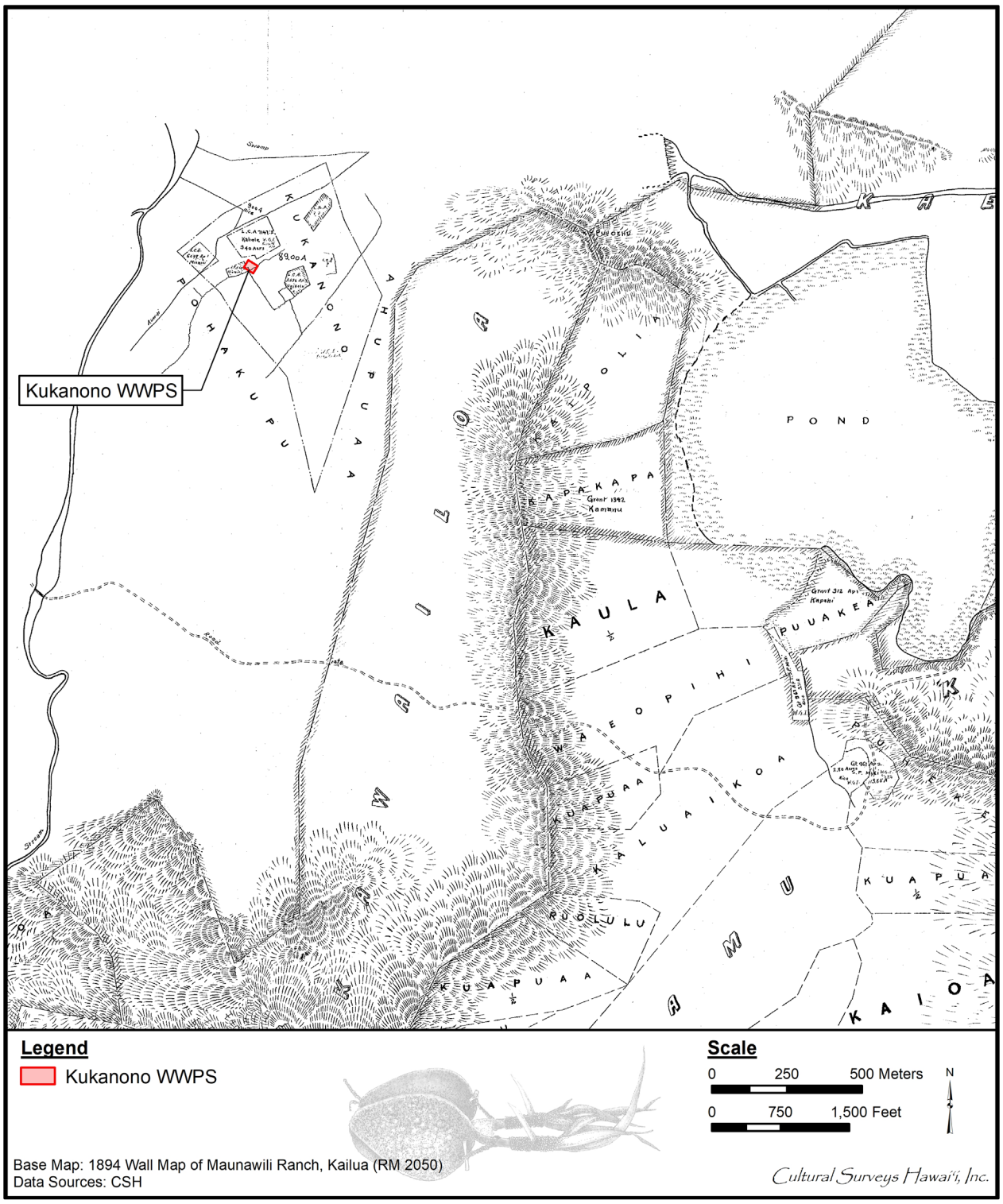


Figure 11. Portion of the 1894 Wall map of Maunawili Ranch, Kailua (RM 2050) showing the location of the Kukanono WWPS in an area of LCAs and *‘auwai* (constructed water channels)

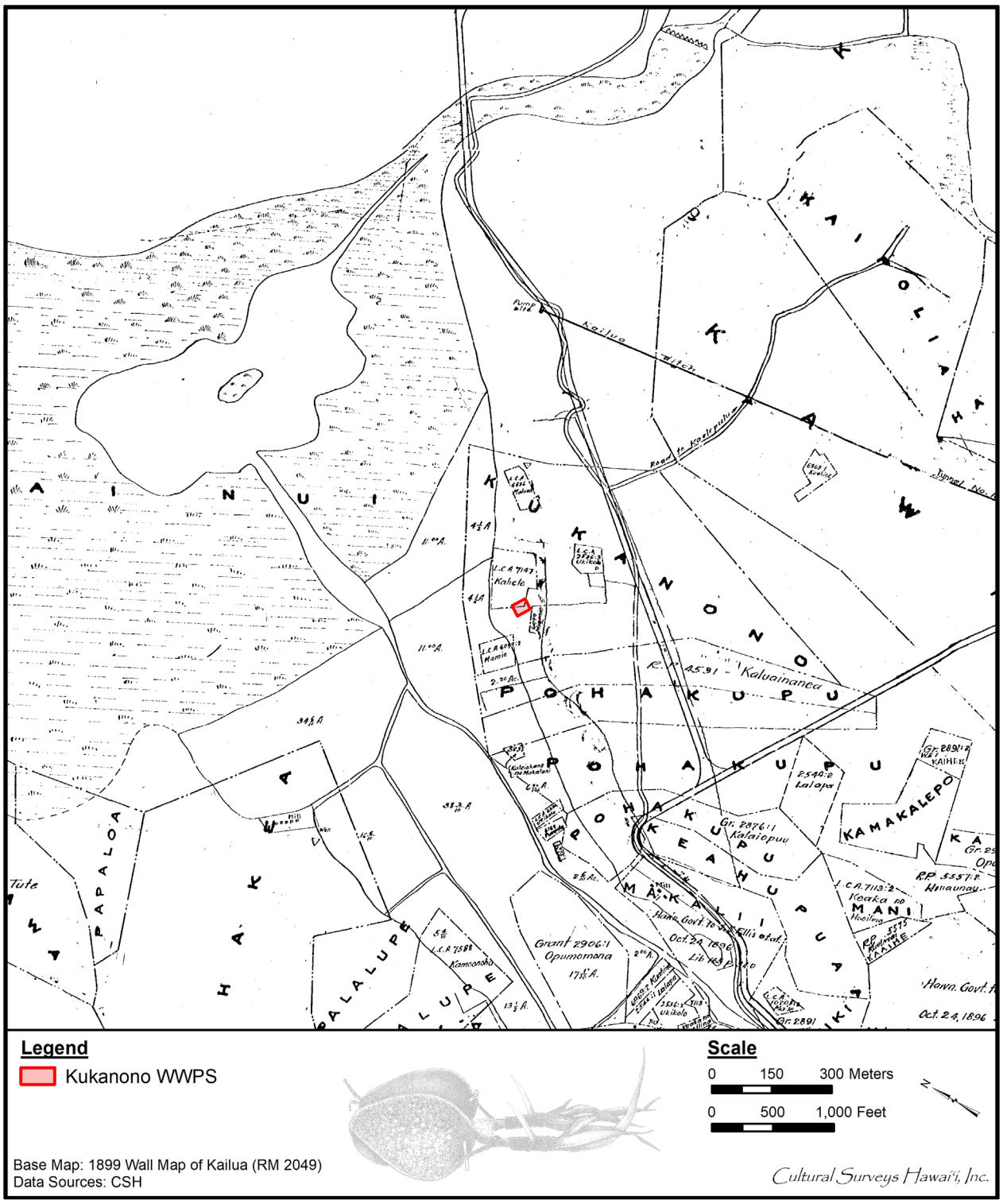


Figure 12. Portion of the 1899 Wall map of Kailua (RM 2049) showing the location of the Kukanono WWPS improvements project area in an area of LCAs and *‘auwai*

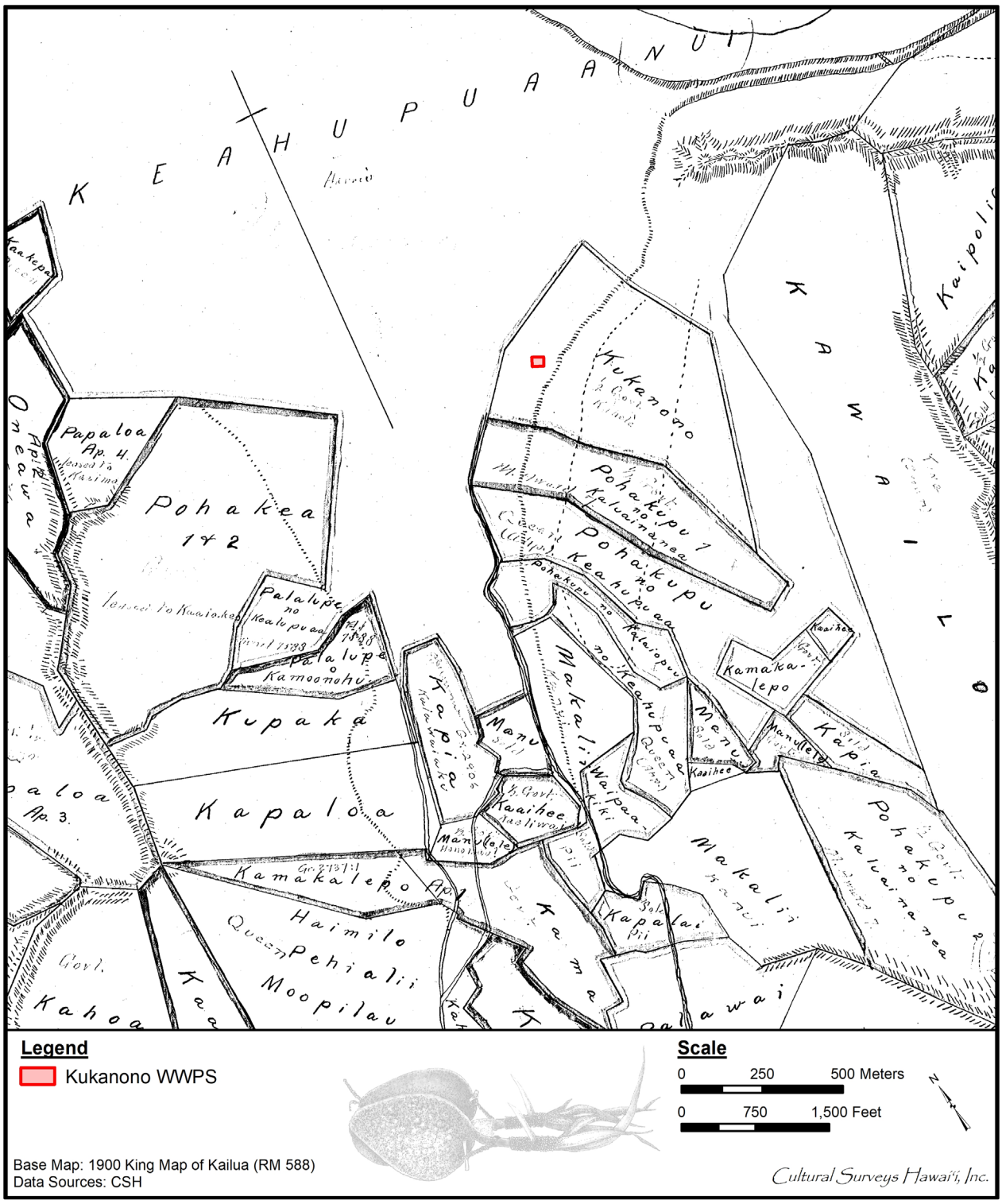


Figure 13. Portion of the 1900 King map of Kailua (RM 588) showing the location of the Kukanono WWPS improvements project area; it seems likely the dashed lines to the east of the project area represent foot paths

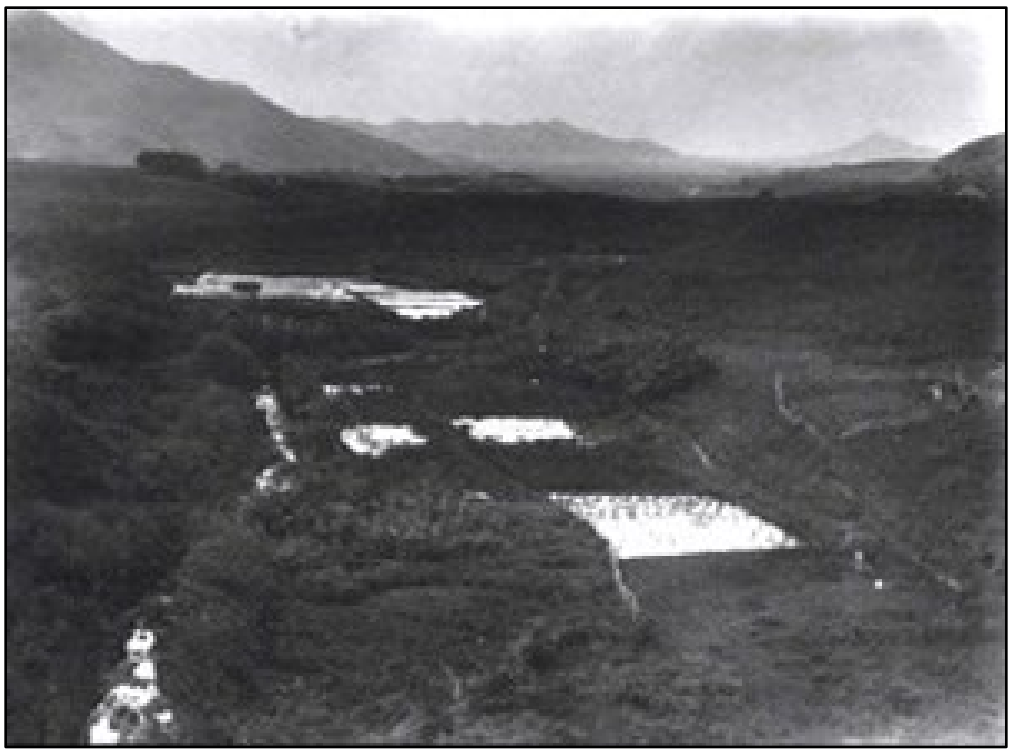


Figure 14. Stream and *lo‘i kalo* system *mauka* of Kawainui in 1885 (Hawaiian Historical Society)

Figure 15. Kailua Fruit Stand in Kūkanono ca. 1930s (Edna Nishikawa Kimura and Some Nishikawa) (Wu 2013)

Figure 16. Portion of a 1906 Donn Hawaii Territory Survey map (RM 2374) showing rice and taro lands (blue striped area) adjacent to the Kukanono WWPS improvements project area

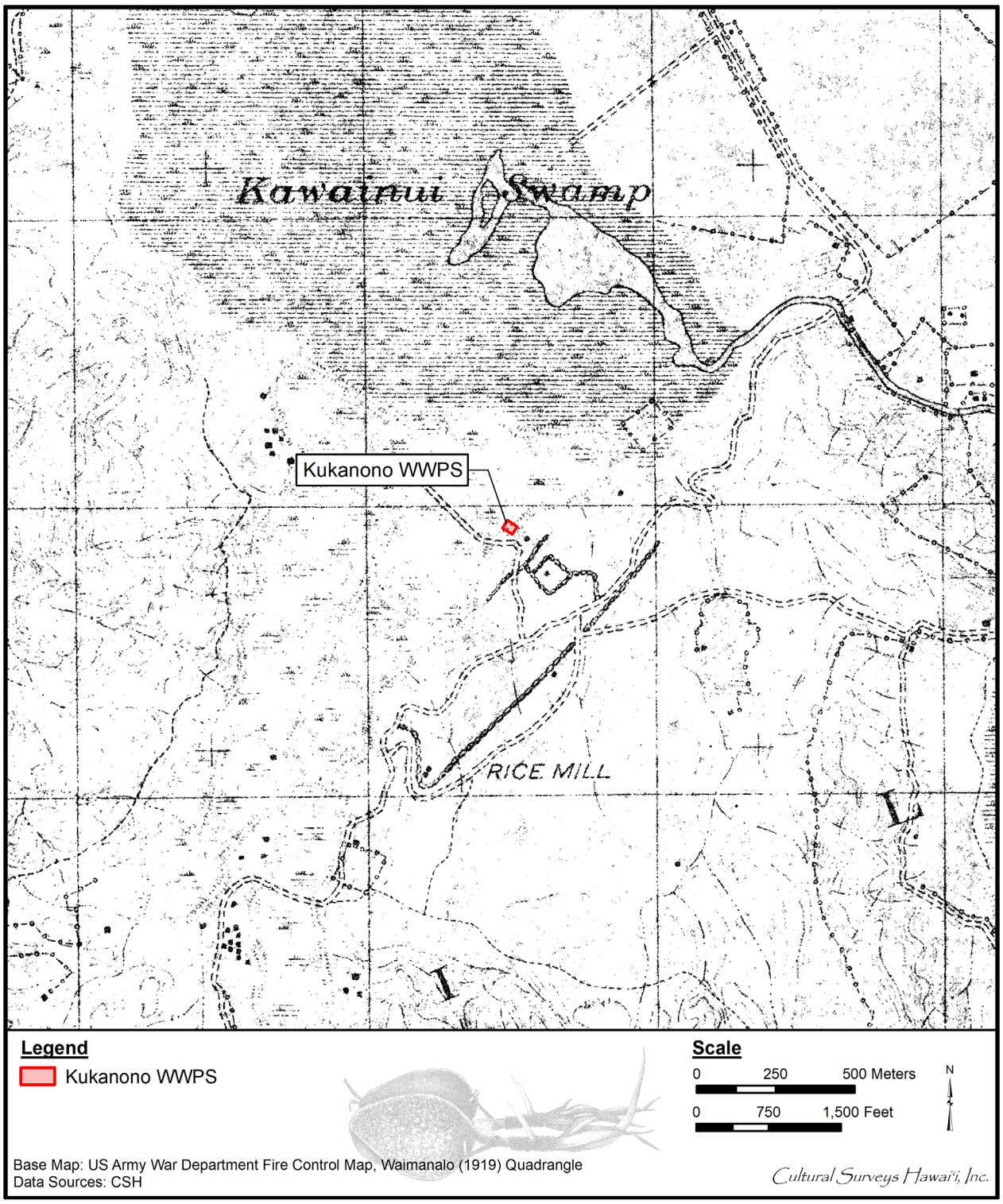


Figure 17. Portion of the 1919 U.S. Army War Department fire control map, Waimanalo quadrangle showing the location of the Kukanono WWPS improvements project area

Figure 18. Nishikawa family with their truck farming equipment in Kūkanono (Wu 2013)

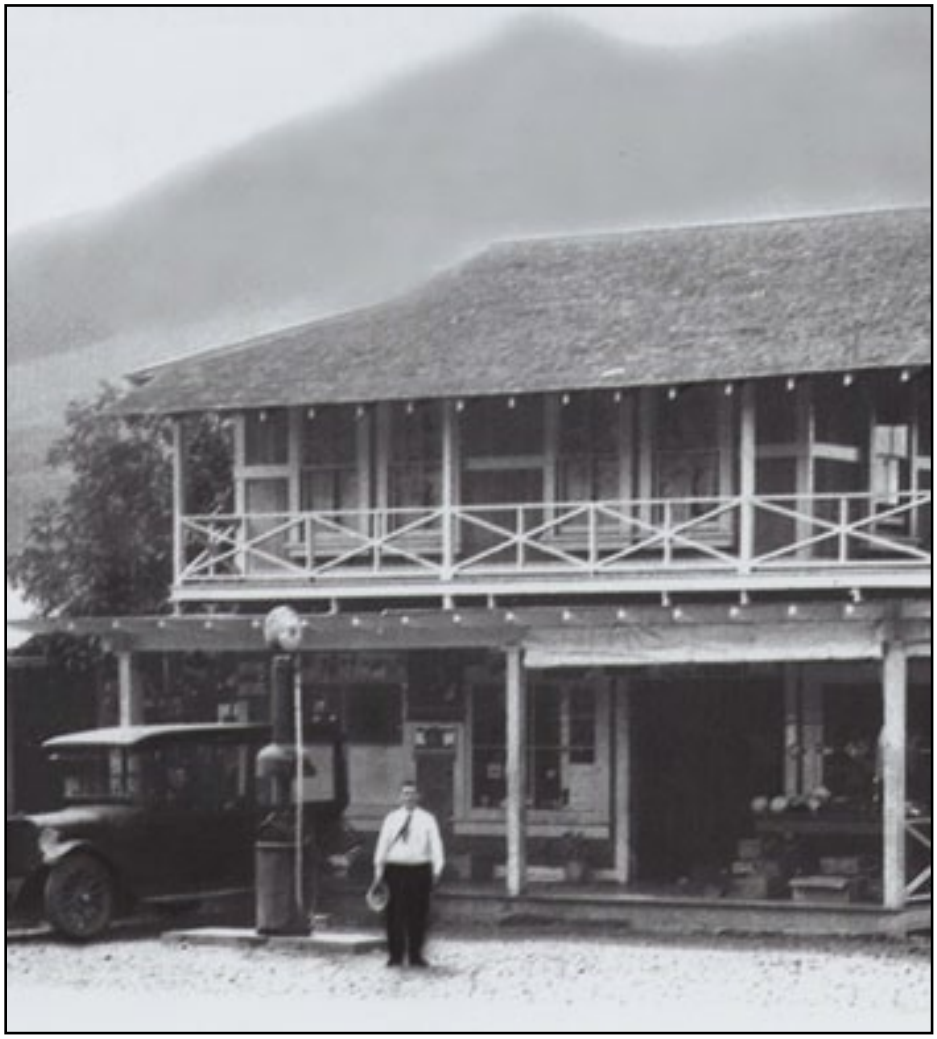


Figure 19. Matsuda family store and residence ca. 1930s (Hawai‘i State Archives)

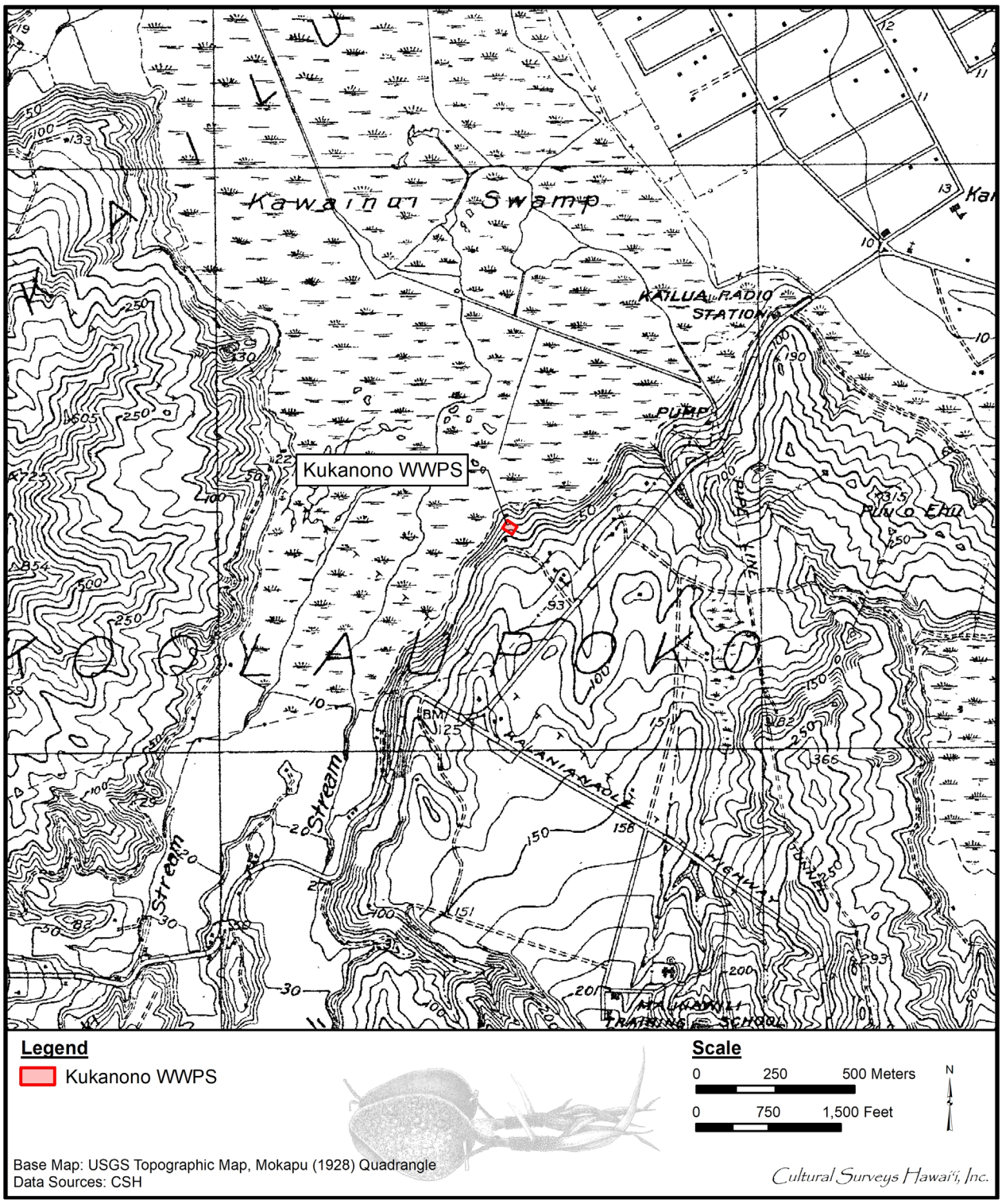


Figure 20. Portion of the 1928 Mokapu USGS topographic quadrangle showing the location of the Kukanono WWPS improvements project area

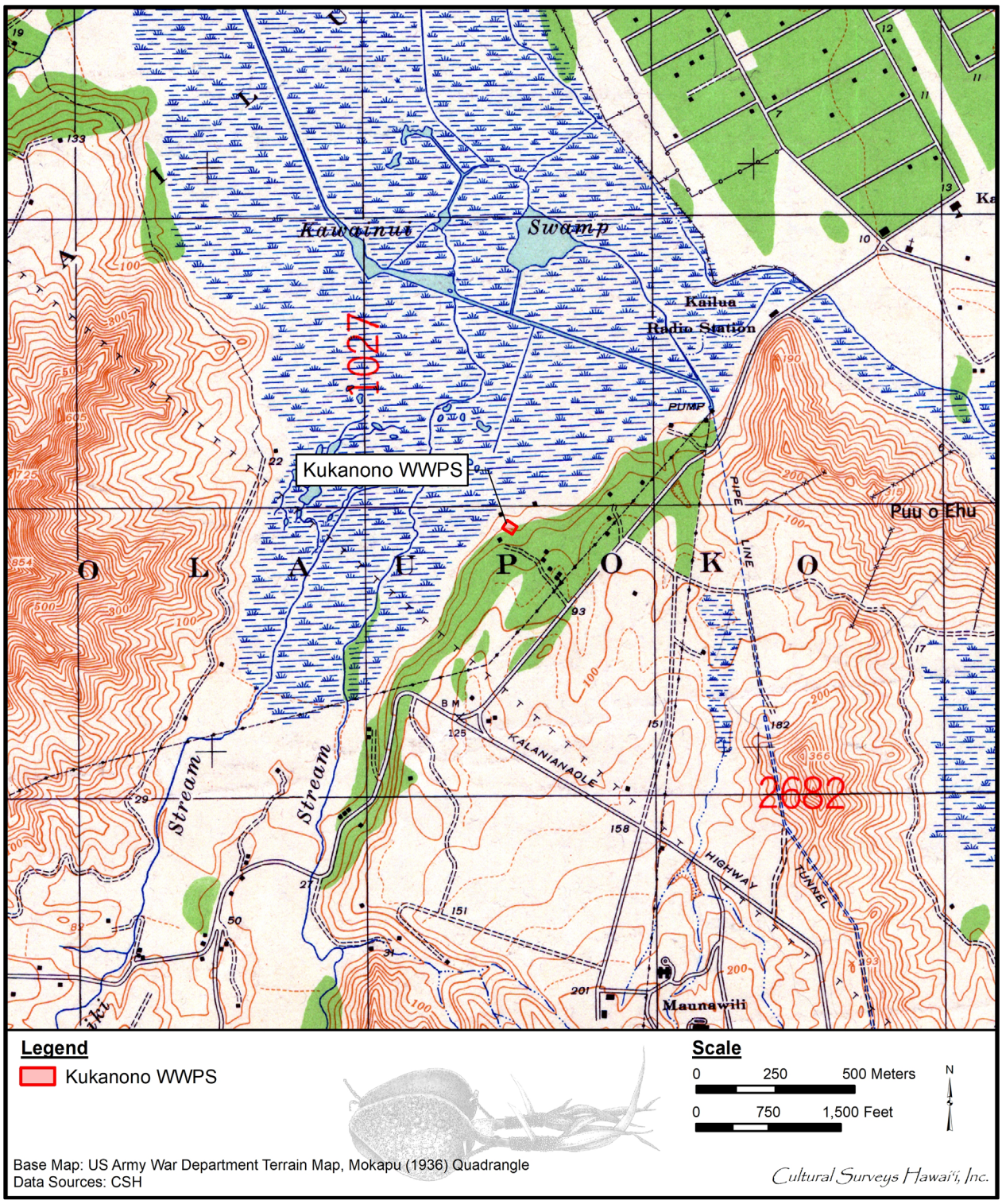


Figure 21. Portion of the 1936 U.S. Army War Department terrain map, Mokapu quadrangle showing the location of the Kukanono WWPS improvements project area

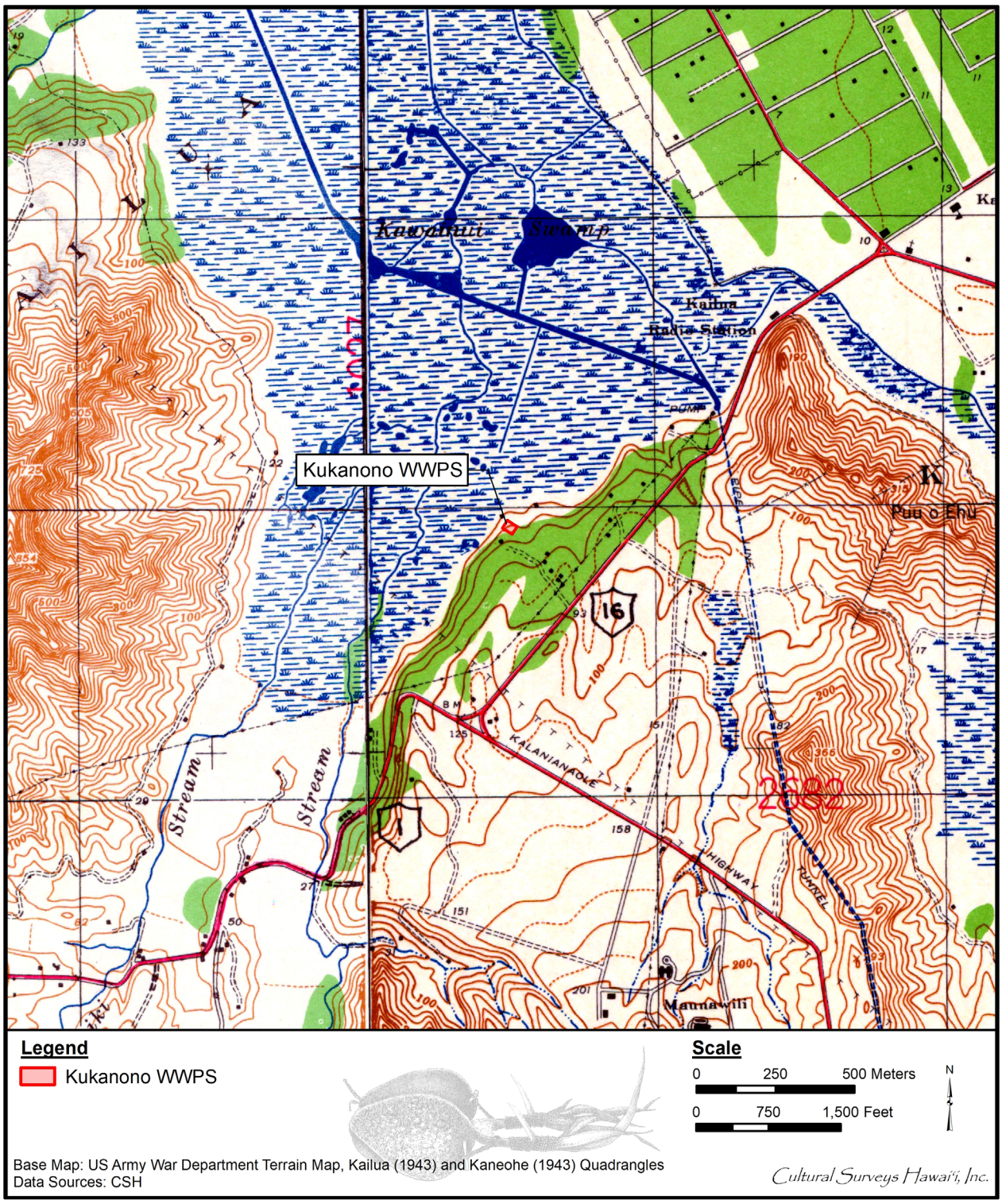


Figure 22. Portion of the 1943 U.S. Army War Department terrain map, Kailua and Kaneohe quadrangles showing the location of the Kukanono WWPS improvements project area

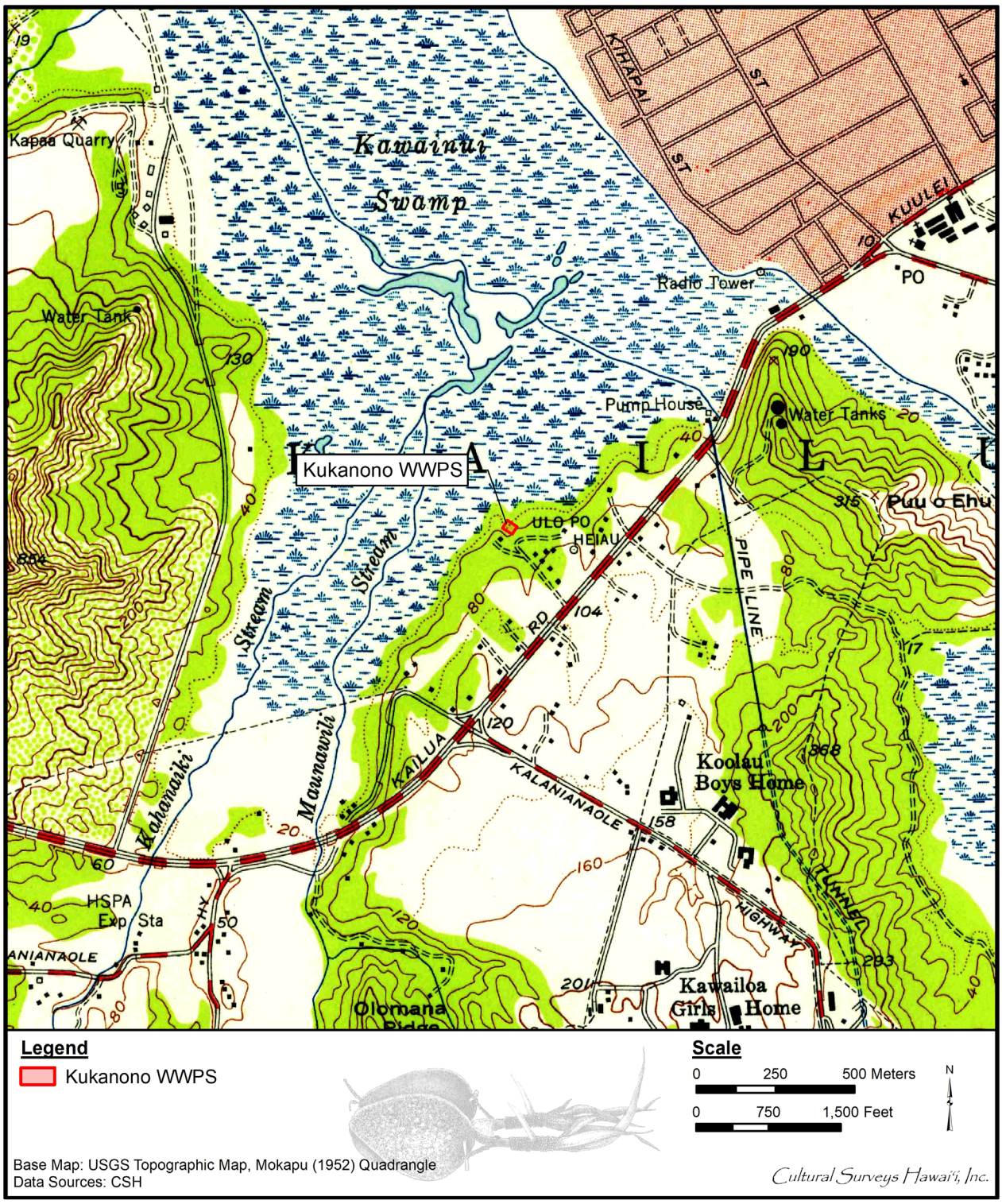


Figure 23. Portion of the 1952 Mokapu USGS topographic quadrangle showing the location of the Kukanono WWPS improvements project area

Figure 24. Portion of a 1959 USGS Kawainui Marsh aerial photograph (UH MAGIS) showing the location of the Kukanono WWPS improvements project area

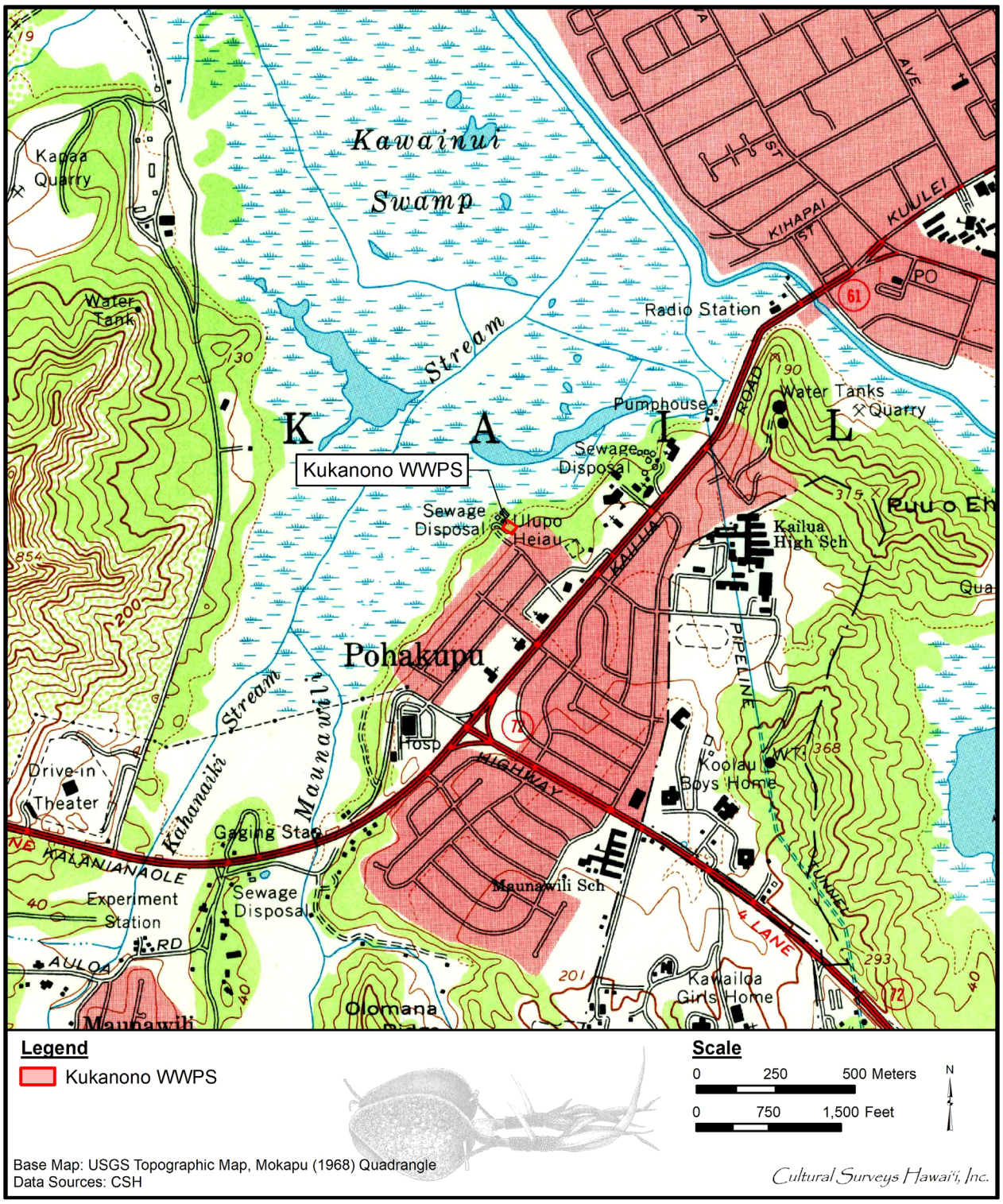


Figure 25. Portion of the 1968 Mokapu USGS topographic quadrangle showing the location of the Kukanono WWPS improvements project area

Figure 26. Portion of a 1968 USGS Kawainui Marsh aerial photograph (UH MAGIS) showing the location of the Kukanono WWPS improvements project area

Figure 27. Portion of a 1978 USGS Orthophotoquad, Mokapu quadrangle showing the location of the Kukanono WWPS improvements project area

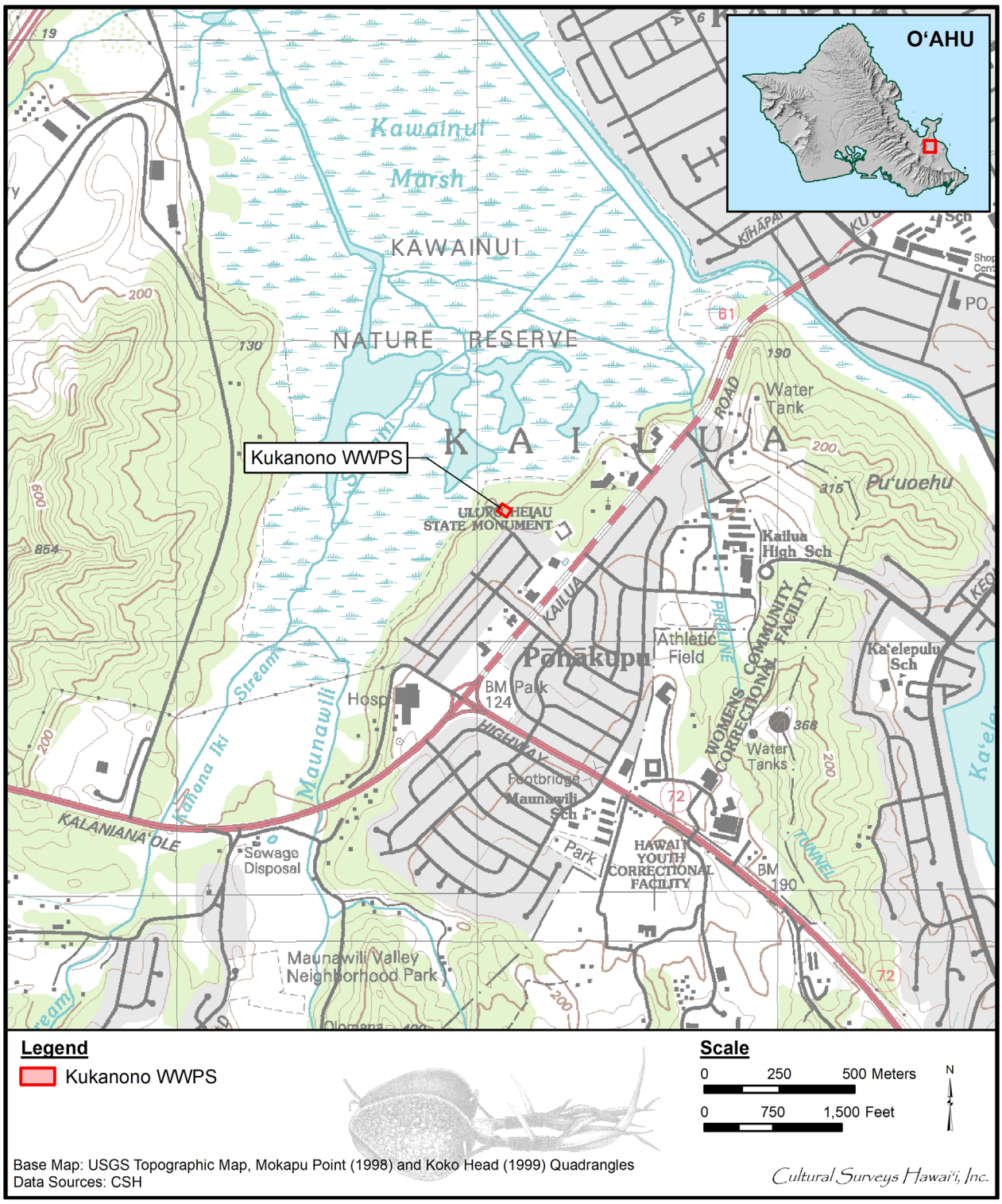


Figure 28. Portion of the 1998 Mokapu Point and 1999 Koko Head USGS 7.5-minute topographic quadrangles showing the location of the Kukanono WWPS improvements project area

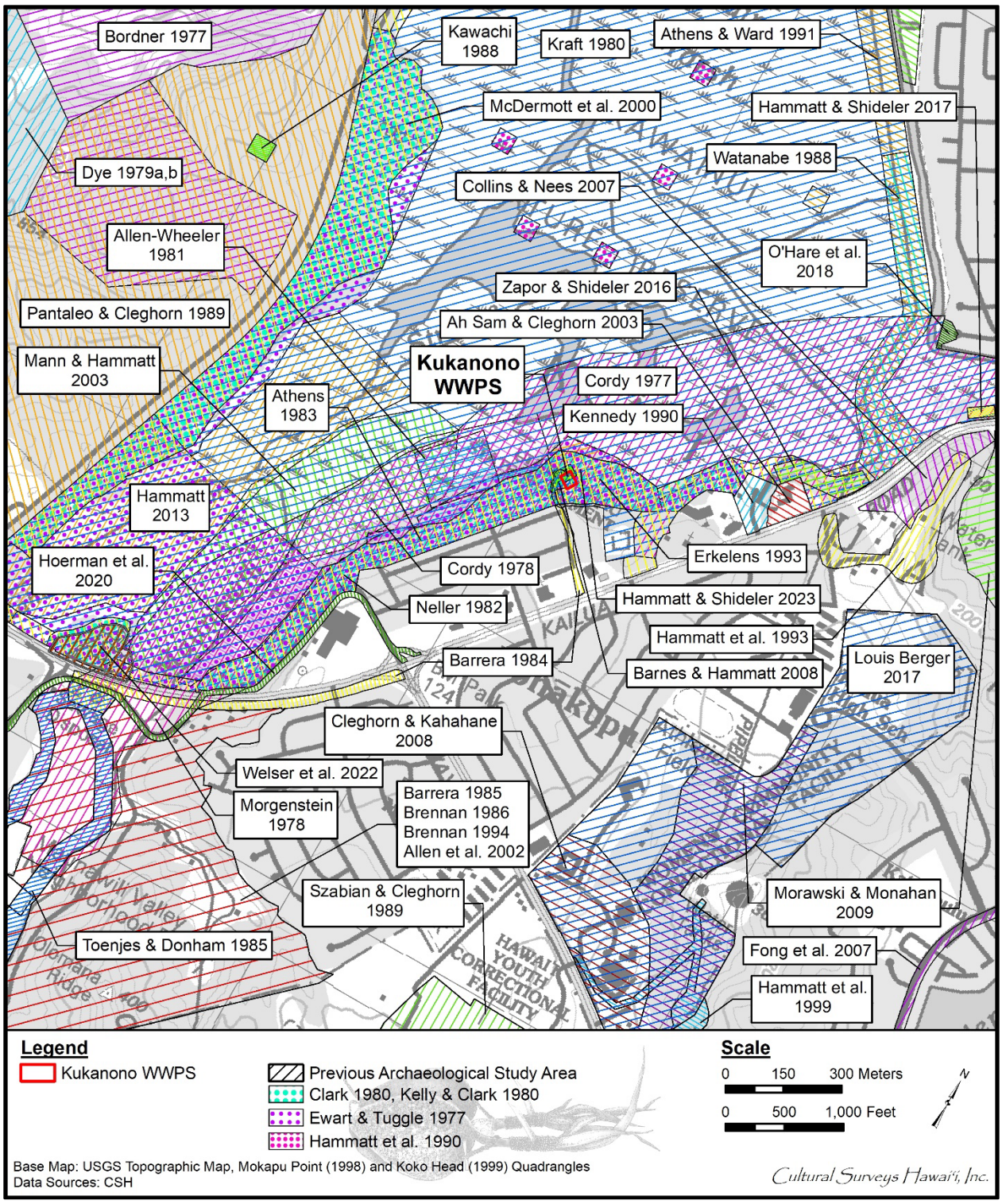


Figure 29. Portion of 1998 Mokapu Point and 1999 Koko Head USGS topographic quadrangles, with previous archaeological studies within approximately 1.0 km of the Kukanono WWPS improvements project area

Table 1. Previous archaeological studies within approximately 1.0 km of the Kukanono WWPS improvements project area

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
McAllister 1933	Archaeological reconnaissance	Island-wide	Described 16 sites within Kailua Ahupua‘a, including Holomakani Heiau (Site 360), Kawainui Pond (Site 370, SIHP # -00370), and Ulupō Heiau (Site 371, SIHP # -00371); in all, he reported eight *heiau* (pre-Christian place of worship) for Kailua
Bordner 1977	Archaeological reconnaissance	Proposed Kapa‘a landfill	No historic properties identified
Cordy 1977a, 1977b	Archaeological inventory survey	S and SE margin of Kawainui Marsh	For alignment of proposed City and County sewer line; documented historic house sites and dryland and wetland agricultural features designated as Site 7 and SIHP # -02029
Ewart and Tuggle 1977	Archaeological investigation	Kawainui Marsh margins, focuses on Kūkanono-Pōhākupu slope	Located and briefly described nine archaeological features or complexes of features; concludes “claims as to the historical significance of the Kawainui area are not well supported by the data at this time”
Cordy 1978	Test excavations report	“Site 7” at Kawainui Marsh	Involved four test excavations in large walled agricultural complex; defined boundary of SIHP # -02029
Morgenstein 1978	Geo-archaeological analysis	Kawainui Marsh	Study of field remnants dating to late pre-Contact/early post-Contact period
Dye 1979a	Archaeological reconnaissance	TMK: (1) 3-2-015:001	Identified and documented Bishop Museum site # 50-0a-G6-31, a combination of terrace remnants and cobble paving (no SIHP # assigned)
Dye 1979b	Archaeological inventory survey	Bishop Site 50-0a-G6-31 nestled in small hanging valley on N side of Ulumawao Ridge, just NE and downslope from summit at Ulumawao Peak	Subsurface excavations within SIHP # -02155; no additional historic properties identified

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Clark 1980; Kelly and Clark 1980	Archaeological inventory survey	Kawainui Marsh	Documented over 178 predominantly agricultural features, many previously located by Cordy (1977); reports AD 350–650 radiocarbon date from context not clearly associated with human activity
Kraft 1980a, 1980b, 1980c	Geo-archaeological study	Kawainui Marsh	Coring results suggested shallow marine embayment similar to present-day Kāne‘ohe Bay ca. 6,000 and 2,800 years BP
Allen-Wheeler 1981	Archaeological excavations	Kawainui Marsh	Tested agricultural features in marsh (SIHP # -02029); presented model for agricultural developments in the area
Neller 1982	Limited subsurface investigations	Kawainui, Kūkanono area	Limited subsurface investigations by volunteers produced artifacts associated with Native Hawaiian farmers living in area in 1850s; large number of artifacts related to more recent occupation including abundance of Japanese wares from 1940s and 1950s
Athens 1983	Archaeological excavations and analysis	Pōhākupu Kūkanono slope,	Archaeological investigation concluded numerous surface features (primarily agricultural mounds and terraces, SIHP # -02022) primarily constructed after AD 1990; calls into question early dates (AD fifth to eighth century) obtained by Clark (1980) in same slope
Barrera 1984	Archaeological reconnaissance	Kailua Rd Maunawili and Kūkanono; interceptor sewer, WWPS, and force main project	Reported general observations on archaeology in vicinity; no historic properties identified
Barrera 1985	Archaeological reconnaissance	Maunawili at proposed golf course location	Notes potential for subsurface archaeological remains
Toenjes and Donham 1985	Archaeological reconnaissance survey	Along stretch of Maunawili Stream between 80-ft and 20-ft elevation	Two sites identified including historic earthen flume known as the “rice ditch” (designated Bernice Pauahi Bishop Museum [BPBM] site 50-Oa-G6-43, SIHP # 15-02003) and possibly prehistoric terrace complex including at least two earthen terraces (designated 50-Oa-G6-42, SIHP # 15-02002)

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Brennan 1986	Archaeological reconnaissance survey	Maunawili Valley (Royal Hawaiian Country Club, Inc. lands)	Located and described 42 sites, some previously identified, including historic features, a *heiau* (possibly McAllister's Site 374) prehistoric irrigated taro fields, habitations, walls, and burials; conclusions regarding site patterns presented
Kawachi 1988	Archaeology field inspection	Kapa‘a Ridge	Field check of Ulumawao area; identified a terrace (SIHP # -03739) which may be Holomakani Heiau (Site 360)
Watanabe 1988	Archaeological monitoring	Kawainui Marsh levee	Noted modest features, not recommended eligible for listing on NRHP or HRHP; no SIHP #s assigned
Pantaleo and Cleghorn 1989	Archaeological reconnaissance	Proposed Windward Park	Five historic properties identified, recommendation of further work: SIHP # -02033 (a stepped terrace), SIHP # -02034 (two rock walls), SIHP # -02035 (two features, a rock wall and mound), SIHP # -02036 (a linear rock mound), SIHP # -02037 (an agricultural complex consisting of five features)
Szabian and Cleghorn 1989	Archaeological reconnaissance survey	Olomana, Maunawili (Women's Community Correctional Complex)	No significant finds other than historic buildings
Hammatt et al. 1990	Study of sediment coring	Kawainui Marsh	Pollen recovery in 30 samples ranging from around 4,000 BC showed predominance of mixed mesic forest dominated by *Loulu* palm with no major changes until around AD 1400 when forest species declined rapidly in favor of grasses and sedge; results of research suggested possibility of extensive prehistoric *Loulu* palm forests on margins of Kawainui and elsewhere has major implications for Hawaiian prehistory; dominance of lowland *Lou1u* palm, fruits of some species of which are edible, may have supplied large, easily available food supply to early Hawaiians; humans, pigs, and rats may have had a hand in dramatic decrease around AD 1400

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Kennedy 1990	Archaeological reconnaissance survey	Pōhākapu Subdivision included then-abandoned 1958 Pohakupu Sewage Treatment Plant Facility	Noted presence of several well-formed basaltic walls, terraces and platforms but concluded they were built as part of 1958 sewage treatment plant; no historic properties identified
Athens and Ward 1991	Paleo-environmental and archaeological investigations	Kawainui Marsh	No historic properties identified within marsh
Quebral et al. 1992	Archaeological inventory survey	Near Ka‘elepulu Stream	Four historic properties identified including lithic scatter and habitation: SIHP #s -04428 (habitation platforms), -04429 (lithic scatter), -04430 (lithic scatter), and -04431 (enclosures)
Erkelens 1993	Master’s thesis – archaeological investigations	Kūkanono Slope, Kawainui Marsh	No historic properties identified; consisted of surface survey and excavation of 29 test pits, collection and analysis of artifacts
Hammatt et al. 1993	Archaeological inventory survey	Proposed Kailua 272 Reservoir	No historic properties identified; oral history research yielded information about traditional Hawaiian significance of Pu‘u o ‘Ehu peak
Brennan 1994	Archaeological monitoring (letter report)	Royal Hawaiian Country Club, Phase 1 golf course, Maunawili	Provides site documentation, and significance assessments for eight sites: • SIHP # -02034, a pond field complex with fire pit and refuse dump • SIHP # -02466, a Hawaiian cemetery • SIHP # 11-02467, 15-02468, and 15-02469, three habitation sites, • SIHP # 15-02470, fire pits and fire/refuse pits, • SIHP # 15-02471, slope retainers and fire pits, • SIHP # 15-02491, a pond field complex, and a military feature

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Hammatt et al. 1999	Archaeological inventory survey	Access road on ridge line that separates Women's Correctional Facility from Ka‘elepulu Pond	No archaeological sites observed; historic document research indicated portion of SIHP # 15-04042, a subsurface water tunnel constructed in 1923 as part of Waimanalo Sugar Co.'s irrigation system passes through property; no sign of this subsurface feature observed
McDermott et al. 2000	Archaeological field inspection and literature review	Kawainui Marsh; proposed circle Kawainui Trail project	Highlighted possibilities for interpretive trail through marsh area; noted three previously identified historic properties: SIHP # -02027, terraces and stacked basalt features, SIHP # -03958 complex of wall and alignments, and SIHP # 15-04042, Waimanalo Irrigation System; proposed trails also in vicinity of Ulupō Heiau; no newly identified historic properties
Allen et al. 2002	Summary study: archaeological inventory survey, data recovery, and interpretive excavations (at preserved sites) conducted between 1986 and 1989	202.35-ha property in middle Maunawili Valley	Described, mapped, and investigated 29 sites containing more than 607 surface features/feature clusters including a walled *heiau*; human bones; house sites; field shelters; work areas, some with grinding stones; extensive pre-Contact agricultural complexes of rainfed, irrigated, and intermediate types, one with a petroglyph boulder; a post-Contact charcoal kiln; E.H. Boyd's and W.G. Irwin's estates; Irwin's coffee mill; a historic road network; ranching walls and enclosures; and sugar plantation-related features including ‘Ainoni Spring and Ditch; some 3,664 artifacts of pre-Contact types and 1,166 post-Contact artifacts addressed; radiocarbon dating indicated occupation since ca. AD 1000
Ah Sam and Cleghorn 2003	Archaeological literature review and field inspection (recorded as an archaeological assessment)	St. Johns Church	No historic properties identified

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Mann and Hammatt 2003	Archaeological inventory survey	Kawainui Marsh	Project within SIHP # -02029, Kawainui Marsh archaeological cultural-historical complex; completed two test excavations revealing buried A horizon and possible natural riverbed deposit; no additional historic properties identified
Collins and Nees 2007	Archaeological inventory survey (recorded as an archaeological assessment)	East of Kailua Rd on west side of Pu‘u o Ehu Ridge	No historic properties identified
Fong et al. 2007	Archaeological monitoring	Kainehe St, Hāmākua Dr, and Keolu Dr	No historic properties identified
Barnes and Hammatt 2008	Archaeological monitoring	180 ft of Kukanono WWPS force main piping extending southwest from pump station	No historic properties identified
Cleghorn and Kahahane 2008	Archaeological literature review	Women’s Community Correctional Center	No historic properties identified
Morawski and Monahan 2009	Archaeological inventory survey	25 acres, two alternative road corridors connecting Kailua High School campus with Kalaniana‘ole Hwy	Two archaeological sites newly identified: SIHP # -06816 a lithic scatter and SIHP # -06817, a historic water-flow control structure, once part of the Historic Waimanalo Ditch System (SIHP # 15-04042)

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Hammatt 2013	Archaeological reconnaissance with subsurface testing	Kawainui Marsh Wetland Restoration and Habitat Enhancement	Identified additional components of SIHP # -02029, Kawainui Marsh archaeological cultural-historical complex, including a grinding stone and early historic habitation remnants; and SIHP # -07199, historic road remnant; core analysis documented native plants in marshy deposits dating to AD 420 to 580, overlain by modern marshy deposits dominated by *Saccarum* pollen from sugarcane fields in area
Zapor and Shideler 2016	Archaeological literature review and field inspection	Kawainui Marsh	Documented previously identified SIHP # 15-04042 (Waimanalo Irrigation System Pump House), and identified nine potential historic properties
Hammatt and Shideler 2017	Archaeological literature review and field inspection	Iwi Kūpuna reinterment facility, 840 Kailua Rd	No historic properties identified
Louis Berger 2017	Reconnaissance survey	Women’s Community Correction Center facility located north of Kalaniana‘ole Hwy and south of Kailua High School	Noting Hammatt et al. (1999) and Morawski and Monahan (2009) studies, concluded roughly half of project area had been previously surveyed; noted prehistoric lithic scatter (SIHP # -06816) and remnants of historic-period irrigation system (SIHP # 15-04042); four terraces predating 1968, site of ruined stable structures, and small concrete foundation noted
O’Hare et al. 2018	Archaeological inventory survey	Kihapai Place Apartment project	One historic property identified: SIHP # -07938, human skeletal remains
Hoerman et al. 2020	Archaeological literature review and field inspection	Portions of ‘Auloa Rd, Loop Rd, Kalaniana‘ole Hwy, and Ulukahiki St	Five potential archaeological and architectural sites identified within (CSH 1 and CSH 2, both concrete bridges) or immediately adjacent to Hoerman et al. 2020 project area (CSH 3, a concrete culvert; CSH 4, a concrete culvert; CSH 5, a concrete structure) (not shown in Figure 30)

Reference	Type of Study	Location	Results (SIHP # 50-80-11, unless noted)
Welser et al. 2022	Archaeological inventory survey	Mokulana project area south Kawainui Marsh along Kalaniana‘ole Hwy	Identified SIHP # 15-09161, historic-era structural remnants including seven designated features
Hammatt and Shideler 2023	Archaeological literature review and field inspection	Kukanono Wastewater Pump Station (improvements project)	Addressed several ground-disturbing improvements; notes while no historic properties appear to have been designated in present project area per se, a very large number of archaeological features designated in the immediate vicinity of the Station in prior archaeological studies

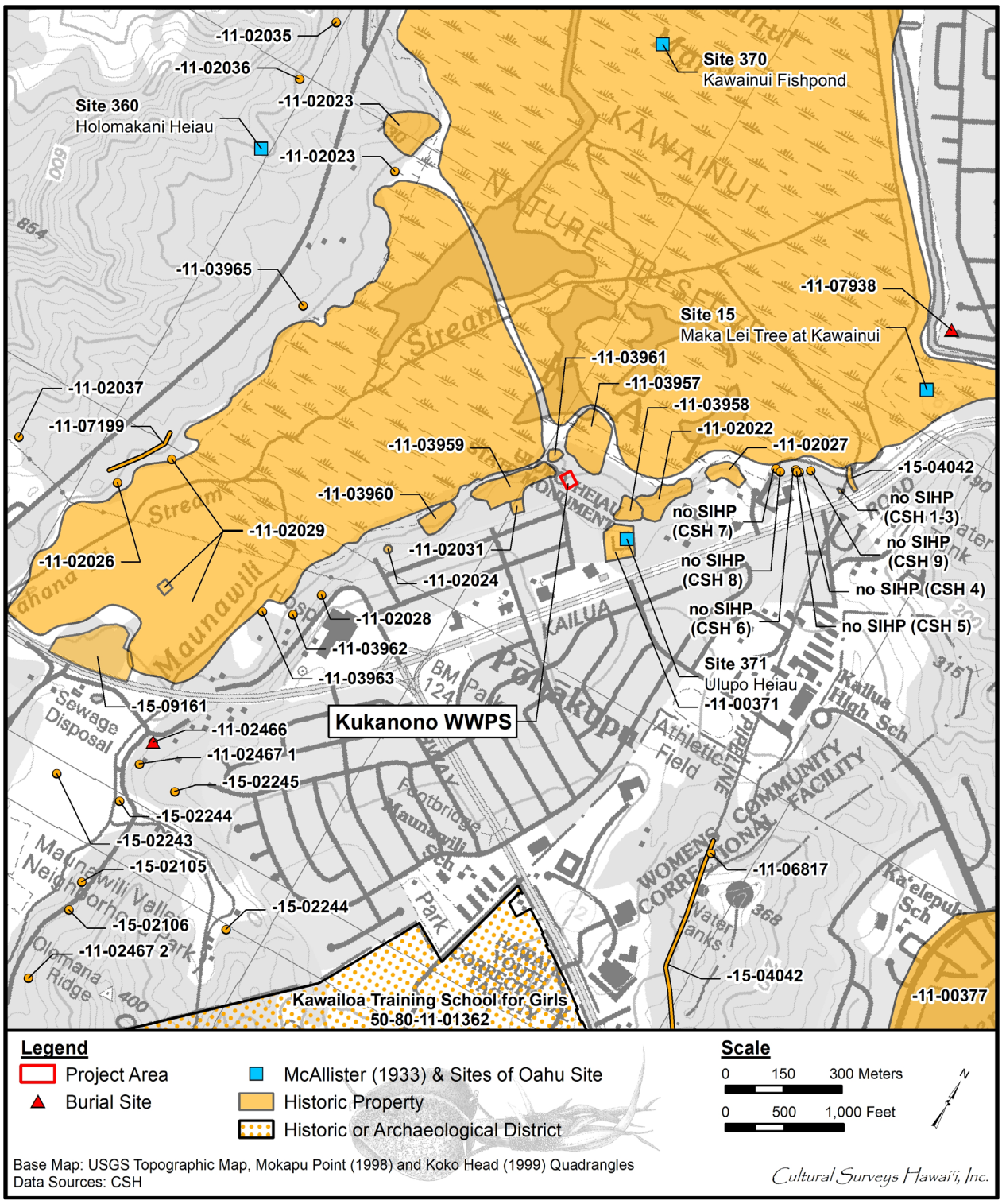


Figure 30. Portion of the 1998 Mokapu Point and 1999 Koko Head topographic quadrangles, showing historic properties within approximately 1.0 km of the Kukanono WWPS improvements project area

Table 2. Previously identified historic properties within approximately 1.0 km of the Kukanono WWPS improvements project area

SIHP #	Description	Source	Comments
Bishop Museum "Site 15"	Maka-Lei Tree	Sterling and Summers 1978:231	"[…] a famous mythological tree which had the power of attracting fish" (Sterling and Summers 1978:231) associated with Kawainui
McAllister Site 360	Holomakani Heiau	McAllister 1933:182	See SIHP # 50-80-11-03739
50-80-11-00370 (McAllister Site 370)	Kawanui Fishpond	McAllister 1933:186; Wall Kailua map (RM 2049)	"Kawainui pond, once a large inland fishpond"; pre- and post-Contact
50-80-11-00371 (McAllister Site 371)	Ulupō Heiau	McAllister 1933; Cordy 1977	"Its earlier importance and size is indicated by the large open terrace 140 feet in width, and 30 feet high. […]"
50-80-11-00377	Kaelepulu fishpond	McAllister 1933:190	Formerly a fresh-water pond of much importance; pre- and post-Contact
50-80-11-01362	Kawailoa Training School for Girls	NRHP Form 1984	Built in 1929, Kawailoa Training School for Girls at Maunawili includes five major buildings
50-80-11-02022	Terrace complex (Kawainui Terraces)	Clark 1980; Cordy 1978; Ewart and Tuggle 1977	Series of terraces from marsh edge upslope, a long retaining wall upslope, remnants of a historic house, a spring
50-80-11-02023	Agricultural complex	Clark 1980	12 features including retaining walls, L-shaped alignments of rocks, terraces, a roadbed, a level terrace or platform, surface scatter, two retaining walls; includes Nā Pōhaku o Hauwahine
50-80-11-02024	Habitation/agricultural complex (pre- and post-Contact) (Makali‘i Slope Cluster 2024, TMK: [1] 4-2-013:010)	Ewart and Tomonari-Tuggle 1977; Clark 1980; McDermott et al. 2000	Mounds, wall remnants, a terrace

SIHP #	Description	Source	Comments
50-80-11-02026	Terrace	Clark 1980; McDermott et al. 2000	Kapaloa Agricultural Terrace; large agricultural terrace; 67 m long along marsh edge in NE/SW direction, 14 m SE/NW; walls single course high; rusting crane
50-80-11-02027	Habitation complex	Clark 1980	Stone wall rectangular enclosure, linear pile of rocks, terrace, surface artifacts
50-80-11-02028	Walls	Clark 1980; McDermott et al. 2000	Two walls that meet at a right angle
50-80-11-02029	Kawainui Marsh Archaeological-Cultural-Historical Complex	Cordy 1997, 1978; Clark 1980; Allen-Wheeler 1981; McDermott et al. 2000; Mann and Hammatt 2003; Hammatt 2013	Complex of agricultural fields; lithic debitage, subsurface volcanic glass flakes, and basalt adze; mound of river cobbles may represent local adaptation to water control; grinding stone and habitation remnants
50-80-11-02031	Habitation complex	Clark 1980; Athens 1983	Traditional Hawaiian occupation and tool manufacturing evident as a dense distribution of basalt flakes and very large grinding stone
50-80-11-02035	Historical wall	Pantaleo and Cleghorn 1989	—
50-80-11-02036	Historical rock mound/wall remnants	Pantaleo and Cleghorn 1989	—
50-80-11-02037	Traditional agricultural terrace complex	Pantaleo and Cleghorn 1989	—
50-80-11-02466	Oral historically documented cemetery	Brennan 1994	—
50-80-11-02467	Habitation areas	Brennan 1994	11 habitation areas with 29 features
50-80-11-03739 (McAllister Site 360)	Holomakani Heiau	McAllister 1933	*Heiau* on Ulumawao Ridge; believed to have been built by high chief ‘Olopana in twelfth century

SIHP #	Description	Source	Comments
50-80-11-03957	Agricultural complex	Clark 1980; Cordy 1978; Ewart and Tuggle 1977	Kawainui Agricultural Complex; nine dryland agricultural terraces, 20 mounds, small C-shaped structures, walls, a walled depression, remains of a historic structure; surface artifact
50-80-11-03958	Terrace	Clark 1980; Cordy 1978	—
50-80-11-03959	Agricultural and habitation complex	Clark 1980; Cordy 1978; Ewart and Tuggle 1977	Miomio Agricultural and Habitation Complex; 26 mounds, 19 dryland agricultural terraces, linear walls, a historic house foundation, traditional basalt artifacts, large boulder grindstone; historical artifacts
50-80-11-03960	Agricultural complex	Clark 1980; Cordy 1978	Pōhākupu Agricultural Cluster; large *lo‘i*, a stone and earthen platform, a stone-lined channel, stone mounds
50-80-11-03961	Agricultural features	Clark 1980; Cordy 1978	Kūkanono Cluster; stone mounds, a stone-edged canal, terraces, retaining walls
50-80-11-03962	Three historical buildings	Clark 1980; Ewart and Tuggle 1977	—
50-80-11-03963	Earthen mounds	Clark 1980; Ewart and Tuggle 1977	Makali‘i Mounds
50-80-11-03965	Terrace	Ewart and Tuggle 1977	Pōhākea Terrace
50-80-11-06817	Historic water-flow control structure	Morawski and Monahan 2009	Now completely abandoned, but once part of the Historic Waimanalo Ditch System (SIHP # 50-80-15-04042)
50-80-11-07199	Unpaved historical road	Hammatt et al. 2013	Extends roughly parallel to western edge of Kawainui Marsh
50-80-11-07938	Human burial	O’Hare et al. 2018	Previously disturbed, fragmented human remains
50-80-15-02105	Agricultural and habitation complex	Allen et al. 2002	Terraces, alignments
50-80-15-02106	Terraces	Allen et al. 2002	—

SIHP #	Description	Source	Comments
50-80-15-02243	Agricultural complex	Allen et al. 2002	Terraces
50-80-15-02244	Agricultural complex	Allen et al. 2002	Features included alignment, concrete well, terrace, clearing mounds
50-80-15-02245	Agricultural complex	Allen et al. 2002	Features included dryland agricultural plots, boundary marker, clearing mounds, terrace, road, and garden plots
50-80-15-04042	Pump house foundation	Bartholomew and Associates 1959; McDermott et al. 2000	Post-Contact (Waimanalo irrigation system)
50-80-15-09161	Structural remnants	Welser et al. 2022	Includes 7 designated features consisting of concrete structures and slabs (one with a “1939” date)
No SIHP assigned (CSH 1–3 and CSH 4–9)	Pre-Contact traditional to 20th century habitation features	Zapor and Shideler 2016	CSH 1–3: remnants of ca. early 20th century Japanese habitation: • Basalt stone walkway • Bathroom remnants • Concrete slab CSH 4: historical holding tank CSH 5: concrete foundation CSH 6: Basalt stone fragment with single petroglyph CSH 7 and 8: two traditional basalt grindstones CSH 9: informal stairway and path likely associated with Japanese garden

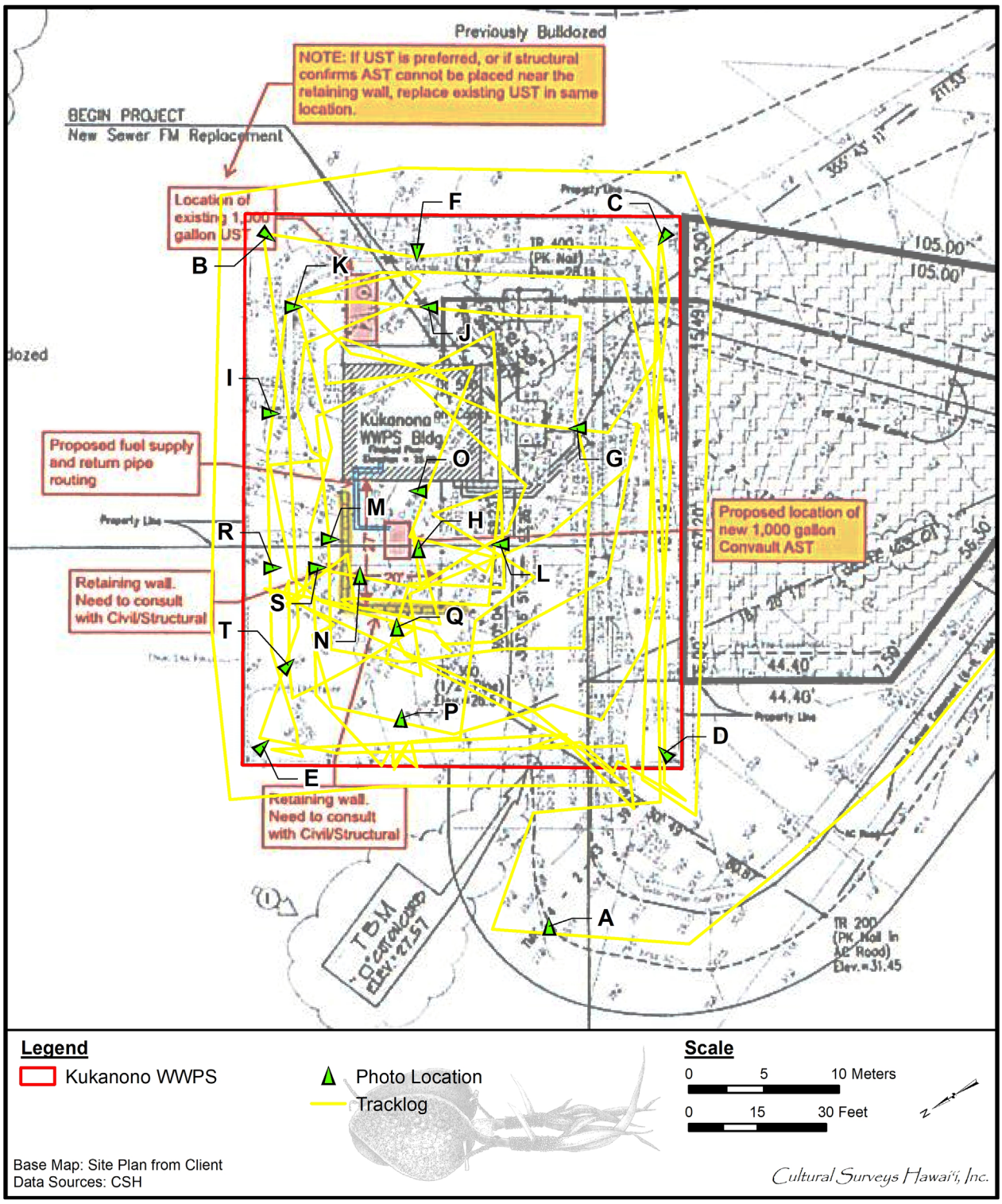


Figure 31. Archaeologist’s track log with a key to the following photographs showing their general location and orientation on a site plan courtesy of Okahara and Associates, Inc.

Figure 32. Photo A: View of the Kukanono WWPS facility from the entry gate, view to southeast

Figure 33. Photo B: View of the Kukanono WWPS facility from the northeast corner, view to southwest

Figure 34. Photo C: View of the Kukanono WWPS facility from the southeast corner, view to northwest

Figure 35. Photo D: View of the Kukanono WWPS facility from the west corner, view to east

Figure 36. Photo E: View of the Kukanono WWPS facility from the northwest corner, view to southeast

Figure 37. Photo F: View of the front (entrance on southeast side) to the Kukanono WWPS Building, view to northwest

Figure 38. Photo G: View of the southwest side to the Kukanono WWPS Building, view to northeast

Figure 39. Photo H: View of the northwest side to the Kukanono WWPS Building, view to southeast

Figure 40. Photo I: View of the northeast side to the Kukanono WWPS Building, view to southwest

Figure 41. Photo J: View of the location of the existing 1,000-gallon UST (under concrete slab) at the northeast corner of the Kukanono WWPS Building, view to northeast

Figure 42. Photo K: View of the location of the existing 1,000-gallon UST (under concrete slab) at the northeast corner of the Kukanono WWPS Building, view to southwest

Figure 43. Photo L: View of the proposed location of a new 1,000-gallon UST (northwest of the Kukanono WWPS Building), view to northeast

Figure 44. Photo M: View of the proposed location of a new 1,000-gallon UST (northwest of the Kukanono WWPS Building), view to southwest

Figure 45. Photo N: View of proposed fuel supply and return pipe routing at northwest corner of the Kukanono WWPS Building, view to southeast

Figure 46. Photo O: View of proposed fuel supply and return pipe routing at northwest corner of the Kukanono WWPS Building, view to northeast

Figure 47. Photo P: View of northwest retaining wall at the Kukanono WWPS facility under evaluation for repair/replacement, view to southeast

Figure 48. Photo Q: Close-up of northwest retaining wall at the Kukanono WWPS facility under evaluation for repair/replacement showing cracking (to right of tape measure), view to southeast

Figure 49: Photo R: View of northeast retaining wall at the Kukanono WWPS facility under evaluation for repair/replacement, view to southwest

Figure 50. Photo S: Close-up of northeast retaining wall at the Kukanono WWPS facility under evaluation for repair/replacement showing cracking (to left of tape measure), view to southwest

Figure 51. Photo T: View of the corner of the retaining wall at the Kukanono WWPS facility under evaluation for repair/replacement, view to south

References Cited

Ah Sam, Jessica A. and Paul L. Cleghorn
2003 *Archaeological Assessment for St. John‘s Church Ko‘olaupoko, Kailua, Ahupua‘a, (TMK: 4-2-103:028).* Pacific Legacy, Inc., Kailua, Hawai‘i.

Allen, Jane, Mary F. Riford, Paul Brennan, David Chaffee, Linda Scott Cummings, Carol Kawachi, Lori Liu, and Gail Murakami
2002 *Kula and Kahawai: Geoarchaeological and Historical Investigations in Middle Maunawili Valley, Kailua, Ko‘olau Poko, O‘ahu*. AMEC Earth and Environmental, Honolulu.

Allen-Wheeler, Jane
1981 *Archaeological Excavations in Kawai Nui Marsh, Island of O‘ahu*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Athens, J. Stephen
1983 *Archaeological Excavations on the Pōhākupu-Kūkānono Slope, Kawainui Marsh O‘ahu*. MS 033183, Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Athens, J. Stephen and Jerome V. Ward
1991 *Paleoenvironmental and Archaeological Investigations, Kawai Nui Marsh Flood Control Projects, O‘ahu Island, Hawai‘i*. International Archaeological Research Institute, Inc., Honolulu.

Barnes, Shawn and Hallett H. Hammatt
2008 *Archaeological Monitoring Report for the Kūkanono Wastewater Pump Station Force Main Partial Replacement Project, Kailua Ahupua‘a, Ko‘olaupoko District, Island of O‘ahu Tax Map Key (TMK): (1) 4-02-013: 038 (por.) & 039 (por.).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Barrera, William
1984 *Archaeological Survey for the Kailua Road Interceptor Sewer, Maunawili Wastewater Pumping Station and Force Main, and Kukanono Wastewater Pump Station And Force Main, Kailua, Oahu*. Chiniago, Inc., Honolulu.

1985 *Maunawili, O‘ahu: Archaeological Reconnaissance at Proposed Golf Course Location.* Chiniago, Inc., Honolulu.

Bartholomew and Associates
1959 General Plan for Waimanalo Valley, Island of Oahu, Territory of Hawaii. Harland, Bartholomew and Associates, Honolulu.

Bishop
1888 Map of Kailua, Registered Map 1434. Land Survey Division, State of Hawai‘i Department of Accounting and General Services, Honolulu. Available online at http://dags.hawaii.gov/survey/search.php

Bordner, Richard M.
1977 *Archaeological Reconnaissance of the Proposed Kapa‘a Landfill Site Ko‘olau Poko, O‘ahu Island*. Archaeological Research Center Hawaii, Inc., Honolulu.

Bowser, George

1880 *The Hawaiian Kingdom Statistical and Commercial Directory and Tourist Guide, 1880-1881.* George Bowser & Company, Honolulu and San Francisco.

Brennan, Paul, W.

1986 *Archaeological Reconnaissance of Maunawili Valley for Royal Hawaiian Country Club, Inc.* Community Planning, Inc., Honolulu.

1994 *Site Documentation and Significance in Maunawili, Kailua, Ko‘olaupoko, O‘ahu*. Bernice Pauahi Bishop Museum, Honolulu.

Brennan, Paul W. and Diane C. Drigot

2009 From Pastures to Suburbs. In *Kailua–in the Wisps of the Malanai Breeze (Kailua i ke oho o ka Malanai)*. Kailua Historical Society, Kailua, Hawai‘i.

Clark, Jeffrey T.

1980 *Phase I Archaeological Survey of Castle Estate Lands Around the Kawai Nui Marsh, Kailua, O‘ahu.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Cleghorn, Paul L. and Elizabeth L. Kahahane

2008 *Archaeological Assessment of the Installation of Electronic Detection Devices at the Women's Community Correctional Center, Kailua, Ko‘olaupoko, O‘ahu (TMK (1) 4-2-06:02).* Pacific Legacy, Inc., Kailua, Hawai‘i.

Collins, Sara and Richard C. Nees

2007 *Final An Archaeological Assessment Report for the Proposed Kailua Road Permanent Rockfall and Landslide Mitigation Project Kailua, Ko‘olaupoko, island of O‘ahu. TMKs: (1) 4-2-003:014 & 017.* Pacific Consulting Services, Inc., Kailua, Hawai‘i.

Cordy, Ross

1977a *A Cultural Resources Study for the City and County of Honolulu’s Permit Request: Kawainui Marsh Sewerline (Oahu), Archaeological Reconnaissance and Pre-1850 Literature Search*. U.S. Army Corps of Engineers, Pacific Ocean Division, Honolulu.

1977b *Supplement 1: The Cultural Resources Study of the Proposed Kawainui Marsh Sewerline (City and County of Honolulu Permit Application–Dept. Army Permit 1317-8); Additional Archaeological Reconnaissance Data & New Recommendations*. U.S. Corps of Engineers, Pacific Division, Honolulu.

1978 *Test Excavations: Site 7, Kawai Nui Marsh, Kailua Ahupua‘a, O‘ahu and Determination of Effect*. U.S. Army Corps of Engineers, Honolulu.

2002 *The Rise and Fall of the O‘ahu Kingdom.* Mutual Publishing, Honolulu.

Coulter, John Wesley and Chee Kwon Chun

1937 *Chinese Rice Farmers in Hawaii.* UH Research Publications Number 16. University of Hawai‘i, Honolulu.

Donn, John M.

1906 Hawaii Territory map of Oahu. Registered Map 2374. Hawai‘i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at http://dags.hawaii.gov/survey/search.php

Dorrance, William H. and Francis S. Morgan

2000 *The 165-Year Story of Sugar in Hawai‘i.* Mutual Publishing, Honolulu.

Drigot, Diane C.

1982 *Ho‘ona‘auao No Kawai Nui (Educating About Kawai Nui)*. University of Hawai‘i at Mānoa, Honolulu.

Dye, Thomas S.

1979a *Archaeological Reconnaissance Survey of Site of Proposed Phase II Kapa‘a Quarry, Ulumawao Ridge, Kapa‘a, Ko‘olau Poko, O‘ahu*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

1979b *Archaeological Phase I Survey and Test Excavations, Site 50-Oa-G6-31, Ko‘olau Poko, O‘ahu*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

1992 Kailua Archaeology. Lecture, 19 November.

Erkelens, Conrad

1993 The Archaeological Investigation of the Kukanono Slope, Kawainui Marsh, Kailua, Ko‘olaupoko, O‘ahu. Unpublished Master’s thesis, Department of Anthropology, University of Hawai‘i at Mānoa, Honolulu.

ESRI, Inc.

2016 Map Image Layer. Esri, Inc. Redlands, California.

Ewart, Ned D. and Myra F. Tuggle

1977 *Archaeological Investigation Kawainui Swamp Ko‘olaupoko, Kailua, O‘ahu Island*. Archaeological Research Center of Hawaii, Inc., Ms. 14-94., Lawa‘i, Kaua‘i, Hawai‘i.

Fong, Jeffrey W.K., Douglas F. Borthwick, and Hallett H. Hammatt

2007 *Archaeological Monitoring Report for the Kainehe Street, Hāmākua Drive and Keolu Drive Reconstructed Sewer Project, Kailua Ahupua‘a Ko‘olaupoko District, Island of O‘ahu TMK: (1) 4-2-01, -77, -81, -82, -87, -89, -90, -93, -94 & -95.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai‘i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Fornander, Abraham

1919 *Collection of Hawaiian Antiquities and Folklore*. T.G. Thrum editor, Memoirs of the Bernice Pauahi Bishop Museum (Vol. VI, Part I). Bishop Museum Press, Honolulu.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte

2013 Online Rainfall Atlas of Hawai‘i. *Bulletin of the American Meteorological Society volume 94, pp. 313-316, doi: 10.1175/BAMS-D-11-00228.1.* Electronic document, http://rainfall.geography.hawaii.edu (accessed 1 February 2023).

Google Earth

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

Hall, W. Thomas

1997 *The History of Kailua*. W. Thos. Hall, Kailua, Hawai‘i.

Hammatt, Hallett H.

2013 *Archaeological Reconnaissance Survey with Limited Subsurface Testing in Support of the Kawainui Marsh Wetland Restoration and Habitat Enhancement Project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu TMK: [1] 4-2-013: 005 por., 022 por. and 043 por.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H., Victoria S. Creed, and Matthew McDermott

1999 *Archaeological Inventory Survey of Kailua 272 Reservoir and Access Road Kailua, Ahupua‘a of Kailua, Island of O‘ahu (TMK: 4-2-03:04, 08 & 4-2-04:37).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H., Michael Pfeffer, and Victoria S. Creed

1993 *Archaeological Inventory Survey of Kailua 272 Reservoir and Access Road, Kailua, Ahupua‘a of Kailua, Island of O‘ahu TMK 4-2-03:9, 16 and a portion of 17.* Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Hammatt, Hallett H. and David W. Shideler

2017 *Archaeological Literature Review and Field Inspection Report for a Kailua Iwi Kūpuna Reinterment Facility: Board of Water Supply Construction of a Burial Preserve at 840 Kailua Road, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMK: [1] 4-2-016:002 por*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

2023 *Archaeological Literature Review and Field Inspection to Support Consultation with the SHPD for the Kūkanono Wastewater Pump Station Improvements Project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMKs: (1) 4-2-013:038 por., 039, and 041.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H., David W. Shideler, Rodney Chiogioji, and Randy Scoville

1990 *Sediment Coring in Kawainui Marsh, Kailua, O‘ahu, Ko‘olaupoko*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hawai‘i State Archives

1930s Photograph of Matsuda family store and residence. Hawai‘i State Archives, Honolulu.

Hawai‘i TMK Service

2022 Tax Map Key (1) 4-2-013. Hawai‘i TMK Service, Honolulu.

Hawaiian Historical Society

1885 Photograph of Kawainui. Hawaiian Historical Society, Honolulu

Hoerman, Rachel, Brittany Enanoria, Ena M. Sroat, and David W. Shideler
2020 *Archaeological Literature Review and Field Inspection Report for the BWS Auloa Road, Loop Road, and Ulukahiki Street 16-inch and 8-inch Water Line Project Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu TMK plats: [1] 4-2-007, 013, and 014.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hollier, Dennis
2011 Kailua Memories. *Honolulu Magazine*. Electronic document, http://www.honolulumagazine.com/Honolulu-Magazine/Kailua/Kailua-Memories/index.php?cp=2&si=1 (accessed 22 July 2013).

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

Kaneohe Ranch
2013 *Kaneohe Ranch history.* Electronic document, http://www.kaneoheranch.com/about-home/kaneohe-ranch-history/ (accessed 22 July 2013).

Kawachi, Carol
1988 *Kapa‘a (Ulumawao) Ridge Field Check (TMK 4-2-14:2), Historic Preservation Office, State of Hawai‘i*. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai‘i.

Kelly, Marion and Jeffrey T. Clark
1980 *Kawainui Marsh, O‘ahu: Historical and Archaeological Studies.* Report Series 80-3. Bernice Pauahi Bishop Museum, Honolulu.

Kelly, Marion and Barry Nakamura
1981 *Historical Study of Kawai Nui Marsh Area, Island of O‘ahu*. Bernice Pauahi Bishop Museum, Honolulu.

Kennedy, Joseph
1990 *Archaeological Reconnaissance Survey for the Proposed Pohakupu Subdivision, TMK:4-2-13:28, Island of Oahu*. Archaeological Consultants of Hawaii, Inc., Hale‘iwa, Hawai‘i.

King
1900 Map of Kailua, Registered Map 588. Land Survey Division, State of Hawai‘i Department of Accounting and General Services, Honolulu. Available online at http://dags.hawaii.gov/survey/search.php

Kraft, John C.
1980a Letter Report to Susumo Ono re: Corings in Kawai Nui Marsh, 15 July.
1980b Letter Report to Ed Mareus re: Corings in Kawai Nui Marsh, 18 December.
1980c Summary of Results of the Kawai Nui Marsh Study.

Louis Berger, Inc.
2017 *Archaeological and Architectural Surveys of Potential Sites for the New Oahu Community Correctional Center Oahu, Hawaii*. Honolulu (Morristown, New Jersey).

Mann, Melanie M. and Hallett H. Hammatt
2003 *Kawai Nui Marsh Environmental Restoration Project, Mitigation Plan & Field Verification & Flagging, Kailua Ahupua‘a, Ko‘olaupoko District, Island of O‘ahu TMK: 4-2-13.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

McAllister, J.G.
1933 *Archaeology of O‘ahu.* Bishop Museum Bulletin 104. Bernice Pauahi Bishop Museum, Honolulu.

McDermott, Matthew, Kristina W. Bushnell, Victoria S. Creed, Scott T. Kikiloi, and Hallett H. Hammatt
2000 *Archaeological Assessment and Background Literature Search for the Proposed Circle-Kawai Nui Marsh Trail Project, Kailua Ahupua‘a, District of Ko‘olaupoko, Island of O‘ahu.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Morawski, Lauren and Christopher M. Monahan
2009 *An Archaeological Inventory Survey of Approximately 25 acres in Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, Hawai‘i, [TMK: (1) 4-2-003:004 (por.) & 022 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Morgenstein, Maurice
1978 *Geoarchaeological Analysis of Field Remnants, Kawai Nui Marsh, Kailua, O‘ahu.* U.S. Army Corps of Engineers, Honolulu.

Neller, Earl
1982 *Archaeological Investigations at Kawai Nui Marsh, in the Kukanono Area, Kailua, O‘ahu, TMK 4-2-13:38*. Department of Land and Natural Resources, State Historic Preservation Division, Honolulu.

O’Hare, Constance R., Scott A. Belluomini, and Hallett H. Hammatt
2018 *Archaeological Inventory Survey Report for the Kihapai Place Apartment Project, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMKs: [1] 4-3-058:047, 048, and 065*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

O’Hare, Constance R., David W. Shideler, Michael E. Rivera, and Hallett H. Hammatt
2014 *Archaeological Monitoring Report for Cultural Resources Support for a Remediation Investigation/Feasibility Study (RI/FS) at Pali Training Camp FUDS Project Number H09HI027701 Kailua and Waimānalo Ahupua‘a, Ko‘olaupoko District, O‘ahu, Hawai‘i TMKs: [1] 4-1 (various plats and parcels) and [1] 4-2 (various plats and parcels).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Pantaleo, Jeffrey and Paul Cleghorn
1989 *A Reconnaissance Survey of the Proposed Windward Park, Kailua, O‘ahu Island (TMK 4-2-14:2 and 4)*. Public Archaeology Section, Applied Research Group, Bernice Pauahi Bishop Museum, Honolulu.

Pukui, Mary K. and Samuel H. Elbert
1984 *Hawaiian Dictionary.* Second edition. University of Hawaii Press, Honolulu.

Quebral, Rey F., Carolyn J. Orndoff, and J. Stephen Athens
1992 *Archaeological Inventory Survey, Phase I, Kailua Gateway Development, Kailua, O‘ahu, Hawai‘i.* International Archaeological Research Institute, Inc., Honolulu.

Ramsar Convention on Wetlands

2013 *The Annotated Ramsar List: United States of America: Kawainui and Hāmākua Marsh Complex.* Electronic document, http://www.ramsar.org/cda/en/ramsar-documents-list-annotated-ramsar-15774/main/ramsar/1-31-218%5E15774_4000_0 (accessed 20 May 2013).

Schmitt, Robert C.

1973 *The Missionary Censuses of Hawaii*. Pacific Anthropological Records, No. 20. Bernice Pauahi Bishop Museum, Honolulu.

Sterling, Elspeth P. and Catherine C. Summers

1978 *Sites of O‘ahu*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Szabian, John, J. Landrum, and Paul L. Cleghorn

1989 *A Reconnaissance Survey of the Proposed Pikoiloa Cemetery, Kāne‘ohe, O‘ahu Island, TMK 4-5-33:1-2*. Applied Research Group, Bernice Pauahi Bishop Museum, Honolulu.

Toenjes, James H. and Theresa K. Donham

1985 An Archaeological Reconnaissance of Maunawili District Trunk Sewer, Section 2 Project; Island of Oahu. In *Environmental Assessment for Maunawili District Trunk Sewer, Section 2 (Maunawili Road Alignment), Tax Map Key:4-2-07 and 08.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

U.S. Army Corps of Engineers

2013 *Kawai Nui Marsh.* U.S. Army Corps of Engineers, Honolulu District. Electronic document, http://www.poh.usace.army.mil/Missions/CivilWorks/CivilWorksProjects/KawaiNuiMarsh.aspx

U.S. Army War Department

1919 U.S. Army War Department fire control map, Waimanalo quadrangle. USGS Information Services, Denver, Colorado.

1936 U.S. Army War Department terrain map, Mokapu quadrangle. USGS Information Services, Denver, Colorado.

1943 U.S. Army War Department terrain map, Kailua and Kaneohe quadrangles. USGS Information Services, 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/ (accessed March 2005).

USGS (U.S. Geological Survey)

1928 Mokapu USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

1952 Mokapu USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

1959 Kawainui Marsh aerial photograph. USGS Information Services, Denver, Colorado.

1968 Mokapu USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

1968 Kawainui Marsh aerial photograph. (UH MAGIS)

1978 Kawainui Marsh aerial photograph. (UH MAGIS)

1998 Mokapu Point USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

1999 Koko Head USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

2017 Koko Head and Mokapu Point USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.

U.S. Heritage Conservation and Recreation Service

1979 Records of the U.S. Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C.

Waihona ‘Aina

2025 *The Māhele Database*. Electronic document, http://waihona.com (accessed 10 April 2014).

Wall, Walter E.

1894 Map of Maunawili Ranch, Kailua. Registered Map 2050. Land Survey Division, State of Hawai‘i Department of Accounting and General Services, Honolulu. Available online at http://dags.hawaii.gov/survey/search.php

1899 Map of Kailua, Koolaupoko Oahu. Registered Map 2049. Land Survey Division, State of Hawai‘i Department of Accounting and General Services, Honolulu. Available online at http://dags.hawaii.gov/survey/search.php

Watanabe, Farley K.

1988 *Memorandum for the Record: Archaeological Monitoring of Kawainui Marsh Levee and Appurtenant Dredging and Vegetation Removal Operations, Kailua, Ko‘olaupoko District, O‘ahu Island.* U.S. Army Corps of Engineers, Honolulu.

Welser, Alison, Katherine Placher, and Hallett H. Hammatt

2022 *Archaeological Inventory Survey Report for the Kawainui Marsh Restoration of Endangered Habitats and Wetlands Project, Mokulana Project Area, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMK: [1] 4-2-013:005 por.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Wu, Nina

2013 The Original Pop-Ups: Looking Back at Kailua’s Roadside Stands. *Go Kailua Magazine,* electronic document: http://www.gokailuamagazine.com/2013/04/history/the-original-pop-ups/.

Wyllie, R.C.

1848 *Answers to Questions*. Hawaiian (Kingdom), Department of Foreign Affairs, Honolulu.

Zapor, Tim and David W. Shideler

2016 *Letter Report on Archaeological Support for the DOFAW/DLNR Hau Brush Clearing Project at Kawainui Marsh, Kailua Ahupua‘a, Ko‘olaupoko District, O‘ahu, TMK: [1] 4-2-016:015*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Appendix B

Early Consultation Letter, Handout, and Responses

TOWNSCAPE, INC.
Environmental & Community Planning

900 Fort Street Mall Suite 1160 · Honolulu, HI 96813 · PH: (808) 536-6999 · FAX: (808) 524-4998 · www.townscapeinc.com

April 4, 2025

Subject: Early Consultation Request for Draft Environmental Assessment (DEA)
Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station – Kailua, Island of Oʻahu
Tax Map Key 4-2-013:038

Dear Participant,

On behalf of the City and County of Honolulu, Department of Environmental Services, Townscape, Inc. is preparing a DEA, pursuant to Hawaiʻi Revised Statues, Chapter 343, and Hawaiʻi Administrative Rules (HAR), Chapter 11-200.1 for the Kukanono Wastewater Pump Station Fuel Storage Tank Improvements ("Project").

Pursuant to HAR, Chapter 11-200.1-18, the City's Department of Environmental Services (Proposing Agency) is conducting early consultation to seek input from agencies, citizen groups, and individuals who may have an area of expertise, which may guide the scope and preparation of the DEA, and/or may be affected by the proposed Project. Please find enclosed an Early Consultation Handout with a project description and location map for your review and comment. We are requesting comments no later than **May 5, 2025** to be sent via mail or e-mail to:

Townscape, Inc.
Attn: Gabrielle Sham
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813
E-mail: gabrielle@townscapeinc.com

If we do not receive a response by this date, we will assume your agency or organization has no comments. Please contact the undersigned with any questions you may have at (808) 550-3894 or via e-mail at gabrielle@townscapeinc.com. Mahalo in advance for your participation in the early consultation for this Project.

Sincerely,

Gabrielle Sham
Associate Planner

Enclosure: Early Consultation Handout

Project Name	Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station
Proposing and Determining Agency	City and County of Honolulu, Department of Environmental Services 1000 Ulu'ōhi'a Street Suite 308 Honolulu, Hawai'i 96707
Agent	Townscape, Inc. 900 Fort Street Mall, Suite 1160 Honolulu, Hawai'i 96813 Phone: (808) 550-3894 E-mail: gabrielle@townscapeinc.com
HRS, Chapter 343 Trigger	Use of State and County lands and funds
Project Location	705 Manu O'o Street Kailua, Hawai'i 96734
Tax Map Key & Recorded Fee Owner	(1) 4-2-013:038, State of Hawai'i
Project Area	19.5080 acres (or 849,768 square feet)
State Land Use District	Urban
Development Plan	Ko'olaupoko Sustainable Communities Plan
Special Management Area	In Special Management Area

Overview of Proposed Project

The Kukanono Wastewater Pump Station (WWPS) has been in service since 1988. The proposed project involves replacing the existing underground fuel storage tank with a new 1,000-gallon aboveground fuel storage tank. Additionally, the project includes replacing the underground fuel piping, fuel monitoring panel, and all associated sensors, as well as connecting the new fuel monitoring panel to the supervisory control and data acquisition (SCADA) system. This work must be completed by July 15, 2028, in compliance with Hawai'i Administrative Rules 11-280.1, which mandates that all underground storage tanks and piping installed before August 9, 2013 to provide secondary containment and utilize interstitial monitoring. The aboveground storage tank will supply the fuel required for the emergency backup generator to service the WWPS.


ISLAND OF O'AHU
N
Kāne'ohe
Wai'anae
Honolulu
Project location indicated by red star
Kawainui Marsh
Kukanono WWPS
(TMK 4-2-013:038)
Ulupō
Heiau
Kailua Rd
MANU OO ST
YMCA
ULUOA ST
Castle
Hospital
Kalanianaole Hwy
This graphic has been prepared for general planning purposes only and should not be used for boundary interpretation or other spatial analysis.
LEGEND
Project Site
TMK Parcels
Roads
Kukanono WWPS
Project Location
Kailua, Hawai'i
March 2025
0 250 500
Feet
N
W
E
S
Prepared by:
TOWNSCAPE, INC.
Environmental & Community Planning

Sean Aoki

From: Gabrielle Sham
Sent: Thursday, April 17, 2025 12:55 PM
To: Sean Aoki
Cc: Sherri Hiraoka
Subject: Fw: OPSD Comments on 6 WWTP Projects
Attachments: OPSD_ Kahaluu Oahu - WWTP PreConsult.pdf; OPSD_C&C Kaneohe_ WWTP PreConsult.pdf; OPSD_Kukanono Oahu_WWTP PreConsult.pdf; OPSD_ C&C Maunawili_WWTP PreConsult.pdf; OPSD_ C&C Waianae_ Preconsult.pdf; OPSD_C&C Waianae_ WWTP Preconsult.pdf

Hi Sean,

Can you please save the attached responses in their respective folders on the server?

I'll forward you other responses too.

Gaby

From: Beasley, Rachel E <rachel.e.beasley@hawaii.gov>
Sent: Thursday, April 17, 2025 9:07 AM
To: Gabrielle Sham <Gabrielle@townscapeinc.com>
Subject: OPSD Comments on 6 WWTP Projects

Hello Ms. Sham,

Please find attached OPSD comments the WWTP projects.

Please note that we have recently received your request for comments for the Pacific Palisades and Wahiawa WWTP. We will not be sending additional comments for these due to their similar nature.

Regards,

Rachel Beasley
Planner
Office of Planning and Sustainable Development
P.O. Box 2359
Honolulu, HI 96804-2359
808-587-2846 (main)
808-587-2878 (direct)

STATE OF HAWAI'I
OFFICE OF PLANNING & SUSTAINABLE DEVELOPMENT
Leiopapa A Kamehameha
235 South Beretania Street, 6th Floor · Honolulu, Hawai'i · 96813
PO Box 2359 · Honolulu, Hawai'i · 96804-2359
Phone (808) 587-2846 · Fax (808) 587-2824

STATE OF HAWAI'I
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

JOSH GREEN, M.D.
GOVERNOR

SYLVIA LUKE
LT. GOVERNOR

MARY ALICE EVANS
DIRECTOR

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

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

Coastal Zone Management Program

Environmental Review Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented Development

Statewide Geographic Information System

Statewide Sustainability Branch

DTS202504011643HE

April 11, 2025

Ms. Gabrielle Sham
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813

Dear Ms. Sham:

Subject: Early Consultation Environmental Assessment for the Proposed Fuel Storage Tank Improvements for the Lualualei Wastewater Pump Station at Waianae, Oahu; Tax Map Key (1) 8-7-007: 067

The Office of Planning and Sustainable Development (OPSD) is in receipt of your early consultation request, received April 1, 2025, on the preparation of an Environmental Assessment (EA), for the proposed fuel storage tank improvements for the Lualualei Wastewater Pump Station (WWPS).

The proposed project involves replacing the existing underground fuel storage tank with a new 2,000-gallon aboveground fuel storage tank. Additionally proposed is replacing the underground fuel piping, fuel monitoring panel, and all associated sensors. The aboveground storage tank will supply the fuel required for the emergency backup generator to service the WWPS. This project must be completed by July 15, 2028, the deadline set forth in Hawaii Administrative Rules (HAR) Section 11-280.1-21 that requires all underground storage tanks and piping installed before August 9, 2013, must be provided with secondary containment design.

The OPSD has reviewed the subject request and has the following comments to offer:

1. The EA shall discuss all triggers of the preparation of an EA set forth in Hawaii Revised Statutes (HRS) Chapter 343, and list all required permits and approvals from the state, federal, and county for the proposed fuel storage tank improvements.

2. The Hawaii Coastal Zone Management (CZM) Law, HRS Chapter 205A, requires all state and county agencies to enforce the CZM objectives and policies. The subject EA should include an assessment with mitigation measures, if needed, as to how the proposed project will conform to each of

the CZM objectives and supporting policies set forth in HRS section 205A-2, as amended.

3. The project is located within the City and County of Honolulu's designated Special Management Area (SMA). The Department of Planning and Permitting, City and County of Honolulu, should be consulted for the SMA permitting requirements and shoreline setbacks. As the supporting document for the SMA permit application, the OPSD suggests that the EA discuss compliance with the requirements of SMA use and shoreline setbacks pursuant to the county SMA and shoreline ordinances.

4. The OPSD recommends that the site-specific Best Management Practices shall be developed and implemented to prevent any runoff, sediment, soil and debris potentially resulting from associated construction activities from adversely impacting the coastal ecosystems and the State waters as specified in HAR Chapter 11-54.

5. To assess potential impacts of coastal erosion and flooding due to sea level rise on the project area, the OPSD suggests the EA refer to the findings of the Hawaii Sea Level Rise Vulnerability and Adaptation Report, 2017 as well as its 2022 update and Guidance for Using the Sea Level Rise Exposure Area in Local Planning and Permitting Decisions: all documents may be found at https://climate.hawaii.gov/hi-adaptation/state-sea-level-rise-resources/.

If you respond to this comment letter, please include DTS202504011643HE in the subject line. For any questions regarding this letter, please contact Rachel Beasley of our office at (808) 587-2831 or by email at rachel.e.beasley@hawaii.gov.

Sincerely,

Mary Alice Evans

Mary Alice Evans
Director

DEPARTMENT OF PLANNING AND PERMITTING
KA 'OIHANA HO'OLĀLĀ A ME NĀ PALAPALA 'AE
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAI'I 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041 • WEBSITE: honolulu.gov/dpp

RICK BLANGIARDI
MAYOR
MEIA

DAWN TAKEUCHI APUNA
DIRECTOR
PO'O

BRYAN GALLAGHER, P.E.
DEPUTY DIRECTOR
HOPE PO'O

REGINA MALEPEAI
2ND DEPUTY DIRECTOR
HOPE PO'O KUALUA

April 15, 2025

2025/ELOG-640(MM)

Ms. Gabrielle Sham
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Dear Ms. Sham:

SUBJECT: Early Consultation for Draft Environmental Assessment (DEA)
Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station – Kailua
Tax Map Key 4-2-013: 038

This is in response to your letter, received April 7, 2025, for early consultation comments on the upcoming Draft Environmental Assessment to be prepared by the City and County of Honolulu, Department of Environmental Services for the proposed improvements on the fuel storage tank at the Kukanono Wastewater Pump Station in Kailua (Project). The proposed Project includes replacing the existing underground tank with a new 1,000 gallon above-ground tank, replacing the new underground fuel piping, fuel monitoring panel, and all associated sensors, as well as connecting the new fuel monitoring panel to the Supervisory Control and Data Acquisition system. The proposed above-ground storage tank will supply the fuel required for the emergency backup generator to service the Kukanono Wastewater Pump Station.

The Project site is within the P-2 General Preservation District and the Special Management Area (SMA). The proposed Project meets Revised Ordinances of Honolulu (ROH), Chapter 25 definition of "development," which requires an SMA Permit. If the cost valuation is less than $500,000, an SMA Minor Permit is required. If the cost valuation is or exceeds $500,000, an SMA Major Permit is required, including an Environmental Assessment, pursuant to ROH Section 25-5.3(a). In this case, it should be noted that the DEA is also being prepared pursuant to ROH Chapter 25.

Should you have any questions, please contact Molly Murai, of our Land Use Approval Branch, at (808) 768-8016 or via email at molly.murai@honolulu.gov.

Very truly yours,

for Dawn Takeuchi Apuna
Director

HONOLULU FIRE DEPARTMENT
KA 'OIHANA KINAI AHI O HONOLULU
CITY AND COUNTY OF HONOLULU

636 SOUTH STREET • HONOLULU, HAWAI'I 96813
PHONE: (808) 723-7139 • FAX: (808) 723-7111 • WEBSITE: honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

SHELDON K. HAO
FIRE CHIEF
LUNA NUI KINAI AHI

JASON SAMALA
DEPUTY FIRE CHIEF
HOPE LUNA NUI KINAI AHI

April 15, 2025

Ms. Gabrielle Sham, Associate Planner
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawai'i 96813

Dear Ms. Sham:

Subject: Early Consultation Request for Draft Environmental Assessment
Fuel Storage Tank Improvements for the Kūkanono Wastewater Pump Station
Kailua, Island of O'ahu
Tax Map Key: 4-2-013: 038

In response to your letter received on April 9, 2025, regarding the abovementioned subject, the Honolulu Fire Department (HFD) reviewed the submitted information and requires that this project follows all applicable codes in the Revised Ordinances of Honolulu Chapter 20 regarding Flammable and Combustible Liquid Storage Tanks.

The requirements above are required by the HFD. This project may have additional requirements to be met as determined by other agencies.

Should you have questions, please contact Battalion Chief Pao-Chi Hwang of our Fire Prevention Bureau at 808-723-7151 or hfdfpb1@honolulu.gov.

Sincerely,

CRAIG UCHIMURA
Assistant Chief

CU/MD:sk

JOSH GREEN, M.D.
GOVERNOR | KE KIAʻĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIAʻĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA ʻOIHANA KUMUWAIWAI ʻĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

May 5, 2025

Townscape, Inc.
Attn: Gabrielle Sham
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813

via email: gabrielle@townscapeinc.com

SUBJECT: Early Consultation Request for Draft Environmental Assessment (DEA) Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station, located in Kailua, Island of Oʻahu, TMK: (1)4-2-013:038

Dear Ms. Sham:

Thank you for the opportunity to review and comment on the subject matter. The Land Division of the Department of Land and Natural Resources (DLNR) distributed or made available a copy of your request pertaining to the subject matter to DLNR's Divisions for their review and comments.

Please find enclosed comments from the Commission on Water Resource Management, the Land Division – Oʻahu District, and the Engineering Division on the subject matter. Should you have any questions, please feel free to contact Dayna Vierra at (808) 587-0423 or email: dayna.k.vierra@hawaii.gov.

Sincerely,

Ian Hirokawa
Acting Land Administrator

Enclosure(s)

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

April 16, 2025

MEMORANDUM

FROM: ~~TO:~~

DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
_X_ Div. of State Parks (curt.a.cottrell@hawaii.gov)
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
__Office of Conservation & Coastal Lands
_X_ Land Division – O'ahu District (barry.w.cheung@hawaii.gov)
_X_ Land Division – Planner (dayna.k.vierra@hawaii.gov)
_X_ Land Division – Planner (lauren.e.yasaka@hawaii.gov)
_X_ Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

TO: ~~FROM:~~ FOR Russell Y. Tsuji, Land Administrator

SUBJECT: Early Consultation Request for Draft EA Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station

LOCATION: Kailua, Island of O'ahu; TMK: (1) 4-2-013:038

APPLICANT: Townscape, Inc. on behalf of the City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments to me by **May 2, 2025.**

If no response is received by this date, we will assume your agency has no comments. Should you have any questions about this request, please contact Dayna Vierra at dayna.k.vierra@hawaii.gov. Thank you.

BRIEF COMMENTS:

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

Signed:
Print Name: Dina U. Lau, Acting Chief Engineer
Division: Engineering Division
Date: Apr 30, 2025

Attachments

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji

Ref: Early Consultation Request for Draft EA Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station
Location: Kailua, Island of O'ahu
TMK(s): (1) 4-2-013:038
Applicant: Townscape, Inc. on behalf of the City and County of Honolulu, Department of Environmental Services

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible for researching the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (fhat.hawaii.gov) could also be used to research flood hazard information.

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4849.

Signed: _____
DINA U. LAU, ACTING CHIEF ENGINEER

Date: Apr 30, 2025

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

April 16, 2025

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
_X_ Div. of State Parks (curt.a.cottrell@hawaii.gov)
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
__Office of Conservation & Coastal Lands
_X_ Land Division – O'ahu District (barry.w.cheung@hawaii.gov)
_X_ Land Division – Planner (dayna.k.vierra@hawaii.gov)
_X_ Land Division – Planner (lauren.e.yasaka@hawaii.gov)
_X_ Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

FROM: FOR Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation Request for Draft EA Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station
LOCATION: Kailua, Island of O'ahu; TMK: (1) 4-2-013:038
APPLICANT: Townscape, Inc. on behalf of the City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments to me by **May 2, 2025.**

If no response is received by this date, we will assume your agency has no comments. Should you have any questions about this request, please contact Dayna Vierra at dayna.k.vierra@hawaii.gov. Thank you.

BRIEF COMMENTS:

It appears a part of Kukanono Pump Station is on State Land TMK:142013038 but we found no disposition. Any use or work on Lands under the Land Board jurisdiction needs a disposition from the Board.

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

Signed: Darlene Bryant-Takamatsu
Print Name: Darlene Bryant-Takamatsu
Division: DLNR/Land Division
Date: APR 21 2025

Attachments

DEPARTMENT OF DESIGN AND CONSTRUCTION
KA 'OIHANA HAKULAU A ME KE KĀPILI
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAI'I 96813
PHONE: (808) 768-8480 • FAX: (808) 768-4567 • WEBSITE: honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

HAKU MILLES, P.E.
DIRECTOR
PO'O

MARK YONAMINE, P.E.
DEPUTY DIRECTOR
HOPE PO'O

April 23, 2025

SENT VIA EMAIL

Ms. Gabrielle Sham
gabrielle@townscapeinc.com

Dear Ms. Sham:

Subject: Early Consultation Request for Draft Environmental Assessment (DEA)
Fuel Storage Tank Improvements for the Kūkanono Wastewater
Pump Station - Kailua, Island of O'ahu
Tax Map Key 4-2-013:038

Thank you for the opportunity to review and comment. The Department of Design and Construction has no comments to offer at this time.

Should you have any questions, please contact me at (808) 768-8480.

Sincerely,

Haku Milles, P.E., LEED AP
Director

HM:krn (938005)

Outlook

Fw: Early Consultation Response – Draft Environmental Assessment Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station – Kailua, O'ahu

From Gabrielle Sham <Gabrielle@townscapeinc.com>
Date Thu 4/24/2025 3:35 PM
To Sean Aoki <sean@townscapeinc.com>

1 attachment (152 KB)
maunawili.pdf;

Please save.

From: Castillo, Carlos <carlos.castillo@hawaiianelectric.com>
Sent: Thursday, April 24, 2025 3:19 PM
To: Gabrielle Sham <Gabrielle@townscapeinc.com>
Cc: Liu, Rouen <rouen.liu@hawaiianelectric.com>
Subject: Early Consultation Response – Draft Environmental Assessment Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station – Kailua, O'ahu

Dear Ms. Sham,

Thank you for the opportunity to review and comment on the proposed Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station (WWPS), located at 705 Manu O'o Street, Kailua, O'ahu (TMK: (1) 4-2-013:038). Hawaiian Electric Company has no objections to the proposed project.

We understand that the project, proposed by the City and County of Honolulu, Department of Environmental Services, involves replacing the existing underground fuel storage tank with a new 1,000-gallon aboveground fuel storage tank, as well as upgrades to related fuel piping, sensors, monitoring systems, and integration with SCADA. These improvements are intended to comply with HAR 11-280.1 requirements and must be completed by July 15, 2028.

The project site is currently served by existing Hawaiian Electric infrastructure. Depending on the final design and electrical load requirements, the project may require coordination for service upgrades or modifications. We recommend early engagement during the design phase to ensure appropriate planning for electrical service and infrastructure needs.

If Hawaiian Electric facilities are located within or adjacent to the project area, we request that access be maintained for safe and reliable operation, maintenance, and emergency response.
We appreciate your efforts to include Hawaiian Electric in the early consultation process and respectfully request to remain informed as the project moves forward, particularly with regard to electrical service coordination.

Should you have any questions or require further information, please feel free to contact me directly at (808) 285-6284.
Sincerely,

Carlos Castillo (WA3 – PTA)
Permits Planner

Hawaiian Electric Company
PO Box 2750
Honolulu, HI 96840-0001

Carlos Castillo
Permits Planner, T&D Engineering

C: 808.285.6284
[Carlos.castillo@hawaiianelectric.com]Carlos.castillo@hawaiianelectric.com

Hawaiian Electric
PO Box 2750, Honolulu, HI 96840

HONOLULU POLICE DEPARTMENT
KA 'OIHANA MĀKA'I O HONOLULU
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET • HONOLULU, HAWAI'I 96813
TELEPHONE: (808) 529-3111 • WEBSITE: www.honolulupd.org

RICK BLANGIARDI
MAYOR
MEIA

ARTHUR J. LOGAN
CHIEF
KAHU MĀKA'I

KEITH K. HORIKAWA
RADE K. VANIC
DEPUTY CHIEFS
HOPE LUNA NUI MĀKA'I

OUR REFERENCE EO-SH

April 25, 2025

SENT VIA EMAIL

Ms. Gabrielle Sham
gabrielle@townscapeinc.com

Dear Ms. Sham:

This is in response to your correspondence dated April 4, 2025, requesting for comments on the Draft Environmental Assessment for the proposed City and County of Honolulu, Department of Environmental Services, Fuel Storage Tank Improvements for the Kūkanono Wastewater Pump Station in Kailua.

Based on the information provided, The Honolulu Police Department (HPD) recommends that all necessary lights, signs, barricades, and other safety equipment be installed and maintained by the contractor during the construction phase of the project. Additionally, adequate notification should be made to area businesses and residents prior to possible road closures, as any impact to pedestrian and/or vehicular traffic or construction-related debris could lead to complaints. Lastly, the HPD recommends a long-term plan to migitate the tracking of dirt, gravel, and debris to minimize potential environmental impacts from all affected areas.

If there are any questions, please call Major Randall Platt of District 4 (Kāne'ohe, Kailua, Kahuku) at (808) 723-8640.

Sincerely,

for GLENN HAYASHI
Assistant Chief of Police
Support Services Bureau

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA 'OIHANA KUMUWAIWAI 'ĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
P.O. BOX 621
HONOLULU, HAWAII 96809

Apr 25, 2025

REF: RFD.6421.3

TO: Mr. Russell Tsuji, Administrator
Land Division

FROM: Ciara W.K. Kahahane, Deputy Director
Commission on Water Resource Management

SUBJECT: Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station

FILE NO.: RFD.6421.3
TMK NO.: (1) 4-2-013:038

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

Our comments related to water resources are checked off below.

- [ ] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- [ ] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- [ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- [X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.
- [X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/
- [ ] 6. We recommend the use of alternative water sources, wherever practicable.
- [ ] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.
- [ ] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

[X] 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

[ ] 11. The Hawaii Water Plan is directed toward the achievement of the utilization of reclaimed water for uses other than drinking and for potable water needs in one hundred per cent of State and County facilities by December 31, 2045 (§174C-31(g)(6), Hawaii Revised Statutes). We strongly recommend that this project consider using reclaimed water for its non-potable water needs, such as irrigation. Reclaimed water may include, but is not limited to, recycled wastewater, gray water, and captured rainwater/stormwater. Please contact the Hawai'i Department of Health, Wastewater Branch, for more information on their reuse guidelines and the availability of reclaimed water in the project area.

[ ] 12. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

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

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

[ ] 15. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

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

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

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

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

[ ] OTHER:

If you have any questions, please contact Ryan Imata of the Groundwater Regulation Branch at (808) 587-0225 or Katie Roth of the Planning Branch (808) 587-0216.

BOARD OF WATER SUPPLY
KA 'OIHANA WAI
CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET • HONOLULU, HAWAI'I 96843
Phone: (808) 748-5000 • www.boardofwatersupply.com

RICK BLANGIARDI
MAYOR
MEIA

ERNEST Y. W. LAU, P.E.
MANAGER AND CHIEF ENGINEER
MANAKIA A ME KAHU WILIKĪ

ERWIN KAWATA
DEPUTY MANAGER
HOPE MANAKIA

NĀ'ĀLEHU ANTHONY, Chair
JONATHAN KANESHIRO, Vice Chair
BRYAN P. ANDAYA
LANCE WILHELM
KĒHAULANI PU'U
EDWIN H. SNIFFEN, Ex-Officio
GENE C. ALBANO, P.E., Ex-Officio

April 28, 2025

Ms. Gabrielle Sham
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawai'i 96813

Dear Ms. Sham:

Subject: Your Letter Dated April 4, 2025 Requesting Comments on the Draft Environmental Assessment Early Consultation for the Proposed Fuel Storage Tank Improvements for the Kūkanono Wastewater Pump Station at 705 Manu 'Ō'ō Street in Kailua – Tax Map Key: 4-2-013: 038

Thank you for your letter regarding the proposed replacement of the existing underground fuel storage tank with an aboveground fuel storage tank.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

Water conservation measures are required for all proposed developments. These measures include utilization of nonpotable water for irrigation using rain catchment, drought tolerant plants, xeriscape landscaping, efficient irrigation systems, such as a drip system and moisture sensors, and the use of Water Sense labeled ultra-low flow water fixtures and toilets.

The proposed project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

The construction drawings should be submitted for our approval, and the construction schedule should be coordinated to minimize impact to the water system.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Daniel Koge, Project Review Branch of our Water Resources Division at (808) 748-5444.

Very truly yours,

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

JOSH GREEN, M.D.
GOVERNOR | KE KIAʻĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIAʻĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA ʻOIHANA KUMUWAIWAI ʻĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

May 19, 2025

Townscape, Inc.
Attn: Gabrielle Sham
900 Fort Street Mall, Suite 1160
Honolulu, HI 96813

via email: gabrielle@townscapeinc.com

SUBJECT: Early Consultation Request for Draft Environmental Assessment (DEA) Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station, located in Kailua, Island of Oʻahu, TMK: (1)4-2-013:038.

Dear Ms. Sham:

Thank you for the opportunity to review and comment on the subject matter. In addition to our previous comments dated May 5, 2025, enclosed are comments from the Division of Forestry and Wildlife on the subject matter. Should you have any questions, please feel free to contact Dayna Vierra at (808) 587-0423 or email: dayna.k.vierra@hawaii.gov.

Sincerely,

Ian C. Hirokawa
Acting Land Administrator

Enclosures

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

MAY 07 2025
REC.

April 16, 2025

MEMORANDUM

FROM: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division (DLNR.ENGR@hawaii.gov)
X Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
X Div. of State Parks (curt.a.cottrell@hawaii.gov)
X Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
__Office of Conservation & Coastal Lands
X Land Division – O'ahu District (barry.w.cheung@hawaii.gov)
X Land Division – Planner (dayna.k.vierra@hawaii.gov)
X Land Division – Planner (lauren.e.yasaka@hawaii.gov)
X Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

TO: FOR Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation Request for Draft EA Fuel Storage Tank Improvements for the Kukanono Wastewater Pump Station
LOCATION: Kailua, Island of O'ahu; TMK: (1) 4-2-013:038
APPLICANT: Townscape, Inc. on behalf of the City and County of Honolulu, Department of Environmental Services

Transmitted for your review and comment is information on the above-referenced subject matter. Please submit comments to me by **May 2, 2025.**

If no response is received by this date, we will assume your agency has no comments. Should you have any questions about this request, please contact Dayna Vierra at dayna.k.vierra@hawaii.gov. Thank you.

BRIEF COMMENTS:

( ) We have no objections.
( ) We have no comments.
( ) We have no additional comments.
(☑) Comments are included/attached.

Signed:
Print Name: JASON D. OMICK, Wildlife Prog. Mgr.
Division: Division of Forestry and Wildlife
Date: May 5, 2025

Attachments

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RYAN K.P. KANAKA'OLE
FIRST DEPUTY

CIARA W.K. KAHAHANE
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

May 2, 2025

Log no. 4974

MEMORANDUM

TO: RUSSELL Y. TSUJI, Land Administrator
Land Division

FROM: JASON D. OMICK, Wildlife Program Manager
Division of Forestry and Wildlife

SUBJECT: Early Consultation Request for Draft Environmental Assessment (DEA) Fuel Storage Tank Improvements for Kukanono Wastewater Pump Station; Kailua, O'ahu, TMK: (1) 4-2-013:038.

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your early consultation request regarding the DEA for proposed fuel storage tank improvements at the Kukanono Wastewater Pump Station within TMK (1) 4-2-013:038. The proposed project is located within the Urban State Land Use District and is in a Special Management Area. The proposed project involves replacing the existing underground fuel storage tank with a new 1,000-gallon aboveground fuel storage tank. The aboveground storage tank will supply the fuel required for the emergency backup generator to service the wastewater pump station. The project also includes replacing the underground fuel piping, fuel monitoring panel, and all associated sensors, as well as connecting the new fuel monitoring panel to the supervisory control and data acquisition system. This work must be completed by July 15, 2028.

DOFAW provides the following comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.

Artificial lighting can adversely impact seabirds which may pass through the area at night by causing them to become disoriented. The disorientation can result in seabird collision with manmade structures or the grounding of birds. Nighttime work which requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15, when young seabirds make their maiden voyage to sea. If nighttime construction is required during the seabird fledgling season, we recommend a qualified biologist be present at the project site to monitor and assess the risk of seabirds being attracted or grounded due to the lighting. If seabirds are seen

circling the area, lights should be turned off. If a downed seabird is detected, please follow DOFAW's recommended response protocol by visiting https://dlnr.hawaii.gov/wildlife/seabird-fallout-season/

Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai'i please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

State-listed waterbirds such as ae'o or Hawaiian stilt (*Himantopus mexicanus knudseni*), 'alae ke'oke'o or Hawaiian coot (*Fulica alai*), 'alae 'ula or Hawaiian gallinule (*Gallinula chloropus sandvicensis*), koloa maoli or Hawaiian duck (*Anas wyvilliana*), and nēnē or Hawaiian goose (*Branta sandvicensis*) could potentially occur at or in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any of these species are present during construction, all activities within 100 feet (30 meters) should cease and the bird or birds should not be approached. Work may continue after the bird or birds leave the area of their own accord. If a nest is discovered at any point, please contact the O'ahu Branch DOFAW Office at (808) 973-9778 and establish a buffer zone around the nest.

DOFAW is concerned about impacts to vulnerable birds from nonnative predators such as cats, rodents, and mongooses. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.

Cats prey on native birds, including State-listed endangered waterbirds, seabirds, and forest birds. Predation is instinctive and means that even well-fed cats will hunt and kill wildlife. Therefore, DOFAW recommends no feeding of feral cats should occur on the premises.

We recommend that Best Management Practices are employed during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., rapid 'ōhi'a death), vertebrate and invertebrate pests (e.g., little fire ants, coconut rhinoceros beetles, etc.), or invasive plant parts (e.g., miconia, pampas grass, etc.) which could harm our native species and ecosystems. We recommend consulting the O'ahu Invasive Species Committee (OISC) at (808) 266-7994 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

The invasive coconut rhinoceros beetle (CRB) or *Oryctes rhinoceros* is found on the islands of O'ahu, Hawai'i Island, Maui, and Kaua'i. On July 1, 2022, the Hawai'i Department of Agriculture (HDOA) approved Plant Quarantine Interim Rule 22-1. This rule restricts the movement of CRB-host material within or to and from the island of O'ahu, which is defined as the Quarantine Area. Regulated material (host material or host plants) is considered a risk for potential CRB infestation. Host material for the beetle specifically includes a) entire dead trees, b) mulch, compost, trimmings, fruit and vegetative scraps, and c) decaying stumps. CRB host plants include the live palm plants in the following genera: *Washingtonia*, *Livistona*, and *Pritchardia* (all commonly known as fan palms), *Cocos* (coconut palms), *Phoenix* (date palms), and *Roystonea* (royal palms). When such material or these specific plants are moved there is a risk of spreading CRB because they may contain CRB in any life stage. For more information regarding CRB, please visit https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/.

You should avoid importing to O'ahu soil or other plant material from off-island. Soil and plant material may contain fungi (e.g., rapid 'ōhi'a death) and other pathogens which could harm our native species and ecosystems. We recommend consulting the Hawai'i Interagency Biosecurity Plan at http://dlnr.hawaii.gov/hisc/plans/hibp/ in the planning, design, and construction of the project.

DOFAW recommends using native plant species for landscaping that are appropriate for the area; i.e., plants for which climate conditions are suitable for them to thrive, plants that historically occurred there, etc. Please do not plant invasive species. DOFAW also recommends referring to www.plantpono.org for guidance on the selection and evaluation of landscaping plants and to determine the potential invasiveness of plants proposed for use in the project.

Due to the arid climate and risks of wildfire to listed species, we recommend coordinating with the Hawai'i Wildfire Management Organization at (808) 850-0900 or admin@hawaiiwildfire.org, on how wildfire prevention can be addressed in the project area. When engaging in activities that have a high risk of starting a wildfire (i.e. welding in grass), it is recommended that you:

- Wet down the area before starting your task,
- Continuously wet down the area as needed,
- Have a fire extinguisher on hand, and
- In the event that your vision is impaired, (i.e. welding goggles) have a spotter to watch for fire starts.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If

you have any questions, please contact Kelli Yamaguchi, Protected Species Habitat Conservation Planning Associate via email at kelli.yamaguchi.researcher@hawaii.gov.

Sincerely,

JASON D. OMICK
Wildlife Program Manager