

# DEPARTMENT OF PUBLIC WORKS

TROY K. TANIGAWA, P.E., COUNTY ENGINEER  
BOYD GAYAGAS, DEPUTY COUNTY ENGINEER



DEREK S.K. KAWAKAMI, MAYOR  
MICHAEL A. DAHLIG, MANAGING DIRECTOR

August 1, 2023

Mary Alice Evans, Interim Director  
Office of Planning and Sustainable Development  
Environmental Review Program  
235 South Beretania Street, Suite 702  
Honolulu, Hawai'i 96813

**Subject: Hawaii Revised Statutes, Chapter 343, Draft Environmental Assessment and Anticipated Finding of No Significant Impact; Kekaha Municipal Landfill Phase II Vertical Expansion; Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kaua'i**

Dear Ms. Evans,

With this letter, the County of Kaua'i, Department of Public Works, Solid Waste Division, transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the proposed Kekaha Municipal Landfill Phase II Vertical Expansion project located in Kekaha, Kaua'i, for review and publication in the next available edition of The Environmental Notice.

In addition to this letter, you will find the online Environmental Review Program (ERP) Publication Form that has been submitted through the ERP website. The online submittal includes one electronic copy of the DEA-AFONSI as an Adobe Acrobat PDF file and the Action Location Map as a shapefile. Should you have any questions, please contact us via email or mail:

Applicant: County of Kaua'i, Department of Public Works, Solid Waste Division  
4444 Rice Street, Suite 275, Lihu'e HI, 96766  
Contact: Allison Fraley, [AFraley@kauai.gov](mailto:AFraley@kauai.gov)

Agent: Tetra Tech  
737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813  
Contact: Kayla Yost; [kayla.yost@tetrattech.com](mailto:kayla.yost@tetrattech.com)

Sincerely,

  
Allison Fraley  
Environmental Services  
Manager

Concur,

  
Troy Tanigawa  
County Engineer

**From:** [webmaster@hawaii.gov](mailto:webmaster@hawaii.gov)  
**To:** [DBEDT OPSD Environmental Review Program](#)  
**Subject:** New online submission for The Environmental Notice  
**Date:** Monday, July 31, 2023 3:20:37 PM

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**Action Name**

Kekaha Municipal Landfill Phase II Vertical Expansion

**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**

Waimea, Kaua'i

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

TMK 1-2-002:001 (portion); TMK 1-2-002:009

**Action type**

Agency

**Other required permits and approvals**

Solid Waste Management Permit Modification; Covered Source Permit Modification (Title V Air Permit); Hawai'i Revised Statutes (HRS) Chapter 6E Compliance (Historic Preservation Review); Federal Aviation Administration Notice of Proposed Construction or Alteration

**Proposing/determining agency**

County of Kaua'i, Department of Public Works, Solid Waste Division

**Agency contact name**

Allison Fraley

**Agency contact email (for info about the action)**

[AFraley@kauai.gov](mailto:AFraley@kauai.gov)

**Agency contact phone**

(808) 241-4837

**Agency address**

4444 Rice Street  
Mo'ikeha Building, Suite 275  
Lihue, Hawaii 96766  
United States  
[Map It](#)

**Was this submittal prepared by a consultant?**

Yes

**Consultant**

Tetra Tech, Inc.

**Consultant contact name**

Kayla Yost

**Consultant contact email**

[kayla.yost@tetrattech.com](mailto:kayla.yost@tetrattech.com)

**Consultant contact phone**

(808) 441-6600

**Consultant address**

737 Bishop Street, Suite 2000  
Honolulu, Hawaii 96813  
United States  
[Map It](#)

**Action summary**

The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II operations at the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i (Proposed Action). The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which is owned by the State of Hawai'i. The Proposed Action would provide additional air space volume for the placement of refuse while the siting, design, and construction of a new landfill facility or other long-term landfill capacity solutions are completed. The Proposed Action would extend Phase II operations upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (amsl) to a maximum elevation of 171.5 ft amsl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill and would be constructed above the existing Subtitle D base liner.

**Reasons supporting determination**

Reasons supporting determination are provided in Section 5.1 Significance Criteria of the Draft EA.

**Attached documents (signed agency letter & EA/EIS)**

- [230731\\_KLF-Phase-II-Vertical-Expansion\\_Final\\_Opt.pdf](#)
- [230731\\_Agency-Transmittal-Kekaha-Vertical-Exp-EA.pdf](#)

**Action location map**

- [KekahaLandfillVerticalExpansion\\_20230724.zip](#)

**Authorized individual**

Kayla Yost

**Authorization**

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

DRAFT ENVIRONMENTAL ASSESSMENT

# Kekaha Municipal Landfill Phase II Vertical Expansion

TMK:1-2-002:001(por.) and 1-2-002:009  
Kekaha, Kauaʻi, Hawaiʻi

*Prepared for*

County of Kauaʻi  
Department of Public Works  
Solid Waste Division

*Prepared by*

Tetra Tech, Inc.

**August 2023**

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# Project Summary

Project Name	Kekaha Municipal Landfill Phase II Vertical Expansion
Proposing Agency	County of Kaua'i Department of Public Works Solid Waste Division
Project Overview	Expand the Phase II landfill area vertically from the currently permitted maximum elevation of 120 feet above mean sea level to a maximum permitted elevation of 171.5 feet above mean sea level
Location	1.3 miles northwest of Kekaha Waimea District, Kaua'i
Tax Map Key	TMK 1-2-002:001 (portion) and TMK 1-2-002:009
Landowner	State of Hawai'i (Department of Land and Natural Resources) <sup>1</sup>
Project Area	Approximately 98 acres <sup>2</sup>
State Land Use District	Agriculture
County Zoning	Agriculture (AG)
Development Plan (Land Use Classification)	West Kaua'i Community Plan (Agriculture: Landfill, Drop-off Recycling Center, Green Waste Diversion Site, Beverage Deposit Redemption Center)
Required Permits and Approvals	Solid Waste Management Permit Modification Covered Source Permit Modification (Title V Air Permit) Hawai'i Revised Statutes (HRS) Chapter 6E Compliance (Historic Preservation Review) Federal Aviation Administration Notice of Proposed Construction or Alteration
HRS Chapter 343 Trigger	Use of State of Hawai'i Lands and County of Kaua'i Funds
Anticipated Determination	Finding of No Significant Impact (FONSI)
Contact Information	Proposing Agency: County of Kaua'i Department of Public Works Solid Waste Division 4444 Rice Street Mo'ikeha Building, Suite 275 Līhu'e, HI 96766 Attn: Allison Fraley <a href="mailto:AFraley@kauai.gov">AFraley@kauai.gov</a>  Agent: Tetra Tech, Inc. 737 Bishop Street, Suite 2000 Honolulu, HI 96813 Attn: Kayla Yost <a href="mailto:kayla.yost@tetratech.com">kayla.yost@tetratech.com</a>
NOTES:	<p>1. Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996), place the control and management of the lands underlying the Kekaha Municipal Landfill to the County of Kaua'i.</p> <p>2. The Kekaha Municipal Landfill Facility encompasses approximately 98 acres. The Phase II permitted limit-of-waste footprint is approximately 44 acres. The limits of the proposed vertical expansion would be approximately 13 acres located within the Phase II permitted limit-of-waste footprint.</p>

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# Abbreviations and Acronyms

°F	Degrees Fahrenheit
§	Section
ACS	American Community Survey
ADC	Agribusiness Development Corporation
AECOM	AECOM Technical Services, Inc.
AIS	Archaeological Inventory Survey
amsl	Above Mean Sea Level
ASD	Alternative Source Demonstration
BLNR	Board of Land and Natural Resources
BMP	Best Management Practice
CCD	Census County Division
CCE	Community Criteria Evaluation
CDUP	Conservation District Use Permit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
County	County of Kaua'i Department of Public Works Solid Waste Division
CSH	Cultural Surveys Hawai'i
CSP	Covered Source Permit (Title V Air Permit)
cy	Cubic Yard
CZM	Coastal Zone Management
CZO	comprehensive zoning ordinance
dB	Decibels
dba	A-weighted Decibel
DHHL	Department of Hawaiian Homelands, State of Hawai'i
DLNR	State of Hawai'i Department of Land and Natural Resources
DOFAW	State of Hawai'i Division of Forestry and Wildlife
DPS	Distinct Population Segment
DPW	County of Kaua'i Department of Public Works
EA	Environmental assessment
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
ESA	Endangered Species Act
EPA	U.S. Environmental Protection Agency
ERP	Environmental Review Program
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
ft	Foot/Feet
GCCS	Gas Collection and Control System
HAR	Hawai'i Administrative Rules
HCB	Host Community Benefit
HDOH	State of Hawai'i Department of Health
HDOT	State of Hawai'i Department of Transportation
HDPE	High-Density Polyethylene

HEPA	Hawai'i Environmental Policy Act
HIEMA	Hawai'i Emergency Management Agency
HIOSH	Hawai'i Occupational Safety and Health Division
HRS	Hawai'i Revised Statutes
IAL	Important Agricultural Land
ISWMP	Integrated Solid Waste Management Plan
JfB	Jaucus Loamy Fine Sand
KCC	Kaua'i County Code
KLF	Kekaha Municipal Solid Waste Landfill
LCRS	Leachate collection and removal system
LSB	Land Study Bureau
LUC	State of Hawai'i Land Use Commission
MBTA	Migratory Bird Treaty Act
MPH	Miles Per Hour
MSW	Municipal Solid Waste
MW	Monitoring Well
NAAQS	National Ambient Air Quality Standards
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated biphenyl
PGE	Pacific Geotechnical Engineers, Inc.
PMRF	Pacific Missile Range Facility - Barking Sands
Proposed Action/Project	Vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SHPD	State Historic Preservation Division
SHWB	Solid and Hazardous Waste Branch, State of Hawai'i Department of Health
SMA	Special Management Area
SPCC	Spill Prevention, Control, and Countermeasures
SSIs	statistically significant increases
SUP	Special Use Permit
SWMP	Solid Waste Management Permit
Tetra Tech	Tetra Tech, Inc.
TMK	Tax Map Key
TOC	Total organic carbon
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WKCP	West Kaua'i Community Plan

# 1. Introduction

The County of Kauaʻi, Department of Public Works (DPW), Solid Waste Division (County/Applicant) is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF; Proposed Action/Project). The Proposed Action would provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a new landfill facility or other long-term landfill capacity solutions are completed. The Proposed Action would extend Phase II upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (amsl) to a new permitted maximum elevation of 171.5 ft amsl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area and would be constructed above the existing Resource Conservation and Recovery Act (RCRA) Subtitle D base liner.

## 1.1 Project Location

KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kauaʻi (Figure 1-1). The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001(por.) and 1-2-002:009, which are owned by the State of Hawaiʻi and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996) place the control and management of the lands underlying the KLF with the County of Kauaʻi.

The KLF is situated adjacent to Kaumualiʻi Highway (Highway 50) and approximately 1,700 ft from the shoreline of the Pacific Ocean. The KLF is located on the coastal Mānā Plain, which was historically used for agriculture and portions of which are still in active agricultural use. The primary land use in the vicinity of the KLF is agricultural and agriculture-related commercial activity, which takes place on lands to the west, north, and east of the KLF. Other land uses in the vicinity of the KLF include federal reserve lands (Pacific Missile Range Facility–Barking Sands [PMRF] and U.S. Lighthouse Service) to the south and west, land leased by the Hawaiʻi National Guard to the south, and a drag racing park (Kauaʻi Raceway Park) to the southeast (Figure 1-2).

## 1.2 Background

As detailed in the Kauaʻi Integrated Solid Waste Management Plan (ISWMP) Update 2021, Kauaʻi County has an island-wide system of solid waste collection and disposal facilities that serve the general population including residential, commercial, and industrial sources (Jacobs 2021). The two main components of the Kauaʻi solid waste management system are the KLF, the only permitted municipal solid waste (MSW) landfill on the Island of Kauaʻi, and the four refuse transfer stations located in Hanalei, Kapaʻa, Līhuʻe, and Hanapēpē. The County also provides recycling drop-off bins for residential use at eight locations across the island and has a voluntary green waste diversion program that allows residents to dispose of green waste free of charge at any of the four refuse transfer stations. Solid waste

is collected, sorted, and then transferred to the appropriate facility depending on whether it is recyclable material, green waste, or solid waste accepted for disposal in the KLF.

### **1.2.1 Existing Kekaha Municipal Landfill Operations and Environmental Controls**

This section summarizes the existing operations and environmental controls at the KLF Phase II. KLF Phase II was designed and operates in accordance with applicable federal and state regulations (e.g., RCRA Subtitle D regulations and HAR § 11-58.1) and the requirements of KLF's Solid Waste Management Permit (SWMP) No. LF-0042-16 issued by the State of Hawai'i Department of Health (HDOH). The *Kekaha Municipal Solid Waste Landfill Operations Manual* (Geosyntec 2023a) contains the policies and procedures that govern operations at the KLF Phase II including the *Waste Acceptance/Hazardous Waste Exclusion Program, Safety and Health Plan, Emergency Action Plan, Operations Plan, Leachate Management Plan, Surface Water Management Plan, and Perimeter Gas Monitoring Plan*. KLF also maintains several stand-alone plans including the *Groundwater and Leachate Monitoring Plan* (Geosyntec 2020); *Spill Prevention, Control, and Countermeasures Plan* (Geosyntec 2022a); and *Closure/Post-Closure Plan* (AECOM 2016).

#### **1.2.1.1 Kekaha Municipal Landfill Operations**

The KLF is comprised of two overlapping refuse fill areas identified as Phase I and Phase II (Figure 1-1). Phase I was an unlined MSW landfill that began accepting solid waste in 1953 and reached a height of +/- 50 ft amsl over an area of 32.8 acres before being succeeded by the Phase II operations in 1993. Phase II is an active, lined MSW landfill that began accepting solid waste on October 9, 1993. Phase II was constructed in accordance with RCRA Subtitle D criteria and Hawai'i Administrative Rules (HAR) Section (§) 11-58.1, and currently receives all MSW<sup>1</sup> and construction/demolition debris generated on the island. The current permitted landfill area of Phase II is approximately 44 acres, which includes the original waste disposal area (31.2 acres) and two expansion areas, Cell 1 (6.3 acres) and Cell 2 (6.5 acres) (collectively referred it as Phase II). An office, scale house, public convenience center, leachate evaporation pond, stormwater infiltration basin, and maintenance shop are located along the northeastern property line of the facility along Kaunualii Highway (Figure 1-1). Photos of the existing KLF facilities are in Appendix A, Photos 1 through 5.

The KLF's current operating hours are 8:00 a.m. to 4:00 p.m., 7 days per week, approximately 352 days per year. The KLF Phase II receives approximately 230 tons of non-hazardous MSW per day. Phase II also receives certain special wastes that must be managed under special operating procedures for disposal including wastewater treatment sludge, septic tank and cesspool pumping, petroleum-contaminated soil, treated medical waste, dead animals, and asbestos-containing materials. The County maintains a

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<sup>1</sup> MSW is waste collected by the municipality (i.e., County of Kaua'i) from residential, commercial, industrial, and construction and demolition sources. MSW includes both organic wastes, such as paper, cardboard, food, yard trimmings, and plastics, and inorganic wastes such as metal and glass.

*Waste Acceptance/Hazardous Waste Exclusion Program* to prevent the disposal of unacceptable waste at the landfill (Geosyntec 2023a).

The County employs approximately 24 full-time personnel to safely and efficiently manage the incoming waste volume at the KLF Phase II. Equipment used in landfill operations include compactors, bulldozers, dump trucks, front-end loaders, excavators, water trucks, tractors, and other auxiliary equipment. The staff and equipment at the KLF Phase II are adequate to handle the daily volume of waste accepted for disposal at the site, to provide support for routine and non-routine related tasks, and to conduct the ongoing excavation and construction activity needed for cell development and generation of cover soil (Geosyntec 2023a).

Scale house attendants and equipment operators monitor the incoming waste and divert unacceptable loads from disposal at the KLF. Once a waste load has been determined to be acceptable by the scale house attendant, it is weighed and the hauler proceeds to either the Material Drop-off Facility (i.e., residential self-haul) or the active disposal area (i.e., transfer trailers and commercial haul). Within the active disposal area, the “area fill” method of landfilling is used, which consists of spreading and compacting waste in horizontal layers (“lifts”), which form the waste cells. At the end of each working day, the exposed waste at the working face<sup>2</sup> is covered with cover soil or an HDOH-approved alternate daily cover. This cover helps to mitigate problems with odors, vectors, leachate, and windblown trash. Waste placement and compaction proceeds until final elevations and grades are achieved. During waste placement operations, the waste surface is graded to prevent surface water run-on and divert water runoff into the KLF stormwater drainage features.

### **1.2.1.2 Environmental Monitoring and Control Systems**

Existing environmental monitoring and control systems at the KLF Phase II include the following:

- **Liner and Leachate Collection and Removal System** – All disposal areas at the KLF Phase II are equipped with a bottom and side slope composite liner and leachate collection and removal system (LCRS)<sup>3</sup>. The base liner consists of several layers of geosynthetic clay and geomembrane liner (60-millimeter-thick high-density polyethylene [HDPE]) as detailed in the KLF SWMP. Above the base liner is a drainage layer containing perforated HDPE pipes. These pipes direct leachate into collection/extraction risers at the perimeter of the landfill unit. Leachate from these risers is then directed via a pump station (i.e., wet wells) to the lined leachate evaporation pond (Figure 1-1). Sensors detect leachate levels and automatically activate pumps when the leachate reaches a predetermined level. The approximately 2-acre leachate evaporation pond is lined to

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<sup>2</sup> The daily operation at a municipal solid waste landfill includes the tipping of waste into a specific area of the landfill, called the working face, followed by compaction or crushing of the waste and covering it with soil at day's end.

<sup>3</sup> Leachate is the liquid that can drain or “leach” from a landfill. Moisture within the landfill moves through the solid waste by gravity, collecting dissolved material along the way, and accumulates at a low point beneath the waste pile, but above the impermeable liner of the landfill. The LCRS collects leachate and retains it on-site in a lined leachate evaporation pond.

prevent infiltration of the water into the underlying soils. It has a maximum depth of 6 ft with an additional 2 ft of freeboard, and it was designed to completely evaporate all leachate collected from the landfill during a normal precipitation/evaporation year. Two floating aerators are used to accelerate evaporation. Leachate monitoring and sampling activities are conducted annually at the KLF Phase II in accordance with the KLF *Groundwater and Leachate Monitoring Plan* (Geosyntec 2020).

- **Landfill Gas Collection and Control System and Perimeter Gas Monitoring** – KFL’s existing landfill gas collection and control system (GCCS)<sup>4</sup> consists of a collection network of HDPE pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control surface emissions. A perimeter landfill gas monitoring system is installed around the KLF to detect landfill gas migration. Twelve landfill gas probes are used to sample for methane, carbon dioxide, and oxygen. The gas probe network is monitored on a quarterly basis in accordance with facility’s *Perimeter Gas Monitoring Plan* (Geosyntec 2023a).
- **Surface Water Management System** – Described in the KLF’s *Surface Water Management Plan* (Geosyntec 2023a), stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. The surface water system includes diversion berms located on the side slopes below the perimeter of the landfill top deck and along the perimeter road, which direct surface water to down drains. The down drains convey runoff to infiltration ditches around the perimeter of the landfill and to an existing, approximately 2.2-acre stormwater infiltration basin. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)).
- **Stormwater Pollution Management and Control System** – Stormwater runoff associated with industrial activities is regulated by the National Pollutant Discharge Elimination System (NPDES) General Permit (HAR § 11-55). Because there is no stormwater discharge point from the KLF Phase II, a request for NPDES exclusion was verbally granted by HDOH in July 2021<sup>5</sup>. In addition, the KLF Phase II implements a *Spill Prevention, Control, and Countermeasure Plan* (Geosyntec 2022a) to prevent releases of petroleum products used on-site and, if a release occurs, contaminants are not discharged into surface waters.
- **Groundwater Monitoring** – In accordance with HAR § 11-58.1-16, a groundwater monitoring program is in place at the KLF to monitor for impact to the groundwater from the landfill. The program includes a groundwater well network and sampling, monitoring, and analytical

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<sup>4</sup> Landfill gas is produced when bacteria break down organic waste. Landfill gas is primarily made up of methane and carbon dioxide but may also be made up of small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, and various other gases. The GCCS collects landfill gases from within the waste volume and safely combusts them in an enclosed landfill gas flare.

<sup>5</sup> A request for exclusion under the NPDES General Permit was submitted to the HDOH by the County of Kaua’i on September 7, 2007, and resubmitted on February 27, 2013. The request for exclusion was verbally granted by HDOH July 1, 2021 (D. Moises, HDOH, personal communication—email to COK, July 6, 2021).

procedures. Groundwater from three Phase I and three Phase II groundwater monitoring wells (MW) is sampled on a quarterly basis to determine whether there are any landfill-related contaminants present in the groundwater. KLF Phase II groundwater and leachate monitoring activities are conducted pursuant to the KLF *Groundwater and Leachate Monitoring Plan* (Geosyntec 2020).

### 1.2.2 History of Kekaha Municipal Landfill Expansions

The KLF Phase II was initially permitted for 31.2 acres and a maximum elevation of 37 ft amsl. The KLF Phase II was extended vertically in 1998 to a maximum elevation of 60 ft amsl (Belt Collins 1998), in 2004 to a maximum elevation of 85 ft amsl (Earth Tech and Wil Chee 2004), and in 2013 to a maximum elevation of 120 ft amsl (AECOM 2013). The KLF was also extended laterally to expand the original limits of Phase II into Cells 1, 2, and 3 (AECOM 2007). Cell 1 added 6.3 acres to the permitted area of the Phase II operations and was brought online in 2010, and Cell 2 added an additional 6.5 acres and was brought online in 2020 (Figure 1-1). The County has not commenced Cell 3, which would have constructed an engineered overliner over Phase I and commence operations upon that overliner (see Section 1.2.3.3). Based on current landfill waste mass density and daily waste disposal rates, the currently permitted Phase II landfill is projected to reach capacity in October 2026.

Table 1-1 summarizes the recent and proposed Phase II expansions, listed in order of implementation, with the subject of this EA shown in **bold font**.

**Table 1-1. Summary of Recent and Proposed Phase II Landfill Expansions**

Order	Expansion	Year Commenced Operations	Maximum Height (ft amsl)	Related Environmental Assessment
1	Phase II Vertical Expansion	1998	60	Belt Collins 1998
2	Phase II Vertical Expansion	2004	85	Earth Tech and Wil Chee Planning 2004
3	Phase II Lateral Expansion, Cell 1, 2, and 3	2010 and 2020 <sup>1</sup>	85	AECOM 2007
4	Phase II Vertical Expansion	2013	120	AECOM 2013a
5	<b>Phase II Vertical Expansion</b>	--	<b>171.5</b>	<b>Ongoing</b>

1. Cells 1 and 2 construction was completed in 2010 and 2020, respectively. Construction of Cell 3 has not commenced.  
AECOM = AECOM Technical Services, Inc.; amsl = above mean sea level; ft = feet

### 1.2.3 History of Activities to Develop Long-term MSW Capacity Solutions

As stated in the Introduction, the Proposed Action would provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a long-term landfill capacity solution is completed. The subsequent paragraphs and Table 1-2 provide a summary of activities conducted by the County to develop long-term MSW capacity solutions.

**Table 1-2 Summary of Recent and Proposed Long-term Capacity Solutions**

Long-term Capacity Solution	Status	Description	Implementation Timeline
Recycling and Waste Diversion	Active	The County manages several programs to reduce the volume of waste generated and to divert waste from landfills through reuse, recycling, and recovery (Jacobs 2021). The County continues to evaluate alternative solutions to landfilling. However, implementation of recycling and waste diversion programs cannot eliminate the need for landfill capacity.	1 to 2 years
Siting a New Landfill Site	Active	The County previously sought to permit a new landfill elsewhere on Kaua’i and the best suitable location was found to have a fatal flaw. The County has identified another possible site and is in the early stages of planning and permitting for the new landfill.	10+ years
Phase II, Cell 3	Active	The County is seeking extension and/or renewal of Conservation District Use Permit (CDUP) KA-3625 to construct Cell 3. Cell 3 as currently permitted is to be constructed atop of Phase I and would cover Phase I and extend to meet the Phase II Vertical Expansion across the state conservation and agricultural districts.	6+ years

**1.2.3.1 Recycling and Waste Diversion**

As detailed in the Kaua’I ISWMP update (Jacobs 2021), a key component of the County’s solid waste management system is source reduction and recycling. The County has implemented a variety of programs and services that promote source reduction. These include partnership with thrift stores, education, home and backyard composting, waste assessments, the Zero Waste Resolution, a plastic bag reduction ordinance, and the Pay As You Throw program<sup>6</sup>.

The County also manages several programs to divert waste from the landfill through reuse, recycling, and recovery of various types of waste. The County has a voluntary recycling program for residents and operates eight recycling drop-off sites in the County. The County also accepts green waste and specified recyclable materials from residents at the four refuse transfer stations free of charge. Accepted recyclable materials include cardboard, glass bottles and jars, aluminum and steel cans, plastic bottles and jars, mixed paper, tires, motor oil, scrap metal, appliances, motor oil filters, propane tanks, and green waste. Garden Isle Disposal also has a contract with the County to accept and process commercially generated recyclables at their facility. The County also participates in the state Deposit

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<sup>6</sup> Residents pay a variable rate for refuse collection, which provides an economic incentive for reducing trash and increasing waste diversion and recycling.

Beverage Container Program<sup>7</sup>; there are five privately operated certified redemption centers throughout the County to collect and recycle beverage containers. The privately operated Puhi Metals Recycling Center also accepts and recycles a variety of metal and electronic waste (eWaste) from the County, the general public, and commercial entities. The services are provided free of charge to residential users and for a fee to commercial users.

The County's waste diversion rate is approximately 40 percent. Although the County continues to evaluate options to increase its landfill diversion rate,<sup>8</sup> implementation of recycling and waste diversion programs cannot eliminate the need for landfill capacity.

### **1.2.3.2 Siting a New Landfill Site**

The County has previously attempted to site a new MSW landfill at another location on the island and continues to investigate alternative landfill sites. The County began the landfill siting process in 2000, culminating in two reports: *Kaua'i Municipal Solid Waste Landfill Siting Study* (Earth Tech 2001) and *New Kaua'i Municipal Solid Waste Landfill, Kālepa Site Investigation* (Earth Tech 2002). Eight potential landfill sites were identified and compared based on 19 environmental, technical, and social/cultural criteria. In 2007, the County convened the Mayor's Advisory Committee on Landfill Site Selection to develop and prioritize 26 community-based criteria and rank seven of the eight previously identified landfill sites<sup>9</sup>. The results of this siting study are summarized in the *Report of the Mayor's Advisory Committee on Landfill Site Selection* (R.M. Towill 2009).

In 2012, the County reevaluated the suitability of the eight identified sites using the community criteria evaluation (CCE) as well as state and other landfill criteria, preliminary engineering evaluations, planning-level cost estimates, existing (agricultural) land use, and landowner willingness (AECOM 2012). The results of this siting study identified Ma'alo, a 270-acre state owned parcel north of Līhu'e, as the preferred alternative. The basis for this decision was that it was the only site with a willing landowner, that allowed for the longest site life (estimated 264 years), was centrally located, had the least annual cost, and was the highest ranking on the CCE of the sites evaluated (AECOM 2012). As part of its commitment to reduce, reuse, and recycle and to maximize diversion of waste from the landfill, the County also conducted a feasibility study of a resource recovery park (AECOM 2013b). The intent of the County was to co-site the new MSW landfill and resource recovery park.

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<sup>7</sup> Within the state, a 5-cent deposit per beverage container is charged for the purchase of specific glass, aluminum, and plastic containers defined under the law. A 1-cent non-refundable container fee is also assessed to support the costs of recycling and program administration.

<sup>8</sup> The County is currently assessing the feasibility of a curbside recycling program as described in the ISWMP Section 4.4.1.2 (Jacobs 2021). The County also recently completed a feasibility study for alternative technologies to landfilling and will be entering into a two-stage Request for Proposals process to determine if there are viable bidders for an alternative system to manage waste and create energy. The County will also conduct a construction and demolition waste diversion pilot next fiscal year (A. Fraley, DPW, personal communication, March 12, 2023).

<sup>9</sup> One site, Kumukumu, was removed from the evaluation due to an anticipated subdivision development within a major portion of the site at the time of the study.

Subsequently, the County completed an engineering study and conceptual design for a new MSW landfill and resource recovery park at the Ma'alo site and initiated the environmental review process in accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and HAR § 11-200.1. In October 2018, the Mayor's Office accepted the Final Environmental Impact Statement (EIS) for the project (R. M. Towill 2018). However, during the permitting process, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Ma'alo because the Federal Aviation Administration (FAA) and the State of Hawai'i Department of Transportation's (HDOT) Airports Division opposed the project due to the potential for the landfill to increase bird strikes at Līhu'e Airport.

All eight original potential landfill sites evaluated in the 2001 to 2002, 2007, and 2012 siting studies are infeasible or problematic to develop. Three sites (Ma'alo, Kālepa, and Kīpū in Līhu'e) are problematic due to potential airport proximity concerns. In 2020, the Hawai'i Legislature passed Act 73, which prohibits landfills within 0.5 mile of a residence, school, or hospital; this law excludes four additional sites from further consideration (Kumukumu in Anahola, Kōloa in south Kaua'i, Pu'u O Papa'i in Hanapēpē, and 'Umi in Kalāheo). The remaining site, Kekaha Mauka, is currently in active use by a state lessee and is no longer available to the County.

The County has identified another possible site and is in the early stages of assessing the site and planning for the new landfill.<sup>10</sup> Based on the County's prior experience, permitting, design, and construction of a new landfill on Kaua'i would take upwards of 10 years (See Section 2.6.2.1 for more information).

### **1.2.3.3 Phase II, Cell 3**

The County is seeking to extend or renew Conservation District Use Permit (CDUP) KA-3625 to allow construction of Cell 3. The Cell 3 expansion was evaluated as part of the 2007 EA and FONSI for the KLF Phase II Lateral Expansion (AECOM 2007). Because a portion of the lateral expansion is within the state Conservation District, the County obtained CDUP No. KA-3625 for the construction of Cells 1, 2, and 3 in 2012. Cells 1 and 2 were then permitted by the HDOH and commenced operations in 2010 and 2020, respectively. The County determined that if the siting of a new landfill could be accomplished within the anticipated operational life of Cells 1 and 2,<sup>11</sup> development of Cell 3 would not be necessary.

As described in AECOM (2007) and permitted under CDUP KA-3625, the Cell 3 operations would install a new landfill liner system meeting regulatory standards over the Phase I operations and expand the landfill over Phase I to a maximum elevation of 85 ft amsl and extend to meet the Phase II Vertical Expansion. The County has also considered an option to mine and remove waste from Phase I, construct an engineered, liner system, and commence Cell 3 operations upon this liner. In 2021, the County

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<sup>10</sup> The County is currently investigating the feasibility of siting a new landfill on a parcel owned by the Agriculture Development Corporation (ADC) that is also located in Kekaha (A. Fraley, DPW, personal communication, March 12, 2023).

retained Stantec Consulting Services, Inc., to complete a feasibility study of this mining option (Stantec 2021). The report concluded that the mining of Phase I was feasible pending consultation with regulatory agencies and the public.

Although technically feasible, implementation of Cell 3 is a multistep and lengthy process. In addition to obtaining HDOH permits, Phase I lies within the Special Management Area (SMA) and Conservation District and, therefore, requires additional approvals, lengthening the implementation timeline. Although currently permitted under CDUP KA-3625, should the BLNR not extend CDUP KA-3625 the County would be required to seek a new CDUP. If a new CDUP is required, the permitting, design, and construction of Cell 3 would take a minimum of 6 years.

### **1.3 Purpose and Need**

The purpose of the Proposed Action is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal capacity of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. The need arises because the currently permitted KLF Phase II is projected to reach capacity in October 2026. The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua'i (see Section 1.2.3). However, the planning, permitting, and implementation of any potential long-term MSW capacity solution is anticipated to require more than 5 years (i.e., would occur after October 2026), at which time the Island of Kaua'i would be without a landfill for the safe disposal of MSW. The lack of a permitted MSW landfill would result in adverse effects on the environment and public health. The proposed vertical expansion of the Phase II landfill is expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, thus providing landfill capacity until a long-term MSW capacity solution can be implemented.

### **1.4 HRS Chapter 343 Compliance**

Compliance with the Hawai'i Environmental Policy Act (HEPA) (HRS Chapter 343) environmental review is required for any agency action that includes one or more triggers identified in HRS § 343-5(a) and HAR § 11-200.1, which are the implementing rules for compliance with HRS Chapter 343. The Proposed Action includes use of state land and county funds, which triggers HEPA environmental review per § 343-5(a)(1).

In accordance with HAR § 11-200.1-18, the County conducted early consultation seeking the advice and input of the agencies having jurisdiction as well as citizen groups and individuals whom the Proposed Action may affect. Appendix B encloses a copy of the pre-assessment consultation letter, list of parties consulted during the pre-assessment consultation process, copies of all comment letters received during the pre-assessment consultation period, and the County's responses to the substantive comment letters. Appendix C encloses other agency correspondence that informed the preparation of the Draft EA.

Based on the scope and scale of the Project and consistent with HAR § 11-200.1-14, the County determined an EA to be the appropriate level of environmental review. As such, this Draft EA has been prepared in compliance with HRS Chapter 343 and HAR § 11-200.1 and submitted to the Environmental Review Program (ERP) for publication in the *Environmental Notice*.

Comments received during the required 30-day public review period on the Draft EA will be incorporated into a Final EA. The Final EA will be provided to the County and published in the *Environmental Notice*. Based on its review of the Final EA and application of the significance criteria in HAR § 11-200.1-13, the County will issue a determination notice of either a FONSI or an Environmental Impact Statement Preparation Notice (EISPN). Based on available information, the County is anticipating that a FONSI will be issued for the Proposed Action.

In addition to the environmental disclosure requirements of HRS Chapter 343, the implementation of the Proposed Action would require coordination and consultation with the federal, state, and county agencies for permits, clearances, or approvals as presented in Table 1-3 (see Appendix C for agency correspondence).

**Table 1-3. Permits and Approvals for Implementation of the Proposed Action**

Permit/Approval <sup>1</sup>	Description	Regulation(s)	Administrative Authority
Solid Waste Management Permit (SWMP)	Solid waste management activities at the Kekaha Municipal Solid Waste Landfill (KLF) are authorized under the SWMP No. LF-0042-16. The Proposed Action will require a modification to SWMP No. LF-0042-16.	Hawai'i Revised Statutes (HRS) Chapter 342H; Hawai'i Administrative Rules (HAR) Section (§) 11-58.1-04	Hawai'i Department of Health (HDOH) Solid and Hazardous Waste Branch
Covered Source Permit (CSP) Modification <sup>2</sup>	A CSP Permit (Title V Air Permit) is required to comply with the New Source Performance Standards found in 40 Code of Federal Regulations (CFR) Part 60, Subpart WWW. Covered sources include those sources that are major sources of air emissions and sources subject to a federal performance or control technology standard. The Proposed Action will require a modification to CSP Permit No. 0802-01-C.	40 CFR Part 60 HAR § 11-60.1-82	HDOH Clean Air Branch; U.S. Environmental Protection Agency
Historic Preservation Review	State Historic Preservation Division (SHPD) review and concurrence required prior to any ground disturbing activities. SHPD concurs with the County's project effect determination of "No historic properties affected" for the Proposed Action (Appendix C).	HRS § 6E-8; HAR § 13-275	Hawai'i Department of Land and Natural Resource SHPD

Permit/Approval <sup>1</sup>	Description	Regulation(s)	Administrative Authority
Notice of Proposed Construction or Alteration	The Federal Aviation Administration (FAA) must be notified of any construction that may affect the National Airspace System under provisions of 14 CFR 77. A “Determination of No Hazard” is anticipated for the Proposed Action.	49 United States Code § 44718; 14 CFR Part 77	FAA
<p>1. The Kauaʻi Planning Commission issued special use permit (SUP) SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64 in 1993 to allow land classified in the county agricultural zone to be used for landfill purposes. As the KLF involved more than 15 acres of land, the SUP also required approval by the state Land Use Commission (LUC) (Petition Docket No. SP93-384). The County of Kauaʻi Planning Department determined that the Proposed Action is permissible under the existing land use entitlements (K. Hull, County of Kauaʻi Planning Department. personal communication – email to A. Fraley, June 15, 2023). No modification to the SUP, use permit, and class IV zoning permit is required.</p> <p>2. The County has submitted a permit renewal application to the HDOH in 2018. Pending permit approval, the KLF site is being operated under the existing air permit No. 0802-01-C.</p>			

# Kekaha Landfill Phase II Vertical Expansion

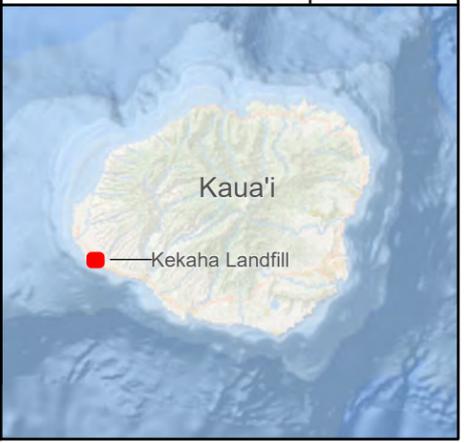
**Figure 1.1  
Project Location**

KAUAI COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit



Reference Map



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# Kekaha Landfill Phase II Vertical Expansion

## Figure 1-2 Land Ownership and User

KAUAI COUNTY, HI

- Local Roads
- ID, Owner, User
- A, State of Hawaii (DLNR)
- B, State of Hawaii (DLNR)
- C, State of Hawaii (HDOA)
- D, State of Hawaii (ADC)
- E, State of Hawaii (HDOA)
- F, U.S. Federal Government
- G, U.S. Federal Government
- H, State of Hawaii



**Kekaha Landfill**

Land Owner	User
A State of Hawaii (DLNR)	County of Kauai
B State of Hawaii (DLNR)	Hawaii National Guard
C State of Hawaii (HDOA)	Syngenta Seed
D State of Hawaii (ADC)	Various
E State of Hawaii (HDOA)	Kekaha Agriculture Park
F U.S. Federal Government	Department of Defense
G U.S. Federal Government	U.S. Lighthouse Service
H State of Hawaii	Kauai Raceway Park



Reference Map



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## 2. Project Description

### 2.1 Project Components

The Proposed Action would extend the Phase II landfill height vertically from the currently permitted maximum height of 120 ft amsl to a maximum elevation of 171.5 ft amsl. The major components of the Proposed Action would be located entirely within the Phase II area (i.e., within TMK 4-1-2-002:001 [por.]) and include the features listed below.

#### 2.1.1 Vertical Landfill Expansion

The proposed Phase II vertical expansion would extend the existing engineered waste disposal area upwards to a maximum height of 171.5 ft amsl, without altering the Phase II permitted limit-of-waste footprint of approximately 44 acres. The Phase II vertical expansion would make use of the existing Subtitle D base liner system and leachate collection system that underlie the Phase II landfill (See Section 1.2.1 for more information). The existing conditions, final cover grade, and landfill cross-sections are presented as Figure 2-1, Figure 2-2, and Figure 2-3, respectively.

The limits of the proposed vertical expansion would be approximately 13 acres. To address slope stability and stormwater management, the proposed vertical expansion would incorporate benches in the slope design (Figure 2-2). The existing all-weather access roads would be extended to access the upper reaches of the landfill area.

Airspace for the waste disposal area is gained from increasing the overall final cover height of Phase II from 120 ft amsl to 171.5 ft amsl. The proposed grading design of the final cover consists of a 3.5:1 (horizontal: vertical) side slope with a 3 percent top grade, similar to the design of the permitted Phase II final cover (Tetra Tech 2022, HDOH 2019). The estimated amount of gross airspace for the Phase II vertical expansion is approximately 405,300 cubic yards (cy) (Table 2-1).

**Table 2-1. Estimated Additional Landfill Capacity from Proposed Action**

Proposed Expansion Area	Additional Design Volume (cy)	Annual Tonnage (tons)	Annual in-place Waste (cy)	Estimated Additional Years of Capacity with Vertical Expansion
Phase II Vertical Expansion	405,300	82,000	124,200	3.2
<p>Assumptions:</p> <p>Design volume estimated as the volume between the proposed top of final cover surface (with the proposed vertical expansion) and the existing permitted top of final cover surface, minus the increased volume of final cover required due to the extended side slope lengths.</p> <p>Annual in-place waste volume estimated based on an assumed in-place waste density of 1,300 pounds of waste per cubic yard of waste volume.</p>				

### **2.1.2 Landfill Gas Collection and Control System**

KFL's existing GCCS consists of a collection network of HDPE pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control emissions. Due to the additional waste tonnage to be accepted as a result of the Proposed Action, the total landfill gas generation rate and landfill gas collected in the GCCS would increase. Tetra Tech, Inc. (Tetra Tech), conducted an engineering analysis of the GCCS for the Proposed Action; the analysis concluded that the existing GCCS is adequately sized to accommodate the anticipated increase in landfill gas flow (Tetra Tech 2022).

Existing GCCS infrastructure located within the vertical expansion footprint would be impacted by the additional fill. To address this, two phases of improvements would maintain gas collection as the vertical expansion is constructed (Tetra Tech 2022). The first phase would occur prior to placement of fill and would include raising the existing vertical landfill gas extraction wells in areas where a relatively minimal amount of fill is anticipated and, where more significant amounts of fill are anticipated, relocating existing vertical landfill gas extraction wells to outside of the limits of the vertical expansion. The second phase would occur when the final fill limit is reached (or just before) and would include the addition of vertical landfill gas extraction wells and related lateral piping to provide landfill gas collection for new waste placed within the vertically expanded area. The proposed GCCS modifications would tie into the existing GCCS.

### **2.1.3 Stormwater Management**

As described in Section 1.2.1.2, stormwater is currently managed at the KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of diversion berms and benches which convey runoff to rippapped down drains (i.e., flumes). The down drains convey runoff to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. As shown in Figure 2-4, surface water drainage features would need to be modified slightly (i.e., extended upwards) to accommodate the increase in side slope lengths and corresponding runoff flow velocities due to the proposed vertical increase. The upper end of the down drains in each of the four existing drainage area affected by the vertical expansion (areas A, B, C, and F in Figure 2-4) will be extended upward as necessary and tied into the proposed diversion berms and benches from the proposed vertical expansion. The proposed surface water management system would tie into the existing permitted system at the limits of the vertical expansion. No changes to the existing perimeter infiltration ditches or stormwater infiltration basin are warranted or proposed.

## **2.2 Construction Activities**

Once evaluated through the HRS Chapter 343 environmental review process and permitted by the HDOH, the vertical expansion could be implemented immediately to meet the anticipated demands. No construction is required to begin accepting waste within the Phase II footprint.

## 2.3 Operations and Maintenance

The KLF incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances, including a waste acceptance and exclusion program, leachate management plan, groundwater and leachate monitoring, landfill gas monitoring plan, surface water management plan, access and traffic control, litter control, dust control, odor control, vector control, explosive gas control, spill prevention, control, and countermeasures (SPCC) plan, and emergency management procedures. These controls are detailed in the KLF's *Operations Manual* (Geosyntec 2023a), which would be amended to incorporate the Proposed Action, as necessary. The KLF would continue to implement these engineering and operational controls under the Proposed Action to minimize the operational impacts. No substantial changes to the KLF's operations are proposed.

## 2.4 Closure and Post-closure

The County is responsible for 30 years of post-closure care of the Phase II landfill in accordance with the KLF *Closure/Post-closure Plan* (AECOM 2016). The post-closure maintenance and monitoring requirements are intended to ensure proper functioning of the landfill systems during the 30-year post-closure care period for the long-term protection of the environment and public health. Post-closure activities include monitoring and maintenance of the landfill final cover, stormwater management systems, landfill gas management, LCRS operation, and groundwater monitoring.

## 2.5 Project Schedule and Cost

As no construction is required to begin operating the vertical expansion, the Proposed Action can begin once all approvals are received. Depending on refuse inflow rates and other operational considerations, the County would begin to landfill within the expanded vertical area by 2026.

The vertical expansion would incur costs for preparation of the design, plans, EA, and permits to an amount of approximately \$825,000 (USD) (Table 2-2). The Project would be entirely funded by the County of Kaua'i.

**Table 2-2.** Proposed Action Implementation Schedule

Item	Anticipated Date of Completion
HEPA Environmental Assessment	December 2023
Final Operations Plan and Design	December 2023
HDOH Solid Waste Management Permit	October 2024
Begin Waste Placement in Phase II Vertical Expansion Volume	2025–2026
Total Time Duration	~ 2 years
HDOH = Hawai'i Department of Health; HEPA = Hawai'i Environmental Policy Act	

## 2.6 Alternatives to the Proposed Action

In addition to the Proposed Action, the no action alternative will be analyzed in this EA. Two other alternatives were considered but dismissed from further consideration. Although technically feasible, these two alternatives did not satisfy the purpose of and need for the action. The no action alternative and two alternatives considered, but not carried forward, are summarized below and in Table 2-3 and explained below.

**Table 2-3. Summary of Alternatives Considered**

Item	Estimated Implementation Timeline	Meets Purpose and Need? <sup>1</sup>
Proposed Action	2025/2026	Yes
No Action Alternative	N/A	No - Retained to Compare Baseline Conditions
Siting and Constructing a New Landfill Facility	2033	No - Dismissed
Off-island Disposal	2025/2026	No - Dismissed
<p>1. The purpose of the Proposed Action is to prolong the life of the Kekaha Municipal Solid Waste Landfill (KLF) prior to exhausting the island's only permitted landfill airspace and to provide safe disposal capacity of municipal solid waste (MSW) in Kaua'i County while a long-term MSW capacity solution can be identified. The need arises because the currently permitted KLF Phase II is projected to reach capacity in October 2026.</p>		

### 2.6.1 No Action Alternative

Under the no action alternative, Phase II would not be vertically expanded, resulting in the closure of the landfill in 2026 when the currently permitted landfill capacity would be reached. The Island of Kaua'i would be left without a permitted facility for the safe disposal of MSW.

### 2.6.2 Alternatives Considered but not Carried Forward

Only the alternatives that were technically feasible and satisfied the purpose of and need for action were carried through the EA analysis. Other alternatives considered, but not carried forward, are summarized below.

#### 2.6.2.1 *Siting and Constructing a New Landfill Facility*

As described in Section 1.2.3.1, the County has a long history of actions attempting to site and permit a new MSW landfill at another location on the island. While the County is currently working on the task of siting a new landfill facility on Kaua'i, this cannot be accomplished prior to 2026, when the KLF Phase II is projected to reach capacity. Siting a new landfill involves numerous steps and substantial time. An implementation schedule presenting the steps and time required to site, permit, and construct a new landfill is presented in Table 2-4 below. These are estimated durations; actual durations may vary.

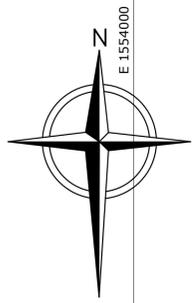
**Table 2-4. Implementation Schedule to Site, Permit, and Construct a New Landfill**

Item	Duration
Prepare Initial Site Report and Environmental Impact Statement	2 years
Acquire Land	2 years
Prepare Feasibility Report	1 year
Prepare Operations Plan and Design	1 year
Land Use Permit(s) (if required)	1 year
HDOH Permits	1 year
Award Construction Contract and Construct MSW Landfill	2 years
Total Time Duration	~ 10 years
HDOH = Hawai'i Department of Health; MSW = municipal solid waste	

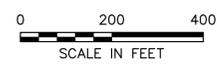
With this implementation schedule, the County expects that a new landfill cannot reasonably be sited in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer (e.g., greater than 10 years). Because this alternative does not meet the Project purpose of providing permitted landfill airspace before the existing permitted landfill airspace is exhausted, it was not carried forward in this analysis. However, the County is still proceeding with plans to site a new landfill as part of its long-term planning objectives.

### **2.6.2.2 Off-island Disposal**

MSW would be shipped from Kaua'i to off-island landfills or to H-POWER on O'ahu. Such a plan would require a transfer station and additional funds to support the transfer costs (i.e., inter-island shipping and off-island hauling). The high cost associated with off-island disposal would raise waste disposal facility costs and fees and could result in widespread illegal disposal of MSW throughout rural Kaua'i. Transporting solid waste off-island would also proportionally increase the likelihood of accidental releases during transport. This option carries the risk that disposal facilities owned and operated by others could become unavailable, leaving the County without a safe disposal option. Additionally, the facilities probably would not accept all forms of MSW generated, which would have to be otherwise managed. For the foregoing reasons, this alternative was eliminated from further consideration.

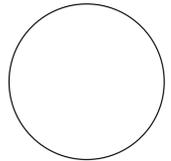


- NOTES:**
1. TOPOGRAPHIC CONTOURS PREPARED BY WALKER ASSOCIATES. DATE OF PHOTOGRAPHY: OCTOBER 2022
  2. HORIZONTAL DATUM IS BASED ON NAD83 (1986). HAWAII ZONE 4. VERTICAL DATUM BASED ON LOCAL TIDAL.



REV	REVISION DESCRIPTION	DATE

**TETRA TECH**  
 21700 Copley Drive, Suite 200  
 Diamond Bar, CA 91765  
 TEL 909.860.7777 FAX 909.860.8017

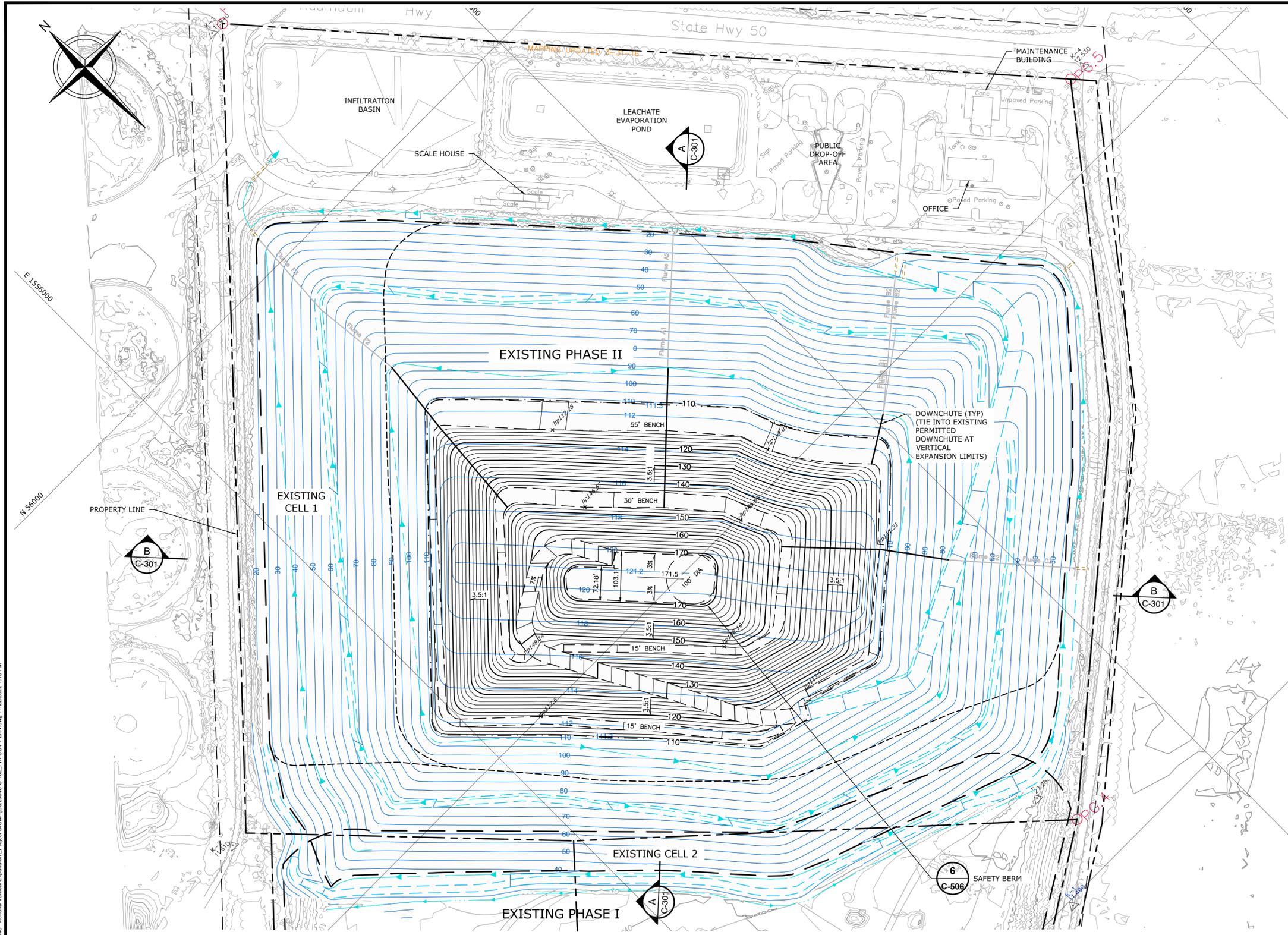


KEKAHA MUNICIPAL SOLID WASTE LANDFILL		
PHASE II - VERTICAL EXPANSION		
<b>EXISTING CONDITIONS</b>		
DESIGNED BY : GRB	CHECKED BY :	DATE : NOV. 2022
DRAWN BY : MDC/GVP	APPROVED BY :	FILE : 220048-C-100_EXIST COND PLAN.dwg

FIGURE  
**2-1**

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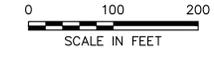
**LEGEND:**

---	PROPERTY LINE
- - - -	EASEMENT
---	PHASE LIMIT
- - - -	CELL LIMIT
- . . . -	PROJECT LIMIT
— 50 —	EXISTING INDEX CONTOUR (10FT INTERVAL)
— 50 —	EXISTING INTERMEDIATE CONTOUR (2FT INTERVAL)
— 50 —	PERMITTED FINAL COVER CONTOUR (10FT INTERVAL) (BY OTHERS)
— 50 —	PERMITTED FINAL COVER CONTOUR (5FT INTERVAL) (BY OTHERS)
— 50 —	PROPOSED FINAL COVER CONTOUR (10FT INTERVAL)
— 50 —	PROPOSED FINAL COVER CONTOUR (2FT INTERVAL)

PH2 PERMIT FC vs VERT EXPAN:  
NET = 407,700 CY (FILL)

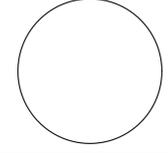
- NOTES:**
1. TOPOGRAPHIC CONTOURS PREPARED BY WALKER ASSOCIATES. DATE OF PHOTOGRAPHY: OCTOBER 2022.
  2. HORIZONTAL DATUM IS BASED ON NAD83 (1986). HAWAII ZONE 4. VERTICAL DATUM BASED ON LOCAL TIDAL.

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21700 Copley Drive, Suite 200  
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TEL 909.860.7777 FAX 909.860.8017

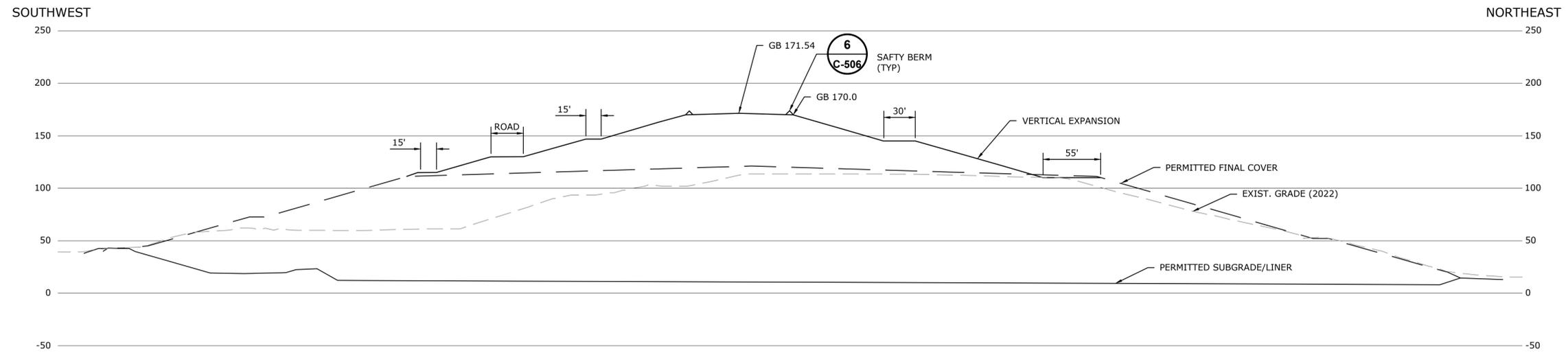


KEKAHA MUNICIPAL SOLID WASTE LANDFILL  
PHASE II - VERTICAL EXPANSION  
**FINAL COVER GRADING PLAN**

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FIGURE  
**2-2**

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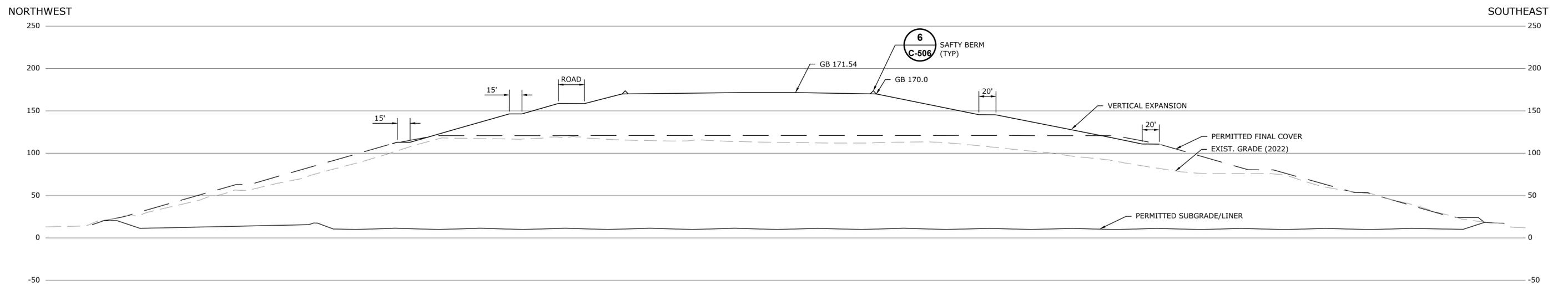


SOUTHWEST-NORTHEAST

SECTION

SCALE: 1"=60'

A  
C-301



NORTHWEST-SOUTHEAST

SECTION

SCALE: 1"=60'

B  
C-301

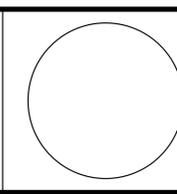
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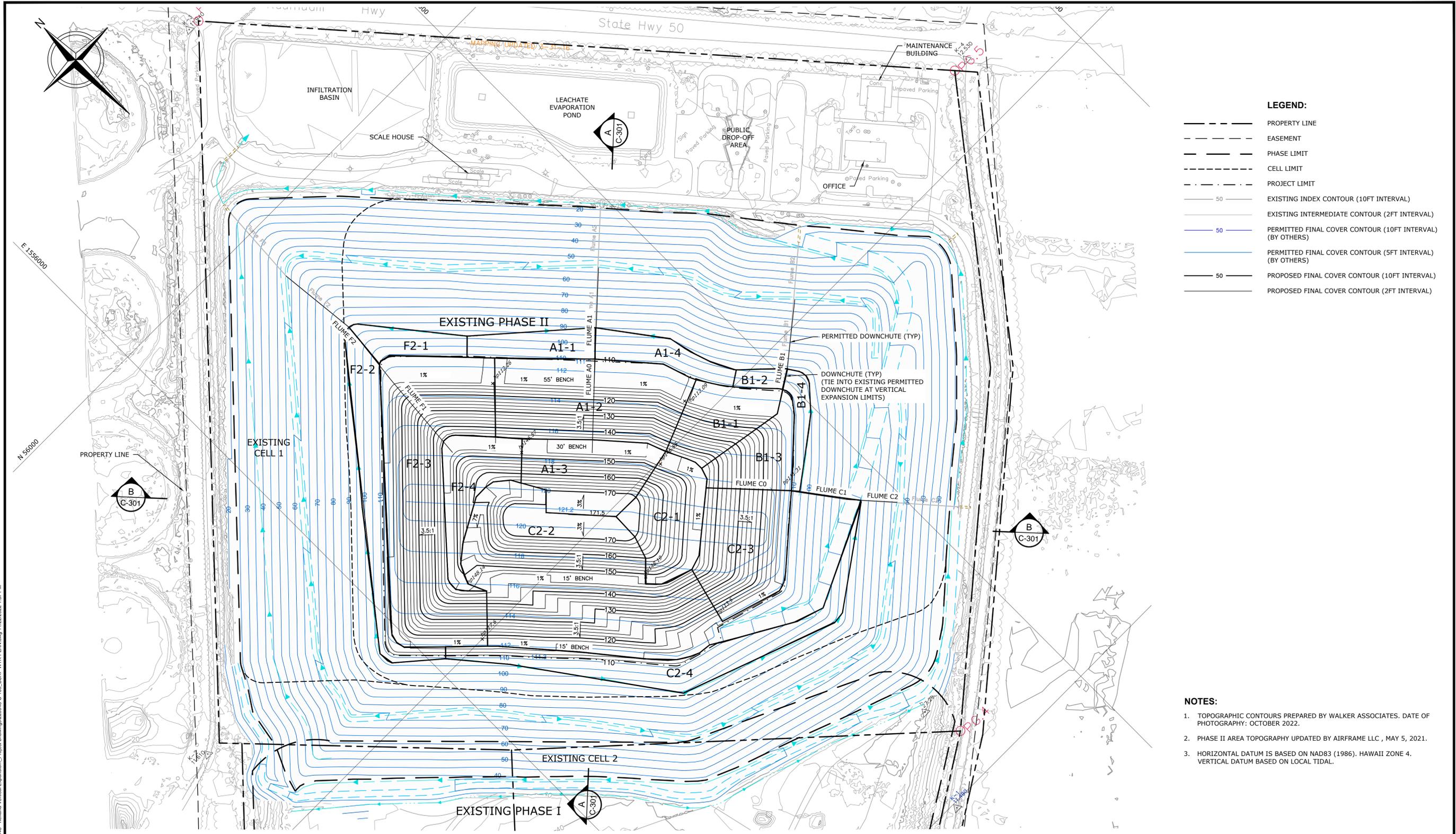
**TETRA TECH**  
 21700 Copley Drive, Suite 200  
 Diamond Bar, CA 91765  
 TEL 909.860.7777 FAX 909.860.8017



KEKAHA MUNICIPAL SOLID WASTE LANDFILL		
PHASE II - VERTICAL EXPANSION		
<b>LANDFILL CROSS-SECTIONS</b>		
DESIGNED BY: GRB	CHECKED BY:	DATE: NOV. 2022
DRAWN BY: MDC/GVP	APPROVED BY:	FILE: 220048-C-301_LF SECTIONS.dwg

FIGURE  
**2-3**

NOT FOR CONSTRUCTION



- LEGEND:**
- PROPERTY LINE
  - - - EASEMENT
  - - - PHASE LIMIT
  - - - CELL LIMIT
  - - - PROJECT LIMIT
  - 50 --- EXISTING INDEX CONTOUR (10FT INTERVAL)
  - EXISTING INTERMEDIATE CONTOUR (2FT INTERVAL)
  - 50 --- PERMITTED FINAL COVER CONTOUR (10FT INTERVAL) (BY OTHERS)
  - PERMITTED FINAL COVER CONTOUR (5FT INTERVAL) (BY OTHERS)
  - 50 --- PROPOSED FINAL COVER CONTOUR (10FT INTERVAL)
  - PROPOSED FINAL COVER CONTOUR (2FT INTERVAL)

- NOTES:**
1. TOPOGRAPHIC CONTOURS PREPARED BY WALKER ASSOCIATES. DATE OF PHOTOGRAPHY: OCTOBER 2022.
  2. PHASE II AREA TOPOGRAPHY UPDATED BY AIRFRAME LLC , MAY 5, 2021.
  3. HORIZONTAL DATUM IS BASED ON NAD83 (1986). HAWAII ZONE 4. VERTICAL DATUM BASED ON LOCAL TIDAL.



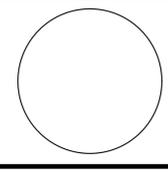
E 1556000  
N 56000

0 100 200  
SCALE IN FEET



REV	REVISION DESCRIPTION	DATE

**TETRA TECH**  
21700 Copley Drive, Suite 200  
Diamond Bar, CA 91765  
TEL 909.860.7777 FAX 909.860.8017



KEKAHA MUNICIPAL SOLID WASTE LANDFILL  
PHASE II - VERTICAL EXPANSION

**SURFACE WATER MANAGEMENT PLAN**

DESIGNED BY : GRB    CHECKED BY :    DATE : NOV. 2022  
DRAWN BY : MDC/GVP    APPROVED BY :    FILE : 220048-C-103\_SURF WTR PLAN.dwg

FIGURE  
**2-4**

NOT FOR CONSTRUCTION

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### 3. Affected Environment, Potential Impacts, and Mitigation Measures

Section 3 describes the Proposed Action in the context of the affected environment, the potential effects of the Proposed Action on that environment, and mitigation measures associated with the Proposed Action and the no action alternative. This includes both the natural and anthropogenic elements of the environment, such as air quality, biological resources, climate, cultural resources, geology, topography, and soils, hazardous materials and hazardous waste, historic and archeological resources, land use, natural hazards, noise, public facilities and services, safety and health, socioeconomics, transportation and traffic, utility infrastructure, visual resources, and water resources. The region of influence (ROI) is defined for each resource area and determines the geographical area to be addressed as the affected environment. This information serves as a baseline from which to identify and evaluate potential environmental impacts that may result from the implementation of the Proposed Action or the no action alternative.

Each section also analyzes the potential impacts of the Proposed Action and the no action alternative. Effects from the Proposed Action may be adverse or beneficial, short- or long-term in duration, and include direct, indirect, and cumulative effects:

- Short-term versus long-term impacts: Indicates the impact duration. Short-term impacts may be related to a specific event (e.g., heavy rainfall) or phase of development (i.e., construction). Long-term impacts are generally associated with the operations phase, which, for the Proposed Action, begins with the acceptance of debris within the expanded Phase II landfill area and continues after closure of the Proposed Action.
- Direct versus indirect impacts: Direct impacts are “cause and effect” types of impacts and tend to be easier to observe or measure. A direct impact occurs at the same time and same place as the action. Indirect impacts (or secondary impacts) are caused by the action and are later in time or further removed in distance, but still reasonably foreseeable (HAR § 11-200-2).
- Cumulative Impacts: Cumulative impacts are impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Regardless of which agency or person undertakes the other actions. Cumulative impacts can result from individually minor, but collectively significant action taking place over a period of time (HAR § 11-200-2). Cumulative impacts are addressed in Section 3.18.

## 3.1 Air Quality

### 3.1.1 Affected Environment

The ROI for air quality is the KLF facility and downwind areas. Modeling of downwind areas was not completed as part of this assessment. However, areas downwind of the KLF would typically include places to the west or southwest. During Kona winds, downwind areas would be places to the north or east.

Ambient air quality, which refers to the purity of the general outdoor atmosphere, is regulated under the Clean Air Act and the U.S. Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) (40 Code of Federal Regulations [CFR] Part 50). The HDOH also regulates air quality and sets ambient air quality standards (HAR § 11-59-4) that are as strict as or, in some cases, stricter than the NAAQS. The State of Hawai'i has also established standards for fugitive dust emissions emanating from construction activities (HAR § 11-60.1-33). These standards prohibit any visible release of fugitive dust from construction sources without taking reasonable precautions.

The HDOH maintains air quality monitoring stations throughout the state to measure ambient air quality based on established federal and state standards. Seven parameters are regulated: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), lead (Pb), and hydrogen sulfide (H<sub>2</sub>S). A summary of Hawai'i's air quality monitoring data is published annually (HDOH 2022). The closest air quality monitoring station to the KLF is the Niupalu Station, located on Hulemalu Road in Līhu'e, approximately 23 miles east of the KLF. This station monitors sulfur dioxide, nitrogen dioxide, and PM<sub>2.5</sub> only. The nearest monitoring station for carbon monoxide, PM<sub>10</sub>, ozone, and lead is at Kapolei on the Island of O'ahu; the only monitoring station for hydrogen sulfide is Leilani on the east coast of Hawai'i Island. In 2021, all areas in the State of Hawai'i met all federal and state ambient air quality standards (HDOH 2022).

In general, existing air quality in the vicinity of the KLF is good. Airborne emissions on the island are relatively low due to low levels of development and automobile emissions and prevailing trade winds that help disperse the accumulation of emissions. Sources of pollutant air emissions in the vicinity include vehicle exhaust from Kaunauli'i Highway/Hawai'i Route 50, dust from agricultural cultivation and construction, and occasional smoke from wildfires. Potential sources of air pollutants and emissions associated with KLF facility include diesel- and gasoline-powered equipment, motor vehicles and refuse transfer trucks, landfill gas, and fugitive dust. These sources are discussed in more detail below.

#### 3.1.1.1 Vehicular Combustion

The existing KLF operations generate some emissions from vehicles and refuse trucks driving to and from the facility as well as diesel- and gasoline-powered equipment used in landfill operations (e.g., compactor, bulldozer, dump truck, front end loader, excavator, water truck, roll-off truck, and auxiliary equipment) (Geosyntec 2023a). All KLF vehicles and equipment are maintained in proper working order

and follow state and federal emission standards. Prevailing trade winds help disperse the accumulation of emissions from vehicles.

### **3.1.1.2 Fugitive Dust**

Fugitive dust is currently managed by KLF personnel. The site's water truck is used during dry weather to spray water on access roads and other areas that might otherwise generate windblown dust. The volume of water and frequency of spraying is increased as needed during particularly dry and windy conditions.

### **3.1.1.3 Landfill Gas**

Landfill gas is generated from the decomposition of organic material and consists primarily of methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>), as well as lesser amounts of non-methane organic compounds. Although some landfill gases are odorless, other gases (such as hydrogen sulfide) cause odor (see below). As described in Section 1.2.1.2, KLF's existing GCCS collects landfill gas from within the waste volume and safely combusts it in an enclosed landfill gas flare. The landfill gas flare is designed to minimize and control emissions in accordance with KLF's CSP Permit No. 0802-01-C. In accordance with HAR § 11-60.1, the KLF reports the GCCS operational and monitoring data and CSP permit compliance tracking semi-annually. In the second half of 2022, the facility had two exceedances of surface concentration of methane and took immediate corrective action to bring that exceedance within compliance (Geosyntec 2023b). All other emissions were in compliance with KLF's CSP Permit No. 0802-01-C.

### **3.1.1.4 Odor Control**

The odor control program at the KLF consists of identification and special handling of odorous wastes, application of daily and intermediate cover, and management of landfill gas (Geosyntec 2023a). Odorous waste accepted at the KLF include sewage sludge and grits, dead animals, grease trap pumping waste, and food wastes. Wastes capable of creating off-site odor problems are identified at the scale house and immediately directed to the active landfill area to be buried and covered with non-odorous waste. Additionally, daily and intermediate cover soil is placed and compacted over the MSW and is an effective means of preventing odors from general solid waste landfilling activities. Regular inspection and maintenance of cover to eliminate cracks and fissures in cover soil is also conducted as an important element of odor control from solid waste after it is buried.

## **3.1.2 Potential Impacts and Mitigation Measures**

### **3.1.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related emission sources are anticipated.

As described in the subsequent paragraphs, no new emission sources or impacts to air quality resources are anticipated; rather, the Proposed Action would continue the existing impacts of KLF operations for an additional 2 to 4 years. Potential short- and long-term impacts of the Proposed Action on air quality are discussed below.

### **3.1.2.2      *Vehicular Combustion***

Daily emissions from vehicle traffic, refuse truck, and landfill equipment are anticipated to remain unchanged from current conditions because the number of daily trips to the landfill and the daily quantities of waste placed on the landfill would not change as a result of the Proposed Action. All KLF vehicles and equipment will continue to be maintained in proper working order and follow state and federal emission standards. Emissions from vehicular combustion would persist for an additional 2 to 4 years; however, due to the relatively small number of vehicles and equipment, and prevailing trade winds that help disperse the accumulation of emissions, emissions resulting from the Proposed Action are expected to be negligible.

### **3.1.2.3      *Fugitive Dust***

Fugitive dust generated from landfill activities would persist for an additional 2 to 4 years. KLF would continue to implement best management practices (BMP) to minimize fugitive dust generated during landfill operations (e.g., water truck used during dry weather). Fugitive dust emissions would be the same as existing conditions and are not anticipated to have a significant adverse effect on air quality.

### **3.1.2.4      *Landfill Gas***

Due to the additional waste tonnage to be accepted as a result of the Proposed Action, the total landfill gas generation rate and landfill gas collected in the GCCS would increase. Tetra Tech (2022) conducted an engineering analysis of the GCCS for the Proposed Action; the analysis concluded that the existing GCCS is adequately sized to accommodate the increase in landfill gas flow. The GCCS collection infrastructure would extend into the new waste placed within the vertically expanded area and would tie into the existing GCCS. The GCCS is regulated by KLF's CSP Permit No. 0802-01-C, which would be modified for the Proposed Action. With the continued use of the GCCS, landfill gas emissions would not significantly differ from existing conditions and are not anticipated to have a significant adverse effect on air quality.

### **3.1.2.5      *Odor***

Odors would continue to occur as a result of the Proposed Action; however, odor would be mitigated using the existing odor control practices (e.g., immediate disposal and daily covering of refuse). Significant adverse impacts related to nuisance odors are not anticipated with the Proposed Action.

With implementation of the BMPs described in Section 3.1.1, such as dust control, minimizing the open face of the landfill, special handling of odorous wastes, application of daily cover, and maintaining

vehicle and equipment in good working order, short- and long-term impacts to air quality will be less than significant.

### **3.1.2.6 No Action Alternative**

Under the no action alternative, the Proposed Action would not occur. The KLF would close in late 2026 and post-closure monitoring would take place for the 30-year period following closure. In the immediate vicinity of the KLF, emissions from vehicular traffic would be lower following closure as daily traffic would be reduced. Final cover and revegetation of the closed landfill would also reduce fugitive dust and landfill odors and landfill gas emissions would continue to be managed through the KLF's existing GCCS. However, without a permitted facility for the safe disposal of MSW, illegal dumping outside of the KLF would likely increase, resulting in increased levels of uncontrolled landfill gas emissions and odor.

## **3.2 Biological Resources**

### **3.2.1 Affected Environment**

The ROI for biological resources, including flora and fauna, is the KLF facility. Applicable regulations include the federal Endangered Species Act (ESA; 50 CFR § 17) and HRS Chapter 195D, both of which protect plant and animal species listed as endangered or threatened. In addition, the federal Migratory Bird Treaty Act (MBTA) provides certain protections for those migratory bird species identified as part of implementing treaty obligations.

Biological resources expected to occur in or transit the KLF, and potential impacts to those resources, are informed by previous surveys in the KLF facility and its vicinity, and various assessments for facility operations (DLNR 1982, R.M. Towhill 1983, Belt Collins 1998, AECOM 2013a, NAVFAC 2014, SWCA 2016). Plant and wildlife surveys conducted within the KLF site in 1982, prior to construction of the Phase II landfill, described the habitat at the site as highly modified and dominated by non-native plant and animal species (DLNR 1982; Appendix C). No rare or state or federally listed plant or wildlife species were recorded at the site or as having the potential to occur. Since then, the KLF site has been subject to further disturbance as a result of construction and operation of the Phase II landfill and its associated infrastructure; thus, the already marginal habitat at the site for native flora and fauna noted in the 1982 surveys has been further modified. Despite this disturbance, several state and federally listed bird species have been recently recorded at the KLF and the vicinity. Additional details on plants and animals are discussed below.

#### **3.2.1.1 Flora**

The vegetation survey conducted prior to construction of the Phase II portion of the KLF facility characterized the vegetation as highly altered and dominated by non-native plant species (DLNR 1982, R.M. Towhill 1983). Dominant plant species recorded during the survey included the following non-native species: beach wiregrass (*Dactyloctenium aegyptium*), Bermuda grass (*Cynodon dactylon*), sandbur (*Cenchrus echinatus*), golden crown-beard (*Verbesina encelioides*), cocklebur (*Xanthium*

*strumarium*), lantana (*Lantana camara*), Indian fleabane (*Pluchea indica*), klu (*Vachellia farnesiana*), koa haole (*Leucaena leucocephala* subsp. *leucocephala*), and kiawe (*Neltuma pallida*). No rare or listed native plants were recorded at the site and were considered highly unlikely to occur (DLNR 1982). Much of the vegetation previously documented was cleared during construction and operation of the KLF. The Proposed Action will occur within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993. Therefore, any vegetation growth within the Phase II area is minimal and likely consist of weedy, low-growing, non-native species.

No critical habitat for plants has been designated by the U.S. Fish and Wildlife Service (USFWS) within the KLF site. The closest plant critical habitat are two units designated for the endangered grass, lau'ehu (*Panicum niuhauense*), situated along the coastline approximately 1 mile to the west and south of KLF (USFWS 2023).

### **3.2.1.2 Fauna**

Wildlife surveys conducted in 1982, prior to construction of the Phase II landfill, recorded only non-native bird and mammal species at the KLF site; no rare or listed wildlife species were observed (DLNR 1982, R.M. Towhill 1983). Suitable habitat for native wildlife has been reduced within the KLF and mostly removed within the Phase II area as a result of construction and operation. However, bi-monthly wildlife surveys conducted at KLF between August 2014 and August 2015 documented two listed bird species within the KLF site outside the Phase II area: the endangered Hawaiian stilt/a'eo (*Himantopus mexicanus knudseni*) and the federally threatened and state endangered Hawaiian goose/nēnē (*Branta sandwichensis*) (SWCA 2016). The endangered Hawaiian duck/koloa (*Anas wyvilliana*), Hawaiian common gallinule/'alae 'ula (*Gallinula galeata sandvicensis*), and Hawaiian coot/'alae ke'oke'o (*Fulica alai*) have also been recorded in the vicinity of the KLF (NAVFAC 2014). None of these listed birds appear to be attracted to any waste handling operations within the Phase II portion of KLF, but they may be occasionally attracted to the leachate evaporation pond and stormwater infiltration basin within the KLF, as well as water features adjacent to (but not associated with) the KLF. Further details regarding the potential for listed wildlife to occur in or transit the KLF are provided below.

In addition, three native bird species protected by the MBTA have been observed within the KLF facility (outside of the Phase II area) and in the facility vicinity; these species are the black-crowned night heron/'auku'u (*Nycticorax nycticorax*), Pacific golden-plover/kolea (*Pluvialis fulva*), and Hawaiian short-eared owl/pueo (*Asio flammeus sandwichensis*) (NAVFAC 2014, SWCA 2016). Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, suitable habitat for native wildlife is minimal. No critical habitat for wildlife has been designated by the USFWS within the KLF site or the vicinity (USFWS 2023).

#### **Listed Waterbirds**

Hawai'i's four listed waterbird species occur in a variety of habitats, including ponds, artificial reservoirs, and irrigation ditches (USFWS 2011). Hawaiian stilts have been observed in the KLF's leachate evaporation pond when water was present (SWCA 2016). The Hawaiian duck/koloa has also been

observed in ponds and ditches in the immediate vicinity of the KLF. The listed Hawaiian common gallinule and Hawaiian coot have also been recorded in the vicinity (NAVFAC 2014) and have the potential fly over the KLF site in transit to areas of suitable habitat.

### **Hawaiian Goose/Nēnē**

The Hawaiian goose is listed as threatened by the USFWS and endangered by the State of Hawai'i Division of Forestry and Wildlife (DOFAW). It occurs in a variety of habitats, but has a preference for open areas, such as pastures and grasslands (USFWS 2004). Hawaiian geese have been observed at the KLF, particularly near green waste piles and vegetated areas in Phase I and at the stormwater basin and leachate evaporation pond (A. Fraley, DPW, personal communication, February 17, 2023). However, there is no indication that Hawaiian geese are attracted to the active area within the Phase II portion or other facilities at the KLF (SWCA 2016).

### **Listed Seabirds**

Although the KLF site does not provide suitable nesting or foraging habitat for listed seabirds, the endangered Hawaiian petrel/'ua'u (*Pterodroma sandwichensis*), the threatened Newell's shearwater/a'ō (*Puffinus newelli*), and the endangered Hawai'i distinct population segment (DPS) band-rumped storm-petrel/'akē'akē (*Oceanodroma castro*), may fly over the KLF site in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1 to December 15). Listed seabirds also have the potential to be attracted to operational lights at night (USFWS 2017, 2021a, 2022a).

### **Hawaiian Hoary Bat**

The endangered Hawaiian hoary bat/'ōpe'ape'a (*Lasiurus semotus*) is known to occur in the vicinity (NAVFAC 2014) and may occasionally traverse the KLF. The Hawaiian hoary bat roosts in both native and non-native trees over 15 ft tall and forages over a variety of habitats and elevational ranges (Bonaccorso et al. 2015, USFWS 2021b). Given the species' wide range of foraging habitat, it is possible that bats forage in or near the KLF. The USFWS and DOFAW recognize all woody vegetation greater than 15 ft tall as potential bat roosting habitat (DLNR 2015, USFWS 2022b). At KLF, the number of trees over 15 ft tall is limited; therefore, potential roosting habitat for the Hawaiian hoary bat is limited.

## **3.2.2 Potential Impacts and Mitigation Measures**

### **3.2.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to flora or fauna are anticipated. The Proposed Action would take place entirely within the existing Phase II footprint, which was highly modified as a result of construction and operation. No new areas will be disturbed as a result of the Proposed Action. As described in the subsequent paragraphs, no new impacts to biological resources are anticipated; rather, the Proposed Action would

continue the existing impacts of KLF operations for an additional 2 to 4 years. Potential short- and long-term impacts of the Proposed Action on flora and fauna are described below.

### **Flora**

No listed or rare plants are known to occur within the KLF, and previous surveys recorded a dominance of non-native plant species. Vegetation within the Phase II area has been highly modified by construction and operations and implementation of the Proposed Action will not result in a change in the type or level of impact to flora; therefore, any impacts to flora expected as a result of the Proposed Action would be very minimal.

### **Fauna**

As described above, although the KLF site has been disturbed, listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF (including the Phase II area). Potential short- and long-term direct and indirect impacts to these species and associated mitigation measures are described in the subsections below.

*Listed Waterbirds:* Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these anthropogenic features are typically dry and, therefore, do not attract many waterbirds (SWCA 2016). Management of the leachate evaporation pond and stormwater infiltration basin will be not change as a result of the Proposed Action. No standing water would be created from the Proposed Action. Vehicle strikes could also affect listed waterbirds should individuals land on or near roadways associated with KLF operations. The KLF maintains posted roadway speed limits at 15 miles per hour (mph) to prevent vehicle strikes to wildlife that may occur in or transit through the KLF facility. Thus, impacts to listed waterbirds will not change as a result of the Proposed Action.

*Hawaiian Goose:* Neither the Phase I portion of the KLF leachate evaporation pond nor the stormwater infiltration basin would be altered or disturbed as a result of the Proposed Action. In the unlikely event that a Hawaiian goose nest is discovered within the KLF property and within a 150-ft radius of the active landfill area of the Phase II landfill, the County will cease all work in the vicinity of the nest immediately and contact the USFWS for further guidance. Vehicle strikes could also affect Hawaiian goose should individuals land on or near roadways associated with KLF operations. The KLF maintains posted roadway speed limits at 15 mph to prevent vehicle strikes to wildlife that may occur in or transit through the KLF facility. Thus, impacts to the Hawaiian goose will not change as a result of the Proposed Action.

*Listed Seabirds:* Listed seabirds could be attracted to operational lighting at the KLF and vulnerable to disorientation and fallout as a result. Existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor's doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are from 8:00 a.m. to 4:00 p.m. Lighting is generally only needed during early morning or early evening hours during the winter months, when daylight hours are reduced. Timers control outdoor lighting and

automatically turn off outdoor lights after the facility has closed and site personnel have departed. The Project does not include plans to add or alter the existing outdoor lighting or change the current hours of operation. Thus, impacts to listed seabirds will not change as a result of the Proposed Action.

*Hawaiian Hoary Bat*: Impacts to the Hawaiian hoary bat could occur if any vegetation over 15 ft tall is removed during the bat birthing and pupping season (June 1 to September 15), or if barbed wire fences are erected. However, trees taller than 15 ft are limited in the KLF and no trees occur within the Phase II area of the facility. No fences are planned to be erected as part of the Proposed Action. Thus, impacts to listed seabirds will not change as a result of the Proposed Action.

Minimization and avoidance measures to avoid and minimize impacts to listed wildlife species with the potential to occur in or transit the KLF would be implemented based on applicable Project-specific recommendations received from the USFWS (Appendix B), and would include such measures as avoiding creating areas with standing or open water; maintaining posted roadway speed limits at 15 mph to prevent vehicle strikes to wildlife that may occur in or transit through the KLF facility; stop work requirements if a listed species is observed inside or within a 150-ft radius of the active Phase II area; seasonal restrictions on removal of woody vegetation greater than 15 ft tall; and continued compliance with lighting standards based on the agency recommended measures currently being implemented at the KLF. With implementation of impact avoidance and minimization measures, the Proposed Action is expected to have less than significant adverse impacts to protected wildlife species.

Because no critical habitat for plants or wildlife has been designated by the USFWS in the KLF site or its immediate vicinity, no impacts to critical habitat are anticipated.

### **3.2.2.2 No Action Alternative**

Under the no action alternative, the Phase II vertical expansion would not be implemented, and landfill operations would cease in late 2026. Listed waterbirds, listed seabirds, Hawaiian goose, and Hawaiian hoary bat would continue to occur in and transit the KLF facility and could be impacted by KLF operations, closure activities, and post-closure monitoring. Thus, potential impacts to biological resources would continue to be less than significant with implementation of the no action alternative.

## **3.3 Climate**

### **3.3.1 Affected Environment**

The ROI for climate is the Island of Kaua'i. The Hawaiian Islands have a tropical climate characterized by relatively mild temperatures and moderate humidity throughout the year (except at high elevations), persistent northeasterly trade winds, notable differences in rainfall across short distances, and infrequent severe storms. Two primary seasons are recognized: a summer (dry) season between May and September, which is typically warmer, drier, and northeasterly trade winds are prevalent, and a winter (wet) period between October and April, which is characterized by more frequent cloud cover and rainfall as well as southerly and westerly winds (Giambelluca and Schroeder 1998). Due to the

tempering influence of the surrounding Pacific Ocean and their low-latitude location, the Hawaiian Islands experience extremely small diurnal and seasonal variations in ambient temperature.

Local climate conditions in Hawai'i are influenced by its rugged mountainous topography and the persistent flow of the trade winds (Giambelluca and Schroeder 1998). The KLF is located on the leeward side of the island of Kaua'i. Mean annual rainfall in Kekaha is approximately 18.2 inches and range from less than 1 inch in the summer months to 2 to 3 inches in the winter (Giambelluca et al. 2014). In the vicinity of the KLF, moisture zones are described as ranging from arid near the coastline to very dry in the Mānā Plains (Price et al. 2012). The daytime temperatures average from the 70s to 80s in degrees Fahrenheit (°F) and nighttime temperatures in the upper 60s to 70s in °F. The prevailing wind direction is from the east at an average of 4 mph (Giambelluca et al. 2014).

Scientific evidence indicates an increase in global greenhouse gas emissions can cause climatic changes (IPCC 2022). The existing KLF contributes a minor amount of greenhouse gases to the environment in the form of exhaust from vehicles and refuse trucks traveling to and from the site, exhaust from equipment used in landfill operations, and controlled landfill gas emissions (see Section 3.1).

### **3.3.2 Potential Impacts and Mitigation Measures**

#### **3.3.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to climate (including greenhouse gas emissions) are anticipated.

The Proposed Action is not anticipated to result in measurable short- or long-term impacts to climate or local climatic conditions (e.g., temperature, rainfall, wind). The Proposed Action would contribute a minor amount of greenhouse gasses to the environment from the use of vehicles and equipment during operations and controlled landfill gas emissions. However, emissions would occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. All vehicles and equipment would be maintained in proper working order and in compliance with state and federal emission standards. Additionally, landfill gas generated from the decomposition of organic material would continue to be collected and safely combusted in an enclosed landfill gas flare in accordance with KLF's CSP Permit No. 0802-01-C, as modified.

#### **3.3.2.2 No Action Alternative**

Under the no action alternative, the Phase II vertical expansion would not occur. In the short term, the KLF would continue to operate and generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions. In the long term, the KLF would reach capacity and close. There would be less exhaust from on-site equipment and vehicles and landfill gas would continue to be managed by the County for 30 years in accordance with its *Closure/Post-closure Plan* (AECOM 2016). However, without a permitted facility for the safe disposal of MSW, illegal dumping outside of the KLF would likely increase, resulting in increased levels of uncontrolled landfill gas

emission. Overall, greenhouse gas emissions would be minimal and are not expected to measurably contribute to regional or global greenhouse gas levels under the no action alternative.

## 3.4 Cultural Resources

### 3.4.1 Affected Environment

The ROI for cultural resources is the KLF facility and Waimea Ahupua‘a. On behalf of the County, Cultural Surveys Hawai‘i (CSH) conducted a Cultural Impact Assessment (CIA) for the Proposed Action (Appendix D). The purpose of the CIA was to gather information on Hawai‘i’s cultural resources, practices, or beliefs that have occurred or still occur within the KLF site and the Waimea Ahupua‘a. Cultural practices and cultural features may include traditional cultural properties and/or designated significant historic properties under Criterion “e” of HAR §13-275-6 and §13-284-6. Significance Criterion “e” refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6(b)(5) and §13-284-6(b)(5)).

The CIA contains information gathered from archival research and consultation, compiled in order to “analyze the impact of a proposed action on cultural practices and features associated with the project area” (Office of Environmental Quality Control 1997). As part of this information gathering, CSH contacted Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants to identify individuals with cultural expertise and/or knowledge of the KLF and vicinity. Community outreach letters were sent to 61 individuals or groups; 14 responded, two provided written testimony, and one met with CSH for an in-depth interview. The results of the archival research and consultation are summarized below.

Waimea Ahupua‘a is composed of several regions which are very different in climate and terrain (Figure 3-1). These differences dictated the kinds of resources that were available and how the ahupua‘a was settled by pre-Contact Hawaiians. On the southwestern leeward coast, the broad, flat Mānā Plain stretches between the Waimea River delta and Polihale to the west. It is here that the villages of Kekaha, Pōki‘i, Wai‘awa, and Mānā are located, backed on the mauka side by steep low cliffs and a series of small valleys and gulches. Just below, makai of the ridges and valleys, lies the Kekaha Ditch, which winds its way down from the Waimea River in the mountains. Between the villages were intermittent homes, with the Old and New Government roads to Mānā (now referred to as the Mānā Road) linking each community between Mānā and Kekaha. The KLF is located near the center of the Mānā Plain, makai of the Kekaha Ditch (Figure 3-1).

Traditional accounts of the Waimea Ahupua‘a are told through Nā ka‘ao a me nā Mo‘olelo (Legends and Stories), Nā Wahi Pana (Storied Places), Oli (Chants), Nā Mele (Songs), and Nā ‘Ōlelo No‘eau (Proverbs). These oral accounts provide important insight into a specific geographical area. There are many legends associated with the Waimea Ahupua‘a, many of which relate to the Hawaiian gods, such as Pele and her

siblings, and ali'i (chiefly class), such as Ola'a. Hawaiian legends concerning Waimea also focus on the engineering feats that made the agricultural abundance of the ahupua'a possible, such as the Kikiola Ditch, also known as the "Menehune Ditch." Waimea, Kaua'i was also a site of great significance for po'e kuhikuhi pu'uone (site experts) and po'e kilo hoku holo moana (navigators) of the pre-contact time. Po'e kilo hoku (astronomers) of O'ahu and Kaua'i also gathered in Waimea, Kaua'i to make their observations.

By the time of western contact in 1778, the Waimea Ahupua'a had long been a focus of settlement, agriculture, and ali'i residence on Kaua'i. However, by the early 1800's, the Hawaiian population was in significant decline. The people of the ahupua'a were struck in May 1826 by an influenza epidemic and a great flood that wreaked havoc upon taro lo'i and damaged structures built by the missionaries. In 1833, censuses taken by Protestant missionaries estimated a population of 3,883 persons within 6 miles of the Waimea station. Subsequent missionary station reports from Waimea recorded the continuing diminishment of the district's population. In 1838 the total population was 3,272, in 1840 it was 2,819, and in 1841 it was 2,779. The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—that introduced private property into Hawaiian society. Over 150 kuleana awards were granted in Waimea; however, only three claims were made in and nearby Kekaha.

In 1850, Waimea was designated a government port, opening it to foreign commerce. At the time, Waimea was exporting a variety of agricultural goods and livestock. Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. Though rice continued to be grown at Waimea and Makaweli into the 1930s, many of the rice fields were being reclaimed for sugar planting.

During the last decade of the nineteenth century, the population of Waimea rebounded, growing from a total of 2,739 in 1890 to 4,595 in 1896, and 5,886 in 1900. That growth was spurred by the establishment of commercial sugarcane planting at Waimea. The Waimea Sugar Mill was founded in 1884 and the railroad line was built in about 1884, which was used to transport sugar from the mills to the pier at Waimea Landing. The fate of plantation agriculture in the arid zones of Waimea Ahupua'a hinged on water supply development in the twentieth century. Construction of the Kekaha Ditch from 1906 to 1907 brought water from the Waimea River to irrigate the sugar cane plantations. From 1923 to 1926, the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands. Kekaha Sugar Company continued to produce sugar until 2000. In 2003, land situated in Kekaha, Kaua'i was transferred through executive order No. 4007 to the ADC for agricultural and related purposes.

As discussed in Section 3.7, CSH conducted a literature review of previous archaeological studies within and in the vicinity of the KLF and identified two historic properties within the KLF. These two 1950s historic properties were identified as an irrigation canal of mounded sand and a low, linear sand mound for irrigation control, both of which are no longer present (AECOM 2013). No traditional cultural properties or designated significant historic properties under Hawai'i significance Criterion "e," were identified within the KLF site.

The CIA also reviewed previous cultural impact assessments conducted within the vicinity of the KLF (Figure 3-2). Previous CIA projects (Chiogioji et al. 2003, Mason 2007, Fernandes et al. 2010, Walden and Collins 2015) and a cultural study (Flores and Kaohi 1993) in close proximity to the KLF identified several traditional cultural practices in the region including: agricultural practices, marine resources, burial practices, gathering practices, hula, mele (songs), recreational activities, and wahi pana (storied places). A CIA was conducted in 2007 for the initial Kekaha Landfill Phase II Lateral Expansion; however, no report was produced. The EA report did state that no cultural practices were identified during consultation (Earth Tech 2007).

Based on the results of community consultation and background research conducted as part of the current CIA (Appendix D), CSH has identified the following cultural practices within Waimea Ahupua'a: fishing, farming (kalo [taro], rice, and sugarcane), limu (seaweed) gathering, hunting, salt production, canoe production, recreational activities, weaving practices, hula, mo'olelo (stories), wahi pana (storied places), mele (songs), and religious activities and burial practices. No ongoing cultural practices were identified within the KLF site during background research and community consultation. However, the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.

### **3.4.2 Potential Impacts and Mitigation Measures**

#### **3.4.2.1 Proposed Action**

No ongoing cultural practices were identified within the KLF during background research and community consultation for this CIA. Although the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities occurring in the Waimea Ahupua'a, no impacts to these cultural practices are anticipated. Consultation identified several concerns related to the environment and the broader community including the following: reduction of native bird habitats and food sources, alteration of the cultural landscape and impacts to the visual aesthetics of the area, and impacts to marine resources from the landfill.

As no impacts to ongoing cultural practices were identified within the KLF site, no mitigation actions are necessary. There is no construction as part of the proposed action, meaning no native soil will be excavated and there will be no new disturbance. Therefore, inadvertent cultural finds are unlikely. However, CSH recommends landfill personnel should be informed of the possibility of inadvertent cultural finds, including human remains, and in the unlikely event that any potential historic properties are identified during landfill activities, all activities cease and the SHPD is notified. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended. In the event that iwi kūpuna and/or cultural finds are encountered during landfill operations, Project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and a cultural preservation plan for proper cultural protocol, curation, and long-term maintenance. As detailed in the CIA,

community participants also provided broad recommendations related to environmental stewardship and landfill management. These should be considered by the County as appropriate.

### **3.4.2.2      *No Action Alternative***

Under the no action alternative, the Phase II vertical expansion would not occur. As no impacts to ongoing cultural practices were identified within the KLF site, no impacts to cultural resources are anticipated with implementation of the no action alternative.

## **3.5    Geology, Topography, and Soils**

### **3.5.1   Existing Conditions**

The ROI for geology, topography, and soils is the KLF facility and Kekaha region. The existing geology, topography, and soils at the KLF and potential impacts to those resources are informed by previous geotechnical investigations conducted by Pacific Geotechnical Engineers, Inc. (PGE), in October 2008, August 2012, and August 2015 within the KLF site (PGE 2008, 2012, 2015), as well as an engineering analysis by Tetra Tech (2022).

#### **3.5.1.1      *Geology***

The KLF is located within the Mānā coastal plain and is approximately 1,700 ft from the Pacific Ocean. The Mānā coastal plain lies at the foot of an ancient sea cliff composed of lava flows of the Waimea Canyon Volcanic series. It is mainly composed of thick deposits of alluvium composed of clay, silt, and other detritus derived from weathered basalt. Seaward portions of the plain are generally overlain by beach and dune deposits largely composed of sand-sized calcareous sediments. Lagoonal deposits composed of a mixture of calcareous and alluvial sediments are generally present in low-lying areas of the plain, just inland of the beach and dune deposits. As a result of agricultural development of the Mānā Plain, most of the lagoonal environments in the plain have been covered by fill (PGE 2008, 2012, 2015).

Based on geologic maps of Kauaʻi by Macdonald et al. (1983) and Sherrod et al. (2007), the KLF is located inland of a beach berm crest in an area composed of calcareous dune and older beach deposits. Development of the landfill has resulted in the widespread placement of fill over the sand deposits. The KLF is not located in an unstable area as defined under HAR § 11-58.1-13(f).

#### **3.5.1.2      *Topography***

The arc-shaped Mānā Plain ranges in elevation from sea level to 50 ft amsl and is approximately 15 miles long and 2 miles wide. The elevation of the KLF site prior to construction was 10 to 11 ft amsl with a slope slightly southwest toward the coastline. Topography within the KLF has been significantly modified from the construction and operation of the existing KLF facility. Phase I landfill has an elevation of

approximately 10 to 49 ft amsl. The base elevation of the KLF Phase II varies from approximately 7 to 12 ft amsl and has a maximum permitted height of 120 ft amsl (Tetra Tech 2022).

### **3.5.1.3      *Soils***

Soils underlying the KLF are classified by the U.S. Department of Agriculture Natural Resource Conservation Service as Jaucus loamy fine sand (JfB), 0 to 8 percent slopes (NRCS 2019). JfB soil is a calcareous soil that developed in wind and water deposited, calcareous sand derived from coral and marine shells. JfB soils is too permeable to allow for surface water ponding or runoff; as a result, the potential for vertical migration of water is great, but erosion by surface water runoff is unlikely. Wind erosion is a severe hazard in the absence of vegetation (Foote 1972).

Soil borings and test pits conducted by PGE found that the predominant on-site foundation soils are poorly graded sands. Results of the percolation tests determined percolation rates of 2 to 6 minutes per inch (PGE 2008, 2012, 2015).

## **3.5.2 Potential Impacts and Mitigation Measures**

### **3.5.2.1      *Proposed Action***

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to geology, topography, and soils will occur. Potential short- and long-term impacts to geology, topography, and soils expected from implementation of the Proposed Action are discussed below.

#### **Geology and Soils**

The Proposed Action would take place entirely within the footprint of the Phase II landfill; no new areas would be disturbed, and no geologic features would be altered. As described in Section 1.2.1.2, the existing LCRS and stormwater management system would prevent uncontrolled runoff and erosion that has the potential to alter the underlying geological conditions. Therefore, no new short- or long-term impacts to geological conditions are expected from the Proposed Action.

There is a potential for short- and long-term impacts to soils from contaminants present in the refuse. The existing LCRS would prevent contamination of soils beneath the landfill. Tetra Tech (2022) evaluated the existing LCRS beneath the Phase II landfill area and concluded that it is structurally capable and adequately sized for the additional load that would be created by the Proposed Action. Possible short- and long-term impacts during operations are from routine transport, use, storage, and disposal of hazardous materials and accidental spills and release of hazardous materials. However, industry-standard BMPs and facility specific plans minimize the potential for inadvertent releases and impacts to soils. See Section 3.6 for more information on hazardous materials and wastes.

## **Topography and Slope Stability**

The Proposed Action would alter the topography within the Phase II area from the current maximum height of 120 ft amsl to 171.5 ft amsl by using the “area fill” method of landfilling, which consists of spreading and compacting waste in horizontal layers. The final shape of the vertically expanded Phase II landfill, after waste placement has ceased and final cover has been installed, would be similar to the Phase II landfill design currently permitted by the HDOH. Top slopes are designed to be sloped at 3 percent and the final cover side slopes sloped at a ratio of 3.5 horizontal to 1 vertical. The final geometry of the Proposed Action with a maximum elevation of 171.5 ft amsl was verified for slope stability (Tetra Tech 2022). The stability analysis looked at two different failure scenarios based on the geometry of the facility, foundation soils, and waste mass. Based on the soil and waste mass properties, the proposed landfill expansion is expected to remain stable (Tetra Tech 2022). No significant short- or long-term impacts are anticipated.

### **3.5.2.2      *No Action Alternative***

Under the no action alternative, the Phase II vertical expansion would not occur. In the short term, the KLF would continue to operate and have potential short- and long-term impacts to soils from inadvertent releases of leachate and hazardous materials. In the long term, the KLF would reach capacity and close; leachate would continue to be managed by the County for 30 years in accordance with KLF’s *Closure / Post-closure Plan* (AECOM 2016). However, without a new landfill facility on Kaua’i to safely dispose of MWS, illegal dumping of waste around the island would likely increase, resulting in increased levels of soil contamination outside of the KLF area.

## **3.6 Hazardous Materials and Wastes**

### **3.6.1 Affected Environment**

The ROI for hazardous materials and hazardous wastes is the KLF facility. In general, hazardous material and wastes include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, may present an unreasonable risk to health, safety, and the environment when released.

There are no outstanding compliance issues related to hazardous materials or hazardous waste at the KLF. According to facility personnel, no major spill events have occurred in the past 5 years (K. Aki, DPW, personal communication, June 20, 2023). In addition, there are no identified Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or RCRA sites within or immediately adjacent to the KLF.

#### **3.6.1.1      *Hazardous Waste***

The KLF does not accept materials designated as hazardous waste under 40 CFR Part 261, polychlorinated biphenyl wastes as defined in 40 CFR Part 761, regulated hazardous waste as defined in

HAR 11-261 through 268, radioactive materials, insecticides and poisons, untreated infectious waste, or explosive materials. In accordance with HAR § 11-58.1-65(b) and (c), scrap vehicles, tires, compressed gas tanks, vehicle batteries, and chlorofluorocarbon (i.e., freon)-containing appliances (e.g., white goods, such as refrigerators, freezers, and air conditioners) may not be disposed of at the KLF Phase II. Operating procedures currently in place to prevent, detect, and manage wastes not acceptable for disposal at the facility are outlined in the *Operations Manual* (Geosyntec 2023a). The Hazardous Waste Exclusion Program procedures include customer notification, scale house monitoring and inspection, random load checks, and landfill working face inspections. If hazardous wastes are discovered during inspections, KLF personnel will reject the load and document the incident in the Daily Logbook. If hazardous waste has been unloaded, KLF personnel will transport the waste to the temporary storage area, and the waste will be identified, logged, placed in bins or separated onto pallets, labeled, and stored until a licensed contractor transports the waste off site for proper disposal, as required by federal and state regulations. (Geosyntec 2023a).

The KLF does accept a number of Special Wastes, including friable and non-friable (non-hazardous) asbestos waste, treated medical waste (sterilized or incinerated), contaminated materials (soils, debris, and other materials contaminated with petroleum or other chemical products), and polychlorinated biphenyl (PCB)-contaminated waste (verified as obtaining less than 50 parts per million PCBs) and dead animals and offal. Each special waste category is handled in accordance with the special waste handling and disposal procedures and regulated under the KLF's SWMP No. LF-0042-16.

The KLF Phase II is classified as a conditionally exempt, small-quantity generator of hazardous waste and is allowed to store such wastes indefinitely, provided they follow procedures required by 40 CFR § 261 (Geosyntec 2023a). Wastes that are generated on-site at the KLF include, but are not limited to, used filters, oils, solvents, and paints, spent lead acid batteries, empty paint, aerosol, and other containers, used tires, scrap metal, welding slag, and leachate. The KLF utilizes third-party contractors for transportation, recycling, and disposal of site-generated waste. Wastes are properly managed on-site according to applicable regulations until properly disposed.

### **3.6.1.2 Hazardous Materials**

The KLF stores and uses petroleum products such as diesel fuel, lubricating oils, and waste oil. Routine handling of oil products occurs primarily at the maintenance shop area and areas over the landfill liner system (Geosyntec 2023a). Thus, the KLF has a low potential for spills of hazardous materials, but incidents are possible in the event of vehicle accidents, malfunctions, or operator error that could result in the discharge of coolant, fuel, or lubricants. The KLF maintains an SPCC Plan, as required by 40 CFR Part 112, to prevent and manage spills of oil and petroleum-based products in the event of a discharge (Geosyntec 2022a).

The facility also houses a 2,000-gallon diesel fuel aboveground storage tank. The double-walled diesel fuel tank is located in the equipment fueling area and includes a reinforced concrete secondary containment structure that can contain 100 percent of the tank's rated capacity (Geosyntec 2022a). In

addition to this concrete structure, there is a tertiary containment system that consists of a low concrete dike built around the perimeter of the tank; this containment system is capable of holding 1,475 gallons. The entire fueling area is protected from accidental traffic collisions by high-visibility yellow traffic bollards spaced at approximately 6-ft intervals (Geosyntec 2022a).

One mobile refueling service truck is used for daily fueling and servicing of Landfill equipment (Geosyntec 2022a). When not in use, the mobile refueling service truck is maintained and parked near the Maintenance Building wash rack that is equipped with an oil water separator. A spill kit for minor spills is located on/near the mobile refueling service truck.

The maintenance shop area contains 55-gallon drums and other small containers holding various types of oils. All drums inside the shop are stored on spill containment pallets capable of containing the full contents of a 55-gallon drum (Geosyntec 2022a). The maintenance building has an impervious concrete floor. The KLF maintains spill kits and absorbent materials in the maintenance shop.

Visual inspections occur at the KLF daily and consist of a complete walkthrough of the facility property to examine perimeter fences for unauthorized entry and locked gates, test leak alarms, and look for tank/piping damage or leakage, stained or discolored pavement, or excessive accumulation of water in the storm drain. Tanks are also inspected for signs of deterioration and discharges. The County performs monthly inspections for permit compliance. Records are maintained at the facility for 3 years.

### **3.6.2 Potential Impacts and Mitigation Measures**

#### **3.6.2.1 *Proposed Action***

Because no construction is required, no short-term construction-related impacts from hazardous materials and hazardous waste would occur.

As described in the subsequent paragraphs, no new impacts from hazardous materials and hazardous waste are anticipated; rather, the Proposed Action would continue the existing impacts of KLF operations for an additional 2 to 4 years. Potential short- and long-term impacts from hazardous materials and waste expected from implementation of the Proposed Action are discussed below.

#### **Hazardous Waste**

The types of waste materials accepted at the KLF would not change under the Proposed Action and current permitted procedures to prevent disposal of hazardous waste at the facility would be maintained. The small quantities of hazardous waste generated at the facility would be handled and stored in accordance with procedures required by 40 CFR § 261 (Geosyntec 2023a). With implementation of these operational controls and BMPs, potential short- and long-term impacts from hazardous wastes would be less than significant.

## **Hazardous Materials**

Facility operational equipment and vehicles contain hazardous materials, such as diesel fuel, gasoline, oil, and hydraulic and brake fluids. Accidental discharge of these materials into the environment would be possible but is not anticipated. Potential releases from landfill operational equipment and refuse trucks would remain unchanged under the Proposed Action because the number of daily offloads to the landfill and the amounts of waste placed on the landfill are not expected to change significantly. Upon closure, this risk would be reduced as no refuse trucks and fewer equipment would be needed for post-closure monitoring. Continued adherence to the site-specific SPCC Plan (Geosyntec 2022a) greatly reduces the likelihood of significant impacts resulting from any spills. No significant short- or long-term impacts are anticipated.

Site-specific BMPs, including procedures for hazardous material storage, handling, and staging, spill prevention and response, waste disposal, and good housekeeping, are covered in the *Operations Manual* (Geosyntec 2023a) and will continue to be implemented by the site operator. Existing spill control measures would continue and involve minimizing hazardous materials at the KLF, good housekeeping, and rapid spill response in the event of a release. Material management practices would be used to reduce the risk of spills or other accidental release of hazardous materials and substances into the environment.

### **3.6.2.2 No Action Alternative**

Under the no action alternative, the Phase II vertical expansion would not occur, resulting in closure of the landfill in late 2026 when the landfill is expected to reach capacity. No hazardous wastes are disposed of at the KLF under its current operations; this would remain unchanged with implementation of the no action alternative. Potential releases from landfill operational equipment and refuse trucks would continue during regular KLF operations and decrease during the post-closure monitoring. In sum, no significant adverse impacts related to hazardous materials or hazardous waste are anticipated with implementation of the no action alternative.

## **3.7 Historic and Archeological Resources**

### **3.7.1 Affected Environment**

The ROI for historic and archeological resources is the KLF facility. On behalf of the County, Cultural Surveys Hawai'i (CSH) conducted a literature review of previous archaeological studies within and in the vicinity of the KLF (Figure 3-3) and identified historic properties<sup>12</sup> documented in the vicinity of the KLF (Figure 3-4). The results of this literature review are summarized in the State Historic Preservation Division (SHPD) consultation letter enclosed in Appendix C. Based on results from previous

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<sup>12</sup> Pursuant to HRS § 6E-2: "Historic properties' means any building, structure, object, district, area, or site, including heiau and underwater site, which is over fifty years old."

archaeological work in and in the vicinity of the KLF, the KLF does not contain significant archaeological features or historic properties.

Archaeological research of KLF and its surrounding area indicates the land was extensively used and much of the physical evidence of the traditional settlement pattern has been obliterated by commercial agriculture and other operations (Hammatt and Shideler 2011). The foothills and wetland areas of the Mānā Plain were extensively planted in sugar cane, gulches were impacted by livestock, and the beach areas have been disturbed by massive shoreline stabilization projects. Historical and archeological resources have also been disturbed by the development of the PMRF, Kaua'i Raceway Park, and the KLF.

Two archaeological surveys were conducted for the existing KLF site:

- Ching (1982) conducted an archaeological reconnaissance survey for the original Phase I landfill site in 1982 and determined no historic properties were present. At the time of the reconnaissance, part of the area was already utilized as a “sanitary landfill” and the other part was used as a dump site for bagasse for Kekaha Plantation (Ching 1982). Prior to being a landfill and a dump site, the area was owned by Kekaha Plantation and utilized as pasture lands. Holding pens for cattle and horses were also once there. According to Ching (1982), the area had “been bulldozed countless of times.”
- In 1993, CSH (Folk and Hammatt 1993) conducted an archaeological inventory survey (AIS) with subsurface testing of 63.2 acres within TMK 1-2-002:009 prior to construction of the Phase II landfill. During the surface survey, an abandoned irrigation canal and a low, linear sand mound were observed (Folk and Hammatt 1993). Extensive subsurface testing was conducted throughout the Phase II area. A total of 55 backhoe test trenches were distributed, approximately 1 per acre, and excavated (Folk and Hammatt 1993). The typical profile revealed that the area, once a place of sand dunes, was modified by destroying the upper portions for plantation purposes. The linear mound and canal were excavated and revealed that stratigraphically, both features post-date the removal of the sand dunes. Oral resources, such as residents and plantation employees, revealed the features were constructed in the 1950s for experimental farming (Folk and Hammatt 1993).

As described in Section 1.2.2, Phase II was permitted for a vertical expansion in 2013. As part of that permitting process, the County requested the SHPD’s determination of “no historic properties affected.” The SHPD requested additional information (September 9, 2013; Log No. 2013.3334 and 2013.4258, Doc. No. 1309SL06) on two historic properties within Phase II area that were recorded (but not assigned site numbers) by the CSH during its 1993 AIS. These two 1950s historic properties were identified as an irrigation canal of mounded sand and a low, linear sand mound for irrigation control. In response to the SHPD’s request, AECOM Technical Services, Inc. (AECOM), on behalf of the County, conducted a document review and field inspection, which confirmed the two historic properties are no longer present (AECOM 2013). Based on this information, the SHPD determined that no historic properties would be affected because no historic properties exist within the Phase II area (October 11, 2013; Log No. 2013.5499; Doc. No. 1310SL09).

## **3.7.2 Potential Impacts and Mitigation Measures**

### **3.7.2.1 *Proposed Action***

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to historic or archeological resources are anticipated.

The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or any new ground disturbance. All operations would be conducted approximately 120 to 171.5 ft above native soils, such that any potential archaeological resources or historic properties cannot be disturbed. An AIS conducted in 1993 and subsequent investigation by AECOM (2013) found no evidence that archaeological resources or historic properties remain within the Phase II area (Appendix C) and none were encountered during previous site activities. In the highly unlikely event that historic or archaeological resources, including human skeletal remains, are inadvertently discovered during site operation, the site operator would cease all intrusive activities and immediately notify the SHPD, Kaua'i Section, prior to continuation of activities.

Based on findings from the previous AIS and that the Proposed Action does not involve construction and will not affect the original ground surface, SHPD concurs with the County's project effect determination of "No historic properties affected" under HRS § 6E-8, HAR § 275(b), and HAR § 275-7 (Appendix C; SHPD Doc. No. 2305DB01).

### **3.7.2.2 *No Action Alternative***

Under the no action alternative, the Phase II vertical expansion would not be implemented. As the KLF does not contain significant archaeological features or historic properties, no potential short- or long-term impacts to historic and archeological resources are anticipated with implementation of the no action alternative.

## **3.8 Land Use**

### **3.8.1 Affected Environment**

The land use and ownership ROI is the KLF facility and adjacent properties.

#### **3.8.1.1 *Land Ownership***

The KLF facility is located on land owned by the State of Hawai'i and administered by the DLNR (Figure 1-2). Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996) place the control and management of the lands underlying the KLF with the County of Kaua'i.

### **3.8.1.2 Existing Land Uses**

The KLF site has been used as a landfill since the early 1950s. The KLF is located on the coastal Mānā Plain historically used for agriculture, portions of which are still in active agricultural use. The primary land use in the vicinity of the KLF is agricultural and agriculture-related commercial activity occurring to the north, northwest, and east of the KLF site. Other land uses in the vicinity of the KLF include federal reserve lands (PMRF and U.S. Lighthouse Service) to the south and west, land leased by the Hawai'i National Guard to the south, and a drag racing park (Kaua'i Raceway Park) to the southeast (Figure 1-2). Photos of the surrounding land uses are provided in Appendix A, Photos 6 through 8.

### **3.8.1.3 State and County Land Use Designations**

As shown in Figure 3-5, the Proposed Action will take place entirely within TMK 1-2-002:001(por.), which is within the state agriculture land use district.<sup>13</sup> Uses within the agricultural land use district are subject to the requirements of HRS Chapter 205. Permissible uses within the state agricultural land use district are listed in HRS § 205-4.5. Landfills and solid waste management operations at landfills are not listed in this section; however, pursuant to HRS § 205-6, the county Planning Commission and state Land Use Commission (LUC)<sup>14</sup> may permit certain unusual and reasonable uses, other than those for which the district is classified, through the issuance of a Special Use Permit (SUP). The Kaua'i County Planning Commission issued SUP SP-93-9 to allow 63.18 acres of land within the state agricultural district to be used for landfill purposes (for KLF Phase II). Since KLF is over 15 acres, its SUP was also approved by the LUC (Petition Docket No. SP93-384).

As shown in Figure 3-6, the Proposed Action is also located within the Kaua'i County agriculture district and is subject to the requirements of the Kaua'i Comprehensive Zoning Ordinance (Kaua'i County Code [KCC] Chapter 8). The Kaua'i County Planning Commission issued use permit U-93-56 and class IV zoning permit Z-IV-93-64 in 1993 to allow for the construction and operation of the Phase II landfill within the county agriculture district.

No maximum landfill height, expiration date, or time limit for use was established in either the state or county use permits or county zoning permit. As discussed in Section 1.2.2, the Phase II landfill was vertically and horizontally expanded in 1998, 2004, 2010, 2013, and 2020. The prior vertical and horizontal expansions were determined to meet the conditions of the original permits and no permit modifications were required. The existing KLF operates in compliance with the SUP SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64.

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<sup>13</sup> The state land use district boundary line is located on the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – telephone, April 3, 2023).

<sup>14</sup> Per HRS § 205-6(d), special permits for land the area of which is greater than 15 acres or for lands designated as important agricultural lands shall be subject to approval by the LUC.

## **3.8.2 Potential Impacts and Mitigation Measures**

### **3.8.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts land ownership and uses expected from implementation of the Proposed Action are discussed below.

#### **Land Ownership**

There would be no change to the land ownership with implementation of the Proposed Action.

#### **Existing and Future Land Uses**

There would be no change to the existing land use at the KLF facility with implementation of the Proposed Action; the site would continue to be used as a solid waste management facility. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances. No substantial changes to KFL's operations are proposed. The continued use of the KLF facility would not affect or preclude the use of lands adjacent to or in the vicinity of the KLF.

#### **State and County Land Use Designations**

As described above, the Proposed Action is located within the state agriculture land use district and county agriculture district. The KLF currently operates under SUP SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64, which allows for the construction and operation of the Phase II landfill. Based on consultation with Kaua'i County Planning Department, the Proposed Action is permissible under the existing land use entitlements (K. Hull, County of Kaua'i Planning Department. personal communication—email to A. Fraley, June 15, 2023). No modification to the SUP, use permit, and class IV zoning permit is required. No changes to the land use designations are warranted or proposed.

See Section 4 for more information on the consistency of the Proposed Action with land use plans and policies.

### **3.8.2.2 No Action Alternative**

Under the no action alternative, land use at the KLF would change from an active landfill to a closed landfill in 2026, when the existing landfill is expected to reach capacity. No short- or long-term impacts to land ownership or land use are anticipated with implementation of the no action alternative.

## 3.9 Natural Hazards

### 3.9.1 Affected Environment

The ROI for natural hazards is the KLF facility. Natural hazards that may occur in and affect the KLF include floods, tsunamis, hurricanes, earthquakes, and sea level rise associated with anthropogenic climate change.

The KLF maintains an *Emergency Action Plan* (Geosyntec 2023a) that provides detailed procedures to be followed by site personnel in the event of an emergency. The *Emergency Action Plan* outlines chains of command and communication, response procedures, personnel evacuation procedures, and recovery activities. Specific procedures established for natural disasters are described in the subsequent paragraphs.

#### 3.9.1.1 Floods

Flooding can occur from stream overflow, storm events, and coastal inundation (e.g., tsunamis, storm surge, large waves, sea-level rise). The KLF facility is situated within an area determined to be outside the 100-year and the 500-year floodplains per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) flood zone designations (Figure 3-7; FEMA 2020). The KLF site is approximately 1,700 ft from the shoreline and is outside of the coastal high hazard areas (i.e., VE Zones), which have a 1 percent annual chance of experiencing a flood event with additional hazards due to storm-induced velocity wave action. No streams or surface water features occur within or in the immediate vicinity of the KLF site. Therefore, there is little risk to the KLF from flooding caused by stream overflow.

Excessive surface water from overland stormwater flow can cause flooding in poorly drained areas. However, the Kekaha region has low annual rainfall (See Section 3.1) and soils underlying the KLF are too permeable to allow for surface water ponding or runoff (See Section 3.4). As described in Section 1.2.1.2, stormwater within the landfill area is managed by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins (Geosyntec 2023a). Runoff from other areas of the KLF facility (e.g., parking area, scale house, drop-off area, maintenance building) is diverted through site drainage features to either the infiltration basin or leachate evaporation lagoon. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)).

During routine landfill operations, site personnel conduct monthly inspections to monitor the integrity of the site's drainage systems (Geosyntec 2023a). Excessive silt in ditches and basins is removed and the condition of pipes and discharge structures from basins is verified. Prior to a forecasted storm, site personnel inspect all on-site drainage structures and verify these structures are in working condition (Geosyntec 2023a). With implementation of these procedures, the potential for flood-related damage is low.

### **3.9.1.2      *Tsunamis***

Tsunamis are a series of destructive ocean waves generated by seismic activity that could potentially affect shorelines. Tsunamis affecting Hawai'i are typically generated in the waters off South America, the U.S., Alaska, and Japan. Local tsunamis have also been generated by seismic activity on the Island of Hawai'i.

According to HAR § 11-58.1-13(g), new MSW landfills and lateral expansions<sup>15</sup> cannot be located in possible tsunami inundation areas as “delineated in a report entitled, ‘Hawai'i Tsunami Inundation Evacuation Map Project’ by George D. Curtis, University of Hawai'i Joint Institute for Marine and Atmospheric Research dated April 19, 1991.” The 1991 Curtis report does not include a tsunami inundation map for the Project vicinity, but indicates that inundation maps for Kaua'i were expected to be published shortly after the report, “in June, 1991” (Curtis 1991). The University of Hawai'i's School of Ocean and Earth Science and Technology and the Joint Institute for Marine and Atmospheric Research (the author of the 1991 Curtis report) indicated that the Kaua'i Inundation Map was completed, but has since been lost (AECOM 2013a).

Because the 1991 Curtis report referenced by HAR § 11-58.1 did not map tsunami inundation zones in the Kekaha area, available information from other sources (i.e., Hawai'i Emergency Management Agency [HIEMA], FEMA, and the National Oceanographic and Atmospheric Administration [NOAA]) was researched. The KLF is located in the designated tsunami evacuation zone (HIEMA 2023) and recent Kauai inundation map prepared for HIEMA shows flows depths ranging from 6.6 ft to 32.8 ft (2 to 10 meters) within the vicinity of the KLF (Cheung 2015<sup>16</sup>). FEMA's most recent Flood Insurance Study includes tsunami flood hazard information for the County of Kaua'i (FEMA 2020). The FEMA coastal flood zone and flooding limit (i.e., VE Zones) is located approximately 2,400 ft seaward from Phase II, near the large dune barrier that runs along the shoreline. A search of the NOAA tsunami run-up database returned tsunami run-up data for three events in Kekaha, approximately 1.2 miles southeast of the KLF. Run-up heights of 9.8, 6.9, and 6.6 ft. (3.0, 2.1, and 2.0 meters) were recorded for tsunamis in 1946, 1957, and 1960, respectively (NOAA 2022). The run-up height represents the maximum elevation the wave reaches at the maximum inundation. To date, the KLF facility has not sustained any tsunami-related damage (K. Aki, DPW, personal communication, June 20, 2023).

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<sup>15</sup> Although the KLF is an existing facility, a discussion of the tsunami inundation mapping is included in this EA.

<sup>16</sup> The HDOH plans to revise HAR §11-58.1-13(g) to reference the Cheung (2015) Hawai'i tsunami mapping report (G. Haae, HDOH, personal communication – email, January 20, 2023).

### **3.9.1.3      *Hurricanes and Severe Storms***

The Hawaiian Islands are seasonally affected by Pacific tropical cyclones (e.g., hurricanes, tropical storms, and tropical depressions) from June to November as well as severe storms that can occur year-round. Tropical cyclones are rare and generally travel toward the islands from a southerly or southeasterly direction. These and other severe storms can bring damaging winds, heavy rainfall, and storm surges to the Hawaiian Islands. Since 1950, eight hurricanes have affected the Hawaiian Islands. Most notable, Hurricane Iniki in 1992 was the most destructive hurricane to strike Hawai'i in the twentieth century, with estimated peak winds over Kaua'i ranging between 130 and 160 mph (Tetra Tech 2021).

In accordance with the KLF *Emergency Action Plan* (Geosyntec 2023a), the following actions are taken to protect against excessive erosion, flooding, and wind damage before and during severe storms. Prior to a forecasted storm, site personnel inspect all on-site drainage structures and verify these structures are in working condition. Diversion berms are constructed around the current disposal area as needed to prevent run-on from entering the waste fill and to prevent runoff from the waste fill areas of the site. Interim cover is placed over exposed waste at the end of the working day prior to the forecasted beginning of a severe storm. At the discretion of site management, the site may be closed for business during storm periods. During any prolonged storm event involving extensive rain, facility personnel periodically inspect site drainage systems to correct or repair, as needed, any damages or with potential to cause damage to on-site or off-site facilities.

As the only permitted MWS landfill of the island, the KLF has historically and would continue to accept non-hazardous disaster debris. In 1992, the KLF received large quantities of disaster debris after Hurricane Iniki, which resulted in the landfill reaching capacity sooner than originally projected.

### **3.9.1.4      *Earthquakes***

Kaua'i is an older Hawaiian Island with dormant volcanic activity. It is not particularly prone to seismic activity and no large earthquakes are recorded on Kaua'i (Tetra Tech 2021). The KLF is not located in a seismic impact zone as defined under HAR § 11-58.1-13(e) and the Subtitle D regulations for MSW landfills (40 CFR Part 258.14). To date, the KLF facility has not sustained any earthquake-related damage (K. Aki, DPW, personal communication, June 20, 2023).

In the unlikely event of a significant earthquake, the KLF would immediately cease or limit landfill operations and, once safe to do so, will promptly conduct a visual survey of the site to identify any slope failures, downed power lines, gas and water leaks, tank leaks or spills, landfill gas collection system failures, or other conditions that could threaten employee or public safety (Geosyntec 2023a).

### **3.9.1.5      *Sea Level Rise***

Sea level rise increases the risks coastal communities face from coastal hazards (e.g., floods, storm surges, and coastal erosion). The Sea Level Rise Vulnerability and Adaptation Report prepared by the Hawai'i State Climate Commission (2022) provides a statewide assessment of Hawai'i's vulnerability to

sea level rise. In support of the Sea Level Rise Vulnerability and Adaptation Report, the State of Hawai'i Sea Level Rise Viewer also provides an interactive mapping tool of sea level rise exposure (Hawai'i Climate Change Mitigation and Adaptation Commission 2021).

As shown in Figure 3-7, the KLF is outside of the 3.2-ft sea level rise exposure area<sup>17</sup> (Hawai'i Climate Change Mitigation and Adaptation Commission 2021). Although not predicted to affect the KLF, surrounding areas may be impacted, including a portion of the land adjacent to the southwestern boundary of Phase I. Additionally, a recent vulnerability assessment of west Kaua'i's coastline identifies expected impacts to community roadways from flooding associated with sea level rise and the potential loss of vehicular access to the landfill, but no direct effects to the landfill itself are anticipated (UH Sea Grant College Program 2020).

### **3.9.1.6 Potential Climate Change Impact on Hazards**

The Multi-hazard Mitigation and Resilience Plan (Tetra Tech 2021) provides projections of future climate change for Kaua'i. A summary of how climate change is anticipated to effect natural hazards is provided below.

- *Floods:* Changing precipitation and runoff patterns will increase the uncertainty for flood management. Extreme climatic events will become more frequent, necessitating improvement in flood protection and emergency response. High frequency flood events (e.g., 10-year floods) in particular will likely increase with a changing climate. Additionally, rising sea levels, coupled with high water levels caused by tropical storms, will incrementally increase coastal flooding and erosion.
- *Tsunamis:* Sea level rise could cause oceanic waves and surge to reach farther inland and increase the risk that coastal communities would be exposed to a tsunami hazard.
- *Hurricanes:* Hawai'i is expected to see an increase in tropical cyclone events as the storm track may shift north toward the central north Pacific. The projected increases in sea level rise and temperatures also have the potential to increase risk of storm surge-related flooding along the coast.
- *Earthquakes:* The impacts of global climate change on Kaua'i's earthquake probability are unknown.
- *Sea level rise:* Sea level rise will exacerbate coastal inundation, erosion, and coastal hazards (e.g., more frequent high surf events and storm surge).

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<sup>17</sup> Modeling was conducted to determine the potential future exposure of each island to multiple coastal hazards as a result of sea level rise. The sea level rise exposure area models three chronic flooding hazards: passive flooding, annual high wave flooding, and coastal erosion (Hawai'i Climate Change Mitigation and Adaptation Commission 2021).

## **3.9.2 Potential Impacts and Mitigation Measures**

### **3.9.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to natural hazards expected from the implementation of the Proposed Action are discussed below.

#### **Floods**

The KLF is located outside of the 100-year and 500-year floodplains and is not expected to be subject to coastal storm surge. With the Proposed Action, surface water drainage features would need to be extended upwards to accommodate the increase in the landfill height and corresponding runoff flow velocities. The proposed surface water management system would tie into the existing permitted system at the limits of the vertical expansion. Tetra Tech (2022) conducted an engineering analysis of the surface water system for the Proposed Action; the analysis concluded that the existing drainage infrastructure is adequately sized to accommodate the anticipated increase in runoff flow.

As described in Section 3.9.1, the KLF's *Emergency Action Plan* provides detailed procedures to protect against excessive erosion and flooding (Geosyntec 2023a). The *Emergency Action Plan* would continue to be implemented with the Proposed Action. With implementation of these procedures, the Proposed Action is anticipated to have less than significant short- and long-term impacts from flooding.

#### **Tsunamis**

The Proposed Action would take place at elevations ranging from approximately 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. In the unlikely event that a destructive tsunami came ashore in the area of the KLF, the energy of any tsunami would be diminished when it encounters the coastal dune barrier prior to reaching the KLF. The proposed vertical expansion area as well as KLF's operational infrastructure would also be protected against tsunami wave action by the Phase I landfill feature. The potential for tsunami-related damage is low.

#### **Hurricanes and Severe Storms**

The KLF is seasonally affected by Pacific tropical cyclones (e.g., hurricanes, tropical storms, and tropical depressions) from June to November as well as severe storms that can occur year-round. High winds and flooding could adversely impact KLF infrastructure and buildings. However, as described in Section 3.9.1, the KLF's *Emergency Action Plan* (Geosyntec 2023a) provides detailed procedures to be implemented prior to, during, and after a large storm event or hurricane to prevent injuries and minimize property damage. The *Emergency Action Plan* would continue to be implemented with the Proposed Action. With implementation of these procedures, the Proposed Action is anticipated to have less than significant short- and long-term impacts from tropical cyclones and severe storms.

## **Earthquakes**

The KLF is not located in a seismic impact zone as defined under HAR § 11-58.1-13(e) and the Subtitle D regulations for MSW landfills (40 CFR Part 258.14). Therefore, an evaluation of seismic loading effects on the stability of the Proposed Action is not required. Response procedures in the event of a significant earthquake are described in the KLF *Emergency Action Plan*, which would continue to be implemented with the Proposed Action. The potential for earthquake-related damage is low.

## **Sea Level Rise**

The KLF is outside of the 3.2-ft sea level rise exposure area, which is predicted to be met or exceeded by year 2100 (Hawai'i Climate Change Mitigation and Adaptation Commission 2021). Therefore, the KLF is not expected to be impacted by sea level rise during the operational period of the Proposed Action (Years 2026 to 2029) nor the 30-year period of post-closure care thereafter. The potential for adverse impacts from sea level rise is low.

## **Potential Climate Change Impact on Hazards**

The Proposed Action is not expected to be impacted by climate-induced changes to natural hazards during the operational period of the Proposed Action (Years 2026 to 2029). There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai'i is expected to see an increase in tropical cyclone and extreme rainfall events. The KLF *Emergency Action Plan* (Geosyntec 2023a) would continue to be implemented during the 30-year period of post-closure care to minimize adverse impacts to employees and the larger community. The final cover and revegetation of the closed landfill would also protect the integrity of the landfill and prevent its contents from being exposed to outside forces. Therefore, the potential for adverse impacts from climate-induced changes to natural hazards is low.

### **3.9.2.2 No Action Alternative**

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. The KLF would continue to implement the facility's *Emergency Action Plan* during the remaining operational years as well as the 30-year post-closure period (Geosyntec 2023a). Under the no action alternative, the KLF would not be able to accept emergency disaster debris and the County would need to reassess the emergency debris management alternatives. No significant adverse impacts relative to natural hazards are anticipated with the no action alternative.

## **3.10 Noise**

### **3.10.1 Affected Environment**

The ROI for noise effects is the KLF facility and bordering areas. The State of Hawai'i regulates noise exposure in HRS Chapter 342F, *Noise Pollution*, HAR § 11-46, *Community Noise Control*, and HAR § 12-

60-50(c), *State Specific Standards for Occupational Noise Exposure*. “Noise” is defined as “any sound that may produce adverse physiological or psychological effects or interfere with individual or group activities, including but not limited to communication, work, rest, recreation and sleep.” Under certain conditions, noise can interfere with human activities at home or work and affect human health and well-being (HAR § 11-46.2). Noise level is measured in decibels (dB) and the relative loudness of sounds in the air as perceived by the human ear is measured in A-weighted decibels (dBA).

The HDOH regulates noise levels by imposing maximum allowable sound levels at property boundaries for various zoning districts (Table 3-1). These noise limits are absolute (i.e., not relative to ambient conditions), are prescribed by receiving zoning class and time period, and are enforceable at the facility property boundaries. Zoning districts are determined by ordinances adopted by the applicable local, county, or state government agencies.

**Table 3-1. Hawai‘i Maximum Permissible Sound Levels by Zoning District**

Receiving Zoning Class District	Maximum Permissible Sound Level (dBA)	
	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Class A Zoning districts include all areas equivalent to land zoned residential, conservation, preservation, public space, or similar type.	55	45
Class B Zoning districts include all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.	60	50
Class C Zoning districts include all areas equivalent to lands zoned agriculture, county, industrial, or similar type.	70	70
Source: HAR § 11-46, <i>Community Noise Control</i>		

Because the KLF is in the state and county agricultural district, the Class C limits are applicable. Properties bordering the KLF are comprised of agricultural lands, a National Guard Rifle Range, and a federal reserve (PMRF and U.S. Lighthouse Service). The nearest town of Kekaha is situated 1.3 miles to the southeast.

The maximum permissible sound level for Class C zoning districts is 70 dBA 24-hours per day (HAR § 11-46-4). Noise levels may exceed the prescribed limits up to 10 percent of the time within any 20-minute period. The maximum permissible sound level for impulsive noise is 10 dBA above the maximum permissible sound levels for the given receiving zoning class district. HAR § 11-46-5 provides further exemptions to these limits. Pursuant to HAR § 11-46-7 and HAR § 11-48-8, a permit or variance may be obtained for operation of an excessive noise source beyond the maximum permissible sound levels. Factors that are considered in granting of such permits and variances include whether the activity is in the public interest and whether the best available noise control technology is being employed.

HAR § 11-46-2 defines ambient or background noise as “the totality of sounds in a given place and time, independent of sound contribution of the specific source being measured.” There are several ambient sound sources in the KLF, including vehicles traveling along the highway, rain, wind blowing through low brush and grass, insects, birds, and mammals. Equipment utilized during normal landfill operations, including trucks, bulldozers, and compactors, could produce localized noise events of 100 dBA or higher at the site, with noise levels decreasing with distance from the KLF. Noise levels of power tools range from 74 to 116 dBA (NIOSH 2011). Typical heavy equipment noise levels at 50 ft from the noise source range between 75 and 94 dBA, including compactors and trucks (EPA 1971). Noise from operational activities decreases with increasing distance from the KLF, at a minimum of a 6-dB decrease each time the distance from the noise source is doubled (OSHA 2022b). The KLF implements operational noise reduction controls as detailed in the *Operations Manual* (Geosyntec 2023a). The KLF has received no community noise complaints (K. Aki, DPW, personal communication, June 20, 2023).

The Hawai‘i Occupational Safety and Health Division (HIOSH) has set the permissible occupational noise exposure at 90 dBA for a duration of 8 hours per day. Permissible noise exposures for shorter periods are higher, with a maximum exposure of 115 dBA permissible for a duration of 15 minutes or less (HAR § 12-8-2). If workers may experience noise exceeding HIOSH standards, appropriate administrative or engineering controls are implemented and hearing protection equipment, such as earplugs or safety earmuffs, are required (Geosyntec 2023a).

### **3.10.2 Potential Impacts and Mitigation Measures**

#### **3.10.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated.

Potential short- and long-term impacts to noise from the operation of the Proposed Action would be associated with refuse trucks and landfill equipment. The daily operations of the landfill would not change with implementation of the Proposed Action; therefore, it is not anticipated that noise levels would change or significantly impact the surrounding area. Operational noise reduction controls contained in the *Operations Manual* would continue to be implemented under the Proposed Action (Geosyntec 2023a). The Proposed Action would continue to be conducted in accordance with State of Hawai‘i requirements set forth in HRS Chapter 342F, *Noise Pollution*, HAR § 11-46, *Community Noise Control*, and HAR § 12-60-50(c), *State Specific Standards for Occupational Noise Exposure*. Thus, the Proposed Action is not anticipated to create significant adverse impacts related to noise.

#### **3.10.2.2 No Action Alternative**

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. There would be no immediate changes to the noise environment until such time that the landfill closed. Noise sources would be reduced with closure of

landfill operations. Thus, adverse noise impacts are anticipated to be minimal under the no action alternative.

### **3.11 Public Facilities and Services**

#### **3.11.1 Affected Environment**

##### **3.11.1.1 Police, Medical, and Fire Protection Service**

The KLF *Emergency Action Plan* (Geosyntec 2023a) includes BMPs to prevent and respond to fires, medical emergencies, spills and releases, and other security threats. In the event of an emergency, the KLF will assess the situation and possible hazards that may result; order evacuations, medical care, and shutdowns (as necessary); notify adjacent property owners and/or tenants (as necessary); and coordinate with emergency response personnel. A 4,000-gallon water truck, loader, and bulldozer are available 24 hours per day to aid in firefighting. Fire extinguishers are provided in all buildings and site vehicles for use in extinguishing small fires. Additionally, maintenance (e.g., servicing, inspection, and repair) of mechanical, electrical, and fuel systems are conducted on a routine basis to decrease the risk of an emergency, including fire.

To date, emergency services have been available and adequate to accommodate the demand created by the operation of the KLF. In the last five years, emergency services responded to four calls from the facility, three surface fires and one medical emergency (K. Aki, DPW, personal communication, June 20, 2023). The nearest fire station is the Waimea Fire Station located at 9835 Kaunualii Highway, Waimea, Hawai'i 96796, approximately 5.3 miles southeast of the KLF. The nearest police station is located at 4564 Ola Road, Waimea, Hawai'i 96796, approximately 5.3 miles southeast of the KLF. Additional fire and police support is available from the Hanapepe Fire Station and Koloa Substation, located 11 miles and 19 miles southeast of the KLF, respectively. The West Kauai Medical Center, formerly known as the Kauai Veterans Memorial Hospital, is located at 4643 Waimea Canyon Drive, Waimea, Hawai'i 96796, approximately 5 miles southeast of the KLF. West Kauai Medical Center is a Critical Access Hospital with 25 acute care beds and a distinct 20-bed long-term care wing, with 24-hour emergency services (HHSC 2023).

##### **3.11.1.2 Educational Facilities**

There are no education facilities within or in the immediate vicinity of the KLF. The nearest education facilities are located approximately 2 miles southeast of the KLF in the nearby town of Kekaha. The Kekaha Elementary School (8140 Kekaha Road, Kekaha, Hawai'i 96752), St. Teresa Catholic School (8311 Kaunualii Highway, Kekaha, Hawai'i 96752), Kekaha Head Start (8563 Elepaio Road, Kekaha, Hawai'i 96752), Ke Kula Ni'ihau O Kekaha PCS (8135 Kekaha Road, Kekaha, Hawai'i 96752) and Kula Aupuni Niihau A Kahelelani Aloha (KANAKA) Public Charter School (8315 Kekaha Road # K, Kekaha, Hawai'i 96752) are located in Kekaha.

### **3.11.1.3 Recreational Facilities**

There are no recreational facilities or uses within the KLF site. Recreational facilities in the vicinity of the KLF include hiking trails, beaches, and historic sites. In the immediate vicinity of the KLF are Kokole Point and Kauai Raceway Park. The nearby Barking Sands Beach Park and Kekaha Beach Park offer many recreational activities including swimming, surfing, fishing, diving, and boating. North of the KLF, there are hiking trails within the Kakaha Game Management Area and Waimea Canyon State Park.

### **3.11.2 Potential Impacts and Mitigation Measures**

#### **3.11.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to public facilities and services expected from implementation of the Proposed Action are discussed below.

#### **Police, Medical, and Fire Protection Service**

The Proposed Action is not anticipated to increase the demand on emergency services. The continued implementation of the *Injury and Illness Prevention Program* (Geosyntec 2023a) and observance of safe working practices are expected to substantially reduce the potential for serious accidents. The Proposed Action would continue to implement the emergency procedures detailed in the *Emergency Action Plan* (Geosyntec 2023a). In the event of an incident, fire, police, and emergency services would be available and expected to be adequate to accommodate the demand. With the implementation of safe working practices, impacts to public safety services from operation of the Proposed Action would be minimal.

#### **Educational Facilities**

As no educational facilities are in the vicinity of the KLF, no short- or long-term direct or indirect impacts to educational facilities are anticipated from the Proposed Action.

#### **Recreational Facilities**

No short- or long-term direct or indirect impacts to recreational resources are anticipated from the Proposed Action. Although the KLF would continue to be visible from recreational areas in the vicinity, no Project infrastructure would be placed within any existing recreation resource area or otherwise limit the use of recreational areas.

#### **3.11.2.2 No Action Alternative**

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. There would be no immediate changes to the demand on public and emergency facilities or services until such time that the landfill closed. Demand on public and emergency facilities would likely be reduced with closure of landfill operations, as fewer

employees, trucks, and equipment would be employed during the 30-year post-closure period. Thus, no adverse impacts to public facilities or services are anticipated under the no action alternative.

## **3.12 Safety and Health**

### **3.12.1 Affected Environment**

The ROI for safety and health is the KLF facility. Specific safety and health concerns related to landfill operation include heavy equipment operation, vector control, flammable and combustible gas, landfill subsurface fire, and injuries (from heavy lifting; slips, trips, and falls; exposure to heat; and biological exposure [e.g., bites, stings, and allergens]). Health and safety related issues that are discussed in other sections of this EA include fugitive dust (Section 3.1), handling and storage of hazardous materials (Section 3.6), and occupational noise (Section 3.10).

The *Operations Manual* (Geosyntec 2023a) also details operating procedures to control risks related to heavy equipment operation, vectors, flammable and combustible gas, landfill subsurface fires, and injuries.

#### **3.12.1.1 Refuse Trucks and Heavy Equipment Operation**

Heavy equipment currently used at the KLF to handle waste and to transport and apply cover soil includes the following: compactor, bulldozer, dump truck, front end loader, excavator, water truck, roll-off truck, and auxiliary equipment (Geosyntec 2023a). The County provides training and implements strict enforcement of landfill safety rules to ensure the safety of customers and employees (Geosyntec 2023a). Access to the KLF is controlled by site perimeter chain link fencing and a gated entrance off Kaumuali'i Highway that is locked during non-operating hours. Access routes are clearly marked, and customers are directed by spotters or the bulldozer operator to specific locations for offloading. Signs, traffic barricades, cones, or traffic controllers direct traffic while inside the KLF. Seatbelts must be worn while driving in the KLF and an on-site speed limit of 15 mph is enforced. Truck and heavy equipment operators must maintain a safe distance between vehicles. While in the offloading area, only the driver and one helper may get out of the vehicle, and both must remain within 6 ft of their vehicle. Employees and all government and commercial drivers are required to wear a high-visibility safety vest/shirt and safety boots when outside their vehicle while in off-loading area, and hard hats are recommended.

#### **3.12.1.2 Vector Control**

Vectors are organisms, such as rodents, flies, mosquitoes, or other animals, capable of transmitting disease to humans. The *Vector Control Plan* (Geosyntec 2023a) for the KLF Phase II complies with the operating criteria for MSW landfills as detailed in 40 CFR § 258.22 and HAR § 11-58.1-15(c). Pursuant to HAR § 11-58.1-15(c), "Owners or operators of all MSWLF units must prevent or control on site populations of disease vectors using techniques appropriate for the protection of human health and the environment." Personnel at the KLF are trained to prevent, detect, and manage on-site populations of disease vectors (Geosyntec 2023a). This includes monthly inspections and subsequent control and

abatement activities, as needed, and minimizing the size of the active working face of the landfill to reduce the likelihood of vectors feeding on the waste materials. Additionally, a minimum of 6 inches of daily cover or alternative daily cover is placed on the active working face and a minimum of 12 inches of intermediate cover on inactive portions of the KLF Phase II to control vectors. The KLF has not received any vector complaints or violations (K. Aki, DPW, personal communication, June 20, 2023).

### **3.12.1.3 Explosive Gas**

Methane gas is produced at landfills as a byproduct of the decomposition of organic components of solid waste materials. The KLF implements a *Perimeter Gas Monitoring Plan* (Geosyntec 2023a) to ensure compliance with RCRA Subtitle D regulations (40 CFR § 258.23), and HAR § 11-58.1-15(d), related to controlling explosive gases on-site. Monitoring is conducted quarterly using 12 permanent gas probes installed around the perimeter of the landfill to detect any LFG migration from the KLF. If methane levels within any probe are detected at or above 5 percent by volume, a response action is conducted to ensure worker safety and bring methane levels into compliance. Three building structures at KLF Phase II are also monitored quarterly: the main office, county office, and scale house. In the latter half of 2022, the facility had two exceedances of surface concentration of methane and took immediate corrective action to bring that exceedance within compliance (Geosyntec 2023b). All other emissions were in compliance with KLF's CSP Permit No. 0802-01-C.

### **3.12.1.4 Landfill Fires**

Heat is generated by the rapid decomposition of waste, which may ignite subsurface fires in landfills in the presence of oxygen gas. Subsurface landfill fires can occur when smoldering waste is buried at the working face or when excess oxygen intrudes into the waste mass. Landfill fires are prevented by monitoring incoming waste load fires and by daily compaction and covering of the active disposal area, which minimize air space and limit the intrusion of oxygen and potential for ignition of subsurface fires.

Methods implemented by the KLF to extinguish a subsurface fire include:

- Cutting off the oxygen supply by smothering the fire with fine-grained soil and/or the use of plastic membranes; or
- Physically extinguishing the fire by excavating down to the fire, removing and putting out burning material, confirming that the burning material is extinguished, and placing waste back into the excavation area (Geosyntec 2023a).

Fire extinguishers are provided in all buildings and on-site vehicles for use in extinguishing small fires. The KLF *Emergency Action Plan* outlines procedures for responding to a larger fire, which includes evacuating buildings, proceeding to the designated evacuation area, and calling 911 to summon the local fire department to respond (Geosyntec 2023a).

### **3.12.1.5 Injury and Illness**

KLF site personnel could be injured at work from heavy lifting; slips, trips, and falls; exposure to heat; and biological exposure (e.g., bites, stings, and allergens). The KLF has developed a comprehensive *Injury and Illness Prevention Program* (Geosyntec 2023a) to minimize the frequency and severity of employee accidents and comply with applicable health and safety laws and regulations. The program includes policies and procedures to eliminate physical hazards from the work environment, when possible, to identify, assess, and minimize workplace hazards that cannot be eliminated, train employees in safe work practices, and conduct monthly site safety inspections. The *Injury and Illness Prevention Program* also includes policies for enforcement of these procedures and reporting in the event of an injury or illness. BMPs to prevent injury and illness include, but are not limited to, keeping working areas clean and free from slip and trip hazards, ensuring adequate lighting and ventilation, maintaining fire aid and emergency wash stations in good working order, using personal prevention equipment, safety procedures for working with tools and equipment, and emergency response procedures. Between 2019 and 2022, the KLF has had two, minor work-related injuries (OSHA 2019; OSHA 2020; OSHA 2021; OSHA 2022a).

## **3.12.2 Potential Impacts and Mitigation Measures**

### **3.12.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. In general, the Proposed Action would have positive impacts on public safety and health by allowing for the continued safe and proper disposal of MSW for the island of Kaua'i. Potential short- and long-term impacts to public safety and health expected from the implementation of the Proposed Action are discussed below.

#### **Refuse Trucks and Heavy Equipment Operation**

With the Proposed Action, KLF operations would continue for an additional 2 to 4 years. The KLF would continue to accept refuse truck and use heavy equipment as part of daily landfill operations. The existing raining and landfill safety rules would be enforced to ensure the safety of customers and employees (Geosyntec 2023a). With implementation of the site safety rules, the Proposed Action is not anticipated to have significant short- or long-term impacts on public and employee safety from the operation of trucks and heavy equipment.

#### **Vector Control**

With the Proposed Action, vectors would continue to be avoided and minimized through BMPs and operational controls, as detailed in the KLF *Vector Control Plan* (Geosyntec 2023a). As the Proposed Action does not propose to modify KLF's existing operations or the types of waste accepted, potential impacts from vectors are anticipated to be the same as the existing facility. Short- and long-term impacts from vectors would be less than significant.

### **Explosive Gas**

As described in Section 2.1, the additional waste tonnage to be accepted as a result of the Proposed Action would increase the total landfill gas generation rate and landfill gas collected in the GCCS. Tetra Tech (2022) conducted an engineering analysis of the GCCS for the Proposed Action; the analysis concluded that the existing GCCS is adequately sized to accommodate the anticipated increase in landfill gas flow. Two phases of improvements would maintain gas collection as the vertical expansion is constructed. The first phase would occur prior to placement of fill and includes raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion. The second phase would occur when nearing or at the final fill limit and include the addition of vertical landfill gas extraction wells and related lateral piping to provide landfill gas collection for new waste placed as part of the vertical expansion. With the proposed GCCS improvements and continued monitoring for explosive gases, short- and long-term impacts from explosive gas would be less than significant.

### **Landfill Fires**

Current procedures to mitigate landfill fires would continue as part of the Proposed Action. No significant short- or long- term adverse impacts from landfill fires are anticipated with implementation of the Proposed Action.

### **Injury and Illness**

Current procedures to mitigate safety and health concerns from injury and illness would continue as part of the Proposed Action. No significant short- or long- term adverse impacts to injury or illness are anticipated from implementation of the Proposed Action.

#### **3.12.2.2 *No Action Alternative***

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. The no action alternative would result in the closure of the KLF facility prior to a new facility being sited and operational and would leave residents of Kauaʻi without a safe option for disposing of MSW. Illegal dumping could ensue and would potentially result in significant adverse impacts to public safety and health.

## **3.13 Socioeconomic Resources**

### **3.13.1 Affected Environment**

The ROI for population and demographic is the Kekaha-Waimea Census County Division (CCD), within which the KLF is situated, and represents the population residing in the vicinity of the Proposed Action. The ROI for direct, indirect, and induced economic benefits of the KLF is the Island of Kauaʻi.

### 3.13.1.1 Population and Demographics

The demographics and income characteristics of the Kekaha-Waimea CCD are summarized in this section along with data for the entirety of County of Kauaʻi for comparison. Population, ethnicity, income, and poverty status data from the recently released 2017 to 2021 American Community Survey (ACS) are summarized in Table 3-2 (U.S. Census Bureau 2022).

As shown in Table 3-2, the estimated population of the Kekaha-Waimea CCD is 5,971 people compared to Kauaʻi County, which is 73,928 people. The population within the Kekaha-Waimea CCD relative to Kauaʻi County overall consists of a larger Native Hawaiian and Other Pacific Islander population at 15.8 percent compared to 9.7 percent, respectively, and a smaller White population at 18.4 percent compared to 31.4 percent, respectively. The median household income (\$81,953) and per capita income (\$32,232) within the Kekaha-Waimea CCD are somewhat lower than Kauaʻi County overall, at \$86,287 and \$35,351, respectively. The percentage of families and individuals below the poverty level are higher in the Kekaha-Waimea CCD compared to the County of Kauaʻi (U.S. Census Bureau 2022).

**Table 3-2. Demographic and Income Characteristics**

Characteristic	County of Kauaʻi		Kekaha-Waimea CCD	
	Number	Percentage	Number	Percentage
Population	73,928		5,971	
Ethnicity				
Asian	21,012	28.4	1,757	29.4
Native Hawaiian and Other Pacific Islander	7,227	9.7	942	15.8
White	23,204	31.4	1,096	18.4
Black or African American	376	0.5	24	0.4
American Indian or Alaska Native	287	0.4	25	0.4
More than one ethnic group	20,008	27.1	2,055	34.4
Other Ethnicity	1,094	1.5	72	1.2
Income (USD)				
Median Household Income	\$86,287		\$81,953	
Per Capita Income	\$35,351		\$32,232	
Poverty Status in 2020				
Families below Poverty Level	NA	7.5	NA	11
Individuals below Poverty Level	NA	9.1	NA	10.8
CCD = Census County Division. Source: U.S. Census Bureau 2022.				

### **3.13.1.2 Economic Contribution of the KLF**

The KLF has direct, indirect, and induced economic benefits to the Kauaʻi economy. Direct effects represent actual and estimated employee compensation and other expenditures of KLF as well as the economic value of services from KLF operations. The KLF also provides direct benefits to community of Kekaha through the host community benefits (HCB) fund (see below). KLF has provided employment opportunities in the region since 1953. In 2023, the KLF employed 24 full-time employees and provided approximately \$1.4 million in wages, plus a fringe benefit rate of over 80%. The KLF also produced direct economic benefits from receiving approximately 90,000 tons of solid waste from July 1, 2021, through June 30, 2022 (Geosyntec 2022b). Approximately 40 percent of the waste received was diverted from the landfill through source reduction, reuse, composting, and recycling. The KLF also had indirect economic effects from purchasing goods and services from other local industries in the Kauaʻi County economy, including equipment, professional and technical services, and supplies. Induced effects reflect changes in local spending that were generated from income changes in directly and indirectly affected industry sectors. As the only permitted MSW landfill for the island of Kauaʻi, the KLF has induced impacts on all major industries of the Kauaʻi economy, including, but not limited to, construction, tourism, service and retail, and agriculture.

### **3.13.1.3 Host Community Benefits**

The Kekaha HCB Fund was founded in 2008 to “balance the need for safe disposal of solid waste with the sacrifices borne by the host community.” The HCB fund started with \$650,000 in 2008. Since then, the amount allocated annually has varied from \$1 per ton to over \$3 per ton and is determined by the Kauaʻi County Council. Between 2012 and 2021, the Citizens Advisory Committee, who manages the distribution of HCP funds, has approved 85 different projects valued at over \$2.7 million (Kekaha HCB 2023). Projects funded by the HCB fund directly benefit the Kekaha Community and include community improvements, economic revitalization, and various environmental sustainability, educational, cultural, art, and health and wellness programs.

## **3.13.2 Potential Impacts and Mitigation Measures**

### **3.13.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to socioeconomic resources expected from the implementation of the Proposed Action are discussed below.

#### **Population and Demographics**

The Proposed Action is not anticipated to have significant short- or long-term impacts on the Kekaha Region’s population trends or distribution, household demographics, or housing.

## **Economic Contribution of the KLF**

The Proposed Action would allow for continued safe and proper disposal of MSW on the island of Kauaʻi for several more years while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would continue to contribute direct, indirect, and induced economic benefits to the Kauaʻi economy. The KLF would provide employment and wages to 24 full-time employees and contribute to the economy by providing waste diversion and disposal services, purchasing goods and services from other local industries, and generating indirect and induced benefits to the construction, tourism, service and retail, and agriculture industries. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kauaʻi economy.

## **Host Community Benefits**

While the Proposed Action is not anticipated to impact the amount allocated annually; the continued operation of the KLF for an additional 2 to 4 years would extend the period that the Kekaha community receives HCB funds. The Proposed Action would not affect the Citizens Advisory Committee's authority to distribute HCB funds.

### **3.13.2.2      *No Action Alternative***

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. Demographics, employment, or income within the ROI would not be significantly impacted under the no action alternative. However, the no action alternative could result in closure of the KLF before a new landfill facility has been sited and is operational, which could result in significant increases in waste disposal costs, exacerbated illegal dumping, and negative effects on the County's economy.

## **3.14 Transportation and Traffic**

### **3.14.1 Affected Environment**

The ROI for transportation is the KLF facility, adjacent roadways, and PMRF Barking Sands Airport. The Proposed Action is not anticipated to impact harbors or public transportation; therefore, these topics are not addressed in this EA.

#### **3.14.1.1      *Roadways and Traffic***

The KLF is accessed via Kaumualiʻi Highway/Hawaiʻi Route 50, which is owned and maintained by the HDOT Highways Division. The average annual daily traffic count for Kaumualiʻi Highway near the KLF is approximately 3,300 vehicles per day (AECOM 2013a). The KLF accepts, on average, approximately 33 commercial loads and 97 non-commercial loads per day, which includes loads consisting of both recyclable and non-recyclable material (A. Fraley, DPW, personal communication, July 18, 2023). Therefore, on average, landfill-related traffic accounts for approximately 4 percent of the traffic volume

on Kaunualii Highway in the vicinity of the KLF. Traffic volumes at the landfill are generally highest on Saturdays when the facility is open to receive beverage containers under the HI-5 program.

### **3.14.1.2 Airports**

The PMRF Barking Sands Airport is approximately 3 miles northwest of the KLF. Due to the facility's proximity to the airport, the FAA and PMRF have evaluated the KLF multiple times in the last 10 to 15 years with no concerns noted (B. Stevenson, U.S. Navy; Appendix B). The existing Phase II landfill does not pose an obstruction risk to aircraft utilizing the PMRF Barking Sands Airport (AECOM 2013a).

## **3.14.2 Potential Impacts and Mitigation Measures**

### **3.14.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to transportation and traffic expected from the implementation of the Proposed Action are discussed below.

#### **Roadways and Traffic**

As described above, the KLF accounts for a small percentage of the overall traffic volume on Kaunualii Highway in the vicinity of the KLF. The Proposed Action would not change the quantity of waste received nor the number of commercial and non-commercial loads accepted at the facility. Therefore, there would not be any significant changes to landfill-related traffic on Kaunualii Highway and no significant adverse impacts to roadways or traffic are anticipated from implementation of the Proposed Action.

#### **Airports**

The Proposed Action would increase the maximum elevation of the Phase II landfill to 171.5 ft amsl. Given the proximity of the KLF to the PMRF Barking Sands Airport and in accordance with CRF 77.9<sup>18</sup>, the County will notify and consult with the FAA and PMRF to evaluate the potential impacts of the landfill on aircraft utilizing the airfield (FAA 2023). The FAA requires submission of an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an Obstacle Evaluation. The form submission will result in the FAA working with other federal entities and the PMRF to conduct a review and determine possible risks to aircrafts and evaluate other concerns, including Bird Animal Strike Hazard, Hazard of Electronic Radiation, Radiation Hazard, and visibility risks, among others. The final action will result in a Letter of Determination by the FAA on whether the raise in elevation raises an acceptable, or unacceptable, risk. As the landfill elevation has been raised multiple times in the last 10 to 15 years with no concerns noted from the FAA, PMRF, or other entities, an FAA determination letter of "no hazard to

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<sup>18</sup> Pursuant to the Notice of Criteria Tool, the landfill (21°59'6.24"N; 159°45'52.83"W) would exceed an instrument approach area by approximately 52 ft and aeronautical study is needed to determine if it will exceed a standard of Subpart C of 14 CFR Part 77.

air navigation” is anticipated. Therefore, the Proposed Action is not anticipated to have short- or long-term adverse impacts on airports.

### **3.14.2.2 No Action Alternative**

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. Refuse truck traffic to the KLF would cease upon closure of the KLF, resulting in a decrease in traffic to the facility. As the KLF does not contribute significantly to traffic on Kaunaliʻi Highway, the no action alternative is anticipated to have less than significant impacts to roadways and traffic. The closed KLF facility would have no impact on air navigation at the PMRF Barking Sands Airport.

## **3.15 Utility Infrastructure**

### **3.15.1 Affected Environment**

The ROI for utilities and infrastructure is the KLF facility. This section includes information on infrastructure related to electrical power, telecommunications, potable and non-potable water, wastewater systems, drainage, and solid waste disposal.

Electricity for on-site use is supplied by Kauaʻi Island Utility Cooperative. A 105-kilowatt, diesel-powered, emergency standby generator automatically operates when normal power is interrupted.

Telephone service to the KLF is provided by Hawaiian telecom via non-fiber optic telephone landlines. The KLF has limited internet bandwidth via DSL landline service; fiber optic service is anticipated to be installed at the landfill within one year.

Potable water supplied to the office, scale house, and maintenance shop is obtained from the County water system serving the town of Kekaha, and then piped into the facility via a U.S. Navy owned water main that serves federal reserve lands. In accordance with the "Three Party Service Agreement" executed in 1994 between the DPW, PMRF, and County of Kauaʻi Department of Water, water use from the existing landfill water meter is limited to 31,000 gallons per month (COK DPW 1994).

Non-potable water for dust control and fire protection is obtained from a former Kekaha Sugar Company irrigation ditch and transported to the site using a 4,000-gallon capacity water truck.

Wastewater from the office and maintenance shop is handled by an on-site septic system. Other wastewater, such as wash down water from the maintenance shop, is treated via an oil and water separator system.

As described in the KLF’s *Surface Water Management Plan* (Geosyntec 2023a) and Section 1.2.1.2 above, stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. The facility does not discharge water to off-site areas or into the municipal drainage system.

Solid waste generated on-site is either recycled or deposited in the active cell of the Phase II landfill. The KLF maintains a *Litter Control Plan* (Geosyntec 2023a). The KLF Phase II uses various strategies to confine litter to the landfill working face area, to prevent on-site litter accumulation, and to prevent litter from leaving the landfill premises. Windblown litter is controlled through proper management of the landfill working face, the use of portable litter fences, and utilizing staff to pick up litter. Daily inspections and litter cleanup activities are conducted around the site and in front of the landfill along the Kaumuali'i Highway. Landfill employees clean and pick up litter within adjacent properties, as needed, once landowner permission is obtained. The KLF enacts supplementary measures to control or clean-up excessive litter at the KLF when winds are above normal. The trucks that haul the MSW to the landfill are also monitored on a routine basis to ensure they are not contributing to litter along the truck haul routes and, if they were determined to be, corrective actions are implemented immediately.

### **3.15.2 Potential Impacts and Mitigation Measures**

#### **3.15.2.1 Proposed Action**

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated.

The Proposed Action would not increase the daily load on utility infrastructure and services over existing levels, although use of public utilities would continue for up to an additional estimated 2 to 4 years. The current KLF utility requirements do not exceed the existing capacity and no adverse impacts to utilities are anticipated from implementation of the Proposed Action.

The Proposed Action would increase the capacity of Phase II, resulting in a positive impact for solid waste infrastructure for the Island of Kaua'i. The KLF would continue to implement the *Litter Control Plan* (Geosyntec 2023a) to prevent a litter nuisance.

#### **3.15.2.2 No Action Alternative**

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. However, the no action alternative could result in closure of the KLF before a new landfill facility has been sited and is operational, which could result in significant increases in waste disposal costs and exacerbated illegal dumping. Therefore, adverse impacts to the island's solid waste infrastructure would occur under the no action alternative.

## **3.16 Visual Resources**

### **3.16.1 Affected Environment**

The ROI for visual resources includes scenic vistas and view planes in the vicinity of the KLF identified in county or state plans or studies as well as view planes along Kaumuali'i Highway and mauka to makai view planes from the KLF facility. Visual resources refer to both natural and built features visible on the

landscape that impart visually aesthetic qualities to a natural, rural, or urban environment. Visual resources are evaluated to determine whether the Proposed Action and no action alternative would be congruent with the existing landscape and development plans for the area.

HAR § 11.200.1-13 requires applicants to identify potential adverse impacts on scenic vistas and view planes as identified in county or state plans or studies. While no specific scenic resources or corridors are identified at or in the vicinity of the KLF in either the Kaua'i County General Plan (County of Kaua'i 2018) or the West Kaua'i Community Plan (County of Kaua'i 2020), both plans include policies to preserve scenic and public views. Section 3, subsection VII, of the Kaua'i General Plan directs the County to preserve scenic resources and public views in developing public facilities and in administering land use regulations. Specifically, the County is directed to: (1) preserve public views that exhibit a high degree of intactness or vividness; (2) preserve the scenic qualities of mountains, hills, and other elevated landforms; and (3) preserve the scenic qualities of lowland and open space features, such as the shoreline. The Heritage Resource Maps in the Kaua'i General Plan and Natural Landscape Maps in the West Kaua'i Community Plan depict scenic roadway corridors; no scenic corridors are identified in the Kekaha Region on either map.

Public views of the KLF are primarily from Kaumuali'i Highway where the Phase II landfill, with a currently permitted height of 120 ft amsl, is partially visible along portions of the highway where the line-of-sight is not blocked by vegetation (primarily along the highway northwest of the KLM while trees along the highway southeast of the KLM create a vegetative visual buffer). The Phase 1 portion of KLF is makai of the Phase II landfill and has an elevation of approximately 10 to 40 ft amsl and is not visible from the highway as it is blocked by the Phase II landfill. Views of the KLF from Kaumuali'i Highway are presented in Appendix A, Photos 9 through 15.

The line of sight to the KLF from the nearby shoreline is largely obstructed by coastal dunes and an earthen berm associated with the National Guard Rifle Range; the KLF Phase I is not visible from the shoreline while the KLF Phase II is partially visible from the shoreline area southeast of the landfill near the Kaua'i Raceway Park. Views of the KLF from the shoreline are presented in Appendix A, Photos 16 through 17.

Where visible, the Phase II landfill has the appearance of an earthen mound. Phase II is covered daily with landfill cover and is partially vegetated; the earth-tone daily landfill color is generally consistent in color with the surrounding agricultural areas.

### **3.16.2 Potential Impacts and Mitigation Measures**

#### **3.16.2.1 *Proposed Action***

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to visual resources expected from the implementation of the Proposed Action are discussed below.

The County proposes to vertically expand Phase II by 51.5 ft to a maximum height of 171.5 ft amsl. The Phase II landfill is currently permitted to receive waste up to 120 ft amsl and is currently in active use for landfilling operations. During operations, the Proposed Action would look substantially the same as existing landfill operations. Only one landfill cell would be open and operational at a time and debris would be spread, compacted, and covered each night with daily cover. Under the Proposed Action, the Phase II landfill would continue to appear as an earthen mound.

The line-of-sight to Phase II is currently partially visible from both the northwest bound (i.e., PMRF bound) and southeast bound (i.e., Kekaha bound) direction of Kaumuali'i Highway and from the shoreline southeast of the landfill (Appendix A, Photos 9 – 12, 14, and 17). The shoreline is currently not visible from Kaumuali'i Highway in the vicinity of the KLF due to intervening vegetation and the highway's distance from the shoreline. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. As described above, no scenic resources or corridors have been identified at or in the vicinity of the KLF in either the Kaua'i County General Plan (County of Kaua'i 2018) or the West Kaua'i Community Plan (County of Kaua'i 2020). The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan. The 51.5 foot increase to the maximum permitted height of the Phase II landfill (i.e. the Proposed Action) is not anticipated to cause a significant change in the existing view planes in the vicinity of the KLF and would not block scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan and therefore, the Proposed Action does not conflict with County policies for the protection of scenic resources.

After the landfill is closed, the landfill surface would be covered with an engineered cap and soil and then planted with vegetation. Closure plans for the Proposed Action would include a landscaping and revegetation program for revegetation of the landfill base and slopes and landscaping at the site entrance to minimize visual impacts to the public. The top of the landfill would likely be vegetated primarily with native grasses due to shallow soils. Random groups of shrubs and low trees may be planted on the landfill slopes, where the soil depth would be greater and where taller plants may be used without penetrating the engineered cap. A variety of native trees and shrubs could be selected, with an understory of native species. Varying plant heights on the landfill top and side slopes and planting with native species would serve to break up the engineered topography of the landfill final cover grade and provide for a more natural appearance. Plant densities, depth of planting, and species composition for landscaping at the site entrance would be adapted to ensure adequate screening and consistency of plantings with the surrounding environment and to select against significant maintenance requirements. With implementation of the landscaping and revegetation measures described above, no significant short- and long-term adverse impacts to visual resources are anticipated.

### **3.16.2.2 No Action Alternative**

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in October 2026 when it is expected to reach capacity. There would be no change to the visual quality of the KLF. Therefore, no impacts to visual resources are anticipated under the no action alternative.

## **3.17 Water Resources**

### **3.17.1 Existing Conditions**

The ROI for water resources includes the KLF facility, the underlying aquifer, and the Pacific Ocean downgradient of the KLF facility. Water resources include surface water and groundwater. Surface water refers to water bodies on the surface, such as wetlands, lakes, reservoirs, streams, springs, and the ocean. Groundwater refers to water resources that occur beneath the surface, such as water stored in deep reservoirs called aquifers. Federal and local regulations applicable to water resources include the Clean Water Act (33 United States Code § 1251 et seq. 1972), the Coastal Zone Management Act of 1972, and the State Water Code (HRS Chapter 174C).

#### **3.17.1.1 Surface Water**

The KLF is within the Hoesa watershed (CWRM 2008). No surface water features (including wetlands, streams, ditches) are identified by the National Wetlands Inventory, National Hydrography Dataset, or by the State of Hawai'i Division of Aquatic Resources within the KLF site. Wetlands and ponds are identified adjacent to the KLF north of Kaunualii Highway and within the PMRF. The Pacific Ocean is approximately 2,800 ft makai of the Phase II area.

Several anthropogenic features within the KLF occasionally have temporary surface water: the stormwater infiltration basin, leachate evaporation pond, and infiltration ditches. As described in the KLF's *Surface Water Management Plan Annual Update* (Geosyntec 2023a) and Section 1.2.1.2 above, stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. Runoff from the top of the Phase I and Phase II flows radially off the landfill. Runoff in Phase I is collected at a series of inlet pipe drains located around the perimeter of the landfill. These drains discharge to an infiltration ditch that surrounds Phase I. Runoff from Phase II flows into diversion berms located on the side slopes below the perimeter of the landfill top deck and along the perimeter road, which direct surface water to down drains. The down drains convey runoff to infiltration ditches around the perimeter of the landfill. Runoff then infiltrates, evaporates, or flows to the 2.2-acre stormwater infiltration basin. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)). Runoff from paved areas, including employee parking and the public material drop-off area, sheet flows to vegetated areas and/or the infiltration ditches along the perimeter and access road, where it infiltrates, evaporates, and/or flows to the stormwater infiltration basin. Stormwater immediately adjacent to the north side of maintenance building sheet

flows to the wash rack, which gets periodically pumped and conveyed to the leachate evaporation lagoon for on-site treatment (Personal comm. . The facility does not discharge water to off-site areas.

Also described in Section 1.2.1.2 above, the LCRS collects leachate and directs it via a pump station to the lined leachate evaporation pond (Figure 1-1). The approximately 2-acre leachate evaporation pond is lined to prevent infiltration of the water into the underlying soils. It has a maximum depth of 6 ft with an additional 2 ft of freeboard, and it was designed to completely evaporate all leachate collected from the landfill during a normal precipitation/evaporation year. Two floating aerators are used to accelerate evaporation.

### **3.17.1.2 Groundwater**

The KLF is located within the Kekaha Aquifer System (HDOH 2011). The Kahaha- Mānā coastal plain is underlain by two aquifers: a coastal plain aquifer within the near-surface sedimentary (caprock) deposits and a deep aquifer within the underlying fractured basalt (Geosyntec 2020). The basaltic aquifer occurs within lava flows of the Nāpali Formation. The U.S. Geological Survey (USGS) estimates this aquifer has generally high hydraulic conductivity, approximately 400 ft per day. Saturated sediments of the caprock formation (the caprock aquifer) overlie the basaltic aquifer and limit the seaward discharge of groundwater from the deeper aquifer. Groundwater flows from the higher elevations to the northeast, through the Nāpali basalts, and into the sedimentary coastal plain aquifer. According to the USGS, the average hydraulic conductivity of the coastal plain aquifer is approximately 0.12 ft per day (Geosyntec 2020).

Recharge to the uppermost water bearing zone of the coastal plain aquifer underlying the KLF occurs in the upland areas northeast of the facility. Groundwater flows from the higher elevations to the northeast, through the Napali basalts, into the sedimentary coastal plain aquifer flows and discharges to the Pacific Ocean. Total dissolved solids concentrations increase significantly from inland (mauka) areas to seaward (makai) areas as the groundwater flows through the coastal sediments and mixes with sea water. However, the results of an April 1994 tidal study indicate that tidal effects do not significantly influence the prevailing groundwater flow direction within the coastal plain aquifer at the site (Geosyntec 2020).

The water table level in the site area is controlled by pumping stations in the area operated and maintained by the Agribusiness Development Corporation (ADC) and the Kekaha Agricultural Association, in coordination with the U.S. Navy. The groundwater management system controls flooding and facilitates cultivation of the lower elevations on the Mānā Plain (Geosyntec 2020).

Shallow groundwater underlying the KLF is encountered within the coastal plain aquifer at approximately 4 to 5 ft amsl. Monitoring data suggests groundwater generally flows southwest towards the Pacific Ocean, with a hydraulic gradient of approximately 0.0005 ft per ft; however, groundwater flow at the site can periodically shift more than 90 degrees toward the north and more than 60 degrees toward the south relative to the typical west-southwest flow direction, and the gradient sometimes becomes essentially flat (Geosyntec 2020). Periodic shifts in the groundwater flow may be influenced by

variations in pumping rates for the groundwater management system wells and other production wells near the site (A. Miller, Geosyntec Consultants, Inc., personal communication – email to A. Fraley, July 24, 2023). Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as irrigation water or as a potable water supply.

In accordance with HAR § 11-58.1, the HDOH *State of Hawai'i Landfill Groundwater Monitoring Guidance Document*, and Federal Subtitle D regulations (40 CRF Part 258), groundwater monitoring is regularly conducted at the KLF pursuant to its *Groundwater and Leachate Monitoring Plan* (Geosyntec 2020). Groundwater monitoring at the KLF Phase II site began in 1994. The purpose of the monitoring is to detect and evaluate potential changes to groundwater in the area of the landfill to evaluate if past and/or present municipal solid waste disposal operations have impacted groundwater quality within the coastal plain aquifer beneath the KLF. The monitoring program includes a groundwater well network and sampling, monitoring, and analytical procedures. Currently, groundwater is sampled on a quarterly basis from six groundwater monitoring wells (Geosyntec 2020c). The County is planning to install two upgradient monitoring wells north of the highway and one downgradient well on the Kaua'i Raceway Park property to provide background data. As required by KLF's SWMP, leachate samples are also collected on a routine basis (from Wet Well-1 and Wet Well-2 since 1994 and from Wet Well-3 since 2010) and the results compared to the groundwater monitoring data (Geosyntec 2020). The leachate data is used to characterize the potential contaminant source (i.e., the landfill waste materials) and evaluate the suitability of site-specific groundwater monitoring parameters.

Groundwater monitoring has identified several statistically significant increases (SSIs) of monitored parameters, including ammonia as nitrogen (N), arsenic (As), calcium (Ca), potassium (K), and total organic carbon (TOC) (Geosyntec 2023c). Alternative source demonstration (ASD) reports have indicated that the elevated levels may be due to sources other than the landfill including fertilizer application on agricultural land upgradient of the KLF, biodegradation of organic material prior to construction of Phase II, the unlined Phase I site, and impacts from the adjacent aquaculture facility (Geosyntec 2023c). Naturally occurring arsenic in the volcanic soils was also cited as a possible source (Geosyntec 2023c).

The HDOH, Solid and Hazardous Waste Branch (SHWB), in a letter dated 22 May 2014, responded to the previously mentioned ASDs with the following acceptance of ASD findings:

- The ammonia as N SSIs is not related to Phase II landfill releases, but due to fertilizer compounds associated with upgradient agricultural activities and biodegradation of organic fill materials.
- The TOC SSIs are likely from the Phase I landfill. SHWB noted that the Phase I wells identified TOC at significantly greater concentrations and earlier than the detection of TOC in well MWII-6.
- SHWB agreed that the calcium and potassium SSIs observed at MWII-7 are not related to Phase II landfill releases but are associated with impacts from the adjacent Aquaculture Facility (Geosyntec 2023c).

The County is currently working with the HDOH to conduct the following: approve an updated monitoring plan; install new monitoring wells; further investigate arsenic in groundwater and background values for detection monitoring parameters; and reevaluate intra-well statistics.

### **3.17.2 Potential Impacts and Mitigation Measures**

#### **3.17.2.1 Proposed Action**

##### **Surface Water**

No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater is currently managed as described in the *Surface Water Management Plan* (Geosyntec 2023a) and described in Section 3.17.1 above. Surface water drainage features within the KLF will be modified slightly (i.e., continued upwards as the expansions are filled in) to accommodate the increase in side slope lengths due to the proposed vertical increase. Tetra Tech (2022) conducted an engineering analysis of the stormwater management system and concluded that it is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Therefore, no significant impacts to surface water resources are anticipated with implementation of the Proposed Action.

##### **Groundwater**

The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and LCRS. An engineering analysis of the LCRS piping in the center of the Phase II area confirmed that the piping can structurally withstand the additional load from the Phase II vertical expansion (Tetra Tech 2022). Further, the Proposed Action is not expected to substantially affect the production and migration of leachate in the 30-year timeframe. Compared with the results of modeling of the currently permitted design, the Phase II vertical expansion will change both the peak day and average annual leachate generation by less than 1 percent (Tetra Tech 2022). Groundwater monitoring at the KLF would continue to be conducted in accordance with applicable regulations and in consultation with the HDOH. The Proposed Action would not change the current KLF groundwater monitoring program or alter existing impacts to groundwater. Therefore, no significant impacts to groundwater resources are anticipated with implementation of the Proposed Action.

#### **3.17.2.2 No Action Alternative**

Under the no action alternative, the Proposed Action would not be implemented and there would be no change to the water resources within the area. No new impacts to water resources are anticipated with implementation of the no action alternative.

### 3.18 Cumulative Impacts

“Cumulative impacts” refer to impacts on the environment that result from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (i.e., county, state, or federal) or person undertakes such actions. Cumulative impacts can result from individually minor yet collectively significant actions taking place over a period of time (HAR § 11-200-2). Major existing developments within the Kekaha Region are summarized in Table 3-3 and planned land development projects are listed in Table 3-4. A summary of resource attributes that may contribute to cumulative impacts is provided below.

**Table 3-3. Existing Developments in the Region**

#	Project Name and Description	Type
1	The U.S. Navy’s Pacific Military Range Facility–Barking Sands (PMRF) is the world’s largest instrumented, multi-dimensional testing and training missile range. The base is located on 2,385 acres and includes a 6,000-ft runway, maintenance facilities, and approximately 70 housing units. It is the largest employer in west Kaua’i. While the PMFR continues to improve and expand its operations, a review of publicly available information did not identify any new major development projects <sup>1</sup> .	Military/Defense
2	Agribusiness Development Corporation (ADC) controls and manages over 12,000 acres of land in the Mānā Plains area of Kekaha, including the Kokee Ditch System, the Kekaha Ditch System, two pump stations, two hydroelectric power plants, and an irrigation/drainage ditch system. ADC’s proposed, short- to mid-range developments are provided in Table 3-4 below.	Agriculture
3	The Department of Hawaiian Homelands (DHHL) manages 52 acres of residential and special district lands in the Kekaha community. These lands are nearing its capacity for homestead development and currently support 117 residential lessees. No new developments are proposed for DHHL’s Kekaha lands. <sup>3</sup>	Residential

Sources: 1. U.S. Navy 2023; 2. ADC 2022; 3. DHHL 2011.

**Table 3-4. Planned Developments and Land Use Changes**

#	Project Name and Description	Type	Status	Proponent
1	<b>West Kaua’i Energy Project<sup>1</sup></b> is a proposed renewable energy and battery storage project located 4 miles north of Kekaha that will utilize hydroelectric and solar photovoltaic energy production.	Utility	In progress. Finding of No Significant Impact determination 12/23/2022	Kaua’i Island Utility Cooperative and AES West Kaua’i Energy Project, LLC
2	<b>Kekaha Ditch Modifications.<sup>2</sup></b> In 2022, the legislature appropriated \$3.5M to Agribusiness Development Corporation (ADC) for improve the Kekaha Ditch network to modify the instream flow and stop waste of water.	Agriculture	In progress. Funding allocated in 2022.	ADC
3	The <b>Hawai’i Agribusiness Plan 2021<sup>3</sup></b> provides short- to mid-range planning objectives for the ADC. Specific goals related to ADC’s Kekaha lands include	Agriculture	Mid-range planning.	ADC

#	Project Name and Description	Type	Status	Proponent
	convert 1,000 acres to productive diversified agriculture status (1 to 3 years); pressurize the existing irrigation system (1 to 5 years); rehabilitate the existing irrigation system, including repair of the hydroelectric plant (2 to 5 years); and improve the Kekaha Bridge (1 to 3 years).			
4	<b>Kekaha Road and 'Akialoa Road Improvements Project</b> <sup>4</sup> includes resurfacing the entire length of Kekaha Road and improving traffic flow at the intersection of Kekaha Road with Kōke'e Road.	Transportation	Project planning.	County of Kaua'i DPW
5	<b>Federal-aid Highways 2035 Transportation Plan for the District of Kaua'i</b> <sup>5</sup> is a planning document for land transportation planning decisions on Kaua'i through the year 2035. The plan identifies potential roadway infrastructure solutions, including widening the shoulders, resurfacing, and realigning portions of Kaumuali'i Highway in the Kekaha vicinity.	Transportation	Long-range planning.	Hawai'i Department of Transportation, Highways Division
6	<b>West Side Path (Phase 1 Hanapēpē Town to Salt Pond and Waimea to Kekaha)</b> <sup>6</sup> . Shared pathway; future phases and alignments to be determined.	Transportation	Mid- to long-range planning.	Unknown
7	<b>Kīkīaola Mauka</b> <sup>6</sup> is a proposed residential development for 270 new housing units in Waimea.	Residential	Mid- to long-range planning.	Unknown
8	<b>Kīkīaola Field 14</b> <sup>6</sup> is a proposed residential development for 56 new housing units in Waimea.	Residential	Mid- to long-range planning.	Unknown
9	<b>Kapalawai Resort, LLC</b> <sup>6</sup> is a proposed resort development for 250 new housing units in Waimea.	Resort	Mid- to long-range planning.	Unknown
10	<b>Kekaha Municipal Solid Waste Landfill -Recycling and Waste Diversion</b> <sup>7</sup> . The County is assessing the feasibility of a curbside recycling program, alternative technologies to landfilling and a construction and demolition waste diversion pilot.	Solid Waste Management	Project planning.	County of Kaua'i, Solid Waste Management Division
11	<b>Kekaha Municipal Solid Waste Landfill Construction of Phase II, Cell 3</b> <sup>7</sup> would increase landfill capacity at the KLF. Two alternatives are being considered: (1) install an engineered, liner system over Phase I and expand the landfill over that liner or (2) mine and remove waste from Phase I, construct an engineered, liner system, and commence Cell 3 operations upon this liner.	Solid Waste Management	Project permitting.	County of Kaua'i, Solid Waste Management Division
12	<b>New Municipal Solid Waste Landfill</b> <sup>7</sup> . The County is currently investigating the feasibility of siting a new	Solid Waste Management	Project planning.	County of Kaua'i, Solid Waste

#	Project Name and Description	Type	Status	Proponent
	landfill on a parcel owned by ADC that is also located in Kekaha.			Management Division
Sources: 1. SSFM International, Inc. 2022; 2. ADC 2022; 3. ADC 2020; 4. County of Kaua'i 2023; 5. CH2MHILL 2014; 6. County of Kaua'i 2018; 7. A. Fraley, DPW, personal communication, March 12, 2023.				

### 3.18.1 Air Quality

Existing air quality in the vicinity of the KLF is good. Emissions associated with Proposed Action would not hinder conformance with the NAAQS and HDOH ambient air quality standards. Operational activities would be conducted in accordance with Hawai'i air pollution control regulations and would employ proper administrative and engineered controls to reduce air emissions. In general, sources of pollutant air emissions may increase with increased development in the region include vehicle exhaust from Kaunauli'i Highway, dust from intensified agricultural cultivation, construction of new developments, and continued MSW landfill operations. However, development is expected to remain at relatively low levels in the Kekaha Region and prevailing trade winds would help disperse the accumulation of emissions. If the KLF Phase II, Cell 3 is constructed or a new landfill is sited in the Kekaha Region, BMPs would be implemented similar to those currently implemented at KLF to minimize dust and other emissions to less than significant levels. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to air quality when combined other proposed developments in the area.

### 3.18.2 Biological Resources

Flora and fauna of the KLF facility are comprised of primarily non-native species characteristic of highly disturbed lowland habitats. No sensitive species of flora are known to occur within the KLF; therefore, no impacts to botanical resources are anticipated. Listed waterbirds, listed seabirds, Hawaiian goose, and Hawaiian hoary bat have potential to occur in or traverse the KLF facility but have not been detected and are unlikely to be occur within the active area of Phase II. Thus, no detrimental impacts to biological resources are anticipated with implementation of the Proposed Action and execution of agency recommended wildlife impact avoidance and minimization measures (Section 3.2). If the KLF Phase II, Cell 3 was constructed or a new landfill was sited in the Kekaha Region, wildlife impact avoidance and minimization measures would be implemented similar to those conducted at the current KLF and those proposed as part of the Proposed Action. In general, terrestrial and marine biological resources are continuously being negatively impacted by anthropogenic and natural activities throughout the Hawaiian Islands. However, no other actions have been identified in the vicinity of KLF that would result in a cumulative impact to biological resources in conjunction with implementation of the Proposed Action.

### **3.18.3 Climate**

The Proposed Action is not anticipated to result in measurable impacts to climate or local climatic conditions (e.g., temperature, rainfall, wind) and would contribute a negligible amount of greenhouse gasses to the environment from the use of vehicles and equipment during operations and controlled landfill gas emissions. Even with continued growth in the region, greenhouse gas emissions are anticipated to occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to climate when combined with implementation of the Proposed Action.

### **3.18.4 Cultural Resources**

No ongoing cultural practices were identified within the KLF during background research and community consultation for this CIA. Although the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities, no impacts to these cultural practices are anticipated. Future development in the region would need to comply with state regulations related to the protection of cultural properties and practices. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to cultural resources when combined with implementation of the Proposed Action.

### **3.18.5 Geology, Topography, and Soils**

Analysis of soil borings, test pits, and laboratory results indicate that the site is suitable for the Proposed Action from a geotechnical standpoint. Based on the soil and waste mass properties and the designed slopes of the landfill, the proposed landfill expansion is expected to remain stable. The existing LCRS, industry standard BMPs, and facility specific plans minimize the potential for inadvertent releases and impacts to soils. Intensification of agricultural uses on ADC lands in the vicinity of the KLF could impact soil quality. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha would also change site topography. However, potential impacts from the Proposed Action are expected to be minor and would not cause a cumulative impact to geology, topography, or soils when combined with other proposed developments in the area.

### **3.18.6 Hazardous Materials and Hazardous Waste**

The types of waste accepted at the KLF would not change under the Proposed Action, and current procedures to prevent disposal of hazardous waste materials at the facility would be maintained. Landfill operations would continue to be administered following the *Operations Manual* and the SPCC Plan developed for the KLF (Geosyntec 2023a). Cumulatively, with continued growth in the region, future specific uses could also increase the possibility of hazardous material and hazardous waste impacts, primarily during construction and transportation and if there are accidental spills. Given strict

adherence to petroleum operation rules and regulations, hazardous materials handling rules, and BMPs, the Proposed Actions contribution to cumulative impacts would be less than significant.

### **3.18.7 Historic and Archeological Resources**

The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or any new ground disturbance. An AIS conducted in 1993 and subsequent investigation by AECOM (2013) found no evidence that archaeological resources or historic properties remain within the Phase II area (Appendix C) and none were encountered during previous site activities. Archaeological research of KLF and its surrounding area indicates the foothills and wetland areas of the Mānā Plain were extensively modified and much of the physical evidence of the traditional settlement pattern has been obliterated by commercial agriculture and other operations. Future development in the region would need to comply with state and/or federal regulations related to historic and archeological properties. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to historic and archeological resources when combined with implementation of the Proposed Action.

### **3.18.8 Land Use**

There would be no change to land use or ownership of the KLF facility with implementation of the Proposed Action. The continued use of the KLF facility would not affect or preclude the use of lands adjacent to or in the vicinity of the KLF and no changes to the land use designations are warranted or proposed. Future developments identified in the region are consistent with current land uses. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to land use when combined with implementation of the Proposed Action.

### **3.18.9 Natural Hazards**

There have been no historical adverse impacts to the KLF facility from natural hazards (e.g., hurricanes, floods, tsunamis, and earthquakes) and the KLF is not expected to be impacted by sea level rise or climate-induced changes to natural hazards. While there is a potential for natural hazards to impact the facility short term, implementation of KLF's *Emergency Action Plan* would avoid and minimize injuries and property damage. No other foreseeable actions have been identified in the vicinity of the KLF that would cause cumulative natural hazard impacts when combined with implementation of the Proposed Action.

### **3.18.10 Noise**

Noise from landfill operational activities decrease with distance from the active area and are minimal at the KLF border. Daily operations and associated noise generation at the landfill would not change because of the Proposed Action. Properties adjacent to the KLF are used for agricultural purposes, a firing range, and federal reserve land at PMRF. The nearest town is approximately 1.3 miles to the southeast and would not be impacted by noise from the KLF and the Proposed Action. There is a

potentially for noise impacts related to future construction, MWS landfill operations, and increased regional traffic. However, potential impacts from the Proposed Action are expected to be minor and would not cause a cumulative impact to noise when combined with other proposed developments in the area.

### **3.18.11 Public Facilities and Services**

The Proposed Action would not result in an increased demand on public facilities or services. The cumulative demands on public facilities and services will likely increase over time as new residential and resort developments are constructed. However, potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to public facilities and services when combined other proposed developments in the area.

### **3.18.12 Safety and Health**

Current procedures specified in the *Operations Manual* to ensure safe operation of the KLF would be continued under the Proposed Action. The proposed expansion of the KLF would result in long-term positive impacts on public safety and health by allowing for continued safe disposal of MSW on the island of Kaua'i. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to safety and health when combined with implementation of the Proposed Action.

### **3.18.13 Socioeconomics**

No adverse impacts to demographics, income, or employment are anticipated from implementation of the Proposed Action. The Proposed Action would allow for continued safe and environmentally-sound disposal of MSW on the island of Kaua'i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha could illicit concerns from the community. However, the HCB program is anticipated to mitigate significant socio-economic impacts by providing continued fiscal support to the community. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to socioeconomic resources when combined other proposed developments in the area.

### **3.18.14 Transportation and Traffic**

Landfill filling rates are not expected to change significantly over the life of the Proposed Action and there would not be any significant change to landfill-related traffic on local roadways. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha would increase the timeline of waste disposal traffic in the region but the filling rate (i.e., amount of daily trip to and from the landfill) is not anticipated to significantly change. Proposed improvements to roadways within the vicinity of the KLF may have a temporary, short-term impacts on traffic, but are anticipated to result in a long-term benefit

to local transportation. Residential and resort developments proposed in Waimea may also increase local traffic. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to transportation or traffic when combined other proposed developments in the area.

### **3.18.15 Utility Infrastructure**

The Proposed Action would not result in an increase in the daily load on public utilities, although use of public utilities by the KLF would continue for up to an additional estimated 2 to 4 years. The current KLF utility requirements would not exceed the existing capacity of local utility companies or on-site utility infrastructure. The Proposed Action would increase the capacity of Phase II and would be a positive benefit to the County's solid waste infrastructure. The cumulative demands on utility infrastructure and services will likely increase over time as new residential and resort developments are constructed. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha would provide a long-term MWS waste capacity solution, resulting in a positive impact for the solid waste infrastructure on Kaua'i. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to public utilities when combined other proposed developments in the area.

### **3.18.16 Visual Resources**

The maximum height of the landfill and final cover upon closure would be no greater than 171.5 ft amsl. Closure plans for the KLF Phase II may include provisions for landscaping of the fill areas, as well as the site perimeter, to minimize visual impacts. Construction of the Phase II, Cell 3 could increase the overall height of the KLF landfill to over 200 ft amsl (pending final design and permitting). Additionally, the construction and operation of a new landfill within Kekaha would further modify the visual landscape of the region. However, potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to visual resources when combined other proposed developments in the area.

### **3.18.17 Water Resources**

Surface water drainage features would need to be modified slightly (i.e., extended upwards as the expansion is landfilled) to accommodate the increase in side slope lengths due to the proposed vertical increase, but existing infiltration ditches and basins would continue to manage site surface water without discharging off-site. Groundwater monitoring at the KLF would continue to be conducted. Generally, water quality may be affected by the development in the region. While intensification of agricultural uses upstream of the KLF could impact surface and groundwater in the vicinity of the KLF, ADC is expected to mitigate significant impacts with improvements to their stormwater management system (ADC 2022). Increases in impervious surfaces and reduced infiltration through soils potentially increase storm water runoff and introducing sediment and other pollutants to the nearshore environment. However, potential impacts from the Proposed Action are to be minor and would not

cause a cumulative impact to water resources when combined other proposed developments in the area.

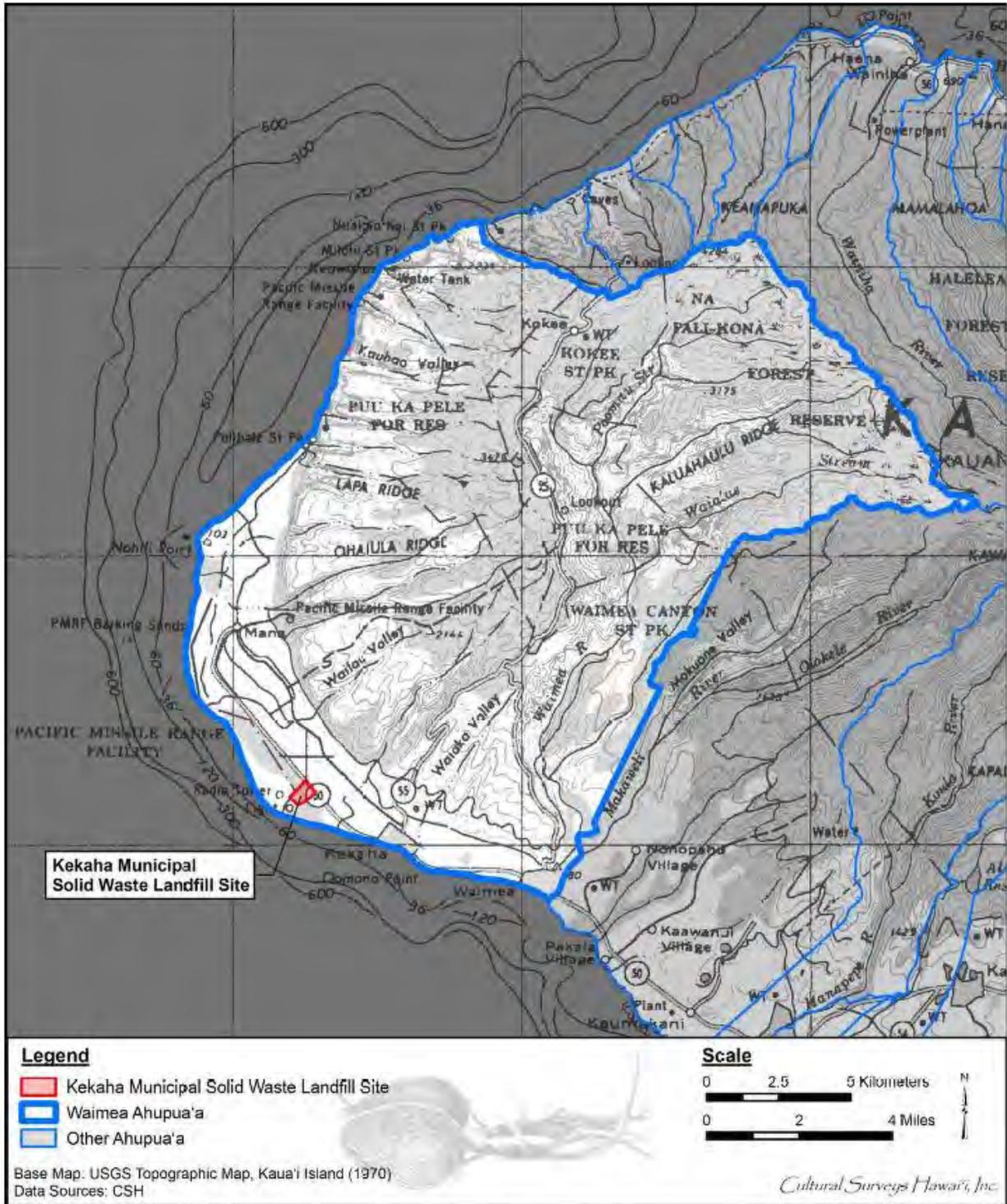
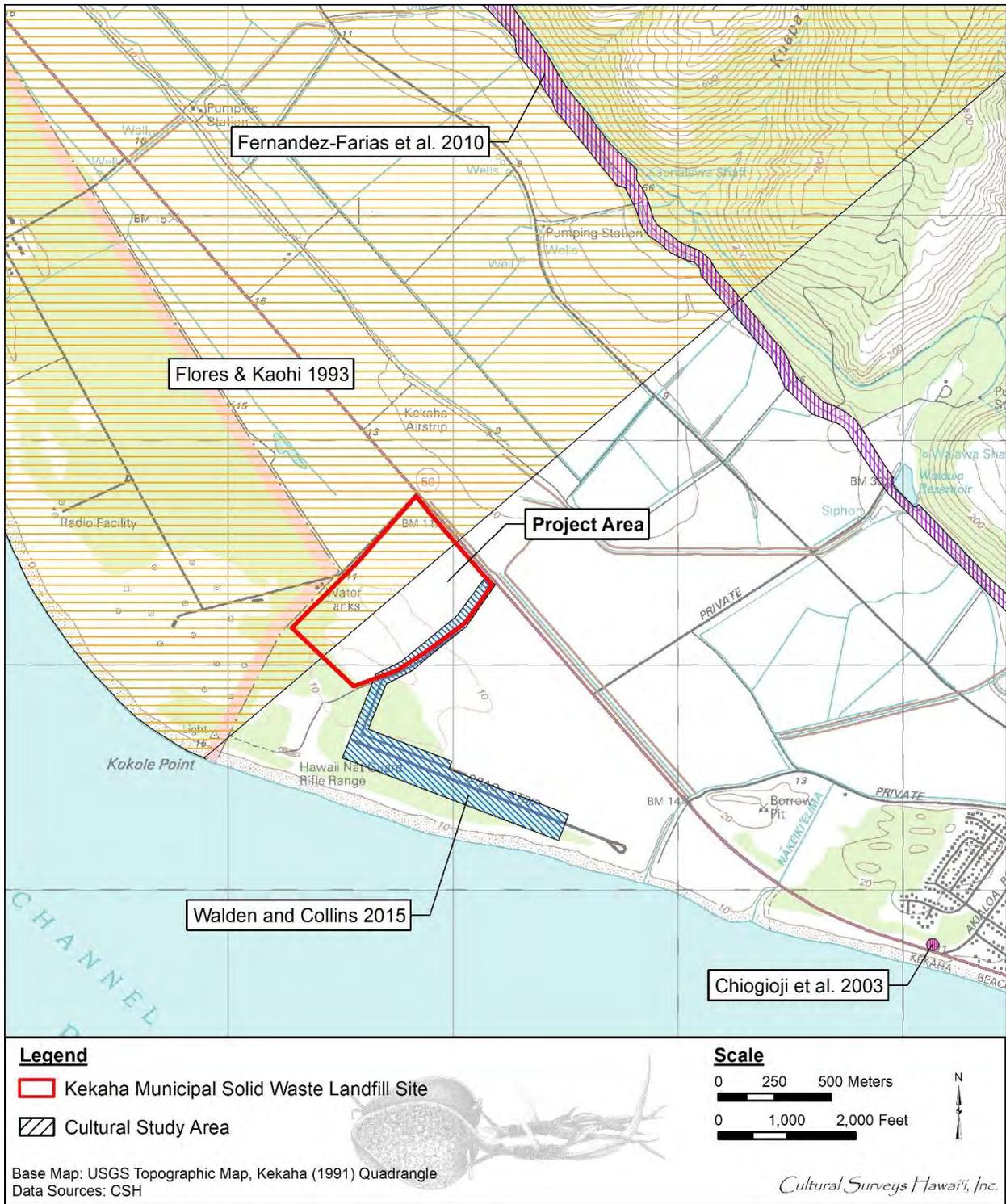
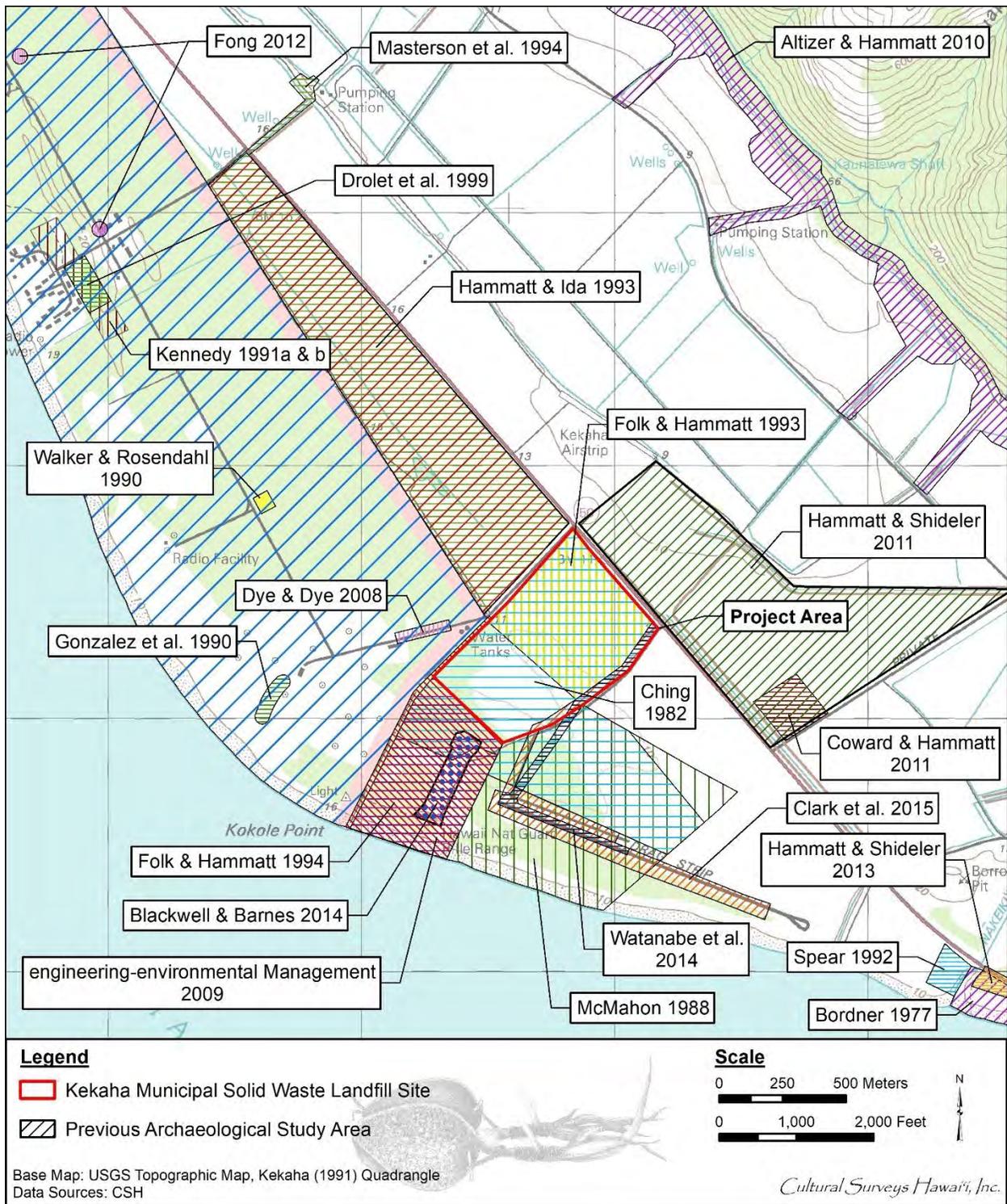


Figure 3-1. Location of the KLF within Waimea Ahupua'a



**Figure 3-2. Previous Cultural Studies in the Vicinity of the KLF**



**Figure 3-3. Previous Archaeological Studies in the Vicinity of the KLF**

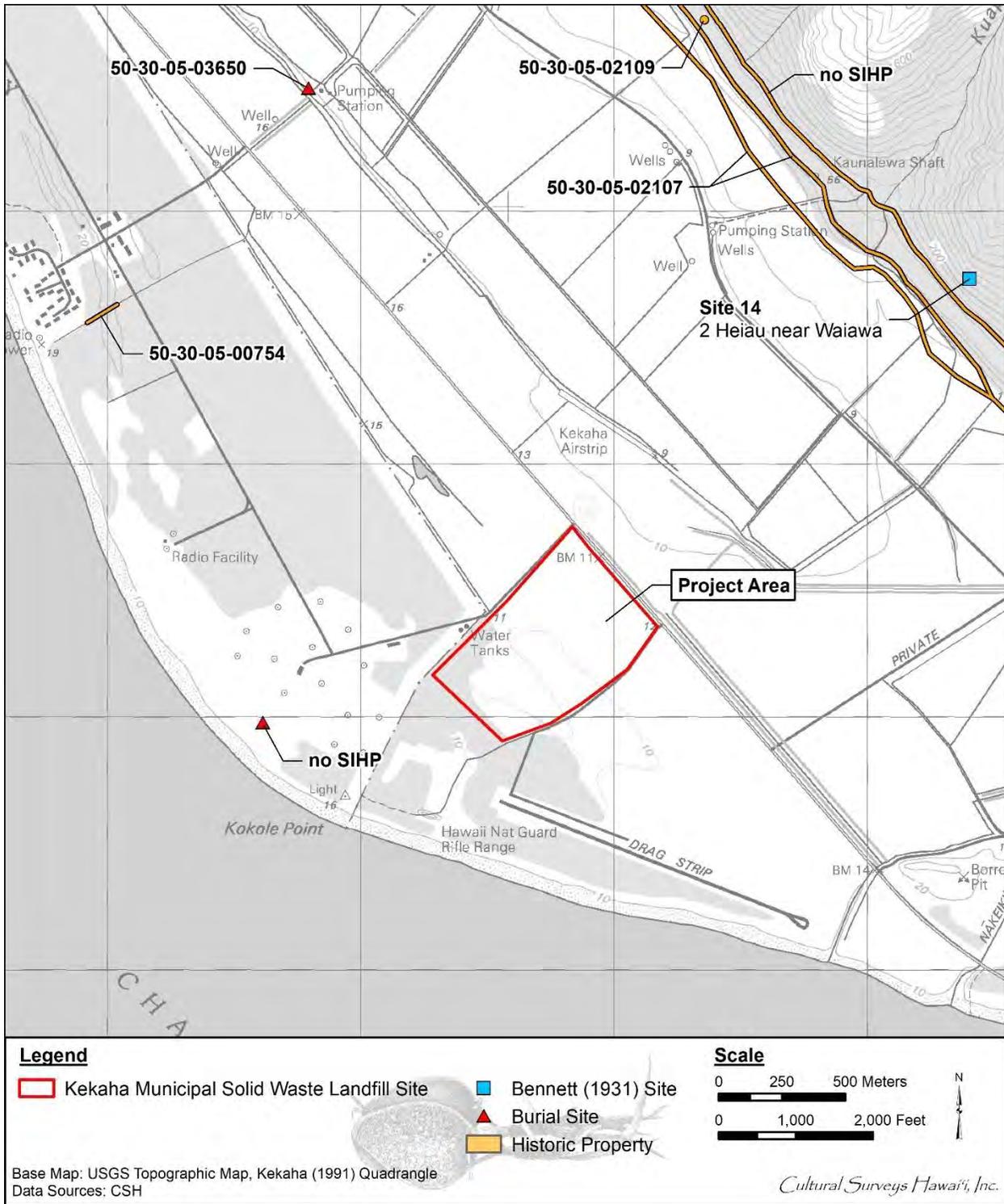


Figure 3-4. Historic Properties in the Vicinity of the KLF

# Kekaha Landfill Phase II Vertical Expansion

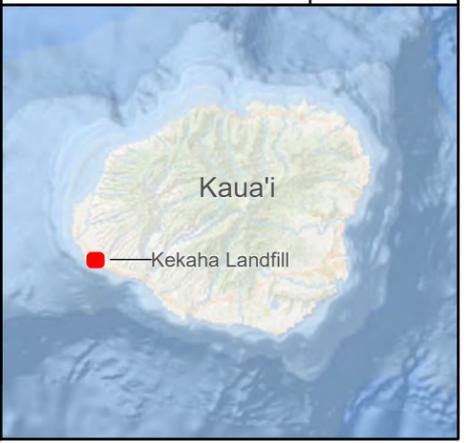
**Figure 3.5  
State Land Use  
Designations**

KAUAI COUNTY, HI

-  Cell 1 Limit
  -  Cell 2 Limit
  -  Phase II Limit
  -  Phase I Limit
  -  TMK Parcel Boundary
  -  Approximate Extent of the Proposed Vertical Expansion
- State Land Use
-  Agricultural Land Use District
  -  Conservation Land Use District



Reference Map



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# Kekaha Landfill Phase II Vertical Expansion

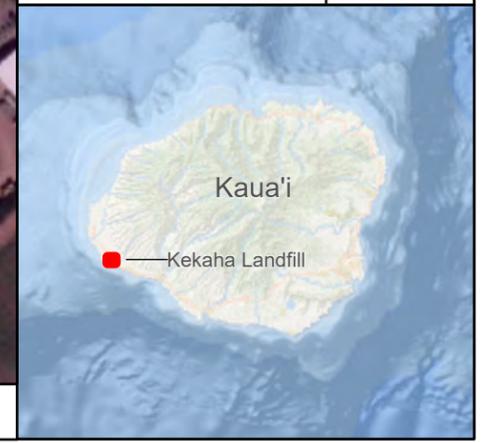
## Figure 3.6 County Zoning and Special Management Area

KAUAI COUNTY, HI

- Cell 1 Limit
- Cell 2 Limit
- Phase II Limit
- Phase I Limit
- TMK Parcel Boundary
- Approximate Extent of the Proposed Vertical Expansion
- Special Management Area
- County Agriculture Zone



Reference Map



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# Kekaha Landfill Phase II Vertical Expansion

## Figure 3.7 Coastal and Flood Hazards

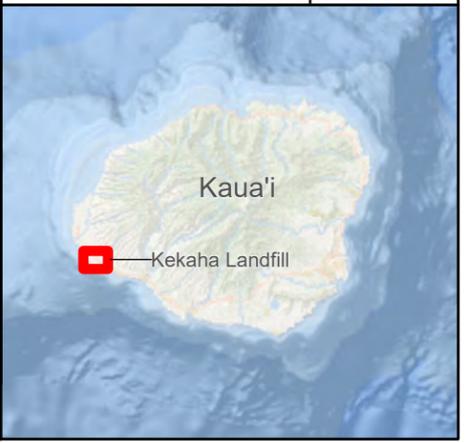
KAUA'I COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit

- Sea Level Rise**
-  3.2 Feet
- Tsunami Evacuation Zone**
-  Tsunami Evacuation Zone
-  Extreme Evacuation Zone
- Flood Zone**
-  A, 1% Annual Chance Flood Hazard
-  AE, 1% Annual Chance Flood Hazard
-  AH, 1% Annual Chance Flood Hazard
-  VE, 1% Annual Chance Flood Hazard
-  X, 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
-  X, AREA OF MINIMAL FLOOD HAZARD



Reference Map



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## 4. Consistency with Plans, Policies and Controls

### 4.1 State of Hawai'i

#### 4.1.1 State Land Use Law (HRS Chapter 205)

The Hawai'i State Land Use Law (HRS Chapter 205) established the state Land Use Commission (LUC) and granted the authority to classify all lands in the state into one of four land use districts: urban, rural, agricultural, and conservation. As shown in Figure 3-5, the Proposed Action will take place entirely within TMK 1-2-002:001(por.), which is within the state agriculture land use district<sup>19</sup>. Permissible uses within the state agricultural land use district are listed in HRS § 205-4.5. Landfills and solid waste management operations at landfills are not listed in this section; however, pursuant to HRS § 205-6, the county Planning Commission and state LUC may permit certain unusual and reasonable uses, other than those for which the district is classified, through the issuance of a Special Use Permit (SUP). The county Planning Commission is the decision-making authority for all SUPs; as the proposed use involves more than 15 acres of land, the SUP also requires approval by the State LUC.

The LUC issued an SUP to the County DPW in 1993 (Petition Docket No. SP93-384) to allow 63.18 acres of land within the state agricultural district to be used for landfill purposes (for KLF Phase II). Based on consultation with County of Kaua'i Planning Department, the Proposed Action (i.e. a vertical expansion of Phase II at KLF) is permissible under the existing SUP (K. Hull, County of Kaua'i Planning Department, personal communication – email to A. Fraley, June 15, 2023) as the Proposed Action is consistent with the proposed use evaluated in the existing SUP (the construction and operation of Phase II). The existing SUP does not specify a height restriction to Phase II of KLF nor does it have an expiration date. Based on this determination, no changes to the land use designations are warranted or proposed.

The LUC guidelines for determining “unusual and reasonable” uses for granting of an SUP are provided in HAR § 15-15-95(b). These guidelines are evaluated in the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993) and are bulleted below, with a discussion of the Proposed Action's consistency with each guideline.

- (1) *The use shall not be contrary to the objectives sought to be accomplished by HRS Chapters 205 and 205A and the rules of the commission*

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the proposed use (the construction and operation of Phase II of the KLF) would not be contrary to the objectives sought to be accomplished by HRS Chapters 205 and 205A, and the proposed use would not result in a substantial degradation or loss of prime and productive agricultural land. The Planning Department also found that the proposed use

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<sup>19</sup> The state land use district boundary line is located on the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – telephone, April 3, 2023).

would have “no effect” on significant historical sites or adversely impact recreational, scenic, and open space requirements.

The Proposed Action is consistent with the conclusions made by the Planning Department in the existing SUP and is consistent with the objectives sought to be accomplished for the Agricultural District pursuant to HRS § 205-2 and HAR § 15-15-19.

Per HRS § 205-2(d), the Agricultural District includes areas that are “not used for, or that are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics.” (HRS § 205-2[d]). The KLF site (within which the Proposed Action will take place) is consistent with this description as its topography (i.e. the current active landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. As discussed in the existing SUP, the native soils underlying the KLF are characterized as having poorly graded sand overlying dense sand. This soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. The native soils, which have limited agricultural potential, are largely covered by refuse and cover soils used in landfill operations, further degrading the agricultural potential of the site.

Further, the Proposed Action would not take place on lands suitable for intensive agriculture in accordance with HRS § 205-2(a)(3): “in the establishment of the boundaries of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation.” The KLF facility is not designated or adjacent to Important Agricultural Land (IAL)<sup>20</sup>. The majority of the KLF site, including the lands underlying the Proposed Action, are also designated as Class E soils by the University of Hawai‘i Land Study Bureau (LSB) (Office of Planning 2021)<sup>21</sup> and as “other” in the Agricultural Lands of Importance in the State of Hawai‘i (ALISH) (UH CTAHR 1977)<sup>22</sup>. Therefore, the Proposed Action would not withdraw prime agricultural lands from production.

The Proposed Action is expected to have an operational life of approximately 2 to 4 years (through 2029) with a 30-year closure/post-closure monitoring period. In the long term, when the facility is closed, heavy equipment and accessory structures that are not needed during the 30-year monitoring

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<sup>20</sup> The Important Agricultural Lands (IAL) designation is a supplemental land use classification reserved for high quality farmland within the State Agricultural District.

<sup>21</sup> The University of Hawai‘i Land Study Bureau system rates the productivity of soils throughout the state based on characteristics including texture, slope, salinity, erodibility, and rainfall, and designates areas in categories ranging from A to E (with Class A representing the most productive soils and Class E representing the least productive soils). While the majority of the KLF site is designated as Class E soils, a small section of the northwest corner of TMK 1-2-002:001(por.) is designated as Class C soils; this is outside of the boundaries of the Proposed Action.

<sup>22</sup> The Soil Conservation Service, University of Hawai‘i College of Tropical Agricultural and Human Resources, and the State of Hawai‘i Department of Agriculture designated ALISH in 1977 (UH CTAHR 1977). The ALISH system designates areas into “prime”, “unique” and “other” classifications based on soil type, climate, water supply, and agricultural land use patterns. “Prime” lands are suited for production of food, feed, forage, and fiber crops, “unique” lands are useful for specific high value food crops (e.g., taro, coffee, rice, watercress) and “other” designates farmland of statewide or local importance.

period would be removed and the KLF site would appear as a hill covered in natural vegetation. Consistent with the requirements of HRS Chapter 205, the County could consider using the site for other permissible use in the Agricultural Districts when the landfill is closed.

The Proposed Action would be in compliance with the objectives and policies of HRS Chapter 205A, as further discussed in Section 4.1.2.

*(2) The desired use would not adversely affect surrounding property*

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the proposed use (the construction and operation of Phase II of the KLF) should not adversely affect surrounding property based on the nature and conduct of the proposed operation.

The Proposed Action is consistent with the conclusions made by the Planning Department in the existing SUP and would not adversely affect or preclude the use of lands adjacent to or in the vicinity of the KLF.

The KLF site has been used as a landfill since the early 1950s. The KLF is located on the coastal Mānā Plain historically used for agriculture, portions of which are still in active agricultural use. The primary land use in the vicinity of the KLF is agricultural and agriculture-related commercial activity occurring to the north, northwest, and east of the KLF site. Other land uses in the vicinity of the KLF include federal reserve lands (PMRF and U.S. Lighthouse Service) to the south and west, land leased by the Hawai'i National Guard to the south, and a drag racing park (Kaua'i Raceway Park) to the southeast (Figure 1-2).

There would be no change to the existing land use at the KLF facility with implementation of the Proposed Action. The site would continue to be used as a solid waste management facility and will continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances including fugitive dust (Section 3.1), landfill gas (Section 3.1), odor (Section 3.1), hazardous waste and materials (Section 3.6), noise (Section 3.10), or surface and ground water (Section 3.17). No substantial changes to KLF's operations are proposed. Based on the nature and conduct of the Proposed Action, the continued use of the KLF facility would not adversely affect or preclude the use of lands adjacent to or in the vicinity of the KLF.

*(3) The use would not unreasonably burden public agencies to provide roads and streets, sewers, water drainage and school improvements, and police and fire protection*

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the proposed use (the construction and operation of Phase II of the KLF) would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, and police and fire protection. The Planning Department noted the following in making this determination:

- Police, sewer and school improvements are not required for the proposed landfill.
- Water drainage and road improvements are incorporated into the design.
- Fire protection will be derived from emergency well systems installed at the site.

- Fresh water for drinking and irrigation is the only public service required, and the County will supply the required flows as part of a new water main which will be installed by the U.S. Navy.

As described in Section 3, the Proposed Action would not require improvements to or otherwise burden public infrastructure nor would it be expected to increase demand on public services including traffic and roadways (Section 3.14), utility infrastructure and services (Section 3.11), educational facilities and population (Section 3.11 and 3.13), or police, fire, and emergency services (Section 3.15). Therefore, the Proposed Action is consistent with the conclusions made by the Planning Department in the existing SUP and would not adversely unreasonably burden public agencies.

*(4) Unusual conditions, trends, and needs have arisen since the district boundaries and rules were established*

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that Hurricane Iniki caused an unusual need for waste disposal capacity as the hurricane generated approximately five times the normal annual waste volume in one day. This waste disposal crisis was cited as an unusual condition which requires special consideration. Further, SUP No. SP93-384 states that the Phase II landfill area was “expected to serve the County’s future waste disposal need since there are no other areas on the island that are physically and climatically conducive for a sanitary landfill.” The Phase II site was unsuitable for agricultural production and was “characterized as having poorly graded sand overlying dense sand. This soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. Therefore, the proposed landfill does not withdraw prime agricultural lands from production”.

The KLF is the only permitted MSW landfill on the Island of Kaua’i and is a key component of the county’s Integrated Solid Waste Management Plan (Jacobs 2021). The KLF Phase II is projected to reach capacity in October of 2026, at which time the island of Kaua’i would be without a landfill for the safe disposal of MSW. As summarized in Section 1.2.3, the County has a long history of attempts to site a new MSW landfill at another location on the island. Most recently, in 2018, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Ma’alo because the FAA and the HDOT Airports Division opposed the project due to the potential for the landfill to increase bird strikes at Līhu’e Airport. While the County is currently working on the task of siting a new landfill facility on Kaua’i, this is an extensive effort and is not anticipated to be accomplished in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer or not succeed, as happened with the prior new landfill site. Therefore, there is a need to provide landfill capacity beyond 2026 at the KLF. The Proposed Action is expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, to meet the County of Kaua’i’s immediate need for landfill capacity. This is an “unusual condition,” which requires special consideration.

*(5) The land upon which the proposed use is sought is unsuited for the uses permitted within the district*

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the KLF property is characterized as having poorly graded sand overlying dense sand and this soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. Therefore, the proposed use does not withdraw prime agricultural lands from production.

As discussed in the response to HAR § 15-15-95(b)(1), the Proposed Action would not take place on lands suitable for intensive agriculture and would not withdraw prime agricultural lands from production. Pursuant to HAR § 15-15-25(b), HRS § 205-4.5,<sup>23</sup> and HRS § 205-2(d), permissible uses in the Agricultural District include agricultural uses as well as other uses including wind energy production, biofuel production, small-scale solar facilities, scientific data collection, and open area recreation facilities. As described above, agricultural activities at the Proposed Action site are highly constrained by site-specific factors. The KLF site is potentially suitable for small-scale solar energy facilities or biofuel production; small-scale meteorological, air quality, noise, and other scientific and environmental data collection; and open area recreational facilities. The Proposed Action would not preclude the use of the site for these purposes; but some uses would be delayed until post-closure.

#### **4.1.2 Coastal Zone Management Program (HRS Chapter 205A)**

Under the authority of the federal Coastal Zone Management Act (16 U.S.C. 1451-1456), the Hawai'i Coastal Zone Management (CZM) Program was enacted as HRS Chapter 205A and is administered by the State of Hawai'i Department of Business, Economic Development and Tourism, Office of Planning. The purpose of the Hawai'i CZM program is to provide for the effective management, beneficial use, protection, and development of the coastal zone. It is designed to integrate decisions made by state and county agencies to provide greater coordination and compliance with existing laws and rules. The CZM area encompasses the entire state. The objectives of the Hawai'i CZM Program are listed in Table 4-1, with a brief statement regarding the consistency of the Proposed Action with each of the objectives and associated policies.

The Proposed Action would not result in significant adverse impacts to recreational, historic, or scenic and open space resources; coastal ecosystems; public use beaches/shoreline access; or marine resources. The KLF is not mapped within a flood plain, an erosion-prone area, or on geologically hazardous area, and is not at increased risk of damage from coastal hazards. Public participation has been incorporated into the environmental review process for compliance with HRS 343. Therefore, the

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<sup>23</sup> HRS 205-4.5 (c): "Within the agricultural district, all lands with soil classified by the land study bureau's detailed land classification as overall (master) productivity rating class C, D, E, or U shall be restricted to the uses permitted for agricultural districts as set forth in section 205-5(b)."

§205-5(b): "Within agricultural districts, uses compatible to the activities described in section 205-2 as determined by the commission shall be permitted; provided that accessory agricultural uses and services described in sections 205-2 and 205-4.5 may be further defined by each county by zoning ordinance.

Proposed Action is consistent with the objectives and policies of the coastal zone management program as outlined in HRS § 205A-2.

Key components of the Hawai'i CZM Program include (1) regulation of development within the Special Management Area (SMA), a designated area extending inland from the shoreline, (2) restrictions within the shoreline setback area, which serves as a buffer against coastal hazards and erosion and to protect view planes, and (3) a Federal Consistency provision, which requires that federal activities, permits, and financial assistance be consistent with the enforceable policies of the Hawai'i CZM program, to the maximum extent practicable.

As shown in Figure 3-6, the portion of the KLF within TMK (4) 1-2-002:009 (i.e. Phase I and a portion of Cell 2) is within the SMA. An SMA use permit (SMA(U)20-12-4) was obtained for the Phase II lateral expansion in 2012. However, the Proposed Action is not within the SMA as it would take place entirely within TMK (4) 1-2-002:001(por.).

The KLF is not within the shoreline setback area nor would it involve a federal activity or permit requiring federal consistency review.

**Table 4-1. Proposed Action's Consistency with the Objective and Policies of the Hawai'i CZM Program**

Objectives and Policies	Assessment of Consistency
<p><b>Recreational Resources:</b> Provide coastal recreational opportunities accessible to the public.</p>	<p>The KLF does not support coastal nor any other type of recreational resources. The Proposed Action would not impair access to the shoreline, degrade the quality of coastal waters, or otherwise affect coastal recreational opportunities.</p>
<p><b>Historic Resources:</b> 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.</p>	<p>The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or new ground disturbance. An AIS conducted in 1993 and subsequent investigation (AECOM 2013) found no evidence that archaeological resources or historic properties remain within the Phase II area (Appendix C) and none were encountered during previous site activities. SHPD concurs with the County's project effect determination of "No historic properties affected" under HRS § 6E-8, HAR § 275(b), and HAR § 275-7 (Appendix C; SHPD Doc. No. 2305DB01).</p>
<p><b>Scenic and Open Space Resources:</b> Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.</p>	<p>The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaunualii Highway and the shoreline and has the appearance of an earthen mound. Phase II is covered daily with landfill cover and is partially vegetated; the earth-tone daily landfill color is generally consistent in color with the surrounding agricultural areas. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated.</p>

Objectives and Policies	Assessment of Consistency
<p><b>Coastal Ecosystems:</b> Protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.</p>	<p>The Proposed Action would not involve work within coastal ecosystems. Stormwater would continue to be conveyed to the stormwater infiltration basin. Similarly, the leachate collection and removal system, would collect and divert leachate into the lined leachate evaporation pond. The facility does not discharge water to off-site areas. The Proposed Action would not adversely impact coastal ecosystems.</p>
<p><b>Economic Uses:</b> Provide public or private facilities and improvements important to the State’s economy in suitable locations.</p>	<p>The Proposed Action would allow for continued safe and environmentally-sound disposal of MSW on the island of Kaua’i for several more years while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua’i economy. The Proposed Action would provide direct economic benefits from employment and wages, from purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua’i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua’i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua’i economy.</p>
<p><b>Coastal Hazards:</b> Reduce hazard to life and property from coastal hazards.</p>	<p>The KLF is located outside of the 100-year and 500-year floodplains and 3.2-ft sea level rise exposure area and is not expected to be subject to coastal storm surge. The Proposed Action would take place at elevations ranging from 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. Therefore, the Proposed Action is not anticipated to be affected by coastal hazards and would not contribute to coastal flooding.</p>
<p><b>Managing Development:</b> Improve the development review process, communication, and public participation in the management of coastal resources and hazards.</p>	<p>As detailed in Section 6, outreach and consultation was initiated with stakeholders early in the Project development process. In parallel, this EA has been prepared to disclose the potential impacts of the Proposed Action; the environmental review process includes opportunities for public review and comment, pursuant to HRS Chapter 343 and HAR § 11-200.1. The discretionary permitting process will also include opportunities for public participation.</p>
<p><b>Public Participation:</b> Stimulate public awareness, education, and participation in coastal management.</p>	<p>The Proposed Action does not contain a public participation component for programmatic coastal management issues. Project-specific input has and will continue to be sought through the HRS Chapter 343 EA and permitting process.</p>
<p><b>Beach and Coastal Dune Protection:</b> Protect beaches and coastal dunes for: (i) Public use and recreation; (ii) The benefit of coastal ecosystems; and (iii) Use as natural buffers against coastal hazards; and (B) Coordinate and fund beach management and protection.</p>	<p>The Proposed Action would not involve placement of structures within the shoreline setback area or otherwise affect erosion or natural shoreline processes.</p>

Objectives and Policies	Assessment of Consistency
<p><b>Marine and Coastal Resources:</b> Promote the protection, use, and development of marine and coastal resources to assure their sustainability.</p>	<p>The Proposed Action would not involve work within marine or coastal ecosystems. Stormwater would continue to be conveyed to the stormwater infiltration basin and the leachate collection and removal system, would collect and divert leachate into the lined leachate evaporation pond. The facility does not discharge water to off-site areas. Therefore, the Proposed Action would not adversely affect marine or coastal resources.</p>

**4.1.3 Hawai'i State Planning Act (HRS Chapter 226)**

The Hawai'i State Planning Act (HRS Chapter 226) is a broad policy document relating to the statewide planning system, including all activities, programs and decisions made by local and state agencies. It is intended to “improve the planning process in this state, to increase the effectiveness of government and private actions, to improve coordination among different agencies and levels of government, to provide for wise use of Hawai'i's resources and to guide the future development of the state” (HRS § 226-1). The State Plan serves as a written guide for the long-range development of the state by describing the desired future for the residents of Hawai'i and providing a set of goals, objectives, and policies that are intended to shape the general direction of public and private development. Part I of the State Plan lists the state's long-range goals, objectives, policies, and priorities. Part II establishes a statewide planning system to coordinate and implement the State Plan. Part III establishes priority guidelines to address areas of statewide concern.

The stated goals of the state plan relate to a strong viable economy, a desired physical environment, and individual and family well-being (HRS § 226-4). Overall, the Proposed Action supports these goals. The Proposed Action would meet county's immediate need for landfill capacity and provide an environmentally sound and safe place to dispose of MSW on the island of Kaua'i. The KLF would continue to contribute direct, indirect, and induced economic benefits to the Kaua'i economy and would implement engineering and operational controls to minimize and avoid adverse impacts to the environment. Consistency of the Proposed Action with the specific objectives and policies in the Hawai'i State Plan is summarized in Table 4-2. Consistency of the Project with the specific relevant priority guidelines in the Hawai'i State Plan is summarized in Table 4-3. Relevant state functional plans are discussed in the following subsection.

**Table 4-2. Proposed Action’s Consistency with the Objective and Policies of the Hawai’i State Planning Act**

Objectives	Assessment of Consistency
<p><b>Population:</b> It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.</p>	<p>The Proposed Action would not affect population growth.</p>
<p><b>Economy - In General:</b> Planning for the State's economy in general shall be directed toward achievement of the following objectives: Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai’i’s people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited. A steadily growing and diversified economic base that is not overly dependent on a few industries and includes the development and expansion of industries on the neighbor islands.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme. The Proposed Action would contribute to economic and social welfare by providing employment and wages, purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua’i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua’i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua’i economy.</p>
<p><b>Economy – Agriculture:</b> Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives: Viability of Hawai’i’s sugar and pineapple industries. Growth and development of diversified agriculture throughout the State. An agriculture industry that continues to constitute a dynamic and essential component of Hawai’i’s strategic, economic, and social well-being.</p>	<p>The Proposed Action would not have a direct effect on the economy as related to agriculture.</p>
<p><b>Economy – Visitor Industry:</b> Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai’i’s economy.</p>	<p>The Proposed Action would not have a direct effect on the economy as related to the visitor industry.</p>
<p><b>Economy – Federal Expenditures:</b> Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai’i’s economy.</p>	<p>The Proposed Action would not involve federal expenditures.</p>
<p><b>Economy - Potential Growth and Innovative Activities:</b> Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion</p>	<p>The Proposed Action would not have a direct effect on the economy as related to the potential growth and innovative activities.</p>

Objectives	Assessment of Consistency
<p>of potential growth and innovative activities that serve to increase and diversify Hawai'i's economic base.</p>	
<p><b>Economy - Information Industry:</b> Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawai'i as a leader in broadband and wireless communications and applications in the Pacific Region.</p>	<p>The Project would not have a direct effect on the economy as related to telecommunication and information technology.</p>
<p><b>Physical Environment - Land-based, Shoreline, and Marine Resources:</b> Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:</p> <p>Prudent use of Hawai'i's land-based, shoreline, and marine resources.</p> <p>Effective protection of Hawai'i's unique and fragile environmental resources.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(3) Take into account the physical attributes of areas when planning and designing activities and facilities.</p> <p>(8) Pursue compatible relationships among activities, facilities, and natural resources.</p> <p>The KLF site has been extensively modified by past and ongoing solid waste management operations. The Proposed Action aims to maximize the use of the existing facility and would take place entirely within the existing Phase II footprint. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment.</p>
<p><b>Physical Environment - Scenic, Natural Beauty, and Historic Resources:</b> Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(1) Promote the preservation and restoration of significant natural and historic resources.</p> <p>(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.</p> <p>The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or new ground disturbance. No archaeological resources or historic properties remain within the Phase II area, therefore, no impacts to archaeological or historic resources are anticipated. The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing</p>

Objectives	Assessment of Consistency
	visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated.
<p><b>Physical Environment - Land, Air, and Water</b>  <b>Quality:</b> Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:  Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.  Greater public awareness and appreciation of Hawai'i's environmental resources.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.</p> <p>(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.</p> <p>Engineered and operational controls would be implemented as part of the Proposed Action to avoid and minimize impacts to soil, water and air quality.</p>
<p><b>Facility Systems – In General:</b> Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.</p> <p>(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.</p> <p>The Proposed Action would provide an environmentally sound and safe place to dispose MSW on the island of Kaua'i. The Proposed Action would maximize the use of the existing KLF facility (and the county's investment) to the extent practical and meet county's immediate need for landfill capacity.</p>
<p><b>Facility Systems – Solid and Liquid Wastes:</b> Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:  Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.  Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(2) Promote reuse and recycling to reduce solid and liquid wastes and employ a conservation ethic.</p> <p>As detailed in the Kaua'i Integrated Solid Waste Management Plan update (Jacobs 2021), a key component of the County's solid waste management system is source reduction, reuse, and recycling. Implementation of recycling and waste diversion programs are depended on the ability to safely dispose of unrecyclable materials in the landfill. The Proposed Action is necessary to provide immediate landfill capacity for the island of Kaua'i.</p>

Objectives	Assessment of Consistency
<p><b>Facility Systems – Water:</b> Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.</p>	<p>The Proposed Action would not adversely affect facility systems related to water.</p>
<p><b>Facility Systems – Transportation:</b> Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:</p> <p>An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.</p> <p>A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.</p>	<p>The Proposed Action would not adversely affect facility systems related to transportation.</p>
<p><b>Facility Systems – Energy:</b> Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:</p> <p>Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;</p> <p>Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation;</p> <p>Greater diversification of energy generation in the face of threats to Hawai'i's energy supplies and systems;</p> <p>Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and</p> <p>Utility models that make the social and financial interests of Hawai'i's utility customers a priority.</p>	<p>The Proposed Action would not adversely affect facility systems related to energy.</p>
<p><b>Facility Systems – Telecommunications:</b> Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.</p>	<p>The Proposed Action would not adversely affect facility systems related to telecommunications.</p>
<p><b>Socio-Cultural Advancement - Housing:</b> Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:</p> <p>Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located</p>	<p>The Proposed Action would not adversely affect housing.</p>

Objectives	Assessment of Consistency
<p>in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and above moderate-income segments of Hawai'i's population.</p> <p>The orderly development of residential areas sensitive to community needs and other land uses.</p> <p>The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.</p>	
<p><b>Socio-Cultural Advancement – Health:</b> Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:</p> <p>Fulfillment of basic individual health needs of the general public.</p> <p>Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.</p> <p>Elimination of health disparities by identifying and addressing social determinants of health.</p>	<p>The Proposed Action would not adversely affect the health of the general public or healthcare systems.</p>
<p><b>Socio-Cultural Advancement – Education:</b> Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.</p>	<p>The Proposed Action would not have an effect on education.</p>
<p><b>Socio-Cultural Advancement – Social Services:</b> Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.</p>	<p>The Proposed Action would not have an effect on social services.</p>
<p><b>Socio-Cultural Advancement – Leisure:</b> Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.</p>	<p>The Proposed Action would not adversely affect recreational facilities or leisure activities.</p>
<p><b>Socio-Cultural Advancement – Individual Rights and Personal Well-Being:</b> Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of</p>	<p>The Proposed Action would not have an effect on individuals' rights and personal well-being.</p>

Objectives	Assessment of Consistency
individual rights to enable individuals to fulfill their socio-economic needs and aspirations.	
<p><b>Socio-Cultural Advancement – Culture:</b> Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.</p>	<p>The Proposed Action would not adversely affect cultural identities, traditions, values, customs, or arts of Hawai'i's people.</p>
<p><b>Socio-Cultural Advancement – Public Safety:</b> Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:</p> <p>Assurance of public safety and adequate protection of life and property for all people.</p> <p>Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.</p> <p>Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.</p>	<p>The Proposed Action would not adversely affect public safety.</p>
<p><b>Socio-Cultural Advancement – Government:</b> Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:</p> <p>Efficient, effective, and responsive government services at all levels in the State.</p> <p>Fiscal integrity, responsibility, and efficiency in the state government and county governments.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <ul style="list-style-type: none"> <li>(1) Provide for necessary public goods and services not assumed by the private sector.</li> <li>(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.</li> <li>(5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns.</li> </ul> <p>The Proposed Action would meet the county's immediate need for landfill capacity and would provide an overall benefit to the solid waste management services for the island of Kaua'i.</p> <p>As detailed in Section 6, outreach and consultation was initiated with stakeholders early in the Project development process. In parallel, this EA has been prepared to disclose the potential impacts of the Proposed Action; the environmental review process includes opportunities for public review and comment, pursuant to HRS Chapter 343 and HAR § 11-200.1. The discretionary permitting process will also include opportunities for public participation.</p>

**Table 4-3. Proposed Action’s Consistency with the Priority Guidelines of the Hawai’i State Planning Act**

Priority Guidelines	Assessment of Consistency
<b>Economic Priority Guidelines</b>	
(a) To stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai’i’s people and achieve a stable and diversified economy	The Proposed Action would be consistent with these guidelines. The Proposed Action would contribute to economic and social welfare by providing employment and wages, purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua’i, the Proposed Action has indirect and induced economic impacts on all major industries of the Kaua’i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua’i economy.
(b) To promote the economic health and quality of the visitor industry	The Proposed Action would not adversely affect the visitor industry.
(c) To promote the continued viability of the sugar and pineapple industries	The Proposed Action would not adversely affect the sugar and pineapple industries.
(d) To promote the growth and development of diversified agriculture and aquaculture	The Proposed Action would not adversely affect diversified agriculture and aquaculture.
(e) Water use and development	The Proposed Action would not adversely affect water use and development.
(f) Energy use and development	The Proposed Action would not adversely affect energy use and development.
(g) To promote the development of the information industry	The Proposed Action would not adversely affect the information industry.
<b>Population Growth and Land Resources Priority Guidelines</b>	
(a) To effect desired statewide growth and distribution	The Proposed Action would not affect statewide growth and distribution.
(b) Regional growth distribution and land resource utilization	<p>The Proposed Action would be consistent with these guidelines, particularly the following:</p> <p>(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.</p> <p>(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.</p> <p>(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.</p> <p>Although the KLF is within the agricultural district, agricultural activities are highly constrained by site-specific factors; topography (i.e. the current active</p>

Priority Guidelines	Assessment of Consistency
	landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. The Proposed Action aims to maximize the use of the existing facility and would take place entirely within the existing Phase II footprint. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment. Consistent with the requirements of HRS Chapter 205, the County could consider using the site for other permissible use in the Agricultural Districts when the site reaches capacity and is closed.
<b>Crime and Criminal Justice Priority Guidelines</b>	
In the area of crime and criminal justice	The Proposed Action would not affect crime and criminal justice.
<b>Affordable Housing Priority Guidelines</b>	
Provision of affordable housing	The Proposed Action would not affect affordable housing.
<b>Quality Education Priority Guidelines</b>	
To promote quality education	The Proposed Action would not affect quality education.
<b>Sustainability Priority Guidelines</b>	
To promote sustainability	<p>The Project would be consistent with these guidelines, particularly the following:</p> <ul style="list-style-type: none"> <li>(1) Encouraging balanced economic, social, community, and environmental priorities</li> <li>(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State</li> <li>(3) Promoting a diversified and dynamic economy</li> <li>(4) Encouraging respect for the host culture</li> <li>(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations</li> </ul> <p>The Proposed Action would help to meet Hawai'i's economic, social, community and environmental priorities by providing an environmentally sound and safe place to dispose of municipal solid waste on the island of Kaua'i. The Proposed Action aims to maximize the use of the existing facility to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment. The Proposed Action would also contribute to economic and social welfare by providing employment and wages, purchasing goods and services from other local industries, and through contributions to the Host Benefit Community fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.</p>
<b>Climate Change Adaptation Priority Guidelines</b>	

Priority Guidelines	Assessment of Consistency
<p>To prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy</p>	<p>The Proposed Action would be consistent with these guidelines, particularly the following:</p> <p>(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;</p> <p>(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy</p> <p>The Proposed Action would generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions. The KLF is also outside of the 3.2 ft, sea level rise exposure area and is not expected to be adversely impacted by storm surge or coastal flooding. There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai'i is expected to see an increase in tropical cyclone and extreme rainfall events. The final cover and revegetation of the closed landfill would protect the integrity of the landfill and prevent its contents from being exposed to outside forces. Therefore, the potential for adverse impacts from climate-induced changes to natural hazards is low.</p>

In addition to establishing goals, objectives, and policies for the State of Hawai'i, HRS Chapter 226 also directs state agencies to prepare state functional plans for statewide priority issues. A total of 13 functional plans have been developed; these relate to agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, and transportation. The State Agricultural Functional Plan is the most relevant to the Proposed Action; a brief discussion of the Project's consistency with this plan follows.

The State Agricultural Functional Plan sets forth the policies, programs, and projects for implementing the agricultural and agricultural-related objectives, policies, and priority guidelines contained in the Hawaii State Plan. The agriculture functional plan describes the two fundamental objectives: (1) continued viability in Hawai'i's sugar and pineapple industries, and (2) continued growth and development of diversified agriculture through the state (HDOA 1991). The plan outlines actions directed at the factors and conditions that are key to achieving these objectives; these relate to industry research and development, agricultural pests and the environment, land and water, and services and infrastructure. The plan identifies objectives, policies, and priority actions relative to each of these issues. The majority of these relate to the broader agricultural industry and thus are not applicable to the Proposed Action; however, the Proposed Action would be consistent with Objective (H): "achievement of productive agricultural use of lands most suitable and needed for agriculture."

Per HRS § 205-2(d), the Agricultural District includes areas that are "not used for, or that are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics." (HRS § 205-2[d]). The KLF site (within which the Proposed Action will take place) is consistent with this

description as its topography (i.e., the current active landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. The native soils underlying the KLF are characterized as having poorly graded sand overlying dense sand. This soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. The native soils, which have limited agricultural potential, are largely covered by refuse and cover soils used in landfill operations, further degrading the agricultural potential of the site. Further, the Proposed Action would not take place on lands suitable for intensive agriculture in accordance with HRS § 205-2(a)(3). The KLF facility is not designated or adjacent to IAL. The majority of the KLF site is designated as Class E soils (Office of Planning 2021) and the KLF is not designated as prime or unique lands on ALISH maps (UH CTAHR 1977). The agricultural potential of the site has been severely altered by the construction and operation of the Phase II landfill. Therefore, the Proposed Action would not withdraw prime agricultural lands from production.

The Proposed Action is expected to have an operational life of approximately 2 to 4 years (through 2029) with a 30-year closure/post-closure monitoring period. In the long term, when the facility is closed, heavy equipment and accessory structures that are not needed during the 30-year monitoring period would be removed and the KLF site would appear as a hill covered in natural vegetation. Post-closure, the County could consider using the site for other permissible use in the Agricultural Districts pursuant to HRS § 205-2(d).

#### 4.1.4 Hawai'i State Environmental Policy (HRS Chapter 344)

HRS Chapter 344 establishes a state policy to encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of ecological systems and natural resources important to the people of Hawai'i. Table 4-4 summarizes the Proposed Action's consistency with the specific guidelines identified in HRS Chapter 344.

**Table 4-4. Proposed Action's Consistency with Hawai'i State Environmental Policy**

Guideline	Assessment of Consistency
<b>Population</b>	
Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation;	The Proposed Action would not affect population trends, distribution, or household demographics.
Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.	
<b>Land, Water, Mineral, Visual, Air, and Other Natural Resources</b>	
Encourage management practices which conserve and fully utilize all natural resources;	The Proposed Action would provide an environmentally sound and safe place to dispose of MSW on the island of Kaua'i. The Proposed

Guideline	Assessment of Consistency
	Action aims to maximize the use of the existing facility to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment.
Promote irrigation and waste water management practices which conserve and fully utilize vital water resources;	Wastewater generated at the KLF is treated by an on-site septic system. Non-potable water used for dust control is obtained from a former Kekaha Sugar Company irrigation ditch and transported to the site using a 4,000-gallon capacity water truck. The current KLF water and wastewater requirements do not exceed the existing capacity and no adverse impacts are anticipated from implementation of the Proposed Action.
Promote the recycling of waste water;	Wastewater generated at the KLF is treated by an on-site septic system. Non-potable water used for dust control is obtained from a former Kekaha Sugar Company irrigation ditch and transported to the site using a 4,000-gallon capacity water truck. The current KLF water and wastewater requirements do not exceed the existing capacity and no adverse impacts are anticipated from implementation of the Proposed Action.
Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas;	No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater would continue to be managed on site by the KLF's stormwater management system, which is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as irrigation water or as a potable water supply. The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and would not change the current KLF groundwater monitoring program or altered existing impacts to groundwater. The Proposed Action would not affect forest or open space areas.
Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves, and unique ecological preserves;	The Proposed Action would not involve any activities within a natural area preserve, wildlife preserve, forest reserve, marine preserve, or unique ecological preserve.
Maintain an integrated system of state land use planning which coordinates the state and county general plans;	The Proposed Action would be consistent with relevant state and county plans, as discussed in Section 4 of the EA.
Promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling so that all our wastes become utilized.	As detailed in the Kaua'i Integrated Solid Waste Management Plan update (Jacobs 2021), a key component of the County's solid waste management system is source reduction, reuse, and recycling. Implementation of recycling and waste diversion programs are depended on the ability to safely dispose of unrecyclable materials in the landfill. The Proposed Action would meet the county's immediate need for landfill capacity and would provide an overall benefit to the solid waste management services for the island of Kaua'i.
<b>Flora and Fauna</b>	
Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard	The Proposed Action would take place entirely within the existing Phase II footprint, which has been highly modified by the construction and operation of the Phase II landfill. No new areas will be disturbed as a result of the Proposed Action. No listed or rare plants are known to occur within the KLF and previous surveys recorded a dominance of non-native plant species. Listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian

Guideline	Assessment of Consistency
	hoary bat could occur in or transit through the KLF. As detailed in Section 3. 2, species-specific measures, as recommended by USFWS and DOFAW, would be implemented to avoid and minimize potential impacts.
Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment	It is anticipated that the post-closure landscaping and revegetation program would incorporate native species that are ecologically and culturally appropriate for this location, as practicable.
<b>Parks, Recreation, and Open Space Guidelines</b>	
Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses	The KLF does not support coastal nor any other type of recreational resources, nor would it affect recreational opportunities. The Proposed Action is not located along the shoreline, nor would it affect shoreline structures or processes. The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated.
Protect the shorelines of the State from encroachment of artificial improvements, structures, and activities	
Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people	
<b>Economic Development Guidelines</b>	
Encourage industries in Hawai'i which would be in harmony with our environment	As discussed in Section 3.13, the Proposed Action would be expected to positively impact the economic and social welfare of the community by providing a safe and environmental-sound place to dispose of MSW on the island of Kaua'i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. The Proposed Action would provide direct economic benefits from employment and wages, from purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.
Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands;	
Encourage federal activities in Hawai'i to protect the environment;	
Encourage all industries including the fishing, aquaculture, oceanography, recreation, and forest products industries to protect the environment;	
Establish visitor destination areas with planning controls which shall include but not be limited to the number of rooms;	
Promote and foster the aquaculture industry of the State; and preserve and conserve productive aquacultural lands.	
<b>Transportation Guidelines</b>	
Encourage transportation systems in harmony with the lifestyle of the people and environment of the State	Transportation system improvements are not included as part of the Proposed Action. As discussed in Section 3.14, the KLF

Guideline	Assessment of Consistency
Adopt guidelines to alleviate environmental degradation caused by motor vehicles	accounts for a small percentage of the overall traffic volume on Kaunualii Highway in the vicinity of the KLF. The Proposed Action would not change the quantity of waste received nor the number of commercial and non-commercial loads accepted at the facility. Therefore, there would not be any significant changes to landfill-related traffic on Kaunualii Highway and no significant adverse impacts to roadways or traffic are anticipated from implementation of the Proposed Action.
Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users	
<b>Energy Guidelines</b>	
Encourage the efficient use of energy resources	The Proposed Action would not increase the daily electrical load over existing levels, although use of public electric utility would continue for an additional 2 to 4 years. The current KLF energy requirements do not exceed the existing capacity and no adverse impacts to the electric utility is anticipated from implementation of the Proposed Action.
<b>Community Life and Housing Guidelines</b>	
Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods which reflect the culture and mores of the community	The Proposed Action would benefit community life as it would continue safe and proper disposal of MSW on the island of Kaua'i for several more years while a long-term waste capacity solution is implemented. The Proposed Action would not affect community culture, identity, or lifestyle.
Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation	
Encourage the reduction of environmental pollution which may degrade a community	
Foster safe, sanitary, and decent homes	
Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas	
<b>Education and Culture Guidelines</b>	
Foster culture and the arts and promote their linkage to the enhancement of the environment	The Proposed Action would not adversely affect existing or future educational or cultural programs.
Encourage both formal and informal environmental education to all age groups	
<b>Citizen Participation Guidelines</b>	
Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations	The HRS Chapter 343 environmental review process provides opportunity for public input at various stages, including pre-assessment consultation and public review of the Draft EA. In addition, the land use permitting process also includes opportunity for public input regarding the Proposed Action.

Guideline	Assessment of Consistency
Provide for expanding citizen participation in the decision-making process so it continually embraces more citizens and more issues	

## 4.2 County of Kauaʻi

### 4.2.1 Kauaʻi General Plan

The Kauaʻi General Plan establishes priorities for managing growth and community development over a 20-year planning timeframe and guides future action concerning land use and development regulations, urban renewal programs, and expenditures for capital improvements (County of Kauaʻi 2018). The General Plan is divided into five elements: vision and goals, policies, objectives and actions by sector, policy maps, and implementation programs. The Proposed Actions consistency with each of these elements is described below.

The Kauaʻi General Plan states four over-arching goals: 1) a sustainable island, 2) a unique and beautiful, 3) a healthy and resilient people, and 4) an equitable place, with opportunity for all. Overall, the Proposed Action supports these goals. The Proposed Action would meet county’s immediate need for landfill capacity and provide an environmentally sound and safe place to dispose of MSW on the island of Kauaʻi. The KLF would continue to contribute direct, indirect, and induced economic benefits to the Kauaʻi economy and would implement engineering and operational controls to minimize and avoid adverse impacts to the environment. Implementation of the four Kauaʻi General Plan goals are broken into nineteen policies that address the issues most important to Kauaʻi residents and serve to guide the county’s direction and priorities in accommodating and managing future growth. Consistency of the Proposed Action with the nineteen policies of the Kauaʻi General Plan is summarized in Table 4-5.

**Table 4-5. Proposed Action’s Consistency with the Policies of the Kauaʻi General Plan**

Policies	Assessment of Consistency
Policy 1: Manage growth to preserve rural character.	The Proposed Action would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13).
Policy 2: Provide affordable housing while facilitating a diversity of privately developed housing for local families.	The Proposed Action would not adversely affect affordable housing.
Policy 3: Recognize the identity of Kauaʻi’s individual towns and districts.	As further described below, the Proposed Action is consistent with the community planning guidelines for Waimea-Kekaha, which are to preserve the Kekaha’s agricultural, county-living identity, and ensure that the community is resilient to climate change and coastal hazards. The KLF is also an established use within Kekaha and is shown as a solid waste management facility on Waimea-Kekaha Infrastructure Map (County of Kauaʻi 2018: Figure 5-25).
Policy 4: Design healthy and complete neighborhoods.	The Proposed Action would benefit community life as it would continue safe and proper disposal of MSW on the island of Kauaʻi. The KLF would continue to

Policies	Assessment of Consistency
	implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public health and safety. The Proposed Action would not affect the character of the neighborhood nor adversely impact roadways, recreational facilities, or public services (Section 3.11 and 3.14).
Policy 5: Make strategic infrastructure investments.	The Proposed Action is consistent with the county's objective to provide environmentally-sound waste disposal and collection services. The Proposed Action would maximize the use of the existing KLF facility (and the county's investment) to the extent practical and meet county's immediate need for landfill capacity. It would result in an overall positive impact for solid waste infrastructure for the Island of Kaua'i (Section 3.15).
Policy 6: Reduce the cost of living.	The Proposed Action would not have a direct effect on the cost of living. As discussed in Section 3.13, demographics, employment, and income within the Kekaha region would not be significantly impacted by the Proposed Action. The Proposed Action would be expected to contribute direct, indirect, and induced economic benefits to the Kaua'i economy.
Policy 7: Build a balanced multimodal transportation system.	The Proposed Action would not adversely affect traffic or transportation systems (Section 3.14).
Policy 8: Protect Kaua'i's scenic beauty.	The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated (Section 3.17).
Policy 9: Uphold Kaua'i as a unique visitor destination.	The Proposed Action would not have a direct effect on the visitor industry.
Policy 10: Help business thrive.	The Proposed Action would provide direct economic benefits from purchasing goods and services from other local industries. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors (Section 3.13).
Policy 11: Help agricultural lands be productive.	Although the KLF is within the agricultural district, agricultural activities are highly constrained by site-specific factors; topography (i.e. the current active landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. The Proposed Action would not withdraw prime agricultural lands from production nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF.
Policy 12: Protect our watersheds.	The KLF is within the Hoesa watershed (CWRM 2008). No surface water features (including wetlands, streams, ditches) are identified within the KLF site. Wetlands and ponds are identified adjacent to the KLF north of Kaumuali'i

Policies	Assessment of Consistency
	<p>Highway and within the PMRF. The Pacific Ocean is approximately 2,800 ft makai of the Phase II area.</p> <p>No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater would continue to be managed on site by the KLF's stormwater management system, which is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action.</p> <p>Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as irrigation water or as a potable water supply. The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and would not change the current KLF groundwater monitoring program or altered existing impacts to groundwater.</p> <p>Therefore, the Proposed Action would be consistent with the General Plan's policy to protect watersheds.</p>
<p>Policy 13: Complete Kaua'i's shift to clean energy.</p>	<p>The Proposed Action would not affect the county's transition to clean energy. Energy requirements of the KLF include minor electricity consumption for management and maintenance facilities and diesel fuel for operation of heavy equipment. The Proposed Action would not increase the daily load on local utilities or increase daily consumption of fossil fuels (Section 3.15).</p>
<p>Policy 14: Prepare for climate change.</p>	<p>Section 3.9 analyzes the potential impacts of climate change on the Proposed Action. The KLF is also outside of the 3.2 ft, sea level rise exposure area and is not expected to be adversely impacted by storm surge or coastal flooding. There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai'i is expected to see an increase in tropical cyclone and extreme rainfall events. The final cover and revegetation of the closed landfill would protect the integrity of the landfill and prevent its contents from being exposed to outside forces. Therefore, the potential for adverse impacts from climate change is low. The Proposed Action would generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions.</p>
<p>Policy 15: Respect Native Hawaiian rights and wahi pana.</p>	<p>Based on information gathered from the cultural and historical background, as well as community consultation conducted as part of the CIA, no cultural resources, practices, or beliefs have been identified as existing within the KLF (Section 3.4). The Proposed Action is not anticipated to impact cultural practices that are currently being exercised elsewhere within the Waimea Ahupua'a.</p>
<p>Policy 16: Protect access to Kaua'i's treasured places.</p>	<p>The Proposed Action would not restrict access to or adversely affect the shoreline, recreational areas, or places for religious and cultural observances.</p>
<p>Policy 17: Nurture our keiki.</p>	<p>The Proposed Action would not affect the County's policy to provide future generations with safe communities, great schools and facilities, and financially sustainable jobs, housing, and transportation opportunities.</p>
<p>Policy 18: Honor our kupuna.</p>	<p>The Proposed Action would not affect services or housing for the elderly.</p>
<p>Policy 19: Communicate with aloha.</p>	<p>As detailed in Section 6, outreach and consultation was initiated with stakeholders early in the Project development process. In parallel, this EA has been prepared to disclose the potential impacts of the Proposed Action; the</p>

Policies	Assessment of Consistency
	environmental review process includes opportunities for public review and comment, pursuant to HRS Chapter 343 and HAR § 11-200.1. The discretionary permitting process will also include opportunities for public participation.

The Kaua’i General Plan also describes objectives and actions by sector. *Sector IV. Critical Infrastructure* is the most applicable to the Proposed Action and includes the County’s solid waste management objective “To provide environmentally-sound waste disposal and collection services with a goal to reduce the solid waste stream by 70 percent” (County of Kaua’i 2018). The Proposed Action would be consistent with this objective as it would meet the county’s immediate need for “environmentally-sound waste disposal” by increasing landfill capacity at KLF and would provide an overall benefit to the solid waste management services for the island of Kaua’i. The Proposed Action aims to maximize the use of the existing facility (and the county’s investment) to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment. As detailed in the Kaua’i ISWMP update (Jacobs 2021), a key component of the County’s solid waste management system is source reduction, reuse, and recycling. Implementation of recycling and waste diversion programs are dependent on the ability to safely dispose of unrecyclable materials in the landfill.

Community and special area plans establish more detailed policy and maps that are specific to a certain community or geographic area. The KLF is an established use within the Waimea-Kekaha community and is shown as a solid waste management facility on the Waimea-Kekaha Infrastructure Map (County of Kaua’i 2018: Figure 5-25). The Proposed Action is consistent with the community planning guidelines for Waimea-Kekaha, particularly to preserve the Kekaha’s agricultural, county-living identity, and ensure that the community is resilient to climate change and coastal hazards. As described above, the Proposed Action would not withdraw prime agricultural lands from production, nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF. The Proposed Action would also not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13). As described in Section 3.9, the potential for adverse impacts from climate change is low; the KLF is outside of the 3.2 ft, sea level rise exposure area and is not expected to be adversely impacted by storm surge or coastal flooding. There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai’i is expected to see an increase in tropical cyclone and extreme rainfall events. However, the final cover and revegetation of the closed landfill would protect the integrity of the landfill and prevent its contents from being exposed to outside forces. The Proposed Action would generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions.

#### 4.2.2 West Kaua’i Community Plan

The West Kaua’i Community Plan (WKCP) represents the County’s land use policy at the regional level (County of Kaua’i 2020). It is a long-range plan that considers a 20-year planning timeframe to the year 2040. The WKCP is one of five community plans that guide the County’s land use decisions and

infrastructure investment priorities, while also advancing the goals of the Kaua’i County General Plan. The WKCP is broken into five main components: region-wide policies, objectives, and goals; town plans; plans for other key communities outside of the town cores; implementation actions; and maps. Consistency of the Proposed Action with the regional policies in the WKCP is summarized in Table 4-6. The Proposed Actions consistency with the Kekaha Town Plan is provided in the subsequent paragraphs.

**Table 4-6. Proposed Action’s Consistency with the Policies of the West Kaua’i Community Plan**

Policies	Assessment of Consistency
<p><b>A. Town Design.</b> West Kaua’i’s towns embody the region’s rich and storied past. Each town’s historic buildings and built environment lay the groundwork for future development. By retaining the character and well-defined edges of each small town, we also protect the region’s open spaces and rural heritage.</p>	<p>The Proposed Action would preserve the Kekaha’s agricultural, county-living identity; it would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13), would not withdraw prime agricultural lands from production (Section 4.1.1), nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF (Section 3.8).</p>
<p><b>B. Land Transportation.</b> The land transportation strategy is to address congestion, improve safety and efficiency for all roadway users, increase accessibility to transit, improve resiliency of regional connectivity, and develop multimodal transportation networks that support the land use, environmental impact, and economic development goals of this plan. This strategy is addressed through the regional policies outlined below, as well as through circulation maps and recommendations for each town. This section focuses on land transportation only. Other aspects of transportation, such as airports and harbors, are addressed elsewhere in this plan.</p>	<p>The Proposed Action would not adversely affect traffic or land transportation systems (Section 3.14).</p>
<p><b>C. Heritage Resources.</b> Heritage is important in understanding the story of West Kaua’i—its history, identity, and people. Heritage resources include scenic corridors, storied sites, buildings, parks and streets, and even people, especially our kūpuna. They are both tangible and ethereal.</p>	<p>No archaeological properties or cultural resources, practices, or beliefs have been identified within the KLF (Section 3.4 and 3.7). The Proposed Action is not anticipated to impact cultural practices that are currently being exercised elsewhere within the Waimea Ahupua’a.</p>
<p><b>D. Resiliency.</b> As a coastal community, West Kaua’i must prepare for climate change, such as higher temperatures, SLR, and changing precipitation patterns. These impacts threaten residents by affect-ing housing, infrastructure, jobs, and arable land. Through proactive measures and solutions grounded in resiliency, sustainability, and the Hawaiian concept of ‘āina aloha (beloved homeland), West Kaua’i’s people can strengthen their ability to withstand and recover from hazards and the impacts of climate change</p>	<p>Section 3.9 of the EA analyzes the potential impacts of climate change on the Proposed Action and concluded that the potential for adverse impacts from climate change is low.</p>
<p><b>E. Shared Spaces.</b> Shared spaces, also known as “civic spaces,” are areas that are enjoyed by community members and visitors of all ages and abilities. Shared space can be specific locations, such as a town centers, government buildings and schools, shopping areas, or parks. They can also be corridors like shared-use paths or public streets. Shared spaces not only connect people but create accessways that connect public places throughout the</p>	<p>The Proposed Action would not restrict access to or adversely affect the shoreline, recreational areas, schools, government facilities, or other public spaces (Section 3.11).</p>

Policies	Assessment of Consistency
<p>region—east to west, mauka to makai. Placemaking inspires people to collectively reimagine and reinvent public spaces as the heart of every community, strengthening the connection between people and the places they share.</p>	
<p><b>F. Economic Development.</b> West Kaua’i’s economy should not only create jobs but build prosperity and opportunity for all its communities. Public investment and infrastructure must support the region’s existing economic drivers: agriculture, tourism, and government services. Technological innovation is key to building these existing industries and unlocking new ones. This will require expanding entrepreneurial skills and the development of a STREAM workforce with expertise and vocational skills.</p>	<p>As discussed in Section 3.13, the Proposed Action would be expected to contribute direct, indirect, and induced economic benefits to the Kaua’i economy.</p>

The WKCP also identifies the visions, goals, objectives, and actions for West Kaua’i’s historic town cores. The KLF is an established use within the Kekaha Town Plan and is shown as a landfill on the West Kauai Regional Map (County of Kaua’i 2020). The Kekaha Town Plan acknowledges the role of the Kekaha Landfill in the community and the difficulty of siting and constructing a new landfill facility. Specifically, the goals and objectives of the Kekaha Town Plan include:

- 5. *Manage the Kekaha landfill and impacts to the Kekaha community.*
  - a. *Implement the lateral expansion and finalize plans for the future of the landfill.*
  - b. *Continue providing funding to the Kekaha Host Benefits Community Fund and allow a Citizens Advisory Committee to distribute funds.*

The KLF Phase II has undergone three vertical expansions and two lateral expansions since it began accepting solid waste in 1993. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2010 and 2020, respectively, reaching the currently permitted landfill area of 44 acres. The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, design, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. As summarized in Section 1.2.3, the County has a long history of attempts to site a new MSW landfill at another location on the island. Most recently, in 2018, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Ma’alo because the FAA and the HDOT Airports Division opposed the project due to the potential for the landfill to increase bird strikes at Līhu’e Airport.

While the County is currently working on the task of siting a new landfill facility on Kaua’i, this is an extensive effort and is not anticipated to be accomplished in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer or not succeed, as happened with the prior new landfill site. Therefore, there is a need to provide landfill capacity beyond 2026, when Phase II is expected to reach capacity at the KLF. The Proposed Action is

expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, to meet the County of Kauaʻi’s immediate need for landfill capacity.

The Kekaha HCB Fund was founded in 2008 to “balance the need for safe disposal of solid waste with the sacrifices borne by the host community.” The HCB fund started with \$650,000 in 2008. Since then, the amount allocated annually has varied from \$1 per ton to over \$3 per ton and is determined by the Kauaʻi County Council. While the Proposed Action is not anticipated to impact the amount allocated annually; the continued operation of the KLF for an additional 2 to 4 years would extend the period that the Kekaha community receives HCB funds.

Between 2012 and 2021, the Citizens Advisory Committee, who manages the distribution of HCP funds, has approved 85 different projects valued at over \$2.7 million (Kekaha HCB 2023). Projects funded by the HCB fund directly benefit the Kekaha Community and include community improvements, economic revitalization, and various environmental sustainability, educational, cultural, art, and health and wellness programs. The Proposed Action would not affect the Citizens Advisory Committee’s authority to distribute HCP funds.

### **4.2.3 Comprehensive Zoning Ordinance (Kaua'i County Code Chapter 8)**

The County of Kauaʻi developed the comprehensive zoning ordinance (CZO) as an implementing tool for the Kauaʻi General Plan to address long-range growth and development. The CZO establishes several land districts and delineates the respective types of permitted uses and development that can take place in those districts. As shown in Figure 3-6, the Proposed Action is located within the county agricultural district. Permissible uses within the county agricultural district are listed in CZO § 8-2.4. Solid waste management operations and landfills are not listed in this section; however, pursuant to CZO § 8-2.4(r)(15), the county may allow “any other use or structure which the Planning Director finds to be similar in nature to those listed in this Section and appropriate to the District,” with issuance of a use permit. Pursuant to CZO § 8-8.4(4)(a), a class IV permit shall also be obtained for any construction or development on an agricultural zoned parcel for which a use permit is required.

The Kauaʻi County Planning Commission issued use permit U-93-56 and class IV zoning permit Z-IV-93-64 in 1993 to allow for the construction and operation of the Phase II landfill within the county agricultural district. Based on consultation with Kauaʻi County Department of Planning, the Proposed Action is permissible under the existing use permit and class IV zoning permit (K. Hull, County of Kauaʻi Planning Department. personal communication—email to A. Fraley, June 15, 2023). No changes to the land-use designations are warranted or proposed.

Pursuant to CZO § 8-3.2(e), a use permit may be granted only if the Planning Commission finds that the Proposed Action is a “compatible use and is not detrimental to health, safety, peace, morals, comfort and the general welfare of persons residing or working in the neighborhood of the proposed use, or detrimental or injurious to property and improvements in the neighborhood or to the general welfare of the community, and will not cause any substantial harmful environmental consequences on the land of

the applicant or on other lands or waters, and will not be inconsistent with the intent of this Chapter and the General Plan.” These criteria are bulleted below, with a discussion of the Proposed Action’s compliance with each criterion.

*a) the use must be a compatible use;*

The Proposed Action is consistent with the objectives for the Agricultural District pursuant to CZO § 8-8.1, particularly: “(a) To protect the agriculture potential of lands within the County of Kaua'i to ensure a resource base adequate to meet the needs and activities of the present and future. (b) To assure a reasonable relationship between the availability of agriculture lands for various agriculture uses and the feasibility of those uses. (c) To limit and control the dispersal of residential and urban use within agriculture lands.”

Although the Proposed Action is located within the county agricultural land use district, agricultural activities are highly constrained by site-specific factors. The topography (i.e., the current active landfill area), unproductive soils, and existing use as a solid waste management facility render it not suitable for agricultural use. The Proposed Action would not withdraw prime agricultural lands from production, nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF. The KLF facility is not designated or adjacent to IAL. The majority of the KLF site is designated as Class E soils (Office of Planning 2021) and the KLF is not designated as prime or unique lands on ALISH maps (UH CTAHR 1977). As described in more detail below, the KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and agricultural uses in the vicinity of the KLF. Post-closure, the County could consider using the site for other permissible uses in the agricultural district pursuant to CZO § 8-2.4.

*b) the use must not be detrimental to persons or property in the area;*

The Proposed Action would be expected to positively impact the economic and social welfare of the community by providing a safe and environmental-sound place to dispose of MSW on the island of Kaua'i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. The Proposed Action would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13).

The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to public health and safety and environmental quality. The Proposed Action would conform to the provisions of HAR 11-58.1 including provisions for continued implementation of a waste acceptance and exclusion program, landfill liner, LCRS, GCCS, surface-water management system, and groundwater and leachate monitoring activities (Section 1.2.1.2). The KLF also implements operational controls to minimize and avoid adverse impacts to public health and safety including access and traffic control, litter control, dust control, odor control, vector control, explosive gas control, spill prevention control and countermeasures plan, and emergency management procedures. With implementation of the current operating procedures, no significant adverse impacts to public or employee safety and health are anticipated from implementation of the Proposed Action (Section 3.12).

As described in Section 3.8, the Proposed Action would not preclude or otherwise limit the uses of properties in the vicinity of the KLF. Existing land uses in the vicinity of the KLF include agricultural and agriculture-related commercial activity, federal reserve lands (PMRF and U.S. Lighthouse Service), Hawai'i National Guard lands, and a drag racing park (Kaua'i Raceway Park) (Figure 1-2). There would be no change to the existing land use or operations at the KLF facility with implementation of the Proposed Action. The continued use of the KLF facility would not affect or preclude the use of lands adjacent to or in the vicinity of the KLF (Section 3.8). Based on this analysis, implementation of the Proposed Action would not result in a detrimental effect to health, safety, or the general welfare of persons residing or working in the vicinity of the KLF, nor to property and improvements in the Kekaha region.

*c) the use must not cause substantial environmental consequences; and*

The Proposed Action would take place entirely within the existing Phase II footprint, which has been highly modified by the construction and operation of the Phase II landfill. No new areas will be disturbed as a result of the Proposed Action. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment including air quality (Section 3.1), biological resources (Section 3.2), climate (Section 3.3), geology, topography, or soils (Section 3.5), or surface and ground water quality (Section 3.17).

*d) the use must not be inconsistent with the intent of the Comprehensive Zoning Ordinance (CZO) and General Plan.*

The Proposed Action is consistent with the objectives and standards for the Agricultural District pursuant to the CZO. Although the Proposed Action is located within the county agricultural land use district, agricultural activities are highly constrained by site-specific factors and would not take place on lands suitable for intensive agriculture. Post-closure, the County could consider using the site for other permissible uses in the agricultural district pursuant to CZO § 8-2.4. The Proposed Action is consistent with the agricultural district development standards pursuant to CZO § 8-8.1 (see Section 4.2.3.1 below). The Proposed Action would not conflict with the objectives and policies of the Kaua'i General Plan or West Kaua'i Community Plan. A detailed discussion of the Proposed Action's consistency with these policies and goals is provided in Section 4.2.1 and 4.2.2, respectively.

#### **4.2.3.1 Agriculture District Development Standards**

CZO § 8-8.1, § 8-4.3, § 8-4.5 identifies the development standards applicable in the agricultural district. As the Proposed Action will not change the parcel boundaries and does not propose any new pavements, structures, or buildings, the development standards related to parcel area, parcel dimensions, setbacks, minimum distance between buildings, density, and building height do not apply to the Proposed Action. The Proposed Action also does not propose changes to access roads, driveways, or off-street parking; public utility services; or public access; therefore, these standards also do not apply to the Proposed Action. There are no non-conforming lots or structures.

As the Proposed Action does not propose subdivision of the parcel, development in another zoning district, or farm worker housing, CZO § 8-8.3, § 8-8.5, and § 8-8.6 are not applicable.

## 5. Summary of Findings and Anticipated Determination

The potential impacts of the Proposed Action have been thoroughly evaluated and discussed in this Draft EA. As detailed throughout the document, the Proposed Action would incorporate a variety of avoidance and minimization measures such that no significant impacts are anticipated for the identified environmental resources.

The HRS Chapter 343 environmental review process requires that the sum of the effects of a proposed action on the quality of the environment be considered as part of the determination of significance. Specific significant criteria are identified in HAR § 11-200.1-13 for consideration in determining whether the action may have a significant effect on the environment. These significance criteria are listed in Section 5.1 below, with an assessment of the Proposed Action relative to each criterion. Section 5.2 summarizes the determination resulting from the assessment provided in Section 5.1.

### 5.1 Significance Criteria

Per HAR § 11-200.1-13(b), the following significance criteria must be considered when determining whether an action may have significant effect on the environment.

*A significant effect on the environment shall be determined if the action may:*

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

#### **Assessment of Significance Criteria:**

The Proposed Action would be located within the footprint of the Phase II landfill, which has been extensively modified by past and ongoing solid waste management operations. The Proposed Action aims to maximize the use of the existing facility and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment.

As discussed in Section 3.2, no listed or rare plants are known to occur within the KLF, and previous surveys recorded a dominance of non-native plant species. Listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF. Species-specific measures, as recommended by USFWS and DOFAW, would be implemented to avoid and minimize potential impacts. The Proposed Action is expected to have less than significant adverse impacts to flora and protected wildlife species.

With respect to cultural and historic resources, the CIA did not identify any cultural resources, practices, or beliefs as currently existing within the Project Area (Section 3.4). No archaeological resources or historic properties were identified within the Phase II area and the Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or new ground disturbance (Section 3.7). Therefore, no impacts to cultural, archaeological, or historic resources are anticipated.

Based on this analysis, implementation of the Proposed Action would not be expected to result in an irrevocable commitment to loss or destruction of important natural or cultural resources.

*(2) Curtail the range of beneficial uses of the environment.*

**Assessment of Significance Criteria:**

The range of beneficial uses of the environment is determined by the physical setting and the land use controls that define its use. Although the KLF is within the state and county agricultural district, agricultural activities are highly constrained by site-specific factors, and its topography (i.e., the current active landfill area), unproductive soils, and existing use as a solid waste management facility render it not suitable for agricultural use. The Proposed Action is expected to have an operational life of approximately 2 to 4 years (through 2029) with a 30-year closure/post-closure monitoring period. In the long term, when the facility is closed, heavy equipment and accessory structures that are not needed during the 30-year monitoring period would be removed and the KLF site would appear as a hill covered in natural vegetation. Consistent with the requirements of HRS Chapter 205, the County could consider using the site for other permissible uses in the Agricultural Districts when the landfill is closed.

The Proposed Action would help to meet Hawai'i's economic, social, community and environmental priorities by providing a safe and environmentally-sound place to dispose of MSW on the island of Kaua'i. The Proposed Action aims to maximize the use of the existing facility to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances. As the Proposed Action would provide a vital public service and would not preclude future compatible land use following closure, it would not be expected to curtail the range of beneficial uses of the environment.

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

**Assessment of Significance Criteria:**

The Proposed Action would not conflict with the State's environmental policies or long-term environmental goals, which are specified in HRS Chapter 344. A detailed discussion of the Proposed Action's consistency with these policies and goals is provided in Section 4.1.4.

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

**Assessment of Significance Criteria:**

As discussed in Section 3.13, the Proposed Action would be expected to positively impact the economic and social welfare of the community by providing a safe and environmental-sound place to dispose of MSW on the island of Kaua'i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. The Proposed Action would provide direct economic benefits from employment and wages, from purchasing goods and services from other local industries, and

through contributions to the HCB fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua'i economy including the agriculture, tourism, renewable-energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.

Based on information gathered from the cultural and historical background, as well as community consultation conducted as part of the CIA, no cultural resources, practices, or beliefs have been identified as existing within the KLF (Section 3.4). The Proposed Action is not anticipated to impact cultural practices that are currently being exercised elsewhere within the Waimea Ahupua'a.

As such, the Proposed Action would not result in a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.

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

**Assessment of Significance Criteria:**

The Proposed Action would have long-term positive impacts on public safety and health by allowing for continued proper and safe disposal of MSW on the Island of Kaua'i. Current operating procedures in-place to mitigate for safety and health concerns related to heavy equipment operation, vector control, explosive gas, landfill fires, and injury and illness would continue (Section 3.12). No significant adverse impacts to public or employee safety and health are anticipated from implementation of the Proposed Action.

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

**Assessment of Significance Criteria:**

While the Proposed Action is anticipated to have direct, indirect, and induced economic benefits, it is not anticipated to cause significant secondary effects in the local economy. The Proposed Action would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13). It is also not anticipated to increase the demand on emergency services or public utilities (Sections 3.11 and 3.15). Therefore, public facilities would not be adversely affected, nor would additional use of public facilities occur as a result of the Proposed Action.

*(7) Involve a substantial degradation of environmental quality*

**Assessment of Significance Criteria:**

The Proposed Action would be located within the footprint of the Phase II landfill, which has been extensively modified by past and ongoing solid waste management operations. The Proposed Action would conform to the provisions of HAR 11-58.1 including provisions for continued implementation of a waste acceptance and exclusion program, landfill liner and a leachate collection and removal system, GCCS, surface water management system, and groundwater and leachate monitoring activities. The KLF also incorporates operational controls to minimize and avoid adverse impacts to public health and safety including access and traffic control; litter, dust, odor, and vector control; explosive gas control; spill

prevention, control, and countermeasures plan; and emergency management procedures. Overall, the continued presence of a modern engineered landfill for safe disposal of MSW improves the overall environmental quality of the Island of Kaua`i. Based on this analysis, implementation of the Proposed Action would not be expected to result in substantial degradation of environmental quality.

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

**Assessment of Significance Criteria:**

The Proposed Action does not involve a commitment to a larger action, although it would provide continued presence of a modern engineered landfill for safe disposal for the Island of Kaua`i. When considered in combination with other actions, the Proposed Action is not anticipated to result in adverse cumulative impacts (Section 3.18).

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

**Assessment of Significance Criteria:**

The Proposed Action would take place entirely within the existing Phase II footprint, which has been highly modified by the construction and operation of the Phase II landfill. No new areas will be disturbed as a result of the Proposed Action. No listed or rare plants are known to occur within the KLF, and previous surveys recorded a dominance of non-native plant species. Listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF. As detailed in Section 3.2, species-specific measures, as recommended by USFWS and DOFAW, would be implemented to avoid and minimize potential impacts. As no critical habitat for plants or wildlife has been designated by the USFWS in the KLF site or its immediate vicinity, no impacts to critical habitat are anticipated. Therefore, the Proposed Action is not expected to have a substantial adverse effect on rare, threatened, or endangered species or their habitat.

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

**Assessment of Significance Criteria:**

In general, existing air quality in the vicinity of the KLF is good. Airborne emissions on the island are relatively low due to low levels of development and automobile emissions and prevailing trade winds that help disperse the accumulation of emissions. Potential sources of air pollutants and emissions associated with the Proposed Action include diesel- and gasoline-powered equipment, motor vehicles and refuse transfer trucks, landfill gas, and fugitive dust. With the continued use of BMPs to minimize fugitive dust and operation of the GCCS, air emissions would not significantly differ from existing conditions and are not anticipated to have a significant adverse effect on air quality (Section 3.1).

No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater would continue to be managed on site by the KLF's stormwater management system, which is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as

irrigation water or as a potable water supply. The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and would not change the current KLF groundwater monitoring program or altered existing impacts to groundwater. With implementation of these engineering and operational controls, the Proposed Action is not anticipated to have a substantial adverse effect on surface or ground water resources (Section 3.17).

As described in Section 3.10, the daily operations of the landfill would not change with implementation of the Proposed Action; therefore, it is not anticipated that noise levels would change or significantly impact the surrounding area. Operational noise reduction controls contained would continue to be implemented, and the Proposed Action is not anticipated to create significant adverse impacts related to noise.

*(11) Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters*

**Assessment of Significance Criteria:**

The KLF facility is not mapped within the 100-year and 500-year floodplain, 3.2-ft sea level rise exposure area, a seismic impact zone, beach or shoreline, erosion-prone or other geologically hazardous area, or an estuary, freshwater, or coastal water (Sections 3.9 and 3.17). The Proposed Action is located within the tsunami evacuation zone but would take place at elevations ranging from 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. Therefore, the Proposed Action would not result in substantial adverse effect on an environmentally sensitive area nor be likely to suffer damage by natural hazards.

*(12) Have a substantial adverse effect on scenic vistas and viewplanes, during day or night, identified in county or state plans or studies*

**Assessment of Significance Criteria:**

Phase II is partially visible from Kaumuali'i Highway and the shoreline. It is visible from most viewpoints to the northwest where the vegetation along Kaumuali'i Highway consists mostly of grasses and low-lying shrubs. The Phase II landfill is partially obscured from viewpoints to the southeast due to tree lines located along Kaumuali'i Highway and the access road adjacent to the southeastern boundary of the KLF facility that create a vegetative visual buffer. The line of sight to the KLF from the nearby shoreline is obstructed by coastal dunes and an earthen berm associated with the National Guard Rifle Range; the KLF Phase II is partially visible from the shoreline area southeast of the landfill. Where visible, the Phase II landfill has the appearance of an earthen mound. Phase II is covered daily with landfill cover and is partially vegetated; the earth-tone daily landfill color is generally consistent in color with the surrounding agricultural areas. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas.

As described in Section 3.16, no scenic resources or corridors have been identified at or in the vicinity of the KLF in either the Kaua'i County General Plan (County of Kaua'i 2018) or the West Kaua'i Community

Plan (County of Kaua'i 2020). The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block any scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan. Therefore, the Proposed Action does not conflict with County policies for the protection of scenic resources.

During operations, the Proposed Action would continue to appear as an earthen mound. Only one landfill cell would be open and operational at a time and debris would be spread, compacted, and covered each night with daily cover. Closure plans for the Proposed Action would include a landscaping and revegetation program for revegetation of the landfill base and slopes and landscaping at the site entrance to minimize visual impacts to the public. With implementation of the landscaping and revegetation measures described above, significant short- and long-term adverse impacts to visual resources are not anticipated.

*(13) Require substantial energy consumption or emit substantial greenhouse gases*

**Assessment of Significance Criteria:**

Energy requirements of the KLF include minor electricity consumption for management and maintenance facilities and diesel fuel for operation of heavy equipment. The Proposed Action would not increase the daily load on local utilities or increase daily consumption of fossil fuels. It would contribute a minor amount of greenhouse gases to the environment from the use of vehicles and equipment during operations and controlled landfill gas emissions. However, emissions would occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. Therefore, the Proposed Action would not require substantial energy consumption or emit substantial greenhouse gases.

## **5.2 Determination**

Based upon the analysis and findings presented in this document, implementation of the Proposed Action is not expected to result in a significant adverse direct, indirect, or cumulative impact on the quality of the environment. As such, the County DPW anticipates issuing a FONSI in accordance with HRS Chapter 343. This determination is based on an evaluation of the Project impacts in relation to the significance criteria specified in HAR § 11-200.1-13, as detailed above.

## 6. Coordination and Consultation

### 6.1 Agency Consultation and Community Outreach

In addition to the consultation that has been conducted specifically for the HRS Chapter 343 environmental review process, the County conducted public outreach to solicit feedback from the broader community. The County held a community meeting on May 3, 2023, from 5:30 to 8:00 p.m. at Kekaha Elementary School Cafeteria; approximately 100 individuals attended the meeting. Mayor Kawakami, HCB facilitator, and the County addressed the meeting attendees and assisted with technical responses as necessary. While there was much discussion, the majority of the subject matter was the HCB program, the vertical expansion to Kekaha, waste diversion, and the potential future landfill site located mauka and west of the existing landfill. Additional detail regarding the community meeting is provided in Appendix E.

The Project team also has begun consultation with State and County agencies with jurisdiction related to the Project, including the Department of Planning and the Land Use Commission. The list of parties consulted to date is summarized in Table 6-1. In addition, a website was published for the Project (<https://www.kauai.gov/KekahaLExpansion>) with contact information for receiving input regarding the Project.

Community outreach and consultation efforts are anticipated to continue through the Project development and approval process. Key issues and concerns identified through community outreach and agency coordination for the Proposed Action have been integrated into this EA.

**Table 6-1. Summary of Agency Consultation and Community Outreach**

Entity	Date(s)	Description <sup>1</sup>
<b>Community Outreach</b>		
Kekaha Community Meeting	May 3, 2023	Public Meeting to discuss Project and request input.
<b>Agency Consultation</b>		
U.S. Fish and Wildlife Services, Pacific Islands Fish and Wildlife Office	March 1, 2023 (Letter)	Written Request for Species List and Impact Avoidance Measures
State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife	March 1, 2023 (Letter)	Written Request for Species List and Impact Avoidance Measures
State of Hawai'i, Department of Land and Natural Resources, Office of Conservation and Coastal Lands	April 3, 2023 (Email) May 10, 2023 (Letter)	Written Request for Concurrence Regarding Conservation District Permit Requirements
State of Hawai'i, Land Use Commission	April 3, 2023	Informal Boundary Determination

Entity	Date(s)	Description <sup>1</sup>
State of Hawai'i, State Historic Preservation Division	March 1, 2023 (Letter)	Request for Concurrence with Project Effect Determination of "No Historic Properties Affected"
County of Kaua'i Department of Planning	December 14, 2022 April 4, 2023 (Letter) April 24, 2023	Meetings to discuss Project and request input. Written Request for Director Determination Regarding County Land Use Permit Requirements
1. Copies of the targeted agency consultation letter and responses received are provided in Appendix C.		

## 6.2 HRS Chapter 343 Scoping and Public Review Process

In addition to the general community outreach and agency coordination described above, additional consultation has been conducted specifically for the HRS Chapter 343 environmental review process. These efforts have included pre-assessment consultation/scoping and distribution of the draft EA for public comment in accordance with the requirements of HRS Chapter 343 and HAR § 11-200.1. The various agencies, elected officials, community organizations, and interested individuals contacted as part of the pre-assessment scoping and draft EA public review process are listed in Table 6-2. Additional detail regarding the pre-assessment scoping and the Draft EA review process, including the comments received, is provided the following sections.

**Table 6-2. Agencies, Organizations and Individuals Involved in HRS Chapter 343 Pre-Assessment Consultation and Public Review Process**

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent <sup>1</sup>	Comment Received <sup>1</sup>	Notice of Availability	Comment Received	Notice of Availability
<b>Federal Agencies</b>					
U.S. Geological Survey, Pacific Islands Water Science Center			•		
U.S. Fish and Wildlife Service	•	•	•		
National Marine Fisheries Service			•		
National Resources Conservation Service			•		
U.S. Army Corps of Engineers			•		
Department of the Navy - Pacific Missile Range Facility	•	•	•		
Federal Aviation Administration			•		

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent <sup>1</sup>	Comment Received <sup>1</sup>	Notice of Availability	Comment Received	Notice of Availability
Federal Transit Administration			•		
U.S. Coast Guard	•		•		
Environmental Protection Agency	•		•		
<b>State Agencies</b>					
Department of Agriculture	•		•		
Dept. of Accounting and General Services (DAGS)			•		
DAGS Archives Division			•		
Dept. of Business, Economic Development and Tourism (DBEDT)			•		
DBEDT Agriculture Development Corporation	•		•		
DBEDT Environmental Review Program	•		•		
DBEDT Land Use Commission			•		
DBEDT Office of Planning and Sustainable Development	•		•		
DBEDT Research and Economic Analysis Division			•		
Department of Defense (DOD), Hawai'i Emergency Management Agency			•		
DOD Hawai'i National Guard	•		•		
Department of Education			•		
Department of Hawaiian Homelands	•		•		
Department of Health (HDOH) Environmental Health Administration	•		•		
HDOH Clear Air Branch	•		•		
HDOH Clean Water Branch	•		•		
HDOH Solid and Hazardous Waste Branch	•	•	•		

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent <sup>1</sup>	Comment Received <sup>1</sup>	Notice of Availability	Comment Received	Notice of Availability
Department of Land and Natural Resources (DLNR), Division of Aquatics			•		
DLNR Commission on Water Resource Management			•		
DLNR Division of Forestry and Wildlife – Kaua`i District	•		•		
DLNR Engineering Division	•	•	•		
DLNR Land Division – Kaua`i District	•	•	•		
DLNR Office of Conservation and Coastal Lands	•	•	•		
DLNR State Historic Preservation Division	•	•	•		
Department of Transportation (HDOT), Administration	•		•		
HDOT Airports Division			•		
HDOT Highways Division – Kaua`i District			•		
University of Hawai`i (UH) Water Resources Research Center			•		
UH Environmental Center	•		•		
Office of Hawaiian Affairs			•		
<b>County of Kaua`i Agencies</b>					
Department of Parks and Recreation	•				
Department of Planning	•		•		
Department of Public Works	•		•		
Department of Water	•		•		
Fire Department	•		•		
Police Department	•		•		
Transportation Agency	•	•	•		
<b>Utilities</b>					
Kauai Island Utility Cooperative	•		•		

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent <sup>1</sup>	Comment Received <sup>1</sup>	Notice of Availability	Comment Received	Notice of Availability
<b>Elected Officials</b>					
U.S. Senator Brian Schatz			•		
U.S. Senator Mazie Hirono			•		
U.S. Representative Jill Tokuda			•		
State Senator Ronald Kouchi			•		
State Representative Dee Morikawa			•		
Kaua'i County Council					
Mayor Derek Kawakami			•		
<b>Organizations and Interested Individuals</b>					
Kaua'i Watershed Alliance	•		•		
West Kaua'i Watershed Council	•		•		
Kaunalewa	•		•		
Kekaha Landfill Host Community Benefits Citizen's Advisory Committee	•		•		
E Ola Mau Na Leo O Kekaha	•		•		
St. Theresa Catholic School Kauai	•		•		
Kekaha Elementary School	•		•		
Kekaha Hawaiian Homes Association	•		•		
West Kaua'i Business and Professional Association	•		•		
Kekaha Raceway Park	•		•		
Kekaha Agriculture Association	•		•		
Sunrise Capital Inc (Adjacent Lessee)	•		•		
Syngenta Seeds, Inc. c/o Hartung Brothers, Inc. (Adjacent Lessee)	•		•		
<b>Libraries</b>					
Hawai'i State Library, Hawai'i Documents Center			•		

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent <sup>1</sup>	Comment Received <sup>1</sup>	Notice of Availability	Comment Received	Notice of Availability
Hawai'i State Library, Lihu'e Regional Library			•		
Hawai'i State Library, Waimea Public Library			•		
University of Hawai'i (UH) Thomas H. Hamilton Library			•		
UH West O'ahu James & Abigail Campbell Library			•		
UH Hilo, Edwin H. Mo'okini Library			•		
UH Maui College Library			•		
Kauai Community College Library			•		
Legislative Reference Bureau Library			•		
<b>News Media</b>					
Honolulu Star Advertiser			•		
Hawai'i Tribune Herald			•		
West Hawai'i Today			•		
The Garden Island			•		
Maui News			•		
Molokai Dispatch			•		
Honolulu Civil Beat			•		
Hawai'i Public Radio			•		
1. Copies of the pre-assessment consultation letter and comments received are provided in Appendix B.					

**6.2.1 Pre-Assessment Scoping**

HAR § 11-200.1-18(a) requires early consultation seeking the advice and input of the county agency responsible for implementing the county's general plan and other agencies having jurisdiction or expertise, as well as those citizen groups and individuals that may be affected by the Proposed Action. Pursuant to these requirements, as part of the scoping process for the draft EA, the governmental agencies, organizations, and individuals that may have a specific interest or could otherwise be affected by the Proposed Action were identified. These parties, which are listed in Table 7-2, were sent a pre-assessment consultation letter containing preliminary Project information and were asked to provide

comments and related information for consideration in preparing the Draft EA. A copy of the pre-assessment consultation letter is provided in Appendix B.

A total of eight comment letters were received in response to the pre-assessment consultation request. Appendix B includes a matrix of the pre-assessment consultation comments and the County's responses. This is followed by copies of the comment letters. In accordance with the intent of HAR § 11-200.1, the information and input received through the pre-assessment process was considered in the preparation of the Draft EA.

### **6.2.2 Public Review of Draft EA**

HAR § 11-200.1 requires publication of a Draft EA in the ERP's bimonthly bulletin, *The Environmental Notice*, followed by a 30-day public review period. In accordance with these requirements, the Draft EA was published in *The Environmental Notice* on August 8, 2023, with the 30-day public review period running from the publication date through September 7, 2023. Notice of the Draft EA publication and public review period including instructions for submitting comments was sent to the entities listed in Table 6-2. Comments received on the Draft EA (postmarked on or before September 7, 2023) will be considered and incorporated into the Final EA, as appropriate.

## 7. References

- ADC (Agribusiness Development Corporation). 2020. Hawaii Agribusiness Plan 2021. December. <https://dbedt.hawaii.gov/adc/files/2023/01/ADC-Annual-Report-FY22-9-r.pdf> (accessed April 2023).
- ADC. 2022. Agribusiness Development Corporation Annual Report Fiscal Year 2022. December. <https://dbedt.hawaii.gov/adc/files/2023/01/ADC-Annual-Report-FY22-9-r.pdf> (accessed April 2023).
- AECOM (AECOM Technical Services, Inc.). 2007. Final Environmental Assessment, Kekaha Landfill Phase II Lateral Expansion, Kekaha, Kauaʻi, Hawaiʻi. November.
- AECOM. 2012. New Kauaʻi Landfill Siting Study Report, Kekaha, Kauaʻi, Hawaiʻi. July.
- AECOM. 2013a. Final Environmental Assessment, Kekaha Landfill Phase II Vertical Expansion, Kekaha, Kauaʻi, Hawaiʻi.
- AECOM. 2013b. Kauaʻi Resource Recovery Park Feasibility Study. Kauaʻi, Hawaiʻi. April.
- AECOM. 2016. Closure/Post-closure Plan, Kekaha Landfill Phase II, Kekaha, Kauaʻi, Hawaiʻi. May.
- Belt Collins (Belt Collins Hawaiʻi Ltd.). 1998. Final Environmental Assessment, Kekaha Landfill Phase II Vertical Expansion, Kauaʻi, Hawaiʻi. March.
- Bonaccorso, F.J., C.M. Todd, A.C. Miles, and P.M. Gorresen. 2015. Foraging Range Movements of the Endangered Hawaiian Hoary Bat, *Lasiurus cinereus semotus*. *Journal of Mammalogy* 96(1):64-71.
- Cheung, K.F. 2015. Hawaiʻi Tsunami Mapping Project: Data Sources, Procedures, and Products for Extreme Aleutian Events. Prepared for Hawaiʻi Emergency Management Agency, Honolulu, Hawaiʻi. June.
- Ching, F.K.W. 1982. Archaeological Reconnaissance of 3 Sites for Proposed Kauaʻi Central Sanitary Landfill Project, Kekaha, Kipu, and Kumukumu, Kauaʻi Island TMK 1-2-02:1, 9, 21, 40; 3-4-06:12; and 4-7-04:1. Archaeological Research Center Hawaiʻi, Inc., Lawaʻi, Kauaʻi.
- CH2MHILL. 2014. Federal-Aid Highways 2035 Transportation Plan for the District of Kauaʻi. Prepared for the State of Hawaiʻi Department of Transportation Highways Division. July.
- Chiogioji, R., G. Ida, and H.H. Hammatt. 2003. Cultural Impact Assessment in Support of the Proposes Sandwich Isles Fiber Optic Cable Landing at ʻAkialoa Road, Kekaha, Waimea Ahupuaʻa, Kona District, Island of Kauaʻi (TMK 4-13-001:999). Cultural Surveys Hawaiʻi, Inc., Kailua.
- County of Kauaʻi. 1994. Three Party Water Service Agreement. Adopted March 14 1994.

- County of Kauaʻi. 2018. Kauaʻi Kākoa Kauaʻi County General Plan. Adopted February 2018.  
[https://drive.google.com/file/d/131\\_c8upwnluedpOfInXcT3NHHsclUpbT/view](https://drive.google.com/file/d/131_c8upwnluedpOfInXcT3NHHsclUpbT/view) (accessed April 2023)
- County of Kauaʻi. 2020. West Kauaʻi Community Plan. Adopted December 2020.  
<https://www.kauai.gov/Government/Departments-Agencies/Planning-Department/Long-Range-Division> (accessed April 2023).
- County of Kauaʻi. 2023. Public Invited to a Design-Concept Review Meeting April 5 for Kekaha Road and ʻAkialoa Road. News Release, For Immediate Release: March 24, 2023.  
<https://www.kauai.gov/LinkClick.aspx?fileticket=oLyE5clSXR8%3d&tabid=108&portalid=0&mid=840> (accessed April 2023).
- Curtis, G. D. 1991. Hawaiʻi Tsunami Inundation/ Evacuation Map Project. Joint Institute for Marine and Atmospheric Research Contribution No. 91-327.
- CWRM (State of Hawaiʻi Commission on Water Resource Management). 2008. Surface water hydrologic unit boundaries for the 8 major Hawaiian Islands.  
[https://files.hawaii.gov/dbedt/op/gis/data/watersheds\\_cwrmm.pdf](https://files.hawaii.gov/dbedt/op/gis/data/watersheds_cwrmm.pdf) (accessed April 2023).
- DHHL (Department of Hawaiian Homeands). 2011. West Kauaʻi (Waimea, Kekaha, Hanapēpē) Regional Plan. February. [https://dhh.hawaii.gov/wp-content/uploads/2011/06/DHHL\\_West\\_Kauai\\_Regional\\_Plan\\_030111\\_small.pdf](https://dhh.hawaii.gov/wp-content/uploads/2011/06/DHHL_West_Kauai_Regional_Plan_030111_small.pdf) (accessed April 2023).
- DLNR (State of Hawaiʻi Department of Land and Natural Resources). 1982. Biological Resources Survey Letter, Fauna and Flora Survey, Kekaha Sanitary Landfill Site.
- DLNR. 2015. Endangered Species Recovery Committee Hawaiian Hoary Bat Guidance Document. Prepared by Angela Amlin and Afsheen Siddiqi. December.
- Earth Tech (Earth Tech, Inc.). 2001. Kauaʻi Municipal Solid Waste Landfill Siting Study, Kauaʻi, Hawaiʻi. Prepared for County of Kauaʻi, Department of Public Works, Honolulu, Hawaiʻi. March.
- Earth Tech. 2002. New Kauaʻi Municipal Solid Waste Landfill Kalepa Site Evaluation, Kauaʻi, Hawaiʻi. Prepared for County of Kauaʻi, Department of Public Works, Honolulu, Hawaiʻi. June.
- Earth Tech and Wil Chee (Wil Chee–Planning, Inc.). 2004. Final Environmental Assessment, Kekaha Landfill Phase II Second Vertical Expansion, Kekaha, Kauaʻi, Hawaiʻi. September.
- EPA (U.S. Environmental Protection Agency). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. U.S. Environmental Protection Agency. December 31.
- FAA (Federal Aviation Administration). 2023. Notice Criteria Tool - Desk Reference Guide V\_2018.2.0.  
<https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp> (accessed April 2023).

- FEMA (Federal Emergency Management Agency). 2020. Flood Insurance Rate Maps (FIRM). FEMA Flood Map Products. <https://www.fema.gov/flood-maps/products-tools/products> (accessed April 2023).
- Fernandes-Farias, M., A. Mitchell, and H.H. Hammatt. 2010. Cultural Impact Assessment for a Proposed Rock Crushing Establishment Along Portions of the New and Old Government Roads, Waimea Ahupua'a, Waimea District, Island of Kaua'i TMK: [4] 1-2-002:001. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Flores, K. E. and A. Kaohi. 1993. Hawaiian Cultural & Historical Survey of Nohili, Mānā, Kona District, Island of Kaua'i, State of Hawai'i. dba Hawai'i Pono'i, 'Ele'ele, Hawai'i.
- Folk, W.H., and H.H. Hammatt. 1993. Archaeological Inventory Survey and Subsurface Testing at the Kekaha Phase II Landfill Site (TMK 1-2-02:9), Draft. Prepared for Harding Lawson Associates Group, Inc., Novato, California. Cultural Surveys Hawai'i. August.
- Foote, D., E. Hill, S. Nakamura, and F. Stephens. 1972. Soil Survey, Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lanai, State of Hawai'i. U.S. Department of Agriculture, Soil Conservation Services, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.
- Geosyntec (Geosyntec Consultants). 2020. Groundwater and Leachate Monitoring Plan, Kekaha Municipal Solid Waste Landfill, Kekaha, Kaua'i, Hawai'i. March
- Geosyntec. 2022a. Spill Prevention, Control, and Countermeasures Plan, Kekaha Municipal Solid Waste Landfill, Kekaha, Kaua'i, Hawai'i. September
- Geosyntec. 2022c. Kekaha Municipal Solid Waste Landfill and Kekaha Materials Drop-off Facility, Annual Operating Report, July 1, 2021, through June 30, 2022, Kekaha, Kaua'i, Hawai'i. August.
- Geosyntec. 2023a. Kekaha Municipal Solid Waste Landfill Operations Manual, Kekaha Municipal Solid Waste Landfill – Phase II, Kekaha, Kaua'i, Hawai'i. February.
- Geosyntec. 2023b. 2nd Semi-annual Covered Source Permit Report for Year 2022, Reporting Period: July 1, 2022–December 31, 2022, Landfill Gas Collection and Control System, Kekaha Sanitary Landfill, Kaua'i, Hawai'i. February.
- Geosyntec. 2023c. 4th Quarter 2022 Groundwater and Leachate Monitoring Report, Kekaha Landfill Phase I and Phase II, Kekaha, Kaua'i, Hawai'i. April.
- Giambelluca, T.W. and T.A Schroeder. 1998. Climate. In: *Atlas of Hawai'i*, S.P. Juvik, J.O. Juvik, and T. R. Paradise (eds.). Mānoa: University of Hawai'i Press.
- 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 Hawai'i. Final report submitted to the U.S. Army Corps of Engineers, Honolulu District, and the Commission on Water Resource Management, State of Hawai'i. <http://climate.geography.hawaii.edu/> (accessed March 2023).

Hammatt, H.H. and D.W. Shideler. 2011. Archaeological Literature Review of Eight Possible Locations for a Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, Kekaha Ahupua'a; Pu'u o Pāpa'i, Makaweli Ahupua'a; Umi, Wahiawa Ahupua'a; Kōloa, Pā'ā Ahupua'a; Kīpū, Ha'ikū Ahupua'a; Kālepa, Hanamā'ulu Ahupua'a; Ma'alo, Wailua Ahupua'a; and Kumukumu, Keālia Ahupua'a. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hawai'i Climate Change Mitigation and Adaptation Commission. 2021. State of Hawai'i Sea Level Rise Viewer. Version 1.09. Prepared by the Pacific Islands Ocean Observing System (PacIOOS) 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. <http://hawaiisealevelriseviewer.org> (accessed April 2023).

Hawai'i State Climate Commission. 2022. Hawai'i Sea Level Rise Vulnerability and Adaptation Report 2022 Update. Report to the Thirty-second Legislature 2023 Regular Session. Prepared by the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands in Response to Act 32 of the Regular Session of 2017. December.

HDOA (State of Hawai'i Department of Health). 1991. Agriculture State Functional Plan. <https://files.hawaii.gov/dbedt/op/docs/Agriculture.pdf> (accessed May 2023).

HDOH (State of Hawai'i Department of Health). 2011. Aquifers, as determined/defined by DOH. Original maps prepared by John F. Mink and L. Stephen Lau, Water Resources Research Center, 1987, for the Department of Health's Groundwater Protection Program in the Safe Drinking Water Branch. Digitized by DOH - Environmental Planning Office from the original mylars, based on USGS 1:24,000 scale maps.

HDOH . 2019. Solid Waste Management Permit No. LF-0042-16.

HDOH. 2022. State of Hawai'i Annual Summary 2021 Air Quality Data. December 2021. [https://health.hawaii.gov/cab/files/2022/12/aqbook\\_2021.pdf](https://health.hawaii.gov/cab/files/2022/12/aqbook_2021.pdf) (accessed April 2023).

HHSC (Hawai'i Health Systems Corporation). 2023. Hawai'i Health Systems Corporation: Kaua'i Region. <https://kauai.hhsc.org/about-us/history-of-west-kauai-medical-center/>. (accessed April 2023).

HIEMA (Hawai'i Emergency Management Agency). 2023. Tsunami Evacuation Zones. <https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/> (accessed April 2023).

IPCC (Intergovernmental Panel on Climate Change). 2022. Synthesis Report of the IPCC Sixth Assessment Report (AR6). [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_LongerReport.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf) (accessed April 2023).

Jacobs (Jacobs Solutions Inc.). 2021. Integrated Solid Waste Management Plan Update. County of Kaua'i, Department of Public Works, Solid Waste Division. Kekaha, Kaua'i, Hawai'i. November.

- Macdonald, G.A., A.T. Abbott, and F.L. Peterson. 1983. *Volcanoes in the Sea, the Geology of Hawai'i*. 2nd Edition. Honolulu: University of Hawai'i Press.
- NIOSH (National Institute for Occupational Safety and Health). 2011. NIOSH Power Tools Sound Power Dataset. [https://www.cdc.gov/niosh/topics/noise/noise\\_levels.html](https://www.cdc.gov/niosh/topics/noise/noise_levels.html). Accessed April 2023.
- NAVFAC (Naval Facilities Engineering Command Pacific and U.S. Marine Corps). 2014. Final Environmental Assessment Relocate Marine Unmanned Aerial Vehicle Squadron Three to Hawai'i. Prepared for Naval Facilities Engineering Command Pacific and U.S. Marine Corps. March.
- NIOSH (National Institute for Occupational Safety and Health). 2011. NIOSH Power Tools Sound Power Dataset. [https://www.cdc.gov/niosh/topics/noise/noise\\_levels.html](https://www.cdc.gov/niosh/topics/noise/noise_levels.html) (accessed April 2023).
- NOAA (National Oceanic and Atmospheric Administration). 2022. Natural Hazards Viewer, National Centers for Environmental Information. <https://www.ncei.noaa.gov/maps/hazards/?layers=0> (accessed April 2023).
- NRCS (Natural Resources Conservation Service). 2019. Web Soil Survey. U.S. Department of Agriculture. <http://websoilsurvey.sc.egov.usda.gov/> (accessed April 2023).
- Office of Planning (Statewide GIS Program, Office of Planning, State of Hawai'i). 2021. Land Study Bureau Detailed Land Classification. <https://geoportal.hawaii.gov/datasets/HiStateGIS::lsb/explore?location=21.987108%2C-159.738237%2C15.00> (accessed May 2023)
- OSHA (Occupational Safety and Health Administration). 2019. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2020. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2021. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2022a. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2022b. OSHA Technical Manual (OTM) Section III: Chapter 5. <https://www.osha.gov/otm/section-3-health-hazards/chapter-5> (accessed April 2023).
- PGE (Pacific Geotechnical Engineers, Inc.). 2008. Final Letter Report, Geotechnical Exploration, Horizontal Expansion of the Kekaha MSW Phase II Landfill, Kekaha, Kaua'i, Hawai'i. October 7.
- PGE. 2012. Final Letter Report, Geotechnical Exploration, Kekaha Landfill Phase II Cell 2 Lateral Expansion, Kekaha, Kaua'i, Hawai'i. August 8.

- PGE. 2015. Final Letter Report, Geotechnical Consultation, Gas Collection and Control System Design, Kekaha Sanitary Landfill, Kekaha, Kauaʻi, Hawaiʻi. August 5.
- Price, J.P., J.D. Jacobi, S.M. Gon III, D. Matsuwaki, L. Mehrhoff, W. Wagner, M. Lucas, and B. Rowe. 2012. Mapping Plant Species Ranges in the Hawaiian Islands—Developing a Methodology and Associated GIS Layers. U.S. Geological Survey Open-File Report 2012–1192, 34 p., one appendix (species table), 1,158 maps. <http://pubs.usgs.gov/of/2012/1192/> (accessed March 2023).
- R.M. Towhill (R. M. Towill Corporation). 1983. Revised Environmental Impact Statement, Kekaha Sanitary Landfill Expansion Project. Department of Public Works, County of Kauaʻi. December.
- R.M. Towhill. 2009. Mayor’s Advisory Committee on Landfill Site Selection: Vol. 1: Report (May), Vol. 2: Site Data Sheets (March). Prepared for County of Kauaʻi, Department of Public Works, Refuse Division, Honolulu, Hawaiʻi.
- R.M. Towhill. 2018. Final Environmental Impact Statement New Kauaʻi Landfill Maʻalo, Kauaʻi, Hawaiʻi. July. [https://files.hawaii.gov/dbedt/erp/EA\\_EIS\\_Library/2018-10-23-KA-FEIS-Acceptance-New-Kauai-Landfill.pdf](https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-10-23-KA-FEIS-Acceptance-New-Kauai-Landfill.pdf) (accessed December 2022).
- Sherrod, D.R., J.M. Sinton, S.E. Watkins, and K.M. Brunt. 2007. Geologic Map of the State of Hawaiʻi: U.S. Geological Survey, Open-File Report 2007-1089, Version 1.0, Plate 8, geologic map of the island of Kauaʻi.
- Stantec (Stantec Consulting Services, Inc.). 2021. Phase 1 Landfill Mining Feasibility Study, Kekaha Landfill, County of Kauaʻi, Hawaiʻi.
- SSFM International. 2022. West Kauaʻi Energy Project, Final Environmental Assessment, Finding of No Significant Impact. Prepared for Kauaʻi Island Utility Cooperative and AES West Kauaʻi Energy Project, LLC. November 2022.
- SWCA (SWCA Environmental Consultants). 2016. Proposed Maʻalo Landfill Project Wildlife Hazard Assessment. Prepared for AECOM. August.
- Tetra Tech (Tetra Tech, Inc.). 2021. Multi-hazard Mitigation and Resilience Plan. Prepared for County of Kauaʻi. May. [https://kauaiconomy-my.sharepoint.com/personal/csakai\\_kauai\\_gov/\\_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fcsakai%5Fkauai%5Fgov%2FDocuments%2F2020%20Mitigation%20Plan%20Update%2F2021%2D05%2D04%5FKauaiCountyHMP%2DVol%2E1%5FFinal%2Epdf&parent=%2Fpersonal%2Fcsakai%5Fkauai%5Fgov%2FDocuments%2F2020%20Mitigation%20Plan%20Update&ga=1](https://kauaiconomy-my.sharepoint.com/personal/csakai_kauai_gov/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fcsakai%5Fkauai%5Fgov%2FDocuments%2F2020%20Mitigation%20Plan%20Update%2F2021%2D05%2D04%5FKauaiCountyHMP%2DVol%2E1%5FFinal%2Epdf&parent=%2Fpersonal%2Fcsakai%5Fkauai%5Fgov%2FDocuments%2F2020%20Mitigation%20Plan%20Update&ga=1) (accessed April 2023).
- Tetra Tech. 2022. Engineering Report – 90%. Kekaha Sanitary Landfill, Phase II Vertical Expansion, Kekaha, Kauaʻi, Hawaiʻi. December.
- UH CTAHR (University of Hawaiʻi College of Tropical Agricultural and Human Resources). 1977. Agricultural Lands of Importance in the State of Hawaii [map].

- <https://geoportal.hawaii.gov/datasets/HiStateGIS::alish/explore?location=21.986938%2C-159.740145%2C15.18> (accessed May 2023).
- UH Sea Grant Program (University of Hawai'i Sea Grant College Program). 2020. West Kaua'i Community Vulnerability Assessment. Prepared by University of Hawai'i Sea Grant College Program. June. <https://seagrant.soest.hawaii.edu/wp-content/uploads/2020/06/WKCVA-Final-Report-June-2020.pdf> (accessed April 2023).
- U.S. Census Bureau. 2022. American Community Survey 5-year Estimates 2017–2021. <https://data.census.gov/table> (accessed April 2023).
- U.S. Navy. 2023. Pacific Missile Range Facility Barking Sands. <https://cnrh.cnic.navy.mil/Installations/PMRF-Barking-Sands/> (accessed April 2023).
- USFWS (U.S. Fish and Wildlife Service). 2004. Draft Revised Recovery Plan for the Nēnē or Hawaiian Goose (*Branta sandvicensis*). U.S. Fish and Wildlife Service, Portland, Oregon. 148 + xi pp.
- USFWS. 2011. Recovery Plan for Hawaiian Waterbirds. 2nd Revision. U.S. Fish and Wildlife Service, Portland, Oregon. xx + 233 pp.
- USFWS. 2017. Newell's Shearwater (*Puffinus auricularis newelli*) 5-year Review: Short form summary. Pacific Islands Fish and Wildlife Office, Honolulu, Hawai'i.
- USFWS. 2021a. Band-rumped Storm Petrel (*Oceanodroma castro*) Hawai'i DPS, 5-year Review. Pacific Islands Fish and Wildlife Office, Honolulu, Hawai'i.
- USFWS. 2021b. 'Ōpe'ape'a or Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) 5-year Review. Pacific Islands Fish and Wildlife Office, Honolulu, Hawai'i.
- USFWS. 2022a. Hawaiian Petrel (*Pterodroma sandwichensis*) 5-year Review: Short form summary. Pacific Islands Fish and Wildlife Office, Honolulu, Hawai'i.
- USFWS. 2022b. Final Avoidance and Minimization Measures (AMMs) for ESA Listed Species (Animals). Revised April 2022. <https://www.fws.gov/sites/default/files/documents/Animal%20Avoidance%20and%20Minimization%20Measures-April%202022.pdf> (accessed March 2023).
- USFWS. 2023. USFWS Threatened & Endangered Species Active Critical Habitat Report – Online Mapper. <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77> (accessed April 2023).
- Walden, J. and S. L. Collins. 2015. Cultural Impact Assessment in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i TMK (4) 1-2-02:009, 036, 040. Pacific Consulting Services, Inc., Honolulu.

# Appendix A - Photo Log

## Photos of Kehaha Municipal Solid Waste Landfill Facilities



Photo 1. View of Kehaha Municipal Solid Waste Landfill (KLF) entranceway from Kaumuali'i Highway.



Photo 2. KLF scale house.



Photo 3. View towards north from top of Phase II landfill looking towards the stormwater infiltration basin on the left (no water present) and the leachate evaporation pond on the right.

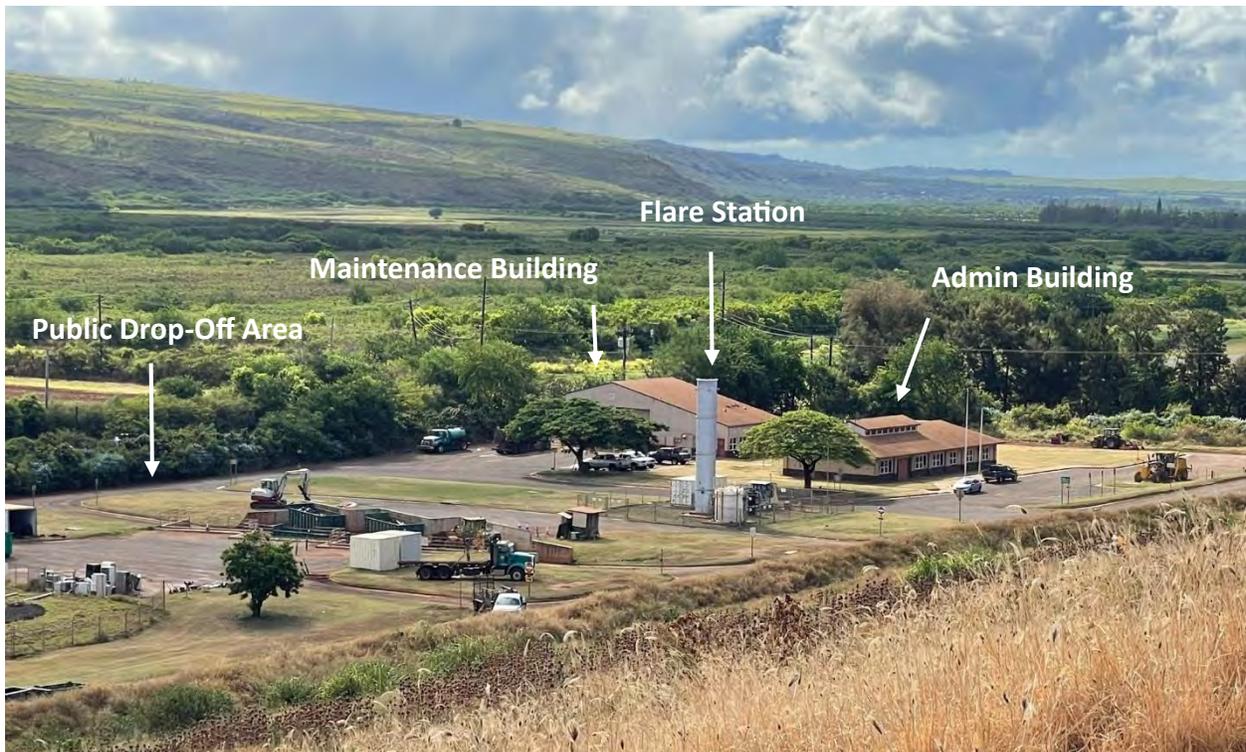


Photo 4. View towards northeast from Phase II landfill looking towards the public drop-off area, flare station, maintenance building, and administrative building.

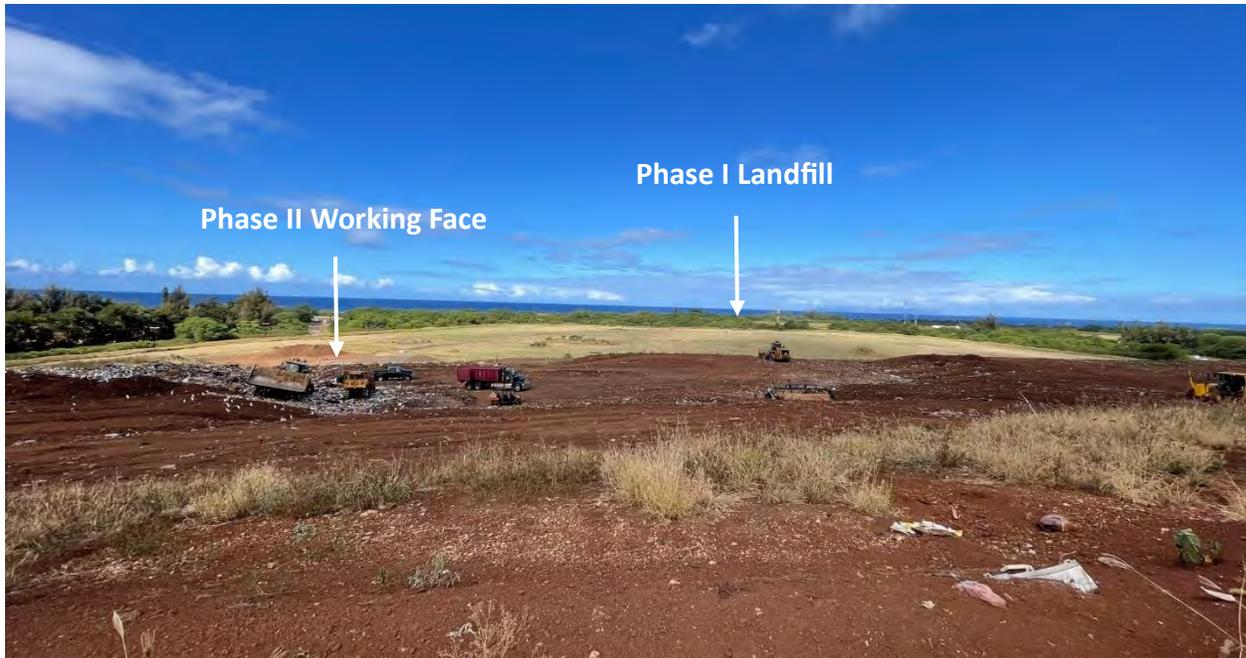


Photo 5. View towards south from top of Phase II landfill with Phase II working face in foreground and Phase I landfill in background.

### Photos of Surrounding Land Uses



Photo 6. View towards the west from top of Phase II looking towards agricultural lands / uses west and northwest of the KLF. Shrimp farms in the Kekaha Agricultural Park shown in midground.



Photo 7. View towards the east from top of Phase II looking towards agricultural lands / uses east of the KLF. Hartung Brothers Hawaii in background.



Photo 8. View towards the southeast from top of Phase II looking towards agricultural lands / uses southeast of the KLF and road leading to the Kaua`i Raceway Park (not shown).

Photos of the view towards KLF Phase II landfill from Kaumuali'i Highway



Photo 9. View toward the southeast from Kaumuali'i Highway at the intersection with Tarter Drive.



Photo 10. View toward the southeast from Kaumuali'i Highway, approximately 0.5 miles from the KLF.



Photo 11. View toward the southeast from Kaumuali'i Highway, approximately 0.2 miles from the KLF.



Photo 12. View toward the southeast from Kaumuali'i Highway, approximately 0.1 miles from the KLF.



Photo 13. View toward the southwest from Kaumuali'i Highway at the intersection with Kaua'i Raceway Park access road. View of the Phase II landfill is obscured by vegetation.



Photo 14. View toward the west from Kaumuali'i Highway, approximately 0.2 miles from the KLF. View of the Phase II landfill is partially obscured by vegetation.



Photo 15. View toward the northwest from Kaumuali'i Highway, approximately 0.5 miles from the KLF. The view of the Phase II landfill is obscured by vegetation.

### Photos of the view toward the KLF Phase II landfill from the shoreline



Photo 16. View towards the northwest from Kekaha Beach Park. The Phase II landfill is not visible.



Photo 17. View towards the northwest from Kekaha Beach from the east end of Kaua'i Raceway Park.

# Appendix B - Pre-Assessment Consultation

## Contents

Distribution List for the Pre-Assessment Consultation Letter

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Sample Pre-Assessment Consultation Letter

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Pre-Assessment Consultation Comment and Response Matrix

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Pre-Assessment Consultation Comment Letters

- County of Kaua'i Transportation Agency
  - State of Hawai'i Department of Land and Natural Resources, Engineering Division
  - State of Hawai'i Department of Land and Natural Resources, Land Division – Kaua'i District
  - State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands
  - State of Hawai'i Historic Preservation Division
  - State of Hawai'i Department of Health, Solid and Hazardous Waste Branch
  - Department of the Navy Pacific Missile Range Facility
  - U.S. Fish and Wildlife Service, Pacific Island Fish and Wildlife Office
-

## Distribution List for the Pre-Assessment Consultation Letter

Stakeholder	Letter Sent	Comment Received
<b>Federal Agencies</b>		
U.S. Fish and Wildlife Service	•	•
Department of the Navy - Pacific Missile Range Facility	•	•
U.S. Coast Guard	•	
Environmental Protection Agency	•	
<b>State Agencies</b>		
Department of Agriculture	•	
Department of Business, Economic Development, and Tourism (DBEDT)		
Agriculture Development Corporation	•	
Environmental Review Program	•	
Office of Planning and Sustainable Development	•	
Department of Hawaiian Homelands	•	
Department of Defense (DOD) Hawai'i National Guard	•	
Department of Health (HDOH) Environmental Health Administration	•	
HDOH Clear Air Branch	•	
HDOH Clean Water Branch	•	
HDOH Solid and Hazardous Waste Branch	•	•
DLNR Division of Forestry and Wildlife – Kaua'i District	•	
DLNR Engineering Division		•
DLNR Land Division – Kaua'i District	•	•
DLNR Office of Conservation and Coastal Lands	•	•
DLNR State Historic Preservation Division	•	•
Department of Transportation (HDOT)	•	
UH Environmental Center	•	
<b>County of Kaua'i Agencies</b>		
Department of Parks and Recreation	•	
Department of Planning	•	
Department of Public Works	•	
Department of Water	•	
Fire Department	•	
Police Department	•	
Transportation Agency	•	•
<b>Utilities</b>		
Kauai Island Utility Cooperative	•	
<b>Organizations and Interested Individuals</b>		

Stakeholder	Letter Sent	Comment Received
Kaua'i Watershed Alliance	•	
West Kaua'i Watershed Council	•	
Kaunalewa	•	
Kekaha Landfill Host Community Benefits Citizen's Advisory Committee	•	
E Ola Mau Na Leo O Kekaha	•	
St. Theresa Catholic School Kauai	•	
Kekaha Elementary School	•	
Kekaha Hawaiian Homes Association	•	
West Kaua'i Business and Professional Association	•	
Kekaha Raceway Park	•	
Kekaha Agriculture Association	•	
Sunrise Capital Inc (Adjacent Lessee)	•	
Syngenta Seeds, Inc. c/o Hartung Brothers, Inc. (Adjacent Lessee)	•	



February 27, 2023

RE: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion  
Kekaha, Kauaʻi, Hawaiʻi; TMK 1-2-002:001 (por.) and TMK 1-2-002:009  
Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

Dear Interested Party,

The County of Kauaʻi, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kauaʻi. The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which is owned by the State of Hawaiʻi and administered by the Department of Land and Natural Resources (DLNR). The facility is situated adjacent to Kaumualiʻi Highway and approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean.

The KLF is a municipal solid waste (MSW) landfill comprised of two refuse fill areas identified as Phase I and Phase II. Currently, the Phase II permitted limit-of-waste footprint is approximately 44 acres and the maximum permitted elevation is 120 ft above mean sea level (msl). Phase II is scheduled to reach its waste disposal capacity by October 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

Hawaiʻi Revised Statutes (HRS) Chapter 343 environmental review is required for any agency action that includes one or more triggers identified in HRS Chapter 343-5(a). The Proposed Action would be located on state lands and use county funds, which is an identified trigger per HRS Chapter 343-5(a)(1). Pursuant to the requirements of HRS Chapter 343 and Hawaiʻi Administrative Rules (HAR) §11-200.1, the County is preparing an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action.

As part of the environmental review process, pre-assessment consultation is being conducted to obtain input on the scope of issues to be considered in the Draft EA. An overview of the Proposed Action and a Location Map are attached. We are requesting input regarding the Proposed Action, including concerns related to particular environmental resources, as well as relevant information that should be considered in the evaluation.

Please provide comments regarding the scope of the EA in writing via U.S. postal mail to Kayla Yost at Tetra Tech (737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813; Tel: (808) 441-6600; Fax: (808) 536-3953) or [kayla.yost@tetratech.com](mailto:kayla.yost@tetratech.com). Comments must be postmarked by March 29, 2023 to be considered in the Draft EA. Copies of the Draft EA and Final EA will be made available for public review. The Draft EA is anticipated to be published in Q2 of 2023.

Thank you for your participation in the environmental review process for the Proposed Action.

Sincerely,



Kayla Yost

Project Manager and Environmental Planner  
Tetra Tech, Inc.

Attachments: Proposed Action Overview  
Figure 1: Location Map  
Figure 2: Simple Profile of KLF Phase II Vertical Expansion

## Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Proposed Action Overview

The County of Kauaʻi, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF is a municipal solid waste (MSW)<sup>1</sup> landfill comprised of two refuse fill areas identified as Phase I and Phase II. The Proposed Action would extend Phase II upward from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area.

KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kauaʻi. The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which are owned by the State of Hawaiʻi and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953) and Executive Order 2872 (signed October 6, 1977) places the control and management of the lands underlying the KLF to the County of Kauaʻi. The KLF is situated adjacent to Kaunuaʻi Highway and approximately 1,700 ft from the shoreline of the Pacific Ocean. The location and boundaries of the KLF and limits of the proposed vertical expansion are shown in the attached Figure 1: Location Map.

### HISTORY OF KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined<sup>2</sup> landfill that began accepting solid waste on October 9, 1993 and is predicted to reach its capacity in October of 2026.

KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

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<sup>1</sup> MSW is waste collected by County of Kauai from residential, commercial, industrial, and construction and demolition sources. The KLF accepts both organic wastes such as paper, cardboard, food, yard trimmings, and plastics, and inorganic wastes such as metal and glass. The KLF does not accept toxic or hazardous waste.

<sup>2</sup> The Phase II portion of the landfill was constructed with a Resource Conservation and Recovery Act (RCRA) Subtitle D base liner which protects the underlying soils and aquifer from landfill leachate.

The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, design, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The County has previously attempted to site a new MSW landfill at another location on the island. The County completed landfill siting studies in 2001/2002, 2007, and 2012. In 2018, the County completed an engineering design and Environmental Impact Statement (EIS) for a new MSW landfill and resource recovery park at Ma'alo. However, during the permitting process, the County had to abandon its plans to develop a new MSW landfill facility at Ma'alo due to the potential for the landfill to increase bird strikes at Līhu'e Airport. The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua'i and continues to evaluate alternative landfill sites and other long-term options for increasing the landfill capacity on Kaua'i.

#### PURPOSE AND NEED

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October of 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

#### PROPOSED ACTION

The major components of the Proposed Action would include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 1: Location Map and Figure 2: Simple Profile of KLF Phase II Vertical Expansion. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS)<sup>3</sup>:** Modern MSW landfills require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed

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<sup>3</sup> Landfill gases are produced when bacteria break down organic waste. Landfill gases are primarily made up of methane and carbon dioxide but may also include small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, and various other gases. Gas Collection and Control Systems (GCCS) are a common and major component of most landfills. They are designed to help control odors, minimize releases to the atmosphere, and increase safety by controlling migration and reducing landfill fire risk.

landfill gas flare that is designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and piping in the areas of new waste.

- **Stormwater Management**<sup>4</sup>: Modern MSW landfills require stormwater management systems to prevent stormwater from coming into contact with waste and other contaminants, control the flow of stormwater into drainage features, and prevent run-off into nearby water bodies. The KLF includes drainage features that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the Proposed Action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls<sup>5</sup> to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the Proposed Action. No substantial changes to KLF's operations are proposed.

As no construction is required to begin operating the vertical expansion, the Proposed Action can begin once all approvals are received (anticipated to be Q4 of 2023).

For more information regarding the Project, please visit <https://www.kauai.gov/KekahaLExpansion>.

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<sup>4</sup> Stormwater is water from rain and can soak into the soil (infiltrate), be held on the surface and evaporate, or run off and end up in a nearby stream, river, or other water body. Stormwater management systems are a common and major component of most landfills. They are designed to prevent stormwater from coming into contact with waste and other contaminants, control the flow of stormwater into drainage features, and prevent run-off into nearby water bodies.

<sup>5</sup> Engineering and operational controls are measures to keep our environment (groundwater, surface water, air, and ecosystem) clean from the gas, leachate, and stormwater contamination caused by a landfill.

# Kekaha Landfill Phase II Vertical Expansion

**Figure 1  
Project Location**

KAUAI COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit

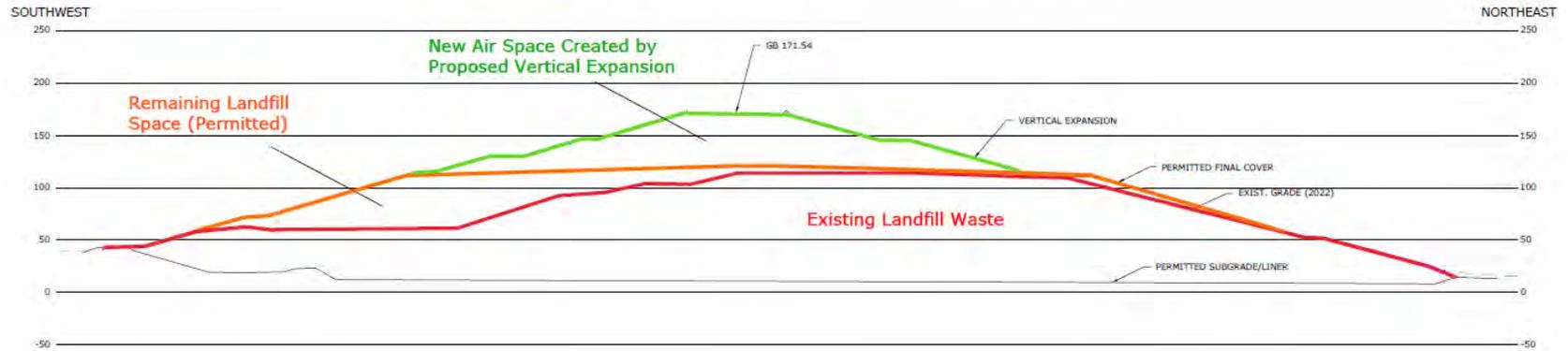


Reference Map



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Figure 2: Simple Profile of KLF Phase II Vertical Expansion



## Pre-Assessment Consultation Comment and Response Matrix

Pre-Assessment Consultation Comment	County of Kaua'i Response
<b>County of Kaua'i Transportation Agency (email dated March 3, 2023)</b>	
The County of Kaua'i Transportation Agency (CTA) has no further comment on this project at this time.	N/A
<b>State of Hawai'i Department of Land and Natural Resources, Engineering Division (letter dated March 28, 2023)</b>	
We have no comments.	N/A
<b>State of Hawai'i Department of Land and Natural Resources, Land Division – Kaua'i District (letter dated March 28, 2023)</b>	
We have no comments.	N/A
<b>State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands (letter dated March 28, 2023)</b>	
<p>The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. The OCCL notes that the portion of KLF that occupies TMK: (4) 1-2-002:001 appears to lie the State Land Use Agricultural District and that a portion of TMK: (4) 1-2- 002:009 appears to lie in the Limited Subzone of the State Land Use Conservation District. The County and Tetra Tech may want to consider consulting with the State of Hawaii Land Use Commission (LUC - (808) 587-3822) regarding the Agricultural and Conservation District boundary on the subject properties and the need for a Boundary Interpretation to determine jurisdictional authority.</p> <p>According to the OCCL files, the Board of Land and Natural Resources (BLNR) approved Conservation District Use Permit (CDUP) KA-3625 for the KLF Phase II Expansion on August 24, 2012, subject to nineteen (19) conditions. A portion of the KLF Phase II Expansion involved KLF lands that appeared to lie in the Limited Subzone. On July 8, 2016, the BLNR approved Time Extension Request KA 16-13 and amended Condition #5 of CDUP KA-3625 to provide the County until August 24, 2018, to initiate</p>	<p>The County discusses the state land use designations applicable the Proposed Action in <i>Section 3.8. Land Use</i> of the draft EA. As shown in Figure 3-3 of the draft EA, the conservation district boundary line is located at the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – phone, April 3, 2023). The components of the Phase II Vertical Expansion (Proposed Action) would be located entirely within TMK 4-1-2-002:001 (por.), which is in the State Land Use Agricultural District. Discussion of the Proposed Actions compliance with the rules regulating the State Agricultural District are discussed in <i>Section 3.8. Land Use</i> of the draft EA.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>construction of the KLF Phase II Expansion project and until August 24, 2022, to complete construction.</p> <p>Based on the information you have provided; it is unclear if land uses are proposed in the Conservation District. Should the current KLF Phase II Vertical Expansion project involve proposed land uses in the Conservation District, they will require review by the OCCL and potentially authorization from the Department or BLNR. A copy of the current rules and regulations of the Conservation District as well as proposed amendments to Hawaii Administrative Rules (HAR) Chapter 13-5 can be found at <a href="https://dlnr.hawaii.gov/occl/rules/">https://dlnr.hawaii.gov/occl/rules/</a>.</p>	
<p>In this context, the OCCL offers the following comments regarding the development of a Draft EA for the project. The OCCL requests that the Draft EA contain a discussion and analysis of sea level rise impacts to the KLF and proposed expansion. A cursory review of the State of Hawaii Sea Level Rise Viewer (<a href="https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/">https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/</a>) appears to indicate that the KLF and surrounding areas may be impacted by 3.2ft of sea level rise, and recent projections appear to indicate that sea level rise may exceed this threshold prior to 2100. The OCCL also requests the Draft EA describe the County's efforts towards Waste Diversion to help with the KLF use and capacity.</p>	<p>A discussion and analysis of sea level rise impacts to the Kekaha Municipal Solid Waste Landfill Facility (KLF) and Proposed Action is included in <i>Section 3.9. Natural Hazards</i> of the Project's draft EA. A description of the County's waste diversion efforts is also included in <i>Section 1.2. Background</i> of the draft EA.</p>
<p>Regarding the County's efforts to find a potential long-term landfill capacity solution and/or new landfill site, Hawaii Revised Statutes (HRS) §183C-4 Zoning, amendments. states:</p> <p><i>{b) The department shall adopt rules governing the use of land within the boundaries of the conservation district that are consistent with the conservation of necessary forest growth, the conservation and development of land and natural resources adequate for present and future needs, and the conservation and preservation of open space areas for public use and enjoyment; provided that no waste or disposal facility shall be located in a conservation district except in emergency circumstances where it may be necessary to mitigate significant risks to</i></p>	<p>The County acknowledges that HRS §183C-4 Zoning, prohibits waste or disposal facility in a conservation district except in emergency circumstances, for nonconforming use, and if the use is in accordance with a zoning rule.</p> <p>As noted above, the components of the Phase II Vertical Expansion (Proposed Action) would be located entirely within TMK 4-1-2-002:001 (por.) which is outside the Conservation District.</p>

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<p><i>public safety and health; provided further that emergency circumstances shall not exceed three years. No use except a nonconforming use as defined in section 183C-5, shall be made within the conservation district unless the use is in accordance with a zoning rule.</i></p> <p><i>For the purposes of this subsection:</i></p> <p><i>"Emergency" means any actual or imminent natural or human-caused occurrence that results or likely will result in substantial injury or harm to the population or substantial damage to or loss of property.</i></p> <p><i>"Waste or disposal facility" means any transfer station or landfill as defined in section 340A-1, open dump as defined in section 342H-1, solid waste reduction facility or waste reduction facility as defined in section 342G-1, disposal facility, or any other facility for the disposal of solid waste that is required by law to obtain a permit from the department of health. "Waste or disposal facility" excludes individual, state certified, non-industrial redemption centers.</i></p>	
<b>State of Hawai'i Historic Preservation Division (email dated February 27, 2023)</b>	
<p>SHPD does not accept any project submissions for review via email. All submissions must be submitted via SHPD's HICRIS portal (see SHPD website).</p>	<p>On behalf of the County, Cultural Surveys Hawaii (CSH) submitted the <i>Request for Concurrence with Project Effect Determination of "No Historic Properties Affected" HRS §6E-8/HAR §275-7 for the Kekaha Landfill Phase II Vertical Expansion Project, Waimea Ahupua'a, Waimea District, Kaua'i, TMKs: (4) 1-2-002:009 and 1-2-002:001 (por.)</i>. (CSH job code WAIMEA 51) to SHPD on March 1, 2023 under HICRIS #2023PR00306.</p>
<b>State of Hawai'i Department of Health, Solid and Hazardous Waste Branch (letter dated March 20, 2023)</b>	
<p>Municipal solid waste landfills (MSWLF) are regulated by the DOH under Chapter 342H, Hawaii Revised Statutes (HRS) and Chapter 11-58.1, Hawaii Administrative Rules. A vertical expansion of the MSWLF requires a modification of the landfill permit which includes a submission to the DOH of a permit application for the permit modification, an appropriate filing fee accompanying the application submission, and a public notice</p>	<p>Thank you for your comment. Upon completion of the HRS 343 environmental review process, the County will submit an application for a Solid Waste Management Permit modification. The County will continue to coordinate with the Hawaii Department of Health as the Project progresses.</p>

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<p>of the draft permit modification with a 30-day public comment period. The modification must meet all applicable requirements of administrative rules and statutes at the time of the application submission.</p>	
<p>Please note, there is a recent amendment to Section 342H-52, HRS that prohibits modification or expansion of an MSWLF or component of an MSWLF without establishing no less than a one-half mile buffer zone (as defined in the section) around the facility. Although the Kekaha MSWLF is an existing facility, it must meet this statutory requirement for the vertical expansion to be permitted.</p>	<p>The County acknowledges that HRS Section 342H-52 prohibits the modification or expansion of a waste or disposal facility, including a municipal solid waste landfill unit, without first establishing a buffer zone of no less than one-half mile around the waste or disposal facility. Pursuant to this subsection 342H-52(b) "Buffer zone" is defined as "the distance between the edge of waste or waste activity and the nearest residential, school, or hospital property line". There are no residentials, schools, or hospitals within 0.5 miles of the KLF. The nearest residential property lines are the Pacific Missile Range (PMRF) military housing approximately 1.25 miles to the northwest and a neighborhood of Kekaha approximately 1.3 miles to the southeast of the KLF. The nearest school is Kekaha Elementary School and the nearest hospital is the Kauai Veterans Memorial Hospital, approximately 2 miles and 5 miles to the southeast of the KLF facility, respectively.</p>
<p><b>Department of the Navy Pacific Missile Range Facility (letter dated March 23, 2023)</b></p>	
<p>Per reference (a), prior to raise of elevation of the landfill, action will have to be taken by Tetra Tech/County of Kauai, the Federal Aviation Administration (FAA), and Pacific Missile Range Facility (PMRF). In order to provide acceptable obstacle clearance for aircraft utilizing the PMRF Barking Sands Airfield, the FAA requires submission of an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an Obstacle Evaluation.</p> <p>The form submission will result in the FAA working with other federal entities and PMRF to conduct a review and determine possible risks to aircraft and evaluate other concerns including Bird Animal Strike Hazard (BASH), Hazard of Electronic Radiation to Ordnance (HERO), Radiation Hazard (RADHAZ), and visibility risks, among others. The final action will</p>	<p>Thank you for your comment. The County will submit an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an obstacle evaluation and determine possible risks to aircraft utilizing the PMRF Barking Sands Airfield. As you've noted, a "Determination of No Hazard" is anticipated based on past determinations made by the FAA for the previous vertical and lateral expansions of the KLF.</p>

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<p>result in a Letter of Determination by the FAA on whether the raise in elevation raises an acceptable, or unacceptable, risk.</p> <p>I have been informed that the landfill elevation has been raised multiple times in the last 10-15 years through this process with no concerns noted from the FAA, PMRF, or other entities.</p>	
<b>U.S. Fish and Wildlife Service, Pacific Island Fish and Wildlife Office (letter dated March 27, 2023)</b>	
<p>Our letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 <i>et seq.</i>), as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to federally listed species in accordance with section 7 of the ESA. Our data indicate the following species may occur or transit through the vicinity of the proposed project area: the endangered 'ōpe'ape'a (Hawaiian hoary bat, <i>Lasiurus cinereus semotus</i>); endangered 'ua'u (Hawaiian petrel, <i>Pterodroma sandwichensis</i>), endangered Hawai'i distinct population segment (DPS) of the 'akē'akē (band-rumped storm-petrel, <i>Oceanodroma castro</i>), threatened 'a'o (Newell's shearwater, <i>Puffinus auricularis newelli</i>) (hereafter collectively referred to as Hawaiian seabirds); the endangered koloa (Hawaiian duck, <i>Anas wyvilliana</i>), endangered 'alae ke'oke'o (Hawaiian coot, <i>Fulica alai</i>), endangered ae'o (Hawaiian stilt, <i>Himantopus mexicanus knudseni</i>), the endangered 'alae 'ula (Hawaiian gallinule, <i>Gallinula galeata sandvicensis</i>) (hereafter collectively referred to as Hawaiian waterbirds); and the threatened nēnē (Hawaiian goose, <i>Branta sandvicensis</i>).</p>	<p>The County acknowledges that these species could occur or transit through the vicinity of the KLF and have incorporated the U.S. Fish and Wildlife Service (Service)'s recommended measures into <i>Section 3.2. Biological Resources</i> of the draft EA.</p>
<p><u>'Ōpe'ape'a</u> The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young 'ōpe'ape'a could inadvertently be harmed or killed since they are too young to fly or may not move away. 'Ōpe'ape'a forage for insects from as low as 3</p>	<p>The County acknowledges that 'ōpe'apea may occur in the vicinity of and potentially occasionally traverse the KLF. The number of trees over 15 feet tall within the KLF is limited, and no trees occur within the proposed limits of the Phase II vertical expansion. A description of the 'ōpe'ape'a, including the information contained in the comment, is included in <i>Section 3.2. Biological Resources</i> of the draft EA.</p>

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<p>feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.</p> <p>To avoid and minimize impacts to the endangered 'ōpe'ape'a we recommend incorporating the following applicable measures into your project:</p> <ul style="list-style-type: none"> <li>• Do not disturb, remove, or trim woody plants greater than 15 ft. tall during the 'ōpe'ape'a birthing and pup rearing season (June 1 through September 15).</li> <li>• Do not use barbed wire for fencing.</li> </ul>	<p>The Service's recommended measures have also been incorporated into <i>Section 3.2. Biological Resources</i> of the draft EA and would be implemented, as applicable, by the County to avoid and minimize Project-related impacts to 'ōpe'ape'a. No trees or shrubs greater than 15 feet tall will be disturbed, trimmed or removed during the 'ōpe'ape'a birthing and pupping season (June 1 through September 15). No fences are planned to be erected as part of the Proposed Action.</p>
<p><u>Hawaiian seabirds</u></p> <p>Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.</p> <p>To avoid and minimize potential project impacts to Hawaiian seabirds we recommend you incorporate the following applicable measures into your project:</p> <ul style="list-style-type: none"> <li>• Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.</li> <li>• Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.</li> <li>• Avoid nighttime construction during the seabird fledging period (September 15 through December 15).</li> </ul>	<p>The County acknowledges that Hawaiian seabirds have the potential to transverse the KLF at night during the breeding, nesting, and fledging seasons (March 1–December 15). A description of listed Hawaiian seabirds, including the information contained in the comment, has been included in <i>Section 3.2. Biological Resources</i> of the draft EA.</p> <p>The measures recommended by the Service are currently being implemented at the KLF to avoid and minimize impacts to Hawaiian seabirds from existing operations and would continue with execution of Proposed Action. The existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor's doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are 8:00 a.m. to 4:00 p.m. Lighting is generally only needed during early morning or early evening hours during the winter months, when daylight hours are reduced. Outdoor lighting is controlled by timers that automatically turn-off outdoor lights after the facility has closed and site personnel have left. The Project does not include plans to add or alter the existing outdoor lighting. Landfill operations associated with the Proposed Action would continue to be conducted primarily during daylight hours. The Proposed Action does not involve nighttime construction.</p>

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<p><u>Hawaiian waterbirds</u>  Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, lo'i kalo (taro, <i>Colocasia esculenta</i> patches), irrigation ditches, sewage treatment ponds, and in the case of the koloa, montane streams and marshlands. Ae'o may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Koloa are also subject to threats from hybridization with introduced mallards.</p> <p>To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following measures into your project:</p> <ul style="list-style-type: none"> <li>• In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.</li> <li>• If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design.</li> <li>• Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found: <ul style="list-style-type: none"> <li>o Contact the Service within 48 hours for further guidance.</li> <li>o Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.</li> <li>o Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving</li> </ul> </li> </ul>	<p>The County acknowledges that listed Hawaiian waterbirds have been observed at the KLF and have the potential to traverse or occur in the vicinity of the KLF. Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these human-made features are typically dry, and therefore do not attract many waterbirds (SWCA 2016).</p> <p>A description of listed Hawaiian waterbirds, including the avoidance and minimization measures provided by the Service have been included in <i>Section 3.2. Biological Resources</i> of the draft EA. The Service's recommended measures would be implemented, as applicable, by the County to avoid and minimize Project-related impacts to Hawaiian waterbirds. The posted speed limit with the KLF is 15 mph. Neither the leachate evaporation pond nor stormwater infiltration basin would be altered or disturbed as a result of the Proposed Action. The Proposed Action would not create standing water or open water.</p>

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<p>activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.</p> <p>In addition, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. The aeʻo is also known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Therefore, we recommend you work with our office during the project planning phase so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).</p>	
<p><u>Nēnē</u> Nēnē are found on the islands of Hawaiʻi, Maui, Molokaʻi, and Kauaʻi. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.</p> <p>To avoid and minimize potential project impacts to nēnē we recommend you incorporate the following measures into your project description:</p> <ul style="list-style-type: none"> <li>• Do not approach, feed, or disturb nēnē.</li> <li>• If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with nēnē nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).</li> <li>• Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.</li> </ul>	<p>The County acknowledges that nēnē have been observed at the KLF and have the potential to traverse or occur in the vicinity of the KLF. Nēnē have been observed at the KLF, particularly near green waste piles and vegetated areas in the Phase I portion of the facility and at the stormwater basin and leachate pond (County of Kauaʻi, personal communication - email, February 17, 2023); however, there is no indication that Hawaiian geese are attracted to the active landfill area within the Phase II portion of the landfill or at other KLF facilities (SWCA 2016). The Service’s recommended measures have been incorporated into <i>Section 3.2. Biological Resources</i> of the draft EA and would be implemented, as applicable, by the County as necessary to avoid and minimize Project-related impacts to nēnē. The posted speed limit within the KLF facility is 15 mph. The Phase I portion of the KLF, leachate evaporation pond nor the stormwater infiltration basin would be altered or disturbed as a result of the Proposed Action. In the unlikely event that a nēnē nest is discovered within a 150 feet radius of the active landfill area of the Phase II landfill, the County will cease all work in the vicinity of the nest immediately and contact the Service for further guidance.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<ul style="list-style-type: none"> <li>In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.</li> </ul>	
<p><u>Enclosure: Service's Recommended Standard Best Management Practices</u></p> <p>The U.S. Fish and Wildlife Service (Service) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.</p> <ol style="list-style-type: none"> <li>Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.</li> <li>Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.</li> <li>Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.</li> </ol>	<p>The County acknowledges receipt of the Service's Recommended Standard Best Management Practices for aquatic habitats. The Project does not include work within aquatic habitats, therefore the recommended measures 1, 2, and 4 do not apply to the Proposed Action. Applicable portions of recommended measures 3, and 5-7 have been incorporated into <i>Section 3.2. Biological Resources</i> of the draft EA and would be implemented, as applicable, by the County to avoid and minimize Project-related impacts to fish and wildlife resources.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see <a href="http://www.haccp-nrm.org/Wizard/default.asp">http://www.haccp-nrm.org/Wizard/default.asp</a>) can help to prevent attraction and introduction of non-native species.</p> <p>5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or near aquatic habitats and should be protected from erosion (e.g., with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.</p> <p>6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.</p> <p>7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.</p>	

**From:** [Leonard Peters](#)  
**To:** [Yost, Kayla](#)  
**Subject:** FW: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment  
**Date:** Friday, March 3, 2023 1:05:48 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image006.png](#)  
[Outlook-Logo\\_comp.png](#)  
[KLF Vertical Expansion\\_Scoping Letter\\_02-27-23.pdf](#)

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**CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments.

Aloha Ms. Yost-  
The County of Kaua'i Transportation Agency (CTA) has no further comment on this project at this time.

Mahalo!

**Leonard Peters**

Assistant Executive on Transportation  
(808) 246-8112



---

**From:** The Kauai Bus <[thekauaibus@kauai.gov](mailto:thekauaibus@kauai.gov)>  
**Sent:** Monday, February 27, 2023 4:58 PM  
**To:** CTA All Management <[Management@kauai.gov](mailto:Management@kauai.gov)>  
**Subject:** Fw: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

Aloha,

Please see email below.

Mahalo,

Cece



County of Kaua'i

Main Line : 808-246-8110

Fax: 808-241-6417

Email  
: [thekauaibus@kauai.gov](mailto:thekauaibus@kauai.gov)

[www.Kauai.gov/Transportation](http://www.Kauai.gov/Transportation)

[www.theKauaiBus.com](http://www.theKauaiBus.com)

---

**From:** Yost, Kayla <[KAYLA.YOST@tetrattech.com](mailto:KAYLA.YOST@tetrattech.com)>  
**Sent:** Monday, February 27, 2023 3:11 PM

**To:** Yost, Kayla <[KAYLA.YOST@tetratech.com](mailto:KAYLA.YOST@tetratech.com)>

**Subject:** Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

**CAUTION:** This email originated from outside the County of Kauai. Do not click links or open attachments even if the sender is known to you unless it is something you were expecting.

Aloha,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF is a municipal solid waste (MSW) landfill comprised of two refuse fill areas identified as Phase I and Phase II. Currently, the Phase II permitted limit-of-waste footprint is approximately 44 acres and the maximum permitted elevation is 120 ft above mean sea level (msl). Phase II is scheduled to reach its waste disposal capacity by October 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

Pursuant to the requirements of Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) §11-200.1, the County is preparing an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action. As part of the environmental review process, pre-assessment consultation is being conducted to obtain input on the scope of issues to be considered in the Draft EA. An overview of the Proposed Action and a Location Map are attached. We are requesting input regarding the Proposed Action, including concerns related to particular environmental resources, as well as relevant information that should be considered in the evaluation.

Please provide comments regarding the scope of the EA in writing via U.S. postal mail to Kayla Yost at Tetra Tech (737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813; Tel: (808) 441-6600; Fax: (808) 536-3953) or [kayla.yost@tetratech.com](mailto:kayla.yost@tetratech.com). Comments must be postmarked by March 29, 2023 to be considered in the Draft EA. Copies of the Draft EA and Final EA will be made available for public review.

Thank you for your participation in the environmental review process for the Proposed Action.

Mahalo,

**Kayla Yost** | Environmental Planner

Pronouns: she, her, hers

Business +1 (808) 441-6600 | Mobile +1 (808) 352-2247 | Fax +1 (808) 536-3953 | [kayla.yost@tetratech.com](mailto:kayla.yost@tetratech.com)

**Tetra Tech** | *Leading with Science*® | CES

737 Bishop St. Suite 2000 | Mauka Tower | Honolulu, HI 96813-3201 | [tetratech.com](http://tetratech.com)

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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

March 28, 2023

LD 0170e

Kayla Yost  
TETRA TECH  
737 Bishop Street, Suite 2000  
Honolulu, HI 96813

*Via email: kayla.yost@tetratech.com*

To Whom It May Concern:

**SUBJECT: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion  
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**  
Kekaha, Island of Kauai, Hawaii  
TMK: (4)1-2-002:001 (por.) and 1-2-002:009

Thank you for the opportunity to review and comment on the subject project. The Land Division of the Department of Land and Natural Resources (DLNR) distributed copies of your request to DLNR's various divisions for their review and comment.

Enclosed are responses/comments received from our (a) Engineering Division Name, (b) Land Division - Kauai District, and (c) Office of Conservation and Coastal Lands. If you have any questions, please feel free to contact Barbara Lee via email at [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov). Thank you.

Sincerely,

*Russell Tsuji*

Russell Y. Tsuji  
Land Administrator

Attachments

cc: Central Files

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

February 28, 2023

LD 0170e

MEMORANDUM

FROM: TØ:

**DLNR Agencies:**

- Div. of Aquatic Resources (via email: glenn.r.higashi@hawaii.gov)
- Div. of Boating & Ocean Recreation
- Engineering Division** (via email: DLNR.Engr@hawaii.gov)
- Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
- Div. of State Parks
- Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
- Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)
- Land Division – Kauai District (via email: alison.neustein@hawaii.gov)
- Aha Moku (via email: leimana.k.damate@hawaii.gov)

TO: FROM:

Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT:

**Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion  
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**

LOCATION:

Kekaha, Island of Kauai, Hawaii

TMK: (4)1-2-002:001 (por.) and 1-2-002:009

APPLICANT:

**Tetra Tech on behalf of County of Kauai Department of Public Works**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **March 27, 2023** to *barbara.j.lee@hawaii.gov* at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

**BRIEF COMMENTS:**

- We have no objections.
- We have no comments.
- We have no additional comments.
- Comments are included/attached.

Signed:

Print Name:

Carty S. Chang, Chief Engineer

Division:

Engineering Division

Date:

Mar 22, 2023

Attachments  
Cc: Central Files

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

February 28, 2023

LD 0170e

MEMORANDUM

TO: **DLNR Agencies:**  
 Div. of Aquatic Resources (via email: glenn.r.higashi@hawaii.gov)  
 Div. of Boating & Ocean Recreation  
 Engineering Division (via email: DLNR.Engr@hawaii.gov)  
 Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)  
 Div. of State Parks  
 Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)  
 Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)  
 Land Division – Kauai District (via email: alison.neustein@hawaii.gov)  
 Aha Moku (via email: leimana.k.damate@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion  
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**

LOCATION: Kekaha, Island of Kauai, Hawaii  
TMK: (4)1-2-002:001 (por.) and 1-2-002:009

APPLICANT: **Tetra Tech on behalf of County of Kauai Department of Public Works**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **March 27, 2023** to *barbara.j.lee@hawaii.gov* at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

BRIEF COMMENTS:

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

Signed: *Alison Neustein*  
 Print Name: Alison Neustein  
 Division: Land Division  
 Date: 3/24/2023

Attachments  
Cc: Central Files

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

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



IN DEVELOPMENT  
OFFICE OF CONSERVATION  
AND COASTAL LANDS

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

2023 FEB 28 P 4:29

OFFICE OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

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

P.O. BOX 621  
HONOLULU, HAWAII 96809

February 28, 2023

LD 0170e

**MEMORANDUM**

TO: **DLNR Agencies:**  
 Div. of Aquatic Resources (via email: glenn.r.higashi@hawaii.gov)  
 Div. of Boating & Ocean Recreation  
 Engineering Division (via email: DLNR.Engr@hawaii.gov)  
 Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)  
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 Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)  
 Land Division – Kauai District (via email: alison.neustein@hawaii.gov)  
 Aha Moku (via email: leimana.k.damate@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion  
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**

LOCATION: Kekaha, Island of Kauai, Hawaii  
TMK: (4)1-2-002:001 (por.) and 1-2-002:009

APPLICANT: **Tetra Tech on behalf of County of Kauai Department of Public Works**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **March 27, 2023** to [barbara.j.lee@hawaii.gov](mailto:barbara.j.lee@hawaii.gov) at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

**BRIEF COMMENTS:**

- We have no objections.
- We have no comments.
- We have no additional comments.
- Comments are included/attached.

Signed: *Trevor Fitzpatrick*  
 Print Name: Trevor Fitzpatrick  
 Division: OCCL  
 Date: 3/28/2023

Attachments  
Cc: Central Files

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

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
Office of Conservation and Coastal Lands  
P.O. BOX 621  
HONOLULU, HAWAII 96809

DAWN N.S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT  
LAURA H.E. KAAKUA  
FIRST DEPUTY  
M. KALEO MANUEL  
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

REF: OCCL: TF

COR: KA 23-133

Kayla Yost  
Tetra Tech, Inc.  
737 Bishop Street, Suite 2000 Mauka Tower  
Honolulu, HI 96813

Mar 28, 2023

SUBJECT: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment  
Located at 6900 Kaunualii Highway #A  
Por. Kekaha, Waimea, Kauai  
Tax Map Keys (TMKs): (4) 1-2-002:001 (por.) and (4) 1-2-002:009

Dear Kayla Yost:

The Office of Conservation and Coastal Lands (OCCL) has reviewed your letter and attachments regarding the subject matter. According to the information in your letter, the County of Kauai Department of Public Works Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The KLF encompasses approximately 98 acres of land within TMK: (4) 1-2-002:009 and a portion of TMK: (4) 1-2-002:001.

Executive Orders 1558 (signed April 27, 1953) and 2872 (signed October 6, 1977) placed the control and management of the lands underlying the KLF to the County of Kauai. The KLF is comprised of two (2) refuse fill areas: Phase I and Phase II. Phase I is an unlined landfill that began accepting solid waste in 1953 and ceased operations on October 8, 1993. Phase II is an active lined landfill that began accepting solid waste on October 9, 1993.

The letter notes that KLF is Kauai's only permitted municipal solid waste landfill and is predicted to reach its capacity in October of 2026. The letter states that major components of the proposed vertical expansion of KLF's Phase II include:

- **Vertical Landfill Expansion:** Extend the existing waste disposal area from the authorized 120ft above mean sea level (msl) to a maximum height of 171.5ft above msl without expanding the existing permitted footprint (approximately 44 acres).
  - New access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS):** The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS

infrastructure within the footprint of the proposed vertical expansion and installing additional landfill gas extraction wells and piping in the areas of new waste.

- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly to extend upwards to accommodate the increase in height of the Phase II waste disposal area.

The letter notes that the purpose of the proposed vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented. The letter states that the County expects the planning, permitting, and implementation of any potential long-term landfill capacity solution would likely take more than five (5) years and the new site would likely not be operational until after October 2026. On behalf of the County, Tetra Tech is seeking pre-assessment consultation comments in advance of developing a Draft Environmental Assessment (EA) for the project.

The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. The OCCL notes that the portion of KLF that occupies TMK: (4) 1-2-002:001 appears to lie the State Land Use Agricultural District and that a portion of TMK: (4) 1-2-002:009 appears to lie in the Limited Subzone of the State Land Use Conservation District. The County and Tetra Tech may want to consider consulting with the State of Hawaii Land Use Commission (LUC – (808) 587-3822) regarding the Agricultural and Conservation District boundary on the subject properties and the need for a Boundary Interpretation to determine jurisdictional authority.

According to OCCL files, the Board of Land and Natural Resources (BLNR) approved Conservation District Use Permit (CDUP) KA-3625 for the KLF Phase II Expansion on August 24, 2012, subject to nineteen (19) conditions. A portion of the KLF Phase II Expansion involved KLF lands that appeared to lie in the Limited Subzone. On July 8, 2016, the BLNR approved Time Extension Request KA 16-13 and amended Condition #5 of CDUP KA-3625 to provide the County until August 24, 2018, to initiate construction of the KLF Phase II Expansion project and until August 24, 2022, to complete construction.

Based on the information you have provided; it is unclear if land uses are proposed in the Conservation District. Should the current KLF Phase II Vertical Expansion project involve proposed land uses in the Conservation District, they will require review by the OCCL and potentially authorization from the Department or BLNR. A copy of the current rules and regulations of the Conservation District as well as proposed amendments to Hawaii Administrative Rules (HAR) Chapter 13-5 can be found at <https://dlnr.hawaii.gov/occl/rules/>.

In this context, the OCCL offers the following comments regarding the development of a Draft EA for the project. The OCCL requests that the Draft EA contain a discussion and analysis of sea level rise impacts to the KLF and proposed expansion. A cursory review of the State of Hawaii Sea Level Rise Viewer (<https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/>) appears to indicate that the KLF and surrounding areas may be impacted by 3.2ft of sea level rise, and recent projections appear to indicate that sea level rise may exceed this threshold prior to 2100. The OCCL also requests the Draft EA describe the County's efforts towards Waste Diversion to help with the KLF use and capacity.

Regarding the County's efforts to find a potential long-term landfill capacity solution and/or new landfill site, Hawaii Revised Statutes (HRS) **§183C-4 Zoning, amendments**. states:

*(b) The department shall adopt rules governing the use of land within the boundaries of the conservation district that are consistent with the conservation of necessary forest growth, the conservation and development of land and natural resources adequate for present and future needs, and the conservation and preservation of open space areas for public use and enjoyment; provided that no waste or disposal facility shall be located in a conservation district except in emergency circumstances where it may be necessary to mitigate significant risks to public safety and health; provided further that emergency circumstances shall not exceed three years. No use except a nonconforming use as defined in section 183C-5, shall be made within the conservation district unless the use is in accordance with a zoning rule.*

*For the purposes of this subsection:*

*"Emergency" means any actual or imminent natural or human-caused occurrence that results or likely will result in substantial injury or harm to the population or substantial damage to or loss of property.*

*"Waste or disposal facility" means any transfer station or landfill as defined in section 340A-1, open dump as defined in section 342H-1, solid waste reduction facility or waste reduction facility as defined in section 342G-1, disposal facility, or any other facility for the disposal of solid waste that is required by law to obtain a permit from the department of health. "Waste or disposal facility" excludes individual, state certified, non-industrial redemption centers.*

The OCCL thanks the County and Tetra Tech for the opportunity to provide comments prior to the development of the Draft EA for the project.

Should you have any questions, feel free to contact Trevor Fitzpatrick of the Office of Conservation and Coastal Lands at (808) 798-6660 or [trevor.j.fitzpatrick@hawaii.gov](mailto:trevor.j.fitzpatrick@hawaii.gov).

Sincerely,

*S Michael Cain*

Michael Cain, Administrator  
Office of Conservation and Coastal Lands

CC: *Kauai Division Land Office  
County of Kauai, Planning Department*

**From:** [Lebo, Susan A](#)  
**To:** [Yost, Kayla](#); [Buckley, David R](#)  
**Subject:** Re: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment  
**Date:** Monday, February 27, 2023 3:16:14 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image006.png](#)

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Hello Kayla,

SHPD does not accept any project submissions for review via email. All submissions must be submitted via SHPD's HICRIS portal (see SHPD website).

Thank you in advance,

Susan

Susan A. Lebo, PhD  
SHPD Archaeology Branch Chief  
(808) 321-9000 cell

---

**From:** Yost, Kayla <KAYLA.YOST@tetrattech.com>  
**Sent:** Monday, February 27, 2023 3:11 PM  
**To:** Yost, Kayla <KAYLA.YOST@tetrattech.com>  
**Subject:** [EXTERNAL] Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

Aloha,

The County of Kaua`i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua`i. The KLF is a municipal solid waste (MSW) landfill comprised of two refuse fill areas identified as Phase I and Phase II. Currently, the Phase II permitted limit-of-waste footprint is approximately 44 acres and the maximum permitted elevation is 120 ft above mean sea level (msl). Phase II is scheduled to reach its waste disposal capacity by October 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

Pursuant to the requirements of Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i

Administrative Rules (HAR) §11-200.1, the County is preparing an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action. As part of the environmental review process, pre-assessment consultation is being conducted to obtain input on the scope of issues to be considered in the Draft EA. An overview of the Proposed Action and a Location Map are attached. We are requesting input regarding the Proposed Action, including concerns related to particular environmental resources, as well as relevant information that should be considered in the evaluation.

Please provide comments regarding the scope of the EA in writing via U.S. postal mail to Kayla Yost at Tetra Tech (737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813; Tel: (808) 441-6600; Fax: (808) 536-3953) or [kayla.yost@tetratech.com](mailto:kayla.yost@tetratech.com). Comments must be postmarked by March 29, 2023 to be considered in the Draft EA. Copies of the Draft EA and Final EA will be made available for public review.

Thank you for your participation in the environmental review process for the Proposed Action.

Mahalo,

**Kayla Yost** | Environmental Planner

Pronouns: she, her, hers

Business +1 (808) 441-6600 | Mobile +1 (808) 352-2247 | Fax +1 (808) 536-3953 | [kayla.yost@tetratech.com](mailto:kayla.yost@tetratech.com)

**Tetra Tech** | *Leading with Science*<sup>®</sup> | CES

737 Bishop St. Suite 2000 | Mauka Tower | Honolulu, HI 96813-3201 | [tetratech.com](http://tetratech.com)

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JOSH GREEN, M.D.  
GOVERNOR OF HAWAII  
KE KIA'ĀINA O KA MOKU'ĀINA 'O HAWAII



KENNETH S. FINK, MD, MGA, MPH  
DIRECTOR OF HEALTH  
KA LUNA HO'ŌKELE

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
KA 'OIHANA OLAKINO  
P. O. BOX 3378  
HONOLULU, HI 96801-3378

In reply, please refer to:  
File:

March 20, 2023

S0307GH

Ms. Kayla Yost  
Tetra Tech  
737 Bishop Street, Suite 2000  
Honolulu, Hawaii 96813

Dear Ms. Yost:

The Department of Health (DOH), Solid and Hazardous Waste Branch is providing comments in response to a letter dated February 27, 2023, regarding an environmental assessment pre-assessment consultation for a proposed vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill on Kauai.

Municipal solid waste landfills (MSWLF) are regulated by the DOH under Chapter 342H, Hawaii Revised Statutes (HRS) and Chapter 11-58.1, Hawaii Administrative Rules. A vertical expansion of the MSWLF requires a modification of the landfill permit which includes a submission to the DOH of a permit application for the permit modification, an appropriate filing fee accompanying the application submission, and a public notice of the draft permit modification with a 30-day public comment period. The modification must meet all applicable requirements of administrative rules and statutes at the time of the application submission.

Please note, there is a recent amendment to Section 342H-52, HRS that prohibits modification or expansion of an MSWLF or component of an MSWLF without establishing no less than a one-half mile buffer zone (as defined in the section) around the facility. Although the Kekaha MSWLF is an existing facility, it must meet this statutory requirement for the vertical expansion to be permitted.

If you have any questions, please contact Mr. Glenn Haae of the Solid and Hazardous Waste Branch at (808) 586-4226.

Sincerely,

*Lene Ichinotsubo*

LENE ICHINOTSUBO, P.E., ACTING CHIEF  
Solid and Hazardous Waste Branch



**DEPARTMENT OF THE NAVY**

PACIFIC MISSILE RANGE FACILITY

P.O. Box 128

KEKAHA, HAWAII 96752-0128

IN REPLY REFER TO:

1200

Ser N3A/0242

29 Mar 23

Ms. Kayla Yost  
Project Manager and Environmental Planner  
Tetra Tech, Inc.  
737 Bishop St.  
Suite 2000, Mauka Tower  
Honolulu, HI 96813

Dear Ms. Yost,

**SUBJECT: PACIFIC MISSILE RANGE FACILITY RESPONSE TO PROPOSED VERTICAL  
LANDFILL EXPANSION OF KEKAHA MUNICIPAL SOLID WASTE LANDFILL  
PROPOSED ACTION**

Reference: (a) 14 CFR Part 77

This letter is in response to your Tetra Tech letter of February 27, 2023 regarding the vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action).

Per reference (a), prior to raise of elevation of the landfill, action will have to be taken by Tetra Tech/County of Kauai, the Federal Aviation Administration (FAA), and Pacific Missile Range Facility (PMRF). In order to provide acceptable obstacle clearance for aircraft utilizing the PMRF Barking Sands Airfield, the FAA requires submission of an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an Obstacle Evaluation.

The form submission will result in the FAA working with other federal entities and PMRF to conduct a review and determine possible risks to aircraft and evaluate other concerns including Bird Animal Strike Hazard (BASH), Hazard of Electronic Radiation to Ordnance (HERO), Radiation Hazard (RADHAZ), and visibility risks, among others. The final action will result in a Letter of Determination by the FAA on whether the raise in elevation raises an acceptable, or unacceptable, risk.

I have been informed that the landfill elevation has been raised multiple times in the last 10-15 years through this process with no concerns noted from the FAA, PMRF, or other entities.

My team and I look forward to working with you as your project moves forward. Our points of contact for this issue are the PMRF Air Operations Officer, LCDR Sean Castle, sean.c.castle2.mil@us.navy.mil, 808-335-4585, and the PMRF Public Works Officer, LCDR John Kimmel, john.l.kimmel.mil@us.navy.mil, 808-335-4635.

Sincerely,

B. A. STEVENSON  
Captain, U.S. Navy  
Commanding Officer



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Pacific Islands Fish and Wildlife Office  
300 Ala Moana Boulevard, Room 3-122  
Honolulu, Hawai'i 96850

In Reply Refer To:  
2023-0051423-S7-001

March 27, 2023

Ms. Kayla Yost  
Project Manager and Environmental Planner  
Tetra Tech, Inc.  
737 Bishop St., Suite 2000  
Honolulu, Hawai'i 96813

Subject: Technical Assistance for the Kekaha Municipal Solid Waste Landfill Phase II  
Vertical Expansion, Kaua'i

Dear Ms. Yost:

Thank you for your March 1, 2023 letter, requesting technical assistance for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project, located on the island of Kaua'i. The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of the Phase II portion of the Kehaka Municipal Solid Waste Landfill (KLF). The KLF is located 1.3 miles northwest of the town of Kekaha and encompasses approximately 98 acres of land within TMKs 1-2-002:001 (portion) and 1-2-002-009, which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993 and was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013. The current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. Phase II is scheduled to reach its waste disposal capacity by October of 2026. The County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl to develop additional air space volume for continued waste disposal.

The Phase II vertical expansion would take place within the footprint of the existing Phase II landfill area. The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. The limits of the proposed vertical expansion would be approximately 13 acres. The existing landfill gas collection and control system (GCCS) would be expanded by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction

## PACIFIC REGION 1

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IDAHO, OREGON\*, WASHINGTON,  
AMERICAN SAMOA, GUAM, HAWAI'I, NORTHERN MARIANA ISLANDS

\*PARTIAL

wells and related lateral piping in the areas of new waste. Existing surface water drainage features that currently divert stormwater away from the refuse area would be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

Our letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to federally listed species in accordance with section 7 of the ESA. Our data indicate the following species may occur or transit through the vicinity of the proposed project area: the endangered 'ōpe'ape'a (Hawaiian hoary bat, *Lasiurus cinereus semotus*); endangered 'ua'u (Hawaiian petrel, *Pterodroma sandwichensis*), endangered Hawai'i distinct population segment (DPS) of the 'akē'akē (band-rumped storm-petrel, *Oceanodroma castro*), threatened 'a'o (Newell's shearwater, *Puffinus auricularis newelli*) (hereafter collectively referred to as Hawaiian seabirds); the endangered koloa (Hawaiian duck, *Anas wyvilliana*), endangered 'alae ke'oke'o (Hawaiian coot, *Fulica alai*), endangered ae'o (Hawaiian stilt, *Himantopus mexicanus knudseni*), the endangered 'alae 'ula (Hawaiian gallinule, *Gallinula galeata sandvicensis*) (hereafter collectively referred to as Hawaiian waterbirds); and the threatened nēnē (Hawaiian goose, *Branta sandvicensis*). We provide the following to assist you in preparation of your project.

#### 'Ōpe'ape'a

'Ōpe'ape'a roost in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young 'ōpe'ape'a could inadvertently be harmed or killed since they are too young to fly or may not move away. 'Ōpe'ape'a forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered 'ōpe'ape'a we recommend you incorporate the following applicable measures into your project:

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the 'ōpe'ape'a birthing and pup rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

#### Hawaiian Seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To avoid and minimize potential project impacts to Hawaiian seabirds we recommend you incorporate the following applicable measures into your project:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period (September 15 through December 15).

### Hawaiian Waterbirds

Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, lo'i kalo (taro, *Colocasia esculenta* patches), irrigation ditches, sewage treatment ponds, and in the case of the koloa, montane streams and marshlands. Ae'o may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Koloa are also subject to threats from hybridization with introduced mallards.

To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following measures into your project:

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
- If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design.
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:
  - Contact the Service within 48 hours for further guidance.
  - Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
  - Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

In addition, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. The ae'o is also known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Therefore, we recommend you work with our office during the project planning phase so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).

Nēnē

Nēnē are found on the islands of Hawai‘i, Maui, Moloka‘i, and Kaua‘i. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

To avoid and minimize potential project impacts to nēnē we recommend you incorporate the following measures into your project description:

- Do not approach, feed, or disturb nēnē.
- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with nēnē nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.
- In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.

We appreciate your efforts to conserve protected species. If you have questions regarding this response, please contact Charmian Dang, Fish and Wildlife Biologist (phone: 808-792-9400, email: [Charmian\\_Dang@fws.gov](mailto:Charmian_Dang@fws.gov)). When referring to this project, please include reference number: 2023-0051423-S7-001.

Sincerely,

Island Team Manager  
O‘ahu, Kaua‘i, Northwest Hawaiian Islands and  
American Samoa

Enclosures: Service’s Recommended Standard Best Management Practices

## **U.S. Fish and Wildlife Service Recommended Standard Best Management Practices**

The U.S. Fish and Wildlife Service (Service) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.
2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.
3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.
4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see <http://www.haccp-nrm.org/Wizard/default.asp>) can help to prevent attraction and introduction of non-native species.
5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or near aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.
6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.
7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

# Appendix C - Agency Correspondence

## Contents

U.S. Fish and Wildlife Service –

Request for Species List and Impact Avoidance Measures<sup>1</sup>

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State of Hawai`i Division of Forestry and Wildlife –

Request for Species List and Impact Avoidance Measures

---

State Historic Preservation Division –

Request for Concurrence with Project Effect Determination of “No Historic Properties Affected”

Letter of SHPD concurrence of “No Historic Properties Affected”

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State of Hawai`i Office of Coastal and Conservation Lands –

Request for Concurrence Regarding Conservation District Permit Requirements

Email Response

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County of Kaua`i Planning Department –

Request for Director Determination Regarding County Land Use Permit Requirements

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<sup>1</sup> USFWS Response included in Appendix B

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March 1, 2023

TTCES-PTLD-2023-019

Pacific Islands Fish and Wildlife Office  
U.S. Fish and Wildlife Services  
300 Ala Moana Blvd. Room 30122  
Honolulu, Hawai'i 96850  
pifwo\_admin@fws.gov

**Subject:** Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Kekaha, Kaua'i, Hawai'i, TMK 1-2-002:001 (por.) and TMK 1-2-002:009; Request for Species List and Impact Avoidance Measures

Aloha,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of the Phase II portion of the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i. KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF property boundary in its entirety encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009 (See Attachment 1: Location Map), which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). The facility is situated adjacent to Kaunuaui Highway and is approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean. This Project involves the vertical expansion of the Phase II portion of KLF and will be located entirely within the Phase II portion of the KLF (See Attachment 1: Location Map).

The County is preparing an Environmental Assessment (EA) under Hawaii Revised Statutes (HRS) Chapter 343 for the Proposed Action. As part of the EA process, and in accordance with HAR §11-200.1-18, Tetra Tech is scoped to conduct early consultation with agencies having jurisdiction or expertise related to the Phase II vertical expansion project.

The purpose of this letter is to request information from the U.S. Fish and Wildlife Service (USFWS) regarding the federally listed species that could potentially occur within the KLF site and specific measures to avoid potential impacts to those species. A brief description of the Project and a summary of the biological resources at the KLF site are provided below in support of this request.

## **Project Description**

KLF is the only active, permitted municipal solid waste (MSW) landfill on the island of Kaua'i and is comprised of two distinct refuse fill areas identified as Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. Phase II was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. Phase II is scheduled to reach its waste disposal capacity by October of 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

The Phase II vertical expansion would take place within the footprint of the existing Phase II landfill area. The major components of the Project include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. The limits of the proposed vertical expansion would be approximately 13 acres.
- **Landfill Gas Collection and Control System (GCCS):** The existing GCCS would be expanded by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.
- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

## **Summary of Biological Resources**

Plant and wildlife surveys were conducted within the KLF site in 1982 prior to construction of the Phase II landfill (see Attachment 2: Biological Resources Survey Letter). Survey results described the habitat as highly modified, and dominated by non-native plant and animal species. No rare or state or federally listed plant or wildlife species were recorded as occupying the site or having the potential to occur (DLNR 1982)<sup>1</sup>. Since then, the KLF site has been subject to further disturbance as a result of construction and operation of Phase II of the landfill and its associated infrastructure; thus, the already marginal habitat at the site for native flora and fauna noted in the 1982 surveys has been further modified.

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<sup>1</sup> DLNR. 1982. Fauna and Flora Survey, Kekaha Sanitary Landfill Site.

Bimonthly wildlife surveys were conducted at KLF between August 2014 and August 2015 (SWCA 2016<sup>2</sup>). During these surveys, two listed bird species—the endangered Hawaiian stilt/ a‘eo (*Himantopus mexicanus knudseni*) and threatened Hawaiian goose/ nēnē (*Branta sandwichensis*)—were recorded within the KLF site. The endangered Hawaiian duck/ koloa (*Anas wyvilliana*), Hawaiian common gallinule/ ‘alae ‘ula (*Gallinula galeata sandvicensis*), and Hawaiian coot/ ‘alae ke‘oke‘o (*Fulica alai*) have also been recorded in the vicinity of KLF. None of these listed birds appear to be attracted to any waste-handling operations within the Phase II portion of KLF, but may be occasionally attracted to the leachate evaporation pond and stormwater infiltration basin within KLF, as well as water features adjacent to (but not associated with) KLF. Further details regarding the potential for listed species at KLF is provided below. Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, and wildlife surveys occurred in 2014-2015, no additional biological surveys will be conducted for the Project.

Listed Waterbirds: Hawaiian stilts have been observed in the leachate evaporation pond at KLF when water was present (SWCA 2016). The Hawaiian duck/ koloa has been observed in ponds and ditches in the immediate vicinity of the KLF. The listed Hawaiian common gallinule and Hawaiian coot also have recorded in the vicinity and have the potential fly over the KLF site. Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these man-made features are typically dry, and therefore do not attract many waterbirds (SWCA 2016). If liquid is present, an aerator system is used. Neither the leachate evaporation pond nor stormwater infiltration basin will be altered as a result of the Project.

Hawaiian Goose: The threatened Hawaiian goose has been observed at KLF, particularly near green waste piles and vegetated areas in the Phase I portion of KLF and at the storm water basin and leachate pond (February 17, 2023, County of Kauai, pers comm); however, there is no indication that Hawaiian geese are attracted to the active area within the Phase II portion or other facilities at KLF (SWCA 2016).

Listed Seabirds: Although the KLF site does not provide suitable nesting or foraging habitat for listed seabirds—the endangered Hawaiian petrel/ ‘ua‘u (*Pterodroma sandwichensis*), the threatened Newell’s shearwater/ a‘o (*Puffinus newelli*), and the endangered band-rumped storm-petrel/ ‘akē‘akē (*Oceanodroma castro*) —these species may fly over the KLF site in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1–December 15) and may be attracted to operational lights at night. The existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor’s doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are 7:00 a.m. to 5:00 p.m. Lighting is generally only needed during early morning or

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<sup>2</sup> SWCA. 2016. Proposed Maala Landfill Project Wildlife Hazard Assessment.

early evening hours during the winter months, when daylight hours are reduced. Outdoor lighting is controlled by timers that automatically turn-off outdoor lights after the facility has closed and site personnel have left. The Project does not include plans to add or alter the existing outdoor lighting. Filling operations would continue to be conducted primarily during daylight hours.

Hawaiian Hoary Bat: The Hawaiian hoary bat/'ōpe'ape'a (*Lasiurus semotus*) is known to occur in the vicinity and may occasionally traverse KLF. However, the number of trees over 15 ft tall at KLF is limited.

Critical Habitat: No critical habitat has been designated by USFWS within the KLF site. The closest critical habitat are two units designated for the endangered grass, lau'ehu (*Panicum niihauense*), situated along the coastline approximately one mile to the west and south of KLF.

### **Request for Information**

In addition to the species noted above as potentially occurring within or transiting the KLF site, we are requesting input from USFWS regarding any additional listed or rare plant and animal species that could occur within the area and should be considered in the Project development process. As the Project intends to avoid impacts to state and federally listed species, we are also requesting USFWS provide Project-specific avoidance and minimization measures that should be implemented to avoid impacts to listed species. A similar request for information has also been sent to the DLNR Division of Forestry and Wildlife.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at [Kayla.Yost@tetrattech.com](mailto:Kayla.Yost@tetrattech.com).

Respectfully,



Kayla Yost, Project Manager and Environmental Planner  
Tetra Tech, Inc.

Attachments: 1. Location Map  
2. Biological Resources Survey Letter (DLNR 1982)

cc: Troy Tanigawa, Acting County Engineer, County of Kaua'i Department of Public Works  
Allison Fraley, Environmental Services Manager, County of Kaua'i Department of Public Works,  
Solid Waste Division  
Tiffany Agostini, Senior Biologist, Tetra Tech Inc.

# Kekaha Landfill Phase II Vertical Expansion

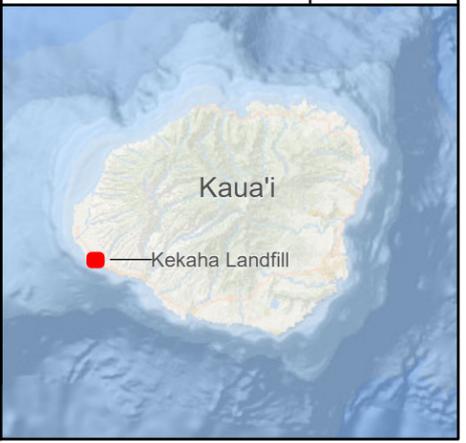
**Figure 1  
Project Location**

KAUA'I COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit



Reference Map

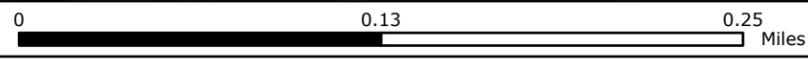


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1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

APPENDIX A  
FLORA AND FAUNA SURVEY



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
KAUAI DISTRICT  
P. O. BOX 1671  
LIHUE, KAUAI, HAWAII 96766

August 6, 1982

Mr. Henry Morita  
County Engineer  
County of Kauai  
Dept. of Public Works  
4396 Rice Street  
Lihue, Kauai, HI. 96766

The following is in response to your 19 July 1982 request for a flora and fauna survey at the Kumukumu and Kekaha candidate sanitary landfill sites:

A survey was conducted at Kekaha on July 30, 1982 and at Kumukumu on 6 August 1982. The attached list indicates those wildlife species actually seen at the respective areas, as well as those that were not seen, but are likely to be found there.

Both the Kekaha and Kumukumu sites are highly altered from once existing native conditions and are vegetated with exotic plants. I have also attached a list of plants known to occur at the candidate landfill sites; however, the list includes only the prominent plant species and does not constitute a botanically complete list. It is highly unlikely that any uncommon or rare native plants exist within the landfill sites.

No endangered wildlife species are known to occupy any of the candidate sites, although the Hawaiian Duck (koloa) and Hawaiian Gallinule may infrequently use portions of Kumukumu Stream. In my opinion, sanitary landfill use of any of the three proposed sites would not cause significant wildlife habitat degradation.

Please contact me should you desire additional assessment of the wildlife values in the project areas.

Sincerely yours,

Thomas C. Telfer  
District Wildlife Biologist

cc: L. Landgraf  
R. Daehler

WILDLIFE KNOWN TO EXIST OR LIKELY TO EXIST AT THE  
CANDIDATE KEKAHA AND KUMUKUMU SANITARY LANDFILL SITES ON KAUAI

Common Name	Scientific Name	7/30/82	8/6/82
		Kekaha	Kumukumu
Black-Crowned Night Heron	<i>Nycticorax nycticorax hoactli</i>	I	I
Cattle Egret	<i>Bubulcus ibis</i>	EX*	EX
Golden Plover	<i>Pluvialis dominica</i>	I	I
Common Mynah	<i>Acridotheres tristis</i>	EX*	EX*
Barred Dove	<i>Geopelia striata</i>	EX*	EX*
Spotted Dove	<i>Streptopelia chinensis</i>	EX*	EX*
House Sparrow	<i>Passer domesticus</i>	EX	EX*
House Finch	<i>Carpodacus mexicanus</i>	EX*	EX
Mockingbird	<i>Mimus polyglottos</i>	EX	
Spotted Munia	<i>Lonchura punctulata</i>	EX	EX*
Northern Cardinal	<i>Cardinalis cardinalis</i>	EX*	EX
Hawaiian Owl	<i>Asio flammeus sandwichensis</i>	I	I
Barn Owl	<i>Tyto alba</i>	EX	EX
Western Meadowlark	<i>Sturnella neglecta</i>	EX	
Ring-Necked Pheasant	<i>Phasianus colchicus</i>	EX	EX
Black Francolin	<i>Francolinus francolinus</i>	EX	
Hwa-Mei (Chinese Thrush)	<i>Garrulax canorus</i>		EX*
Shama	<i>Copsychus malabaricus</i>		EX*
Japanese White-Eye	<i>Zosterops japonicus</i>		EX
Roof Rat	<i>Rattus rattus</i>	EX	EX
Norway Rat	<i>Rattus norvegicus</i>	EX	EX
Polynesian Rat	<i>Rattus exulans</i>	EX	EX
House Mouse	<i>Mus musculus</i>	EX	EX
House cat (feral)	<i>Felis catus</i>	EX	EX

I = Indigenous, EX = Exotic, \* = Actually observed during survey  
All other species listed are likely to exist, but were not seen.

List of Common Plants at Kumukumu Sanitary Landfill Site

Java Plum	Eugenia cuminii
Haole Koa	Leucaena glauca
Lantana	Lantana Camara
Ironwood	Casuarina equisetifolia
Christmasberry	Schinus terebinthifolius
Banana	Musa spp.
Passionflower	Passiflora spp.
Mauna Loa Vine	Canavalia cathartica
California grass	Brachiaria mutica

List of Common Plants at Kekaha Sanitary Landfill Site

Kiawe (Mesquite)	Prosopis pallida
Klu	Acacia farnesiana
Lantana	Lantana camara
Indian fleabane	Pluchea indica
Verbesina	Verbesina encelioides
Beach Wiregrass	Dactyloctenium aegyptium
Bermudagrass	Cynodon dactylon
Sandburr	Cenchrus echinatus
Amaranth	Amaranthus spp.
Haole Koa	Leucaena glauca
Cocklebur	Xanthium strumarium



March 1, 2023

TTCES-PTLD-2023-008

David Smith, Administrator  
Division of Forestry and Wildlife  
State of Hawai'i, Department of Land and Natural Resources  
Kalanimoku Building  
1151 Punchbowl Street, Room 325  
Honolulu, HI 96813  
David.G.Smith@hawaii.gov

**Subject:** Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Kekaha, Kaua'i, Hawai'i, TMK 1-2-002:001 (por.) and TMK 1-2-002:009; Request for Species List and Impact Avoidance Measures

Dear Mr. Smith,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of the Phase II portion of the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i. KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF property boundary in its entirety encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009 (See Attachment 1: Location Map), which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). The facility is situated adjacent to Kaunali'i Highway and is approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean. This Project involves the vertical expansion of the Phase II portion of KLF, and will be located entirely within the Phase II portion of the KLF (See Attachment 1: Location Map).

The County is preparing an Environmental Assessment (EA) under Hawaii Revised Statutes (HRS) Chapter 343 for the Proposed Action. As part of the EA process, and in accordance with HAR §11-200.1-18, Tetra Tech is scoped to conduct early consultation with agencies having jurisdiction or expertise related to the Phase II vertical expansion project.

The purpose of this letter is to request information from the Division of Forestry and Wildlife (DOFAW) regarding the state-listed species that could potentially occur within the KLF site and specific measures to avoid potential impacts to those species. A brief description of the Project and a summary of the biological resources at the KLF site are provided below in support of this request.

## **Project Description**

KLF is the only active, permitted municipal solid waste (MSW) landfill on the island of Kaua'i and is comprised of two distinct refuse fill areas identified as Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. Phase II was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. Phase II is scheduled to reach its waste disposal capacity by October of 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

The Phase II vertical expansion would take place within the footprint of the existing Phase II landfill area. The major components of the Project include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. The limits of the proposed vertical expansion would be approximately 13 acres.
- **Landfill Gas Collection and Control System (GCCS):** The existing GCCS would be expanded by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.
- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

## **Summary of Biological Resources**

Plant and wildlife surveys were conducted within the KLF site in 1982 prior to construction of the Phase II landfill (see Attachment 2: Biological Resources Survey Letter). Survey results described the habitat as highly modified, and dominated by non-native plant and animal species. No rare or state or federally listed plant or wildlife species were recorded as occupying the site or having the potential to occur (DLNR 1982)<sup>1</sup>. Since then, the KLF site has been subject to further disturbance as a result of construction and operation of Phase II of the landfill and its associated infrastructure; thus, the already marginal habitat at the site for native flora and fauna noted in the 1982 surveys has been further modified.

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<sup>1</sup> DLNR. 1982. Fauna and Flora Survey, Kekaha Sanitary Landfill Site.

Bimonthly wildlife surveys were conducted at KLF between August 2014 and August 2015 (SWCA 2016<sup>2</sup>). During these surveys, two listed bird species—the endangered Hawaiian stilt/ a‘eo (*Himantopus mexicanus knudseni*) and threatened Hawaiian goose/ nēnē (*Branta sandwichensis*)—were recorded within the KLF site. The endangered Hawaiian duck/ koloa (*Anas wyvilliana*), Hawaiian common gallinule/ ‘alae ‘ula (*Gallinula galeata sandvicensis*), and Hawaiian coot/ ‘alae ke‘oke‘o (*Fulica alai*) have also been recorded in the vicinity of KLF. None of these listed birds appear to be attracted to any waste-handling operations within the Phase II portion of KLF, but may be occasionally attracted to the leachate evaporation pond and stormwater infiltration basin within KLF, as well as water features adjacent to (but not associated with) KLF. Further details regarding the potential for listed species at KLF is provided below. Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, and wildlife surveys occurred in 2014-2015, no additional biological surveys will be conducted for the Project.

Listed Waterbirds: Hawaiian stilts have been observed in the leachate evaporation pond at KLF when water was present (SWCA 2016). The Hawaiian duck/ koloa has been observed in ponds and ditches in the immediate vicinity of the KLF. The listed Hawaiian common gallinule and Hawaiian coot also have recorded in the vicinity and have the potential fly over the KLF site. Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these man-made features are typically dry, and therefore do not attract many waterbirds (SWCA 2016). If liquid is present, an aerator system is used. Neither the leachate evaporation pond nor stormwater infiltration basin will be altered as a result of the Project.

Hawaiian Goose: The threatened Hawaiian goose has been observed at KLF, particularly near green waste piles and vegetated areas in the Phase I portion of KLF and at the storm water basin and leachate pond (February 17, 2023, County of Kauai, pers comm); however, there is no indication that Hawaiian geese are attracted to the active area within the Phase II portion or other facilities at KLF (SWCA 2016).

Listed Seabirds: Although the KLF site does not provide suitable nesting or foraging habitat for listed seabirds—the endangered Hawaiian petrel/ ‘ua‘u (*Pterodroma sandwichensis*), the threatened Newell’s shearwater/ a‘o (*Puffinus newelli*), and the endangered band-rumped storm-petrel/ ‘akē‘akē (*Oceanodroma castro*) —these species may fly over the KLF site in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1–December 15) and may be attracted to operational lights at night. The existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor’s doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are 7:00 a.m. to 5:00 p.m. Lighting is generally only needed during early morning or

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<sup>2</sup> SWCA. 2016. Proposed Maala Landfill Project Wildlife Hazard Assessment.

early evening hours during the winter months, when daylight hours are reduced. Outdoor lighting is controlled by timers that automatically turn-off outdoor lights after the facility has closed and site personnel have left. The Project does not include plans to add or alter the existing outdoor lighting. Filling operations would continue to be conducted primarily during daylight hours.

Hawaiian Hoary Bat: The Hawaiian hoary bat/'ōpe'ape'a (*Lasiurus semotus*) is known to occur in the vicinity and may occasionally traverse KLF. However, the number of trees over 15 ft tall at KLF is limited.

Critical Habitat: No critical habitat has been designated by U.S. Fish and Wildlife Service (USFWS) within the KLF site. The closest critical habitat are two units designated for the endangered grass, lau'ehu (*Panicum niihauense*), situated along the coastline approximately one mile to the west and south of KLF.

### **Request for Information**

In addition to the species noted above as potentially occurring within or transiting the KLF site, we are requesting input from DOFAW regarding any additional listed or rare plant and animal species that could occur within the area and should be considered in the Project development process. As the Project intends to avoid impacts to state and federally-listed species, we are also requesting DOFAW provide Project-specific avoidance and minimization measures that should be implemented to avoid impacts to listed species. A similar request for information has also been sent to USFWS.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at [Kayla.Yost@tetrattech.com](mailto:Kayla.Yost@tetrattech.com).

Respectfully,



Kayla Yost, Project Manager and Environmental Planner  
Tetra Tech, Inc.

Attachments: 1. Location Map  
2. Biological Resources Survey Letter (DLNR 1982)

cc: Troy Tanigawa, Acting County Engineer, County of Kaua'i Department of Public Works  
Allison Fraley, Environmental Services Manager, County of Kaua'i Department of Public Works,  
Solid Waste Division  
Tiffany Agostini, Senior Biologist, Tetra Tech Inc.

# Kekaha Landfill Phase II Vertical Expansion

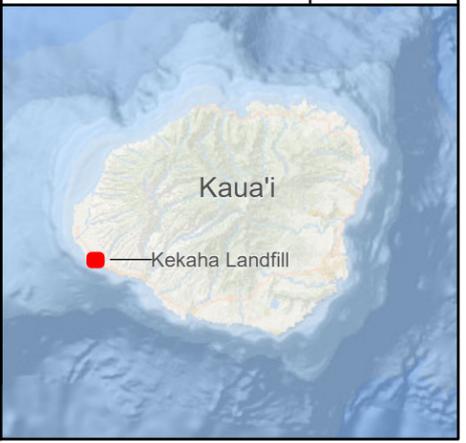
**Figure 1  
Project Location**

KAUAI COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit



Reference Map

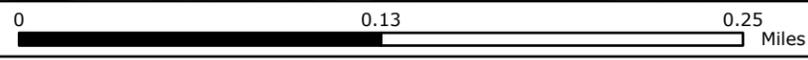


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WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

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HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
KAUAI DISTRICT  
P. O. BOX 1871  
LIHUE, KAUAI, HAWAII 96766

August 6, 1982

Mr. Henry Morita  
County Engineer  
County of Kauai  
Dept. of Public Works  
4396 Rice Street  
Lihue, Kauai, HI. 96766

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District Wildlife Biologist

cc: L. Landgraf  
R. Daehler

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Common Name	Scientific Name	7/30/82	8/6/82
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Polynesian Rat	<i>Rattus exulans</i>	EX	EX
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I = Indigenous, EX = Exotic, \* = Actually observed during survey  
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Bermudagrass	Cynodon dactylon
Sandburr	Cenchrus echinatus
Amaranth	Amaranthus spp.
Haole Koa	Leucaena glauca
Cocklebur	Xanthium strumarium

# SOLID WASTE MANAGEMENT DIVISION

## DEPARTMENT OF PUBLIC WORKS

TROY K. TANIGAWA, P.E., COUNTY ENGINEER

BOYD GAYAGAS, DEPUTY COUNTY ENGINEER



DEREK S.K. KAWAKAMI, MAYOR  
MICHAEL A. DAHILIG, MANAGING DIRECTOR

March 1, 2023

Dr. Alan S. Downer  
Administrator State Historic Preservation Division  
Department of Land and Natural Resources  
601 Kamokila Boulevard, Suite 555  
Kapolei, Hawai'i 96707

Subject: Request for Concurrence with Project Effect Determination of “No Historic Properties Affected” HRS §6E-8/HAR §275-7 for the Kekaha Landfill Phase II Vertical Expansion Project, Waimea Ahupua‘a, Waimea District, Kaua‘i, TMKs: (4) 1-2-002:009 and 1-2-002:001 (por.).

Dear Dr. Downer:

The County of Kaua‘i, Department of Public Works, Solid Waste Division (County) requests the State Historic Preservation Officer’s concurrence with the proposed effect determination of “no historic properties effected” for the proposed vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF), located in Waimea Ahupua‘a, Waimea District, Kaua‘i (Proposed Action). The KLF is situated adjacent to Kaumuali‘i Highway, located 1.3 miles northwest of the town of Kekaha on the southwest side of Kaua‘i and approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean.

### **Project Background and Proposed Action**

The KLF is a municipal solid waste (MSW) landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The Proposed Action would extend Phase II upward from the currently permitted maximum height of 120 ft above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. The proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion are delineated on a portion of the 1991 Kekaha U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), tax map plat (Figure 2), and a 2021 ESRI aerial image (Figure 3).

The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai‘i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953) and Executive Order 2872 (signed October 6, 1977) places the control and management of the lands underlying the KLF to the County of Kaua‘i.

## **History of KLF**

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II (Figure 3). The KLF Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. The KLF Phase II is an active, lined landfill<sup>1</sup> that began accepting solid waste on October 9, 1993 and is predicted to reach its capacity in October of 2026. The current permitted landfill area of Phase II is approximately 44 acres.

KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

## **Purpose and Need**

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October of 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

## **Proposed Action**

The major components of the Proposed Action would include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 3. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS):** Modern MSW facilities require GCCSs to collect and properly dispose of landfill gases. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.

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<sup>1</sup> The Phase II portion of the landfill was constructed with Resource Conservation and Recovery Act (RCRA) Subtitle D base liner which protects the underlying soils and aquifer from landfill leachate.

- **Stormwater Management:** Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the Proposed Action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the Proposed Action. No substantial changes to KLF's operations are proposed. Operation of the Phase II vertical expansion would begin once all approvals are received.

#### **Previous Archeological Studies in the Vicinity of the KLF**

Previous archaeological studies in and in the vicinity of the KLF are summarized in Table 1 and shown in Figure 4.

Table 2 lists the historic properties documented in the vicinity of the KLF and shown in Figure 5. A description of the two archaeological studies conducted in the KFL follows.

Table 1. Previous archaeological studies in the vicinity of the KLF

Reference	Type of Study	Location	Results
Bordner 1977	Reconnaissance survey	Kekaha Beach Park	No significant findings
Ching 1982	Reconnaissance survey	Proposed landfill near Barking Sands	No significant findings
McMahon 1988	Field inspection	Mānā near land fill; TMK: (4) 1-2-002:040	No significant findings
González et al. 1990	Archaeological inventory survey with subsurface testing	Kauai Test Facility (KTF) at PMRF	Recent trash scatter, bone fragments of unknown species, porcelain fragments, and one <i>Cypraea</i> sp. discovered
Walker and Rosendahl 1990	Archaeological inventory survey	Three areas at PMRF and four areas in Kōke'e Park Geophysical Observatory	No significant findings
Kennedy 1991a	Archaeological subsurface testing	Family housing area at PMRF	No significant findings
Kennedy 1991b	Supplemental to archaeological subsurface testing	Family housing area at PMRF	Further discussion of historic ditch (State Inventory of Historic Places [SIHP] # 50-30-05-00754) and testing of low sand mounds discussed in Kennedy 1991a
Spear 1992	Archaeological monitoring	West of Kekaha Town	No significant findings
Folk and Hammatt 1993	Inventory survey with subsurface testing	Proposed landfill expansion near Barking Sands; TMK: (4) 1-2-002:009	No significant findings
Hammatt and Ida 1993	Archaeological assessment	Two separate parcels; <i>makai</i> (seaward) of Kaumuali'i Hwy and <i>mauka</i> (inland) parcel located on Kaleinamanu Ridge in Kekaha	No significant findings

Reference	Type of Study	Location	Results
Folk and Hammatt 1994	Archaeological inventory survey with subsurface testing	National Guard Rifle Range, Barking Sands	No significant findings
Masterson et al. 1994	Inventory survey with subsurface testing	Proposed agricultural park near Barking Sands	SIHP # 50-30-05-03650, two human burials identified
Drolet et al. 1999	Archaeological monitoring	Site of Project H-134 in PMRF	No significant findings
Dye and Dye 2008	Archaeological monitoring	PMRF <i>makai</i> of Kekaha Landfill	No significant findings
engineering-environmental Management 2009	Survey and evaluation of historic buildings	Hanapēpē Armory and adjacent to SE boundary of PMRF	TS Kekaha WETS at PMRF, a single building (Building 00001) documented; Hanapēpē Armory is modern with exception of one building: flammable material storage building (Building 29) built in 1963
Altzer and Hammatt 2010	Archaeological inventory survey	Access roads from Mānā Rd NE through agricultural fields and encompasses portions of New and Old Government roads	Eight historic properties identified: SHIP #s 50-30-05-02107, portions of New and Old Government Rd and associated structural remnants; -02108 and -02112, habitation terraces; -02109, wall remnant; -02110 and -02111, mounds; -02113, historic house site; and -02114, <i>heiau</i> (temple structure)
Coward and Hammatt 2011	Archaeological literature review and field inspection	10-acre Agricultural Field Office, TMK: (4) 1-2-002:001	No significant findings
Hammatt and Shideler 2011	Literature review	Eight possible locations for Kaua‘i Municipal Solid Waste Landfill: Kekaha-Mauka, TMK: (4) 1-2-002	Discusses history of area, previous archaeological studies, and historic properties identified during previous studies
Fong 2012	Archaeological monitoring	Central and southern segments of PMRF	No significant findings

<b>Reference</b>	<b>Type of Study</b>	<b>Location</b>	<b>Results</b>
Hammatt and Shideler 2013	Archaeological monitoring	Kaumuali'i Hwy, Vicinity of Kekaha, MP 27	No significant findings
Watanabe et al. 2014	Archaeological monitoring	Mānā Drag Racing Strip, TMKs: (4) 1-2-002:001, 009, 035, 036, 040	No significant findings
Clark et al. 2015	Archaeological inventory survey with subsurface testing	Mānā Drag Racing Strip, TMKs: (4) 1-2-0-2:009, 036, and 040	No significant findings

Table 2. Historic properties identified in the vicinity of the KLF

State Inventory of Historic Places Number (SIHP) # 50-30-05-	Type	Reference
00754	Drainage ditch	Kennedy 1991a, b
02107	Portions of New and Old Government Rd and associated structural remnants	Altizer and Hammatt 2010
02109	Basalt stacked wall remnants	Altizer and Hammatt 2010
03650	Human skeletal remains	Masterson et al. 1994b
Site 14	<i>Heiau</i>	Bennett 1931
No SIHP	Kekaha ditch	Thrum 1908:158–159; 1910 USGS topo map; 1963 USGS topo map; 1970 USGS topo map; Altizer and Hammatt 2010:20–23; Lyman and Dega 2015
No SIHP	Bone fragments of unknown origin	González et al. 1990

Ching (1982) conducted an archaeological reconnaissance survey for a proposed landfill site on a parcel adjacent to the south side of Barking Sands military installation. At the time of the reconnaissance, part of the area was already utilized as a “sanitary land fill” and the other part was used as a dump site for bagasse for Kekaha Plantation (Ching 1982:2). He noted the land prior to being a land fill and a dump site was once pasture lands owned by Kekaha Plantation. Holding pens for cattle and horses were also once there. The area, he stated had “been bulldozed countless of times” (Ching 1982:2). There were no historic properties present.

Cultural Surveys Hawaii (1993) conducted an archaeological inventory survey with subsurface testing for the proposed Phase II of the existing landfill. The proposed Phase II area would extend to the east from the existing landfill toward Kaumuali‘i Highway, what is now the current project area. During the surface survey, an abandoned irrigation canal and a low linear sand mound were observed (Folk and Hammatt 1993:26). Extensive subsurface testing was conducted throughout the proposed Phase II area. A total of 55 backhoe test trenches “were distributed roughly one per acre” and excavated (Folk and Hammatt 1993:25). The typical profile revealed that the area, once a place of sand dunes, was modified by destroying the upper portions for plantation purposes. A weak A horizon was observed across the majority of the area since the removal of the upper portion of the sand dunes, except where it has been disturbed. Beneath the A horizon, loose coralline sand was observed overlaying a layer of cemented coralline sand (Folk and Hammatt 1993:26–27). The linear mound and canal were excavated and revealed that stratigraphically, both features post-date the removal of the sand dunes. Oral resources such as residents and plantation employees revealed the features were constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28).

Archaeological research of KLF and its surrounding area indicates the land was extensively used and much of the physical evidence of the traditional settlement pattern described by Hammatt and Shideler (2011) has been obliterated by commercial agriculture and other operations. The foothills and wetland areas have been extensively planted in cane, livestock has been run up the gulches, and even the beach areas have been much disturbed by massive shoreline stabilization projects as well as the development of PMRF, the Mānā dragstrip, and the KLF.

As part of development to support the population on the island of Kaua‘i, KLF began operations in 1953. Further development and population increase made expansion of the KLF critical, thus the KLF expanded from its original location, extending to the northeast toward the highway. More development and natural disasters occurring on Kaua‘i have once again brought the need to expand the KLF, however, the existing KLF is bounded by the highway, the Mānā dragstrip, and PMRF, thus the County of Kaua‘i is proposing to expand the KLF vertically on the existing landfill surface.

### **Previous Determination**

As described above, Phase II was previously permitted for vertical expansion in 2013. As part of that permitting process, the County requested SHPD’s determination of “no historic properties affected” by the vertical expansion of Phase II. SHPD requested additional information (September 9, 2013; Log No. 2013.3334 and 2013.4258, Doc. No. 1309SL06) on two historic properties within Phase II area that were recorded (but not assigned site numbers) by CSH during their 1993 AIS. These two 1950s historic properties were identified as an irrigation canal of mounded sand and a low linear sand mound for irrigation control. In response to SHPD’s request, AECOM, on behalf of the County, conducted a document review and field inspection which confirmed the two historic properties are no longer present. Based on this information, SHPD determined that no historic properties will be affected because no historic properties exist within the Phase II project area (October 11, 2013; Log No. 2013.5499; Doc. No. 1310SL09).

### **Determination of Effect**

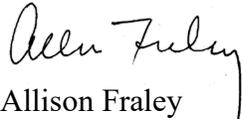
On behalf of the County, CSH conducted an archaeological literature review the results of which are summarized above. This review resulted in no significant findings. Based on this fact, and on SHPD’s previous determination of “no historic properties affected” from the last vertical expansion in 2013, and as the Proposed Action will not affect the original ground surface, the County of Kaua‘i requests SHPD concurrence with a project effect determination of “no historic properties affected” under Hawai‘i Revised Statutes (HRS) §6E-8/Hawai‘i Administrative Rules (HAR) §275(b) and §275-7 for the Kekaha Landfill Phase II Vertical Expansion Project, Waimea Ahupua‘a, Waimea District, Kaua‘i, TMKs: (4) 1-2-002:009 and 1-2-002:001 (por.).

We would appreciate a written response within thirty (30) calendar days from receipt of this letter. Please address any written comments you may have in an email to me at AFraley@kauai.gov or the following:

Attention: Allison Fraley  
Solid Waste Division  
County of Kaua'i Department of Public Works  
4444 Rice Street, Suite 295  
Līhu'e, Hawai'i 96766  
808-241-4837

Thank you for your consideration of the project and your contribution to the HRS §6E process.

Very truly yours,



Allison Fraley  
Environmental Services Manager  
Solid Waste Division

Attachments:

Attachment 1: HRS 6E Submittal Intake Form

Attachment 2: Design Drawings (90%)

## References Cited

### **Altizer, Kendy and Hallett H. Hammatt**

2010 *An Archaeological Inventory Survey for a Rock Crushing Project Along Portions of the New and Old Government Roads, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

### **Bennett, Wendell C.**

1931 *The Archaeology of Kaua'i.* Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

### **Blackwell, Chad and Jeanne Barnes**

2014 *Historic Building Survey and Evaluation Report at Six Facilities, Hawai'i Army National Guard, Project No. CA-1330.* HDR, Honolulu.

### **Bordner, Richard M.**

1977 *Cultural Reconnaissance Report for Kekaha Beach Shore Protection, Kekaha, Kona, Kaua'i, State of Hawaii.* Archaeological Research Center Hawaii, Inc., Lāwa'i, Hawai'i.

### **Ching, Francis K.W.**

1982 *Archaeological Reconnaissance of 3 Sites for Proposed Kauai Central Sanitary Landfill Project, Kekaha, Kipu, and Kumukumu, Kauai Island TMK 1-2-02:1, 9, 21, 40; 3-4-06:12; and 4-7-04:1.* Archaeological Research Center Hawaii, Inc., Lāwa'i, Kaua'i.

### **Clark, Stephen, Katharine A. Shiroma, Melanie A. Mintmier, Jackie Walden, and Sara Collins**

2015 *Archaeological Inventory Survey and Testing in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i, TMK (4) 1-2-02: 009, 036, & 040.* Pacific Consulting Services, Inc., Honolulu.

### **Coward, Erin and Hallett H. Hammatt**

2011 *An Archaeological Literature Review and Field Inspection for a 10-acre Agricultural Field Office, Kekaha, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001(por.).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

### **Drolet, Robert, James Powell, and Allan J. Schilz**

1999 *Archaeological Monitoring at the Site of Project H-134, New Family Housing, Pacific Missile Range Facility (PACMISRANFAC), Kaua'i, Hawai'i.* Ogden Environmental and Energy Services Company, Inc., Honolulu.

### **Dye, Kekapala and Thomas S. Dye**

2008 *Archaeological Monitoring Report for the Extended High Accuracy Network Determination System, Pacific Missile Range Facility, Barking Sands, Kaua'i, Hawai'i, TMK:(4)1-2-002:013.* T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

**engineering---environmental Management, Inc. (e<sup>2</sup>M)**

- 2009 *Historic Buildings Survey and Evaluation Report of Ten Facilities Hawaii Army National Guard.* engineering-environmental Management, Inc. Englewood, Colorado.

**ESRI**

- 2021 Map Image Layer. Esri, Inc., Redlands, California.

**Folk, William H. and Hallett H. Hammatt**

- 1993 *Archaeological Inventory Survey and Subsurface Testing at the Kekaha Phase II Landfill Site (TMK 1-2-02:9).* Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1994 *Archaeological Inventory Survey and Subsurface Testing at the Hawaii Army National Guard Firing Range at Kekaha, Kaua'i (TMK 1-2-02:21), with Historical Research by Gerald K. Ida.* Cultural Surveys Hawai'i, Kailua, Hawai'i.

**Fong, Jeffrey W.K.**

- 2012 *Archaeological Monitoring Report in Support of the Installation of RFID, Seismic, Microwave/Infrared and LIDAR Sensors, Sensormatic Hawaii Response Technology Group Video Sensors, and Six Runway Markers along Runway 34 at Pacific Missile Range Facility (PMRF), Niu and Waiawa Ahupua'a, Waimea District, Kaua'i, TMK: [4] 1-2-02: 13, 26.* Naval Facilities Engineering Command Pacific, Pearl Harbor, Hawai'i.

**Gonzalez, Tirzo, Judy Berryman, and Daniel Welch**

- 1990 *Archaeological Survey and Testing Department of Energy, Kauai Test Facility Barking Sands, Kauai, Hawaii. Prepared as Supplement for the Kauai Test Facility Environmental Assessment.* International Archaeological Research Institute, Inc., Honolulu.

**Hammatt, Hallett H.**

- 1994 *Burial Treatment Plan for State Site #50-30-05-3650 at a Proposed Kekaha Agricultural Park Pumping Station, Limaloa, Kekaha, Kauai (TMK 1-2-02: por. 1).* Cultural Surveys Hawai'i, Kailua, Hawai'i.

**Hammatt, Hallett H. and Gerald K. Ida**

- 1993 *Archaeological Assessment of Two Locations for a Proposed State Agricultural Park Waimea, Kaua'i.* Cultural Surveys Hawai'i, Kailua, Hawai'i.

**Hammatt, Hallett H. and David W. Shideler**

- 2011 *Archaeological Literature Review of Eight Possible Locations for a Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, Kekaha Ahupua'a, Pu'u o Pāpa'i, Makaweli Ahupua'a, Umi, Wahiawa Ahupua'a, Kōloa, Pā'ā Ahupua'a, Kīpū, Ha'ikū Ahupua'a, Kālepa, Hanamā'ulu Ahupua'a, Ma'alo, Wailua Ahupua'a, and Kumukumu, Keālia Ahupua'a.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- 2013 *Archaeological Monitoring Report for the Kaumualii Highway Emergency Shoreline Improvements, Vicinity of Kekaha, MP 27 Project No. 50A-01-13, Waimea Ahupuaa, Waimea District, Kauai Island TMK: (4) 1-2-002: Kaumualii Highway ROW por. and 007 por.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Hawai'i TMK Service**

- 2022 Tax Map Key (4) 1-2-002. Hawai'i TMK Service, Honolulu.

**Kennedy, Joseph**

- 1991a *Archaeological Subsurface Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands. Island of Kauai, TMK 1-2-02:13, Por.25 Revised October 1991.* Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.
- 1991b *Supplement to Archaeological Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands. Island of Kauai, TMK 1-2-02:13, Por.25.* Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.

**Lyman, Kepa and Michael Dega**

- 2015 *Archaeological Inventory Survey of a 17-acre Parcel at the Kekaha Ditch Siphon Headwall, Waimea Ahupuaa, Waimea District, Island of Kauai [TMK: (4) 1-5-001:001 por. and 002 por.* Scientific Consultant Services, Inc., Honolulu.

**Masterson, Ian A., William H. Folk, and Hallett H. Hammatt**

- 1994 *Archaeological Inventory Survey and Sub-surface Testing of the Proposed Kekaha Agricultural Park in 157 Acres at Kekaha, Kaua'i, (TMK 1-2-02:1 portion),* Cultural Surveys Hawaii, Kailua, Hawai'i.

**McMahon, Nancy**

- 1988 *Field Check of Northrup King Digging, Mana, Waimea, Kauai, TMK 1-2-02:40.* State Historic Preservation Division, Honolulu.

**Spear, Robert L.**

- 1992 *Letter Report Concerning Monitoring for the Sunkiss Shrimp Co., Ltd., Kekaha, Waimea Kauai (TMK: 1-2-02:22).* Scientific Consultant Services Inc., Honolulu.

**Thrum, Thomas G.**

- 1908 *Heiaus and Heiau Sites Throughout the Hawaiian Islands: Completing the series which began in the Annual of 1907. Hawaiian Almanac and Annual for 1909:38-43.* Thos. G. Thrum, Honolulu.

**USGS (U.S. Geological Survey)**

- 1910 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.
- 1963 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.
- 1970 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.
- 1991 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.

**Walker, Alan T. and Paul H. Rosendahl**

- 1990 *Archaeological Inventory Survey USN Radio Telescope Project Area, Land of Waimea, Waimea District, Island of Kauai.* Paul H Rosendahl, Inc., Hilo, Hawai'i.

**Watanabe, Tae, Jackie Walden, Stephen D. Clark, Melanie Mintmier, and Sara Collins**

- 2014 *Archaeological Monitoring Report in Support of Improvements to the Western Portion of the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i. TMK (4) 1-2-002: 001, 009, 035, 036, 040.* Pacific Consulting Services, Inc., Honolulu.

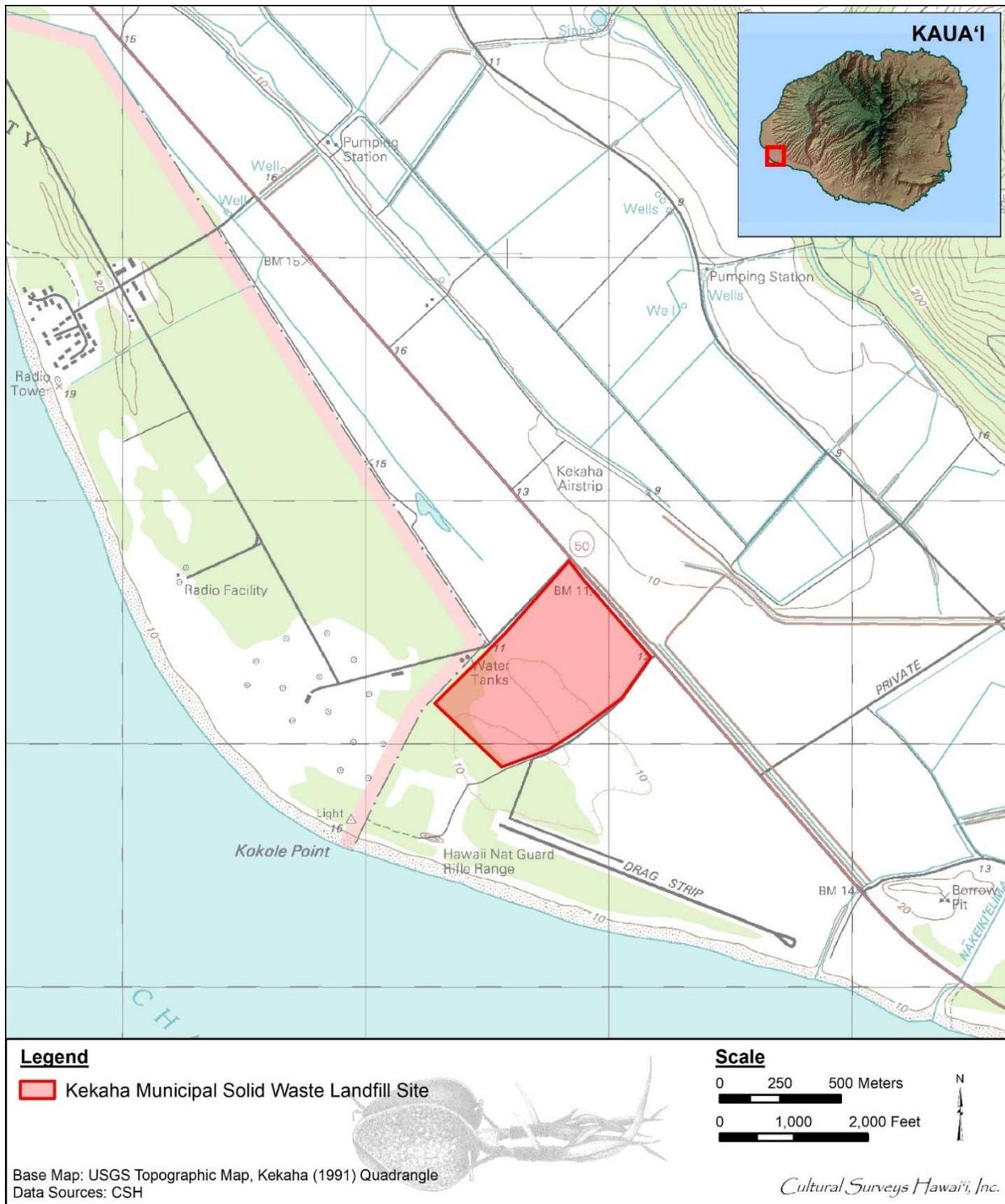


Figure 1. Portion of 1991 Kekaha USGS 7.5-minute-series topographic quadrangle, showing the location of the KLF

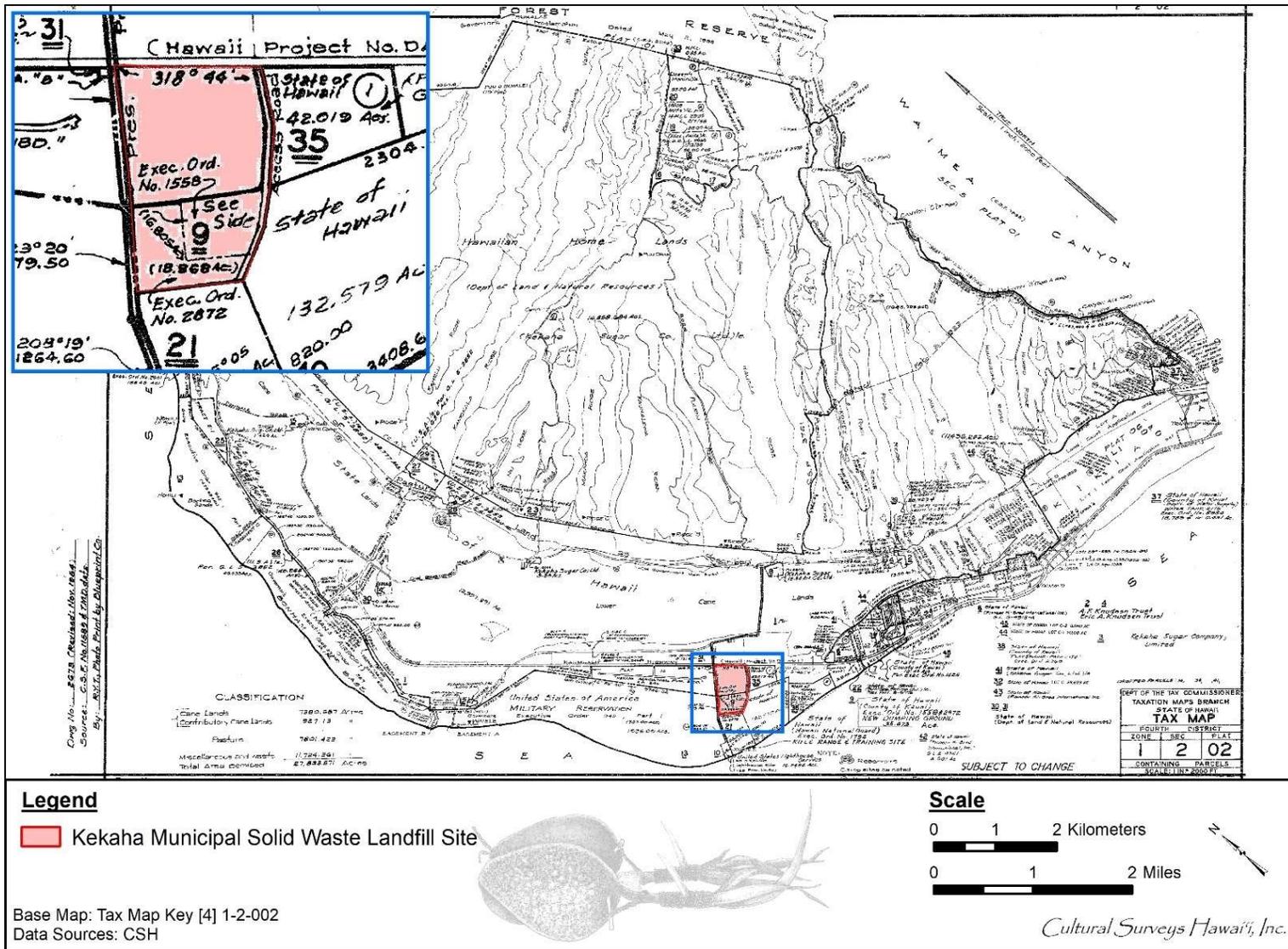


Figure 2. Tax Map Key (TMK) (4) 1-2-02, showing the location of the KLF



Figure 3. 2021 aerial photograph (ESRI Imagery), showing the location of the KLF

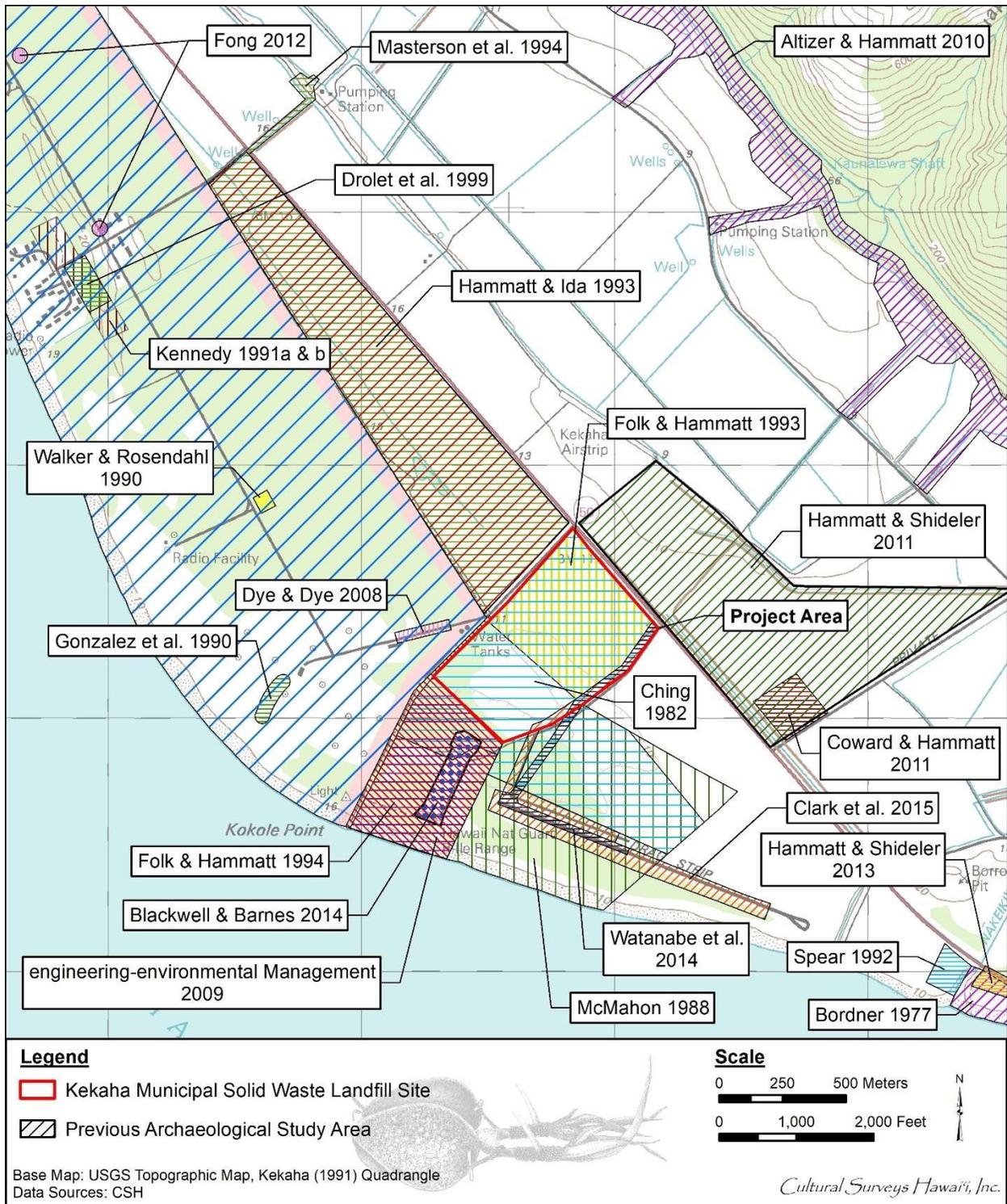


Figure 4. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the KLF

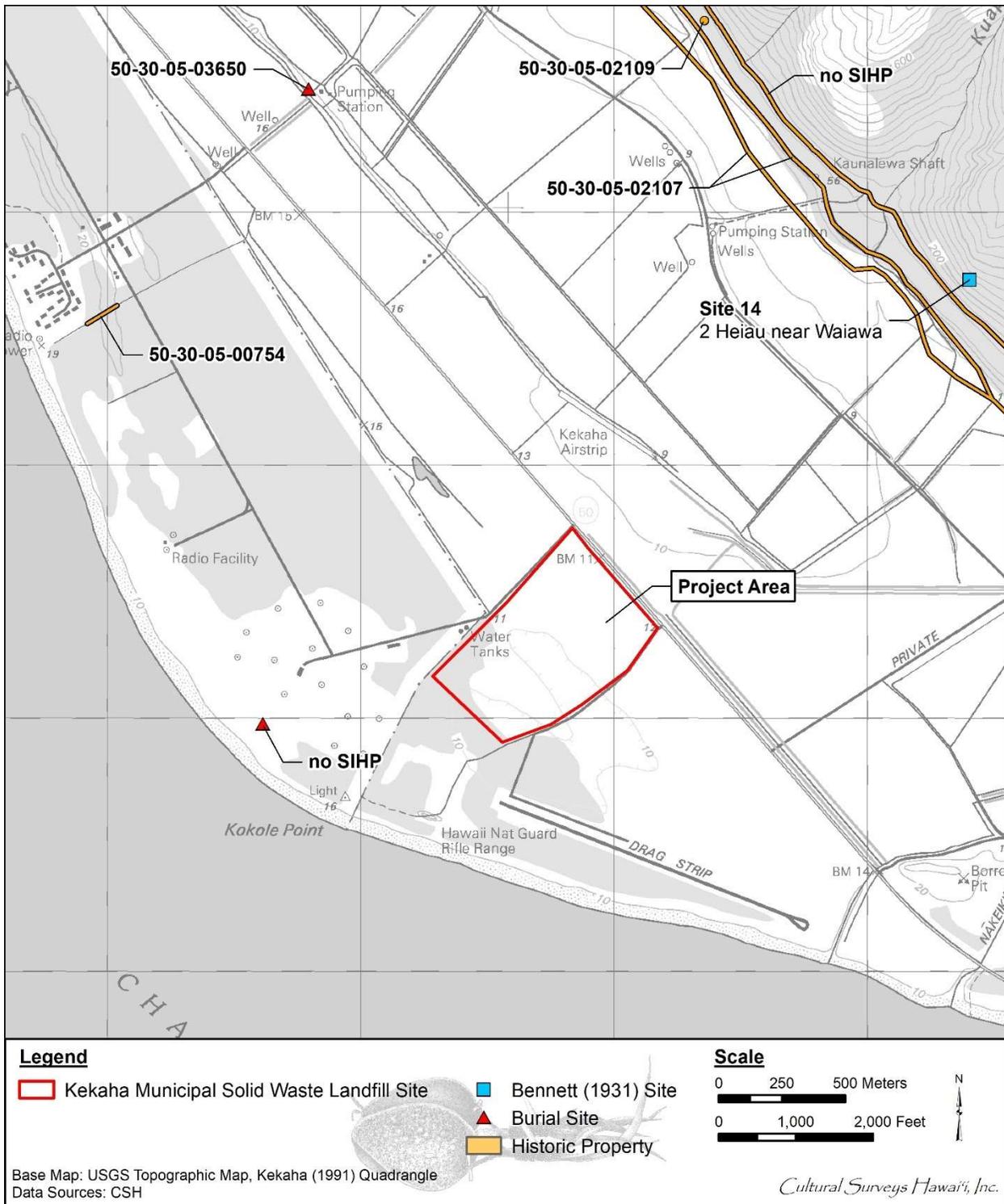


Figure 5. A portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle with overlay of historic properties in the vicinity of the KLF

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

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



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

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

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

LAURA H.E. KAAKUA  
FIRST DEPUTY

M. KALEO MANUEL  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
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CONSERVATION AND COASTAL LANDS  
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ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

May 31, 2023

Troy Tanigawa, County Engineer  
County of Kaua'i  
Department of Public Works  
Solid Waste Division  
4444 Rice Street, Suite 295  
Līhu'e, Hawai'i 96766  
[ttanigawa@kauai.gov](mailto:ttanigawa@kauai.gov)

IN REPLY REFER TO:  
Project No. 2023PR00306  
Doc. No. 2305DB01  
Archaeology

Dear Mr. Tanigawa:

**SUBJECT: HRS Chapter 6E-8 Historic Preservation Review –  
Kekaha Landfill Phase II Vertical Expansion Project  
County of Kaua'i DPW Solid Waste Division  
Request for Concurrence with Effect Determination  
Waimea Ahupua'a, Waimea District, Island of Kaua'i  
TMK: (4) 1-2-002:001 por., and 009**

This letter provides the State Historic Preservation Division's (SHPD's) HRS §6E-8 review of the subject project. The SHPD received the submittal on March 1, 2023, which included a HRS 6E Submittal Form, project description and effect determination request letter from the County of Kaua'i dated March 1, 2023, construction plans, and an aerial site photograph.

The project area comprises approximately a 13-acre portion of the 98-acre parcel. Previous ground disturbances associated with the existing Kekaha Landfill include grubbing, grading, excavation, trenching associated with landfill, roads, and buildings.

The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The purpose is to prolong the life of the KLF. The current maximum permitted landfill height of Phase II is 120 ft. above mean sea level (msl). The project will extend the maximum height to 171.5 ft. above msl. In addition, the Landfill Gas Collection and Control System (GCCS) will be expanded to accommodate the increased height by raising and relocating the existing GCCS infrastructure (pipes, gas collection devices, etc.) within the footprint of the vertical expansion, and installing landfill gas extraction wells and related lateral piping in the areas of new waste. Since the proposed project involves the "vertical expansion" of the landfill, no new ground disturbance will occur for this Phase II project.

The archaeological inventory survey (AIS) conducted for the original Phase II KLF project included excavation of 55 test trenches. An abandoned irrigation canal and low-linear sand mound for irrigation control were identified, both of which were subsequently assessed to post-date previous agricultural activity, likely dating from the 1950s. These features were recorded but not assigned State Inventory of Historic Places (SIHP) site numbers. During a 2013 vertical expansion project for the KLF, SHPD requested additional information on these resources. Based on a field inspection

Mr. Troy Tanigawa  
May 31, 2023  
Page 2

conducted for the Phase II project in 2013, which documented that these resources were no longer present, SHPD concurred with a determination of “No historic properties affected” (October 11, 2013; Log No. 2013.5499, Doc. No. 1310SL09).

The USDA (Foote et. al 1972) identifies the soils within the project area as Jaucus loamy fine sand, 0 to 8 percent slopes (JfB). Although this soil is typically know to have potential for subsurface historic properties and burials, due to the extent of previous ground disturbance, limited potential exists to encounter intact subsurface historic properties if ground distrurbace were to occur.

Based on project information provided, **SHPD concurs** with the County of Kaua‘i DPW Solid Waste Division’s project effect determination of “**No historic properties affected**” for the current project. Pursuant to HAR §13-275-7(e), when the SHPD agrees that the action will not affect any significant historic properties, this is the SHPD’s written concurrence and historic preservation review ends. The historic preservation review process is ended. The permitting and/or project initiation processes may continue.

Please attach to permit: In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, sand deposits, or sink holes are identified during the demolition and/or construction work, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and contact the State Historic Preservation Division, at (808) 462-3225.

Please contact David Buckley, Kaua‘i Lead Archaeologist, at (808) 462-3225 or at [David.Buckley@hawaii.gov](mailto:David.Buckley@hawaii.gov) for questions regarding this letter.

Mahalo,

*Alan Downer*

Alan S. Downer, PhD  
Administrator, State Historic Preservation Division  
Deputy State Historic Preservation Officer

cc: Allison Fraley, DPW Solid Waste Division, [AFraley@kauai.gov](mailto:AFraley@kauai.gov)  
Kayla Yost, Tetra Tech, [kayla.yost@tetrattech.com](mailto:kayla.yost@tetrattech.com)  
William Folk, CSH, Inc., [wfolk@culturalsurveyys.com](mailto:wfolk@culturalsurveyys.com)



May 10, 2023

TTCES-PTLD-2023-036

Mr. Michael Cain, Administrator  
State of Hawaii, Department of Land and Natural Resources  
Office of Conservation and Coastal Lands  
1151 Punchbowl Street, Room 131  
Honolulu, Hawaii 96813

Subject: **Request for Concurrence Regarding Conservation District Permit Requirements; Kekaha Municipal Landfill Phase II Vertical Expansion; Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kauaʻi**

Dear Mr. Cain,

The County of Kauaʻi, Department of Public Works (DPW), Solid Waste Division (County) has received and reviewed the Office of Conservation and Coastal Lands (OCCL) letter dated March 28, 2023, regarding the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion (Proposed Action) Pre-Assessment Consultation for HRS 343 Environmental Assessment (EA) (COR: KA 23-133). The County will address OCCL's pre-assessment consultation comments in the draft EA. The purpose of this letter is to request concurrence from OCCL that, as the Proposed Action would not be within the conservation district, no new CDUP (or modifications to the existing CDUP KA-3625) is required. More information on the Proposed Action and the land use permit determination request is provided below.

As detailed in the Tetra Tech's Pre-Assessment Consultation letter dated February 27, 2023, the County is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009 and is comprised of two distinct refuse fill areas identified as Phase I and Phase II (see Figure 1). Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. The current maximum permitted landfill height of Phase II is 120 feet (ft) above mean sea level (amsl) and the currently permitted landfill area is 44 acres, which includes the original waste disposal area (31.2 acres), and two expansion areas, Cell 1 (6.3 acres) and Cell 2 (6.5 acres) (see Figure 1).

As shown in Figure 1, the Phase I area is located within the state conservation land use district (limited subzone). A portion of the Phase II Cell 2 overlaps with the Phase 1 limits and is also in the conservation land use district. However, no portion of the proposed vertical expansion is within the conservation land use district. The conservation land use district boundary line is located on the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – phone, April 3, 2023). As the Phase I landfill began accepting waste in 1953 prior to the advent of the conservation land use district it is considered "non-conforming" (K. Mills, Office of Conservation and Coastal Lands, personal communication – email, April 3, 2023) and therefore does not have an existing Conservation District Use Permit (CDUP). The County obtained CDUP KA-3625 from DLNR for the construction of Cell 2 in 2012. Subsequently, CDUP KA-3625 was modified in April 2014 and May 2016. Cell 2 was approved to reach 85 ft amsl under CDUP KA-3625.



The Proposed Action would extend the Phase II landfill height vertically from the currently permitted maximum height of 120 ft amsl to a maximum elevation of 171.5 ft amsl. The components of the Proposed Action would be located entirely within TMK 4-1-2-002:001 (por.) and therefore outside the conservation district. The components of the Proposed Action include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the maximum permissible height of the existing waste disposal area upwards to a maximum height of 171.5 ft amsl. As shown in Figure 1, the limits of the proposed vertical expansion would be approximately 13 acres and be located entirely within TMK 4-1-2-002:001.
- **Stormwater Management:** Existing surface water drainage features that divert stormwater away from the refuse areas would be extended upwards to accommodate the increase in height of the Phase II waste disposal area. The expanded drainage features would be located within the limits of the proposed vertical expansion where it would tie into the existing permitted system. No changes to the existing perimeter infiltration ditches or stormwater infiltration basin are proposed.
- **Landfill Gas Collection and Control System (GCCS):** Improvements would maintain gas collection as the vertical expansion is constructed and provide landfill gas collection for new waste placed as part of the vertical expansion. The GCCS improvements would be located entirely within TMK 4-1-2-002:001.

#### **REQUEST FOR DETERMINATION**

As described above, the components of the Proposed Action would be located entirely within TMK 4-1-2-002:001 (por.) and outside of the conservation district. Landfilling activities occurring in the Cell 2 area will continue to occur within the limits of the existing CDUP KA-3625 permit and no vertical expansion is proposed for Cell 2. As shown in Figure 2, the maximum elevation of Cell 2 will be between 40 and 75 ft. amsl.. Since Cell 2 was approved to reach 85 ft amsl under CDUP KA-3625 this current proposal for the final cover of Phase II and Cell 2 will not exceed the permitted elevation for the previously approved CDUP.

Therefore, we respectfully request OCCL's concurrence that, as the components of the Proposed Action would be located entirely within TMK 4-1-2-002:001 (por.), no new CDUP or modifications to the existing CDUP KA-3625 is required.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at [Kayla.Yost@tetrattech.com](mailto:Kayla.Yost@tetrattech.com).

Respectfully,

A handwritten signature in cursive script that reads 'Kayla Yost'.

Kayla Yost, Project Manager and Environmental Planner  
Tetra Tech, Inc.

Attachments: Figure 1: State Land Use Designation  
Figure 2: Final Cover Grading Plan

CC: Troy Tanigawa, Kaua'i County Engineer  
Suzan Pankenier, Tetra Tech BAS, Inc.

# Kekaha Landfill Phase II Vertical Expansion

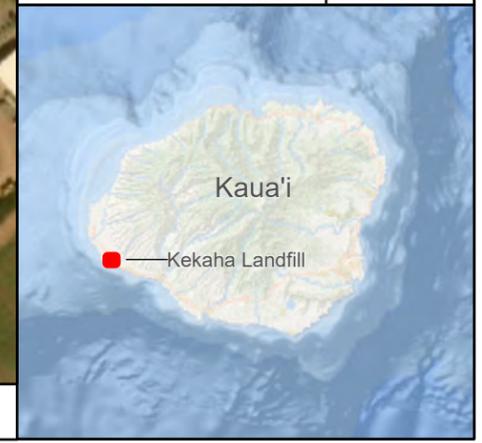
**Figure 1  
State Land Use  
Designations**

KAUAI COUNTY, HI

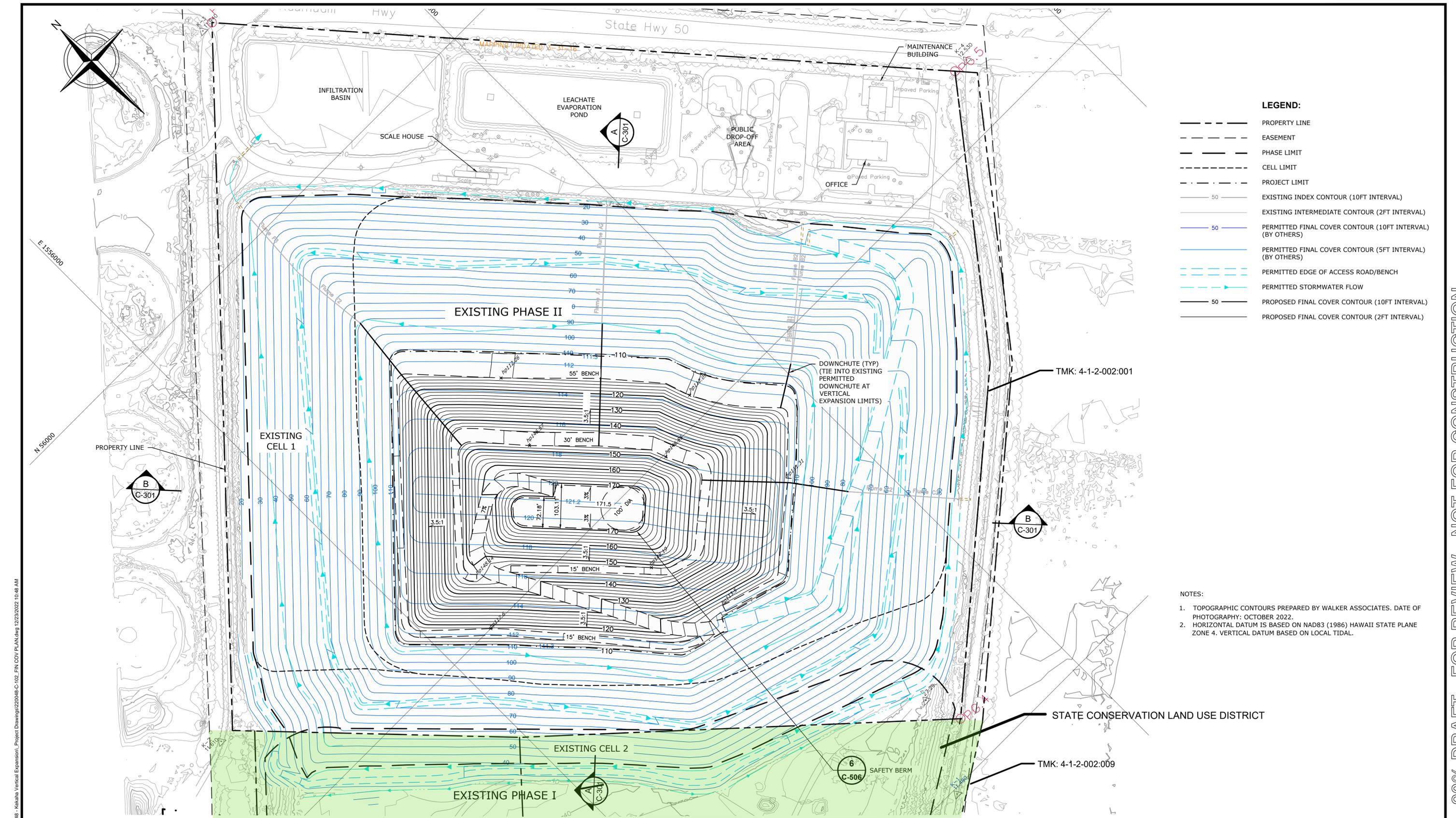
-  Cell 1 Limit
  -  Cell 2 Limit
  -  Phase II Limit
  -  Phase I Limit
  -  TMK Parcel Boundary
  -  Approximate Extent of the Proposed Vertical Expansion
- State Land Use
-  Agricultural Land Use District
  -  Conservation Land Use District



Reference Map

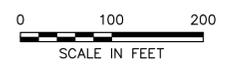


P:\GIS\PROJECTS\Kauai\_County\Kekaha\_Landfill\_Expansion\Maps\CIA\_20221205\KauaiCounty\_KekahaLandfill\_CIA\_20221205.aprx



- LEGEND:**
- PROPERTY LINE
  - - - EASEMENT
  - PHASE LIMIT
  - - - CELL LIMIT
  - - - PROJECT LIMIT
  - 50 EXISTING INDEX CONTOUR (10FT INTERVAL)
  - EXISTING INTERMEDIATE CONTOUR (2FT INTERVAL)
  - 50 PERMITTED FINAL COVER CONTOUR (10FT INTERVAL) (BY OTHERS)
  - PERMITTED FINAL COVER CONTOUR (5FT INTERVAL) (BY OTHERS)
  - PERMITTED EDGE OF ACCESS ROAD/BENCH
  - PERMITTED STORMWATER FLOW
  - 50 PROPOSED FINAL COVER CONTOUR (10FT INTERVAL)
  - PROPOSED FINAL COVER CONTOUR (2FT INTERVAL)

- NOTES:**
- TOPOGRAPHIC CONTOURS PREPARED BY WALKER ASSOCIATES. DATE OF PHOTOGRAPHY: OCTOBER 2022.
  - HORIZONTAL DATUM IS BASED ON NAD83 (1986) HAWAII STATE PLANE ZONE 4. VERTICAL DATUM BASED ON LOCAL TIDAL.



**TETRA TECH**  
 21700 Copley Drive, Suite 200  
 Diamond Bar, CA 91765  
 TEL 909.860.7777 FAX 909.860.8017

KEKAHA MUNICIPAL SOLID WASTE LANDFILL		
PHASE II - VERTICAL EXPANSION		
<b>FINAL COVER GRADING PLAN</b>		
DESIGNED BY: GRB	CHECKED BY:	DATE: DEC. 2022
DRAWN BY: MDC/GVP	APPROVED BY:	FILE: 220048-C-102_FIN COV.PLAN.dwg

FIGURE  
**2**

REV	REVISION DESCRIPTION	DATE

X:\PROJECTS\KAUAI\COUNTY\197-220048 - Kekaha Vertical Expansion - Project Drawings\220048-C-102\_FIN COV.PLAN.dwg 12/23/2022 10:49 AM

90% DRAFT - FOR REVIEW - NOT FOR CONSTRUCTION

## Yost, Kayla

---

**From:** Cain, Michael <michael.cain@hawaii.gov>  
**Sent:** Wednesday, May 10, 2023 10:19 AM  
**To:** Yost, Kayla  
**Cc:** Pankenier, Suzan; Allison Fraley; Troy Tanigawa; Fitzpatrick, Trevor J  
**Subject:** RE: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

**⚠ CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments. **⚠**

Good morning,

If the project is outside the Conservation District then it is outside the jurisdiction of the Office of Conservation and Coastal Lands.

Official determinations of State Land Use boundaries can be sought from the Land Use Commission.

Thank you  
Michael Cain

---

**From:** Yost, Kayla <KAYLA.YOST@tetrattech.com>  
**Sent:** Wednesday, May 10, 2023 10:04 AM  
**To:** Cain, Michael <michael.cain@hawaii.gov>  
**Cc:** Pankenier, Suzan <Suzan.Pankenier@tetrattech.com>; Allison Fraley <afraley@kauai.gov>; Troy Tanigawa <ttanigawa@kauai.gov>; Fitzpatrick, Trevor J <trevor.j.fitzpatrick@hawaii.gov>  
**Subject:** [EXTERNAL] Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Aloha Mr. Cain,

The County of Kaua`i, Department of Public Works, Solid Waste Division (County) has received and reviewed the Office of Conservation and Coastal Lands (OCCL) letter dated March 28, 2023, regarding the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion (Proposed Action) Pre-Assessment Consultation for HRS 343 Environmental Assessment (EA) (COR: KA 23-133). The County will address OCCL's pre-assessment consultation comments in the draft EA.

The purpose of the attached letter is to request concurrence from OCCL that, as the Proposed Action would not be within the conservation district, no new CDUP (or modifications to the existing CDUP KA-3625) is required. More information on the Proposed Action and the land use permit determination request is provided in the attached letter.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at [Kayla.Yost@tetrattech.com](mailto:Kayla.Yost@tetrattech.com).

Mahalo,

**Kayla Yost** | Environmental Planner

Pronouns: she, her, hers

Business +1 (808) 441-6600 | Mobile +1 (808) 352-2247 | Fax +1 (808) 536-3953 | [kayla.yost@tetrattech.com](mailto:kayla.yost@tetrattech.com)

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737 Bishop St. Suite 2000 | Mauka Tower | Honolulu, HI 96813-3201 | [tetratech.com](http://tetratech.com)

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April 4, 2023

TTCES-PTLD-2023-023

Ka'āina S. Hull, Director  
Kaua'i County Department of Planning  
4444 Rice Street, Suite A473  
Lihue, HI 96766

Subject: **Request for Director Determination Regarding County Land Use Permit Requirements; Kekaha Municipal Landfill Phase II Vertical Expansion; Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kaua'i**

Dear Mr. Hull,

The County of Kaua'i (County), Department of Public Works (DPW), Solid Waste Division is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996) places the control and management of the lands underlying the KLF to the County. The Proposed Action involves extending the landfill height vertically from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a maximum elevation of 171.5 ft above msl. The Project would be within the existing permitted limit-of-waste footprint of the Phase II landfill area. The location and boundaries of the KLF and limits of the proposed vertical expansion are shown in the attached Figure 1: Location Map. The purpose of this letter is to request the Department of Planning's determination on whether the Proposed Action requires new land use permits or amendments to existing land use permits including the existing county special permit, use permit, and class IV zoning permit, state special use permit (SUP), and special management area (SMA) permit.

As the Proposed Action would be located on state lands and use county funds. Tetra Tech, Inc. was hired by DPW to prepare an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action in compliance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) §11-200.1. More information on the Proposed Action, existing land use permits and approvals, and the land use permit determination request is provided below.

#### **PROJECT HISTORY AND DESCRIPTION**

KLF is the only active, permitted municipal solid waste (MSW) landfill on the island of Kaua'i and is comprised of two distinct refuse fill areas identified as Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion

Tetra Tech, Inc.

737 Bishop St., Suite 2000, Mauka Tower | Honolulu, HI 96813

Tel 808.441.6655 | [tetratech.com](http://tetratech.com)

in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, design, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The County has attempted to site a new MSW landfill at another location on the island and will continue to evaluate alternative landfill sites and other long-term options for increasing the waste disposal capacity on Kaua'i.

However, there is an immediate need to provide landfill capacity beyond October of 2026, which is when the currently permitted KLF Phase II is projected to reach capacity. The Phase II vertical expansion would add landfill airspace and provide an additional 3 years of safe disposal capacity in Kauai County while a long-term landfill capacity solution is planned, permitted, and implemented. The major components of the Project would be located entirely within TMK 4-1-2-002:001 (por.) and include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. As shown in Figure 1, the limits of the proposed vertical expansion would be approximately 13 acres. The vertical expansion would provide an additional 400,000 cubic yards of waste disposal volume and provide an estimated 3 years of additional landfill capacity.
- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area. The expanded drainage features would be located within the limits of the proposed vertical expansion where it would tie into the existing permitted system. No changes to the existing perimeter infiltration ditches or stormwater infiltration basin are proposed.
- **Landfill Gas Collection and Control System:** Two phases of improvements would maintain gas collection as the vertical expansion is constructed (Figure 2). The first phase would occur prior to placement of fill and includes raising or relocating the existing, permitted Gas Collection and Control System infrastructure within the footprint of the vertical expansion. The second phase would occur when nearing or at the final fill limit and include the addition of vertical landfill gas extraction wells and related lateral piping to provide landfill gas collection for new waste placed as part of the vertical expansion.

#### EXISTING KLF LAND USE PERMITS AND APPROVALS

As shown in Figure 3, the portion of Phase II located within TMK 1-2-002:001 (por) is designated as state and county agricultural lands. The state Land Use Commission (LUC) issued an SUP to DPW in 1993 (Petition Docket No. SP93-384) to allow 63.18 acres of land within the state agricultural district to be used for landfill purposes (for KLF Phase II). Similarly, the county Kaua'i County Planning Commission issued special permit SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64 in 1993 to allow for the construction and operation of the Phase II landfill within county, agriculture zoned land. The existing KLF operates in compliance with the conditions set forth in the SUP SP93-384, special permit SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64. No expiration date or time limit for use

was established in either the state or county use permits or county zoning permit. Additionally, the vertical and horizontal expansions of the Phase II landfill in 2004, 2009, 2013, and 2019 were determined to meet the conditions of the original permits and no permit modifications were required.

As shown in Figure 3, a portion of the Cell 2 area of KLF Phase II (the portion located within TMK (4) 1-2-002:009) is designated as state conservation district and is within the SMA. An SMA use permit (SMA(U)20-12-4) and CDUP (KA-3625) was obtained for the Phase II, Cell 2 lateral expansion in 2012. As Phase II, Cell 2 is designated as state conservation land; pursuant to Hawaii Revised Statutes (HRS) §205-5, land use is governed by DLNR and it is assumed that no county zoning permits were required for Phase II, Cell 2 (HRS §205-5)<sup>1</sup>.

Table 1 summarizes KLF’s existing land use entitlements applicable to the Phase II landfill area.

**Table 1: Existing Land Use Approvals and Entitlements for the Kekaha Landfill Facility Phase II Area**

Agency	Permit / Approval	Permitted Landfill Area / TMK
State Land Use Commission	Special Use Permit (Petition Docket No. SP93-384), Issued July 1993	Phase II; TMK (4) 1-2-002:001(por.)
DLNR Office of Conservation and Coastal Lands (OCCL) and Board of Land and Natural Resources (BLNR)	Conservation District Use Permit (KA-3625), Issued August 2012, modified in April 2014 and May 2016	Phase II, Cell 2; TMK (4) 1-2-002:009 & (4) 1-2-002:001(por.)
County of Kaua’i, Planning Commission	Special Permit SP-93-9 Use Permit U-93-56 Class IV Zoning Permit Z-IV-93-64, Issued May 1993	Phase II; TMK (4) 1-2-002:001 (por.)
County of Kaua’i, Department of Planning and Planning Commission	Special Management Area Use Permit (SMA(U)20-12 4), Issued July 2012	Phase II, Cell 2; TMK (4) 1-2-002:009 & (4) 1-2-002:001(por.)

REQUEST FOR DIRECTOR DETERMINATION – STATE SPECIAL USE PERMIT AND COUNTY SPECIAL PERMIT, USE PERMIT AND CLASS IV ZONING PERMIT

As described above, the state LUC issued a SUP (Petition Docket No. SP93-384) and the county Planning Commission issued special permit SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64 to allow for the construction and operation of the Phase II landfill within state and county agriculture land. The proposed Project would take place within the existing permitted footprint of the Phase II and would be a continuation of the existing KLF operations. As the proposed Project would not constitute a change in land use and the KLF would continue to comply with the conditions set forth in these permits, we respectfully request the County Department of Planning’s concurrence on the determination that the Proposed Action is permissible under KLF’s existing SUP (Petition Docket No. SP93-384), special permit

<sup>1</sup> HRS §205-5 Zoning states “(a) Except as herein provided, the powers granted to counties under section 46-4 shall govern the zoning within the districts, other than in conservation districts. Conservation districts shall be governed by the department of land and natural resources pursuant to chapter 183C”.

SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64. As noted above, this determination would be consistent with past determinations made for the vertical and horizontal expansions of the Phase II landfill in 2004, 2009, 2013, and 2019.

REQUEST FOR DIRECTOR DETERMINATION – SPECIAL MANAGEMENT AREA PERMIT

The potential for an SMA permit was discussed during the December 14, 2022 conference call between County Department of Planning, DPW, and Tetra Tech. During that call, DPW and Tetra Tech indicated that the vertical expansion will be outside of the SMA but a portion of the Gas Collection and Capture System for the proposed vertical expansion would extend into TMK 4-1-2-002:009 and, therefore, be within the SMA (i.e. installation of two, 6-inch HDPE lateral pipes to connect three gas wells to the landfill gas header pipe, see yellow highlighted pipes in Figure 2). Upon further discussion, the landfill engineers clarified that the two lateral pipes that extend into TMK 4-1-2-002:009 are a necessary feature of the existing Gas Collection and Capture System and slated for construction in the very near future. Therefore, DPW has determined that the lateral gas pipes within the SMA are not part of the Proposed Action. The design drawings for the Proposed Action were updated to accurately show that no portion of the Gas Collection and Capture System for the proposed vertical expansion would be within the SMA. As the Proposed Action would not be within the SMA, we respectfully request the County Department of Planning's concurrence that no SMA permit will be required.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at [Kayla.Yost@tetrattech.com](mailto:Kayla.Yost@tetrattech.com).

Respectfully,



Kayla Yost, Project Manager and Environmental Planner  
Tetra Tech, Inc.

Attachments: Figure 1: Location Map  
Figure 2: GCCS Improvements  
Figure 3: Land Use Designations

CC: Troy Tanigawa, Kaua'i County Engineer  
Susan Pankenier, Tetra Tech BAS, Inc.

# Kekaha Landfill Phase II Vertical Expansion

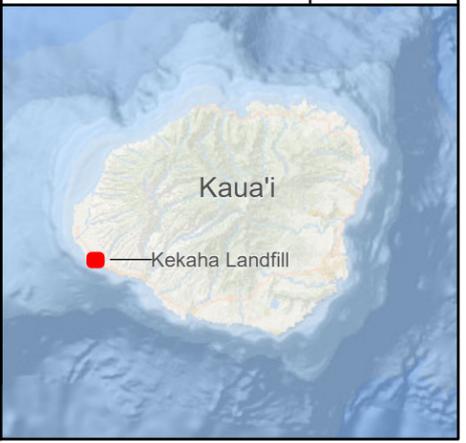
**Figure 1  
Project Location**

KAUA'I COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit



Reference Map

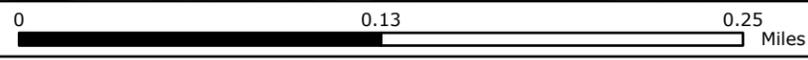


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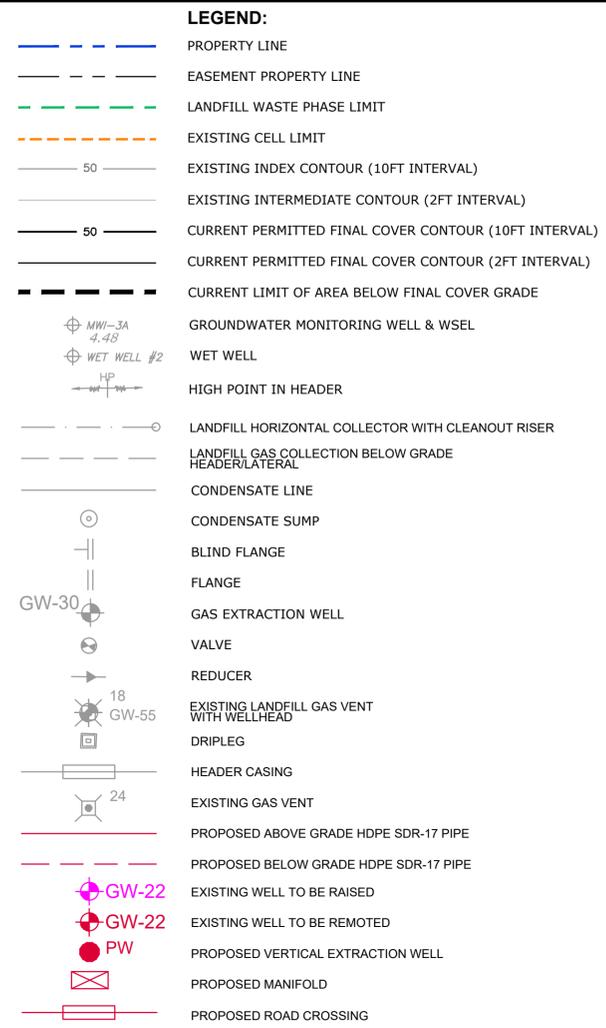
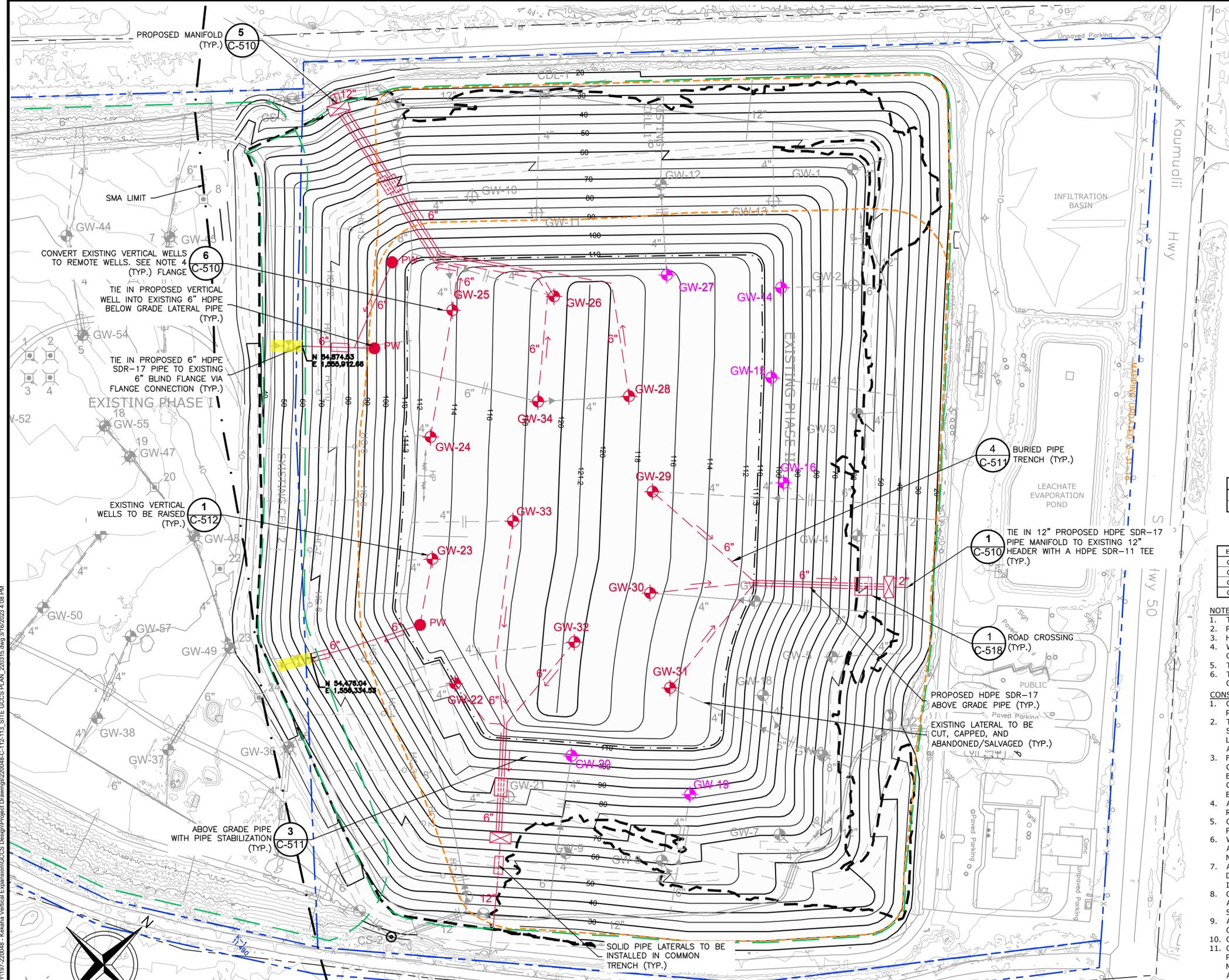


1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION



EXISTING WELLS TO BE RAISED

GW-14	GW-15	GW-16
GW-19	GW-20	GW-27

EXISTING WELLS TO BE REMOVED

GW-22	GW-23	GW-24
GW-25	GW-26	GW-28
GW-29	GW-30	GW-31
GW-32	GW-33	

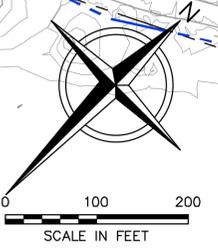
NOTES

- TOPOGRAPHIC CONTOURS PROVIDED BY KAUAI COUNTY. DATE OF PHOTOGRAPHY: OCTOBER 22, 2022
- PHASE II AREA TOPOGRAPHY UPDATED BY AIRFRAME LLC, MAY 5, 2021.
- HORIZONTAL DATUM IS BASED ON NAD83 (1986), HAWAII ZONE 4. VERTICAL DATUM BASED ON LOCAL TIDAL.
- WELLHEADS TO BE LOCATED ON EDGE OF TOP DECK NEXT TO SIDE SLOPE. LOCATIONS MAY REQUIRE FIELD MODIFICATIONS BASED ON TOPOGRAPHY AT TIME OF CONSTRUCTION.
- THE AS-BUILT GCCS WAS PROVIDED BY KAUAI COUNTY DATED MAY 15, 2015.
- THE LOCATIONS OF THE HORIZONTAL COLLECTORS ARE DRAWN IN APPROXIMATELY ACCORDING TO THE AS BUILT SURVEY COMPLETED BY ESAKI SURVEYING AND MAPPING, INC. ON SEPTEMBER 29, 2021.

CONSTRUCTION NOTES:

- CONTRACTOR TO SURVEY AND STAKE PIPING ALIGNMENTS WITH GRADES AND OBTAIN APPROVAL FROM THE ENGINEER AND OWNER PRIOR TO PROCEEDING.
- THE CONTRACTOR SHALL LAY OUT THE PIPE TO CONFORM TO FIELD CONDITIONS. PROVIDE 36" MINIMUM COVER AND 5% MINIMUM SLOPE CROSSING BELOW PERIMETER AND MAIN HAUL ROADS. PROVIDE MINIMUM PIPE DRAINAGE SLOPES OF 3% WITHIN WASTE LIMIT AND 0.5% OUTSIDE OF WASTE LIMIT. CONTRACTOR RESPONSIBLE FOR CUT (12" MAX, UNLESS OTHERWISE NOTED PER PLAN) AND FILL BENEATH PIPE TO ENSURE PROPER DRAINAGE, AS APPROVED BY THE ENGINEER AND OWNER.
- FEATURES, CONTOURS, AND ELEVATIONS OF THESE BASE MAPS ARE APPROXIMATE INDICATIONS OF CURRENT AND FUTURE CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR INSPECTING WORK AREAS AT PRE-BID SITE WALK AS CURRENT CONDITIONS FOR BIDDING PURPOSES. CONTRACTOR SHALL VERIFY THE ACTUAL LOCATIONS OF THESE ELEMENTS PRIOR TO, AND DURING CONSTRUCTION, AND SHALL FINALIZE THE GAS SYSTEM LOCATIONS TO ACCOMMODATE FINAL FIELD CONDITIONS, AS APPROVED BY THE ENGINEER AND OWNER.
- ALL CONNECTIONS TO EXISTING PIPING SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO BIDDING. SOME CONNECTIONS MAY REQUIRE EXCAVATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL DISCONNECTIONS AND RECONNECTIONS FOR INSTALLATION OF NEW PIPING WHERE NECESSARY.
- WORK SHALL NOT VARY FROM DESIGN WITHOUT APPROVAL OF THE ENGINEER. WORK THAT VARIES FROM DESIGN WITHOUT APPROVAL WILL BE SUBJECT TO REWORK TO MAINTAIN ADHERENCE TO THE APPROVED DESIGN. ANY REWORK AS A RESULT WILL NOT BE PAID FOR.
- ALL PIPING GREATER THAN 6 INCHES IN DIAMETER SHALL BE PRESSURE TESTED FOR 1 HOUR AT 10 PSIG. GREATER THAN 10% DROP IN PRESSURE OVER 1 HOUR SHALL INDICATE A LEAK EXISTS AND SHALL BE REPAIRED AND RETESTED. PIPE SHALL BE TESTED IN SEGMENTS NO LONGER THAN 2,000 FEET UNLESS APPROVED BY THE ENGINEER.
- CONTRACTOR TO REMOVE AND REUSE EXISTING WELLHEADS, PUMPS, PIPING AND FITTINGS WHERE APPLICABLE. CAP ALL ABANDONED PIPE. IF ABANDONED PIPE IS HDPE, USE FUSED ON HDPE CAP. IF ABANDONED PIPE IS PVC, USE PVC SCH 40 CAP SECURED WITH SET SCREWS AT 90° AND CEMENT.
- ALL EXISTING PIPING THAT IS NOT IN USE, AS DIRECTED BY THE ENGINEER, SHALL BE RELOCATED BY THE CONTRACTOR TO THE ON-SITE STORAGE FACILITY.
- CONTRACTOR TO USE FACTORY MOLDED/FABRICATED CONCENTRIC REDUCER FITTINGS AS NECESSARY.
- CONTRACTOR TO PROTECT IN PLACE THE EXISTING ABOVE AND BELOW GRADE LATERALS DURING CONSTRUCTION. IF EXISTING PIPING NEEDS TO BE RELOCATED TEMPORARILY DURING CONSTRUCTION, THE CONTRACTOR WILL ENSURE CONSTANT SLOPE IS MAINTAINED ON THE PIPE AND THE LATERALS WILL BE RETURNED TO THEIR EXISTING CONDITION FOLLOWING CONSTRUCTION ACTIVITIES.
- ELECTROFUSION COUPLERS SHALL NOT BE USED UNLESS APPROVED BY THE ENGINEER AND OWNER.

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REV	REVISION DESCRIPTION	DATE

**TETRA TECH**  
7600 Dublin Blvd, Suite 200  
Dublin, CA 94568  
TEL 877.633.5520

KEKAHA MUNICIPAL SOLID WASTE LANDFILL  
PHASE II - VERTICAL EXPANSION  
**GCCS CONSTRUCTION SITE PLAN - PHASE I**

DESIGNED BY: GRB/CME    CHECKED BY: AMN    DATE: DEC. 2022  
DRAWN BY: MDC/GVP    APPROVED BY: GRB/PJS    FILE: 220048-C-112-113\_SITE GCCS PLAN\_220315.dwg

Figure  
**2**

DRAFT - FOR REVIEW - NOT FOR CONSTRUCTION

# Kekaha Landfill Phase II Vertical Expansion

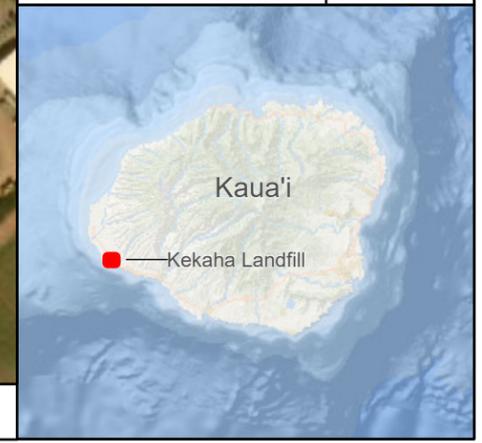
## Figure 3 Land Use Designations

KAUAI COUNTY, HI

-  Approximate Extent of the Proposed Vertical Expansion
-  TMK Parcel Boundary
-  Phase I Limit
-  Phase II Limit
-  Cell 1 Limit
-  Cell 2 Limit
-  Agricultural Land Use District
-  Conservation Land Use District
-  Special Management Area



Reference Map



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# Appendix D - Cultural Impact Assessment

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**Cultural Impact Assessment for the  
Kekaha Municipal Solid Waste Landfill Phase II  
Vertical Expansion Project,  
Waimea Ahupua‘a, Waimea District, Kaua‘i  
TMKs: (4) 1-2-002:009 and 001 (por.)**

**Prepared for  
Tetra Tech, Inc.  
on behalf of the  
County of Kaua‘i**

**Prepared by  
Tehani Baculpo, B.A.,  
and  
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai‘i, Inc.  
Kailua, Hawai‘i  
(Job Code: WAIMEA 49)**

**July 2023**

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

[www.culturalsurveys.com](http://www.culturalsurveys.com)

**Hawai‘i Office  
399 Hualani St. #124  
Hilo, Hawai‘i 96720  
Ph.: (808) 965-6478  
Fax: (808) 965-6582**

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## Management Summary

<b>Reference</b>	Cultural Impact Assessment for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project, Waimea Ahupua‘a, Waimea District, Kaua ‘i, TMKs: (4) 1-2-002:009 and 001 por. (Baculpo and Hammatt 2023)
<b>Date</b>	July 2023
<b>Project Number(s)</b>	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: WAIMEA 49
<b>Agencies</b>	County of Kaua‘i, Department of Public Works, Solid Waste Division
<b>Land Jurisdiction</b>	County of Kaua‘i
<b>Project Location</b>	The existing Kekaha Municipal Solid Waste Landfill (KLF) is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua‘i. The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai‘i and administered by the Department of Land and Natural Resources (DLNR). The KLF is situated adjacent to Kaumuali‘i Highway approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion (proposed action) are delineated on USGS topographic maps (Figure 2 and Figure 2), tax map plat (Figure 3), and a 2021 ESRI aerial image (Figure 4).
<b>Project Description</b>	<p>The County of Kaua‘i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The KLF is a municipal solid waste (MSW) landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The proposed action would extend Phase II upward from the currently permitted maximum height of 120 ft above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. No native soil or new areas will be disturbed.</p> <p>The KLF is Kaua‘i Island’s only permitted MSW landfill and is predicted to reach its capacity in October 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II</p>

	<p>portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.</p> <p>The major components of the proposed action would be located entirely within TMK: (4) 1-2-002:001 (por.) and would include the following:</p> <p><b>Vertical Landfill Expansion:</b> The proposed Phase II vertical expansion would extend the existing engineered waste disposal area upward to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 4 and Figure 5. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New access roads would be constructed to access the upper reaches of the landfill area.</p> <p><b>Landfill Gas (LFG) Collection and Control System (GCCS):</b> Modern MSW facilities require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.</p> <p><b>Stormwater Management:</b> Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the proposed action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upward) to accommodate the increase in height of the Phase II waste disposal area.</p> <p>In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the proposed action. No substantial changes to KLF's operations are proposed. Operation of the Phase II vertical expansion would begin once all approvals are received.</p>
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<p><b>Project Acreage</b></p>	<p>The Kekaha Municipal Landfill Facility encompasses approximately 98 acres (39.659 hectares). The Phase II permitted limit-of-waste footprint is approximately 44 acres. The limits of the proposed vertical expansion would be approximately 13 acres located within the Phase II permitted limit-of-waste footprint.</p>
<p><b>Document Purpose and Regulatory Context</b></p>	<p>This cultural impact assessment (CIA) supports compliance for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion project with:</p> <ul style="list-style-type: none"> <li>• the mandate set forth by the Hawai‘i State Constitution (Articles IX and XII), courts, Hawai‘i Revised Statutes (HRS), Hawai‘i Administrative Rules (HAR), and other Hawai‘i State laws requiring government agencies to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups;</li> <li>• the State of Hawai‘i’s environmental review process under HRS §343, which requires consideration of the proposed project’s potential effects on cultural practices and cultural features in order to “promote responsible decision making” (HRS §343);</li> <li>• and the State of Hawai‘i’s historic preservation review process under HAR §13-275-6 and §13-284-6, which requires the identification and mitigation of adverse effects proposed by a potential project in order to “promote the use and conservation of historic properties for the education of the citizens of Hawai‘i” (HAR §13-275-6).</li> </ul> <p>This CIA contains information gathered from archival research and consultation, compiled in order to “analyze the impact of a proposed action on cultural practices and features associated with the project area” (Office of Environmental Quality Control 1997). Cultural practices and cultural features may include traditional cultural properties (TCPs), designated significant historic properties under State of Hawai‘i significance Criterion e, pursuant to HAR §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6 and §13-284-6).</p>
<p><b>Results of Background Research</b></p>	<p>Background research for the proposed project yielded the following information:</p>

	<ol style="list-style-type: none"> <li>1. Kekaha lies in the <i>ahupua'a</i> (traditional land division) of Waimea on the southwest side of the island of Kaua'i, part of the traditional Hawaiian <i>moku</i> (district) of Kona and the current district of Waimea. Waimea Ahupua'a is by far the largest <i>ahupua'a</i> on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua'i (Gray 1875:146)</li> <li>2. There are many legends associated with the Hawaiian gods, such as Pele and her siblings, and <i>ali'i</i> (chiefly class), such as Ola'a (Wichman 1998:23–24; Wichman 2001:17).</li> <li>3. Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the <i>ahupua'a</i> possible, such as the Kīkīola Ditch, also known as the “Menehune Ditch” (Wichman 1998:9)</li> <li>4. Waimea, Kaua'i was also a site of great significance for <i>po'e kuhikuhi pu'uone</i> (site experts) and <i>po'e kilo hoku holo moana</i> (navigators) of the pre-Contact time. <i>Po'e kilo hoku</i> (astronomers) of O'ahu and Kaua'i, “who were very skilled in discerning the ways of the sun, the moon, and the stars, as well as knowing the configuration of the earth (<i>papa huluhonua</i>)” (Kamakau 1976:14), gathered in Waimea, Kaua'i to make their observations.</li> <li>5. While Waimea may have always been a royal center for the <i>ali'i</i> of Kaua'i, this position was greatly reinforced after Western Contact (Zulick et al. 2000:14).</li> <li>6. Over 150 <i>kuleana</i> awards were granted in Waimea, however, only three claims were made in and nearby Kekaha (Land Commission Award [LCA] 5362, 6698, and 8841) (Papakilo Database 2022; Waihona 'Aina 2022).</li> <li>7. Knudsen assumed the lease of government land from Archibald Archer and a Mr. Gruben. The two men were involved in a failing tobacco farming enterprise. A Mr. Clifford, who made cigars, was also associated with the enterprise (Lydgate 1991:92). Eventually Knudsen controlled the entire district, excluding <i>kuleana</i> (tenant) lands, from Nu'alolo to Waimea, including all the <i>mauka</i> (inland) area (Knudsen and Noble 1945:35).</li> <li>8. Waterfowl present in the wetlands provided a food resource for the area residents. Among them the <i>kōloa</i> (Hawaiian duck) and especially the <i>'alae</i> (Hawaiian gallinule) and <i>āe'o</i> (<i>kukuluāe'o</i>; Hawaiian stilts) were numerous (Von Holt 1985:78). All three</li> </ol>
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	<p>were traditionally caught and consumed by the Hawaiians (Malo 1951:39).</p> <ol style="list-style-type: none"> <li>9. Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. By the 1930s the rice industry had ceased entirely on the islands of Hawai'i, Maui, and Moloka'i (Coulter and Chun 1937:62).</li> <li>10. In 1898, the Kekaha Sugar Company was established by the consolidation of three Kaua'i sugar interests (Wilcox 1996:93).</li> <li>11. Valdemar Knudsen, founder of Kekaha Sugar Company, looked to the Waimea River as a source of sugar cane irrigation—pushing forward the Kekaha Ditch project. Construction of the Kekaha Ditch started in May 1906 and was completed in September 1907 (Wilcox 1996:93).</li> <li>12. Fayé founded H.P. Fayé &amp; Company, a sugar plantation in Mānā, the westernmost town in Kaua'i. In 1906 Fayé acquired the Waimea Sugar Mill, which had been founded in 1884. In 1910 the Waimea Sugar Mill Company was bought by Hans Peter Fayé, Ltd., operator of the neighboring Kekaha Sugar Company. From 1923 to 1926 the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands (Wilcox 1996:93-97).</li> <li>13. The railroad line was built by the Kekaha Sugar Company in about 1884, which used to transport sugar from its own mill to the pier at Waimea Landing. Initially the train stopped at the Waimea Sugar Mill Company to also transport their sugar to the landing (Condé and Best 1973:203).</li> <li>14. In 1950, the Waimea Sugar Mill Company was reorganized into the Waimea Sugar Mill Inc., which continued to process cane, and the Kikiaola Land Company, which was created to manage the property.</li> <li>15. At the time of statehood in 1959, H.P. Fayé &amp; Company was incorporated as Kikiaola Land Company and it is still owned by about 100 of the founder's descendants. Linda Collins, a granddaughter of H.P. Fayé, is now the president of Kikiaola Land Company.</li> <li>16. Kekaha Sugar Company continued to produce sugar until 17 November 2000 when the parent company, AmFac, closed the factory down due to financial hardship (Kojima 2000).</li> <li>17. In September 2003, land situated in Kekaha, Kaua'i was transferred through executive order No. 4007 to the</li> </ol>
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	<p>Agribusiness Development Corporation (ADC) for agricultural and related purposes.</p> <p>18. Seven historic properties were previously identified within the project area vicinity. Folk and Hammatt (1993) identified an abandoned irrigation canal and a low linear sand mound for irrigation control within the project area (Folk and Hammatt 1993:26, 32). These historic properties were confirmed by AECOM to no longer be present within the project area.</p> <p>19. There were three cultural studies that included the current project area. One CIA was conducted for the KLF in 2007 as part of the EA process, however, no report was produced. The EA report did state that no cultural practices were identified during consultation (Earth Tech 2007:4-3). The other two cultural studies included a portion of the current project area (Flores and Kaohi 1993;Walden and Collins 2015) and no ongoing cultural practices were identified as well.</p>
<p><b>Results of Community Consultation</b></p>	<p>CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 61 individuals or groups; 14 responded, three provided written testimony, and one of these <i>kama 'āina</i> (native-born) and/or <i>kūpuna</i> (elder/of the grandparent's generation) met with CSH for a more in-depth interview. Unfortunately, we didn't receive consent in time for one written testimony to be included. Consultation was received from:</p> <ol style="list-style-type: none"> <li>1. Christine "Chris" Fayé, Executive Director of Hui o Laka – Kōke'e Natural History Museum</li> <li>2. Lyle Tabata, Part-owner of B&amp;T Contractors and Kauai County Member of the Agribusiness Development Corporation (ADC) Board of Directors</li> <li>3. Leanora "Lea" Dizol Kaiaokamalie, Lineal descendant and family representative for the Kilauano family</li> </ol>
<p><b>Identification of Cultural Practices</b></p>	<p>Consultation identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Waimea Ahupua'a:</p> <ol style="list-style-type: none"> <li>1. Freshwater resources</li> <li>2. Flora and Fauna</li> <li>3. Marine resources</li> <li>4. <i>Iwi kūpuna</i> (ancestral remains)</li> </ol> <p>Based on the results of community consultation and background research conducted as part of this CIA, CSH has identified the following cultural practices within Waimea Ahupua'a:</p>

	<ol style="list-style-type: none"> <li>1. Fishing</li> <li>2. Farming (<i>kalo</i> [taro], rice, and sugarcane)</li> <li>3. <i>Limu</i> (seaweed) gathering</li> <li>4. Hunting</li> <li>5. Salt production</li> <li>6. Canoe production</li> <li>7. Recreational activities</li> <li>8. Weaving practices</li> <li>9. Hula</li> <li>10. <i>Mo'olelo</i></li> <li>11. <i>Wahi pana</i></li> <li>12. <i>Mele</i> (songs)</li> <li>13. Religious activities and burial practices</li> </ol> <p>No ongoing cultural practices were identified within the project area during background research and community consultation. However, the project area is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.</p>
<p><b>Identification of Impacts to Cultural Practices</b></p>	<p>No impacts to ongoing cultural practices were identified within the project area during background research and community consultation for this CIA. Consultation identified a number of concerns related to the environment and the broader community:</p> <ol style="list-style-type: none"> <li>1. Ms. Fayé is concerned with the reduction of native bird habitats and food sources. Native waterfowl use reservoirs and ditches/canals as habitats and food sources, and currently they thrive in the settling pond at the landfill.</li> <li>2. Ms. Fayé and Ms. Kaiaokamalie are concerned with altering the cultural landscape by creating mountains near the ocean where it was originally flat. This also impacts the visual aesthetics of the area.</li> <li>3. Ms. Kaiaokamalie is also concerned with the depletion of marine resources in the area due to the strong currents and increase of predators, like hammerhead sharks, which are attracted to the smell of the trash from the landfill and the murky water.</li> </ol>
<p><b>Conclusions and Recommendations</b></p>	<p>As no impacts to ongoing cultural practices were identified within the project area, no mitigation actions are necessary. There is no construction as part of the proposed action, meaning no native soil will be excavated and there will be no new disturbance. Therefore, inadvertent cultural finds are unlikely, however, CSH recommends the following in the unlikely case of inadvertent cultural finds:</p> <ol style="list-style-type: none"> <li>1. Landfill personnel should be informed of the possibility of inadvertent cultural finds, including human remains. In the unlikely event that any potential historic properties are identified</li> </ol>

	<p>during landfill operations, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the unlikely event that <i>iwi kūpuna</i> are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended.</p> <p>2. In the event that <i>iwi kūpuna</i> and/or cultural finds are encountered during landfill operations, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and a cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.</p> <p>As detailed in Section 7, community participants provided broad recommendations related to environmental stewardship and landfill management. These should be considered by the county as appropriate:</p> <ol style="list-style-type: none"> <li>1. In response to Ms. Fayé's concern for the reduction of native bird habitats, she recommends better management of the lands that are becoming fallow or return to wetlands for habitat purposes rather than making new wetlands out of dry land.</li> <li>2. Ms. Kaiaokamalie recommends integrating previous archaeological studies conducted within the project area and including in the current CIA report how the site was studied for future reference. If another archaeological survey was to be conducted in the future, she's hoping it can be done more thoroughly.</li> <li>3. Ms. Kaiaokamalie also recommends the county of Kaua'i implement more recycling and upcycling opportunities to prevent overfill at the landfill.</li> <li>4. Ms. Kaiaokamalie suggests the county develop mitigation efforts toward removing the vertical expansion once a long-term solution for the landfill is established. It needs to be removed or flattened to recover the cultural landscape.</li> <li>5. Ms. Kaiaokamalie also suggests to include possible impacts, solutions, and outcomes from projects around the world with similar solid waste management issues. This will create a trail that allows people in the future to further develop a solution. She also recommends the county have a working group or</li> </ol>
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	policy where they must revisit the issue and discuss how to implement ongoing solid waste management technologies.
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## Section 1 Introduction

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### 1.1 Project Description

Cultural Surveys Hawai'i (CSH) has prepared this cultural impact assessment (CIA) for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project, Waimea Ahupua'a, Waimea District, Kaua'i, TMKs: (4) 1-2-002:009 and 001 por. for Tetra Tech on behalf of the County of Kaua'i. The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II the Kekaha Municipal Solid Waste Landfill (KLF) (proposed action). The KLF is a municipal solid waste (MSW) landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The proposed action would extend Phase II upward from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. No native soils or new areas will be disturbed. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion are delineated on USGS topographic maps (Figure 1 and Figure 2), a tax map plat (Figure 3), and aerial photo (Figure 4).

The county is preparing an Environmental Assessment (EA) under Hawai'i Revised Statutes (HRS) §343 for the proposed action. As part of the EA process, the County of Kaua'i has requested that CSH conduct a CIA for the proposed action located in Waimea Ahupua'a, Waimea District, Kaua'i Island. Under Act 50, the Hawai'i State Department of Health *Guidelines for Cultural Impact Assessments* mandate that the subject property be studied as well as surrounding areas where construction or development have impact potential. These guidelines also recommend personal interviews with traditional cultural practitioners and knowledgeable informants on cultural practices.

The existing KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the island of Kaua'i. The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed 27 April 1953), Executive Order 2872 (signed 6 October 1977), and Executive Order 3695 (signed 02 December 1996), place the control and management of the lands underlying the KLF to the County of Kaua'i. The KLF is situated adjacent to Kaumuali'i Highway approximately 1,700 ft from the shoreline of the Pacific Ocean.

#### 1.1.1 History of KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II. The KLF Phase I is an inactive, unlined landfill that began accepting solid waste in 1953 and ceased operations 8 October 1993. The KLF Phase II is an active, lined landfill that began accepting solid waste on 9 October 1993 and is predicted to reach its capacity in October 2026.

KLF Phase II has undergone three vertical expansions and two lateral expansion since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded

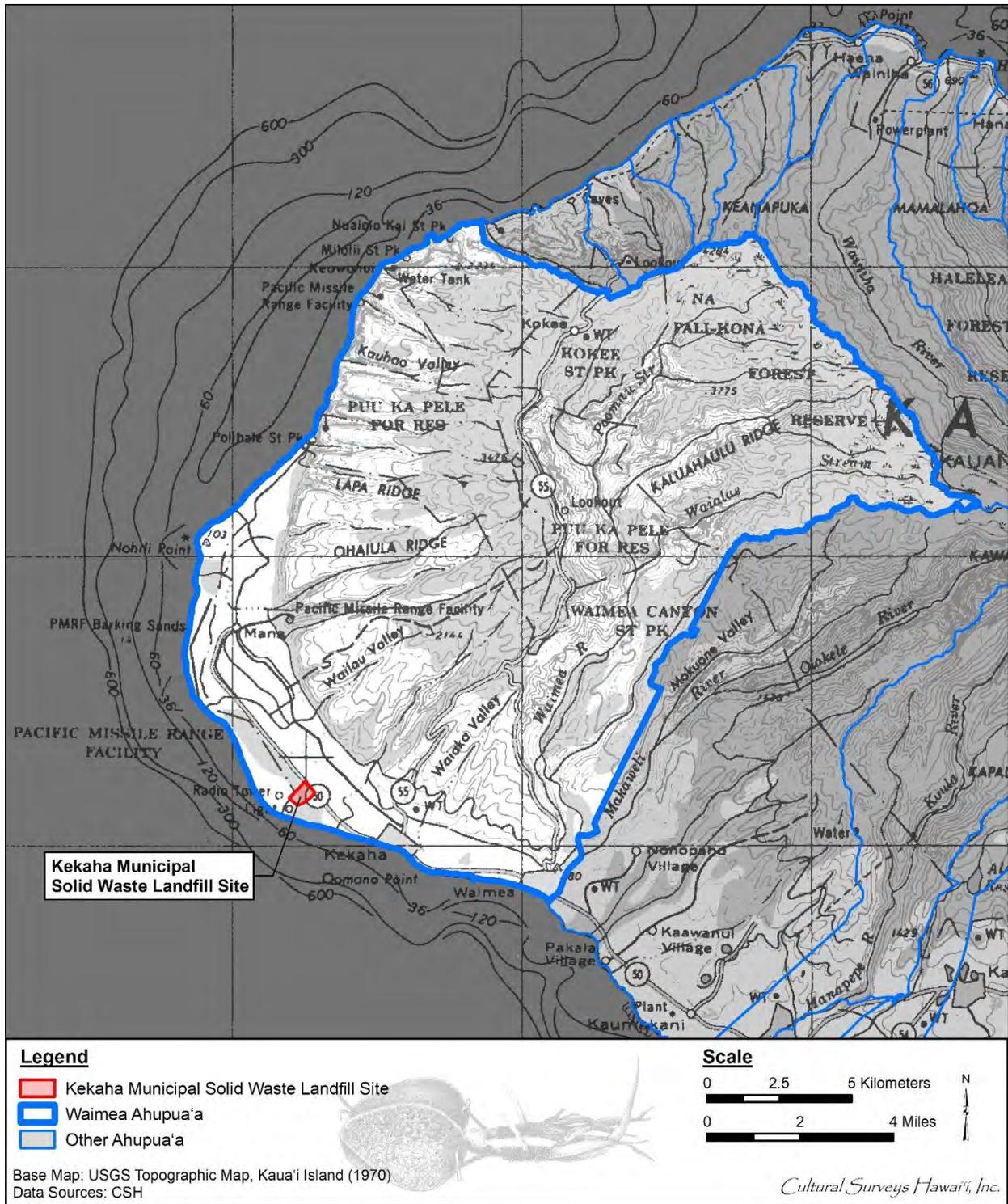


Figure 1. 1970 Kaua'i Island USGS topographic map showing the location of the existing Kekaha Municipal Landfill within Waimea ahupua'a (USGS 1970)

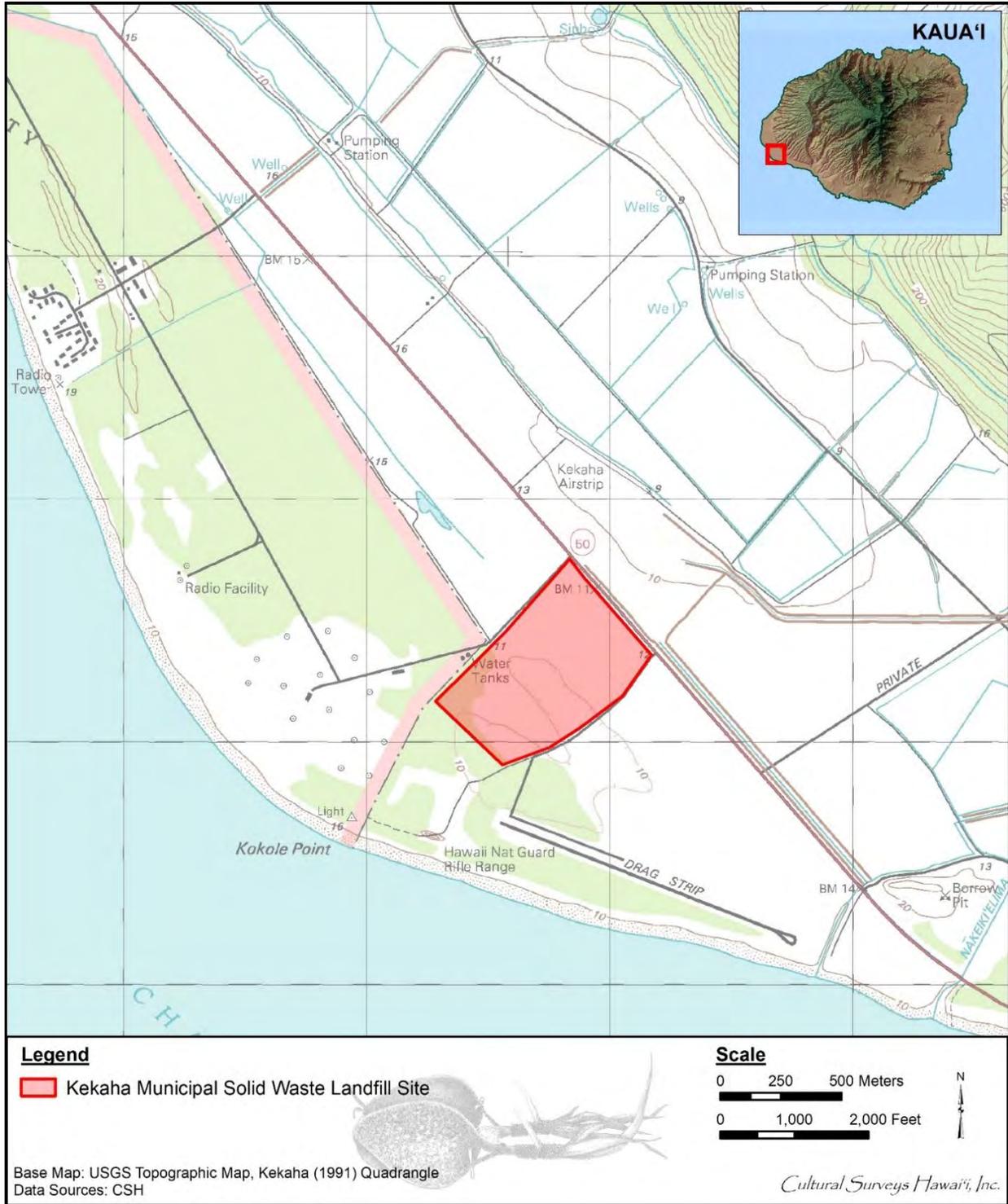


Figure 2. Portion of the 1991 Kekaha USGS 7.5-minute topographic map quadrangle with the boundary of the existing Kekaha Municipal Landfill delineated (USGS 1991)

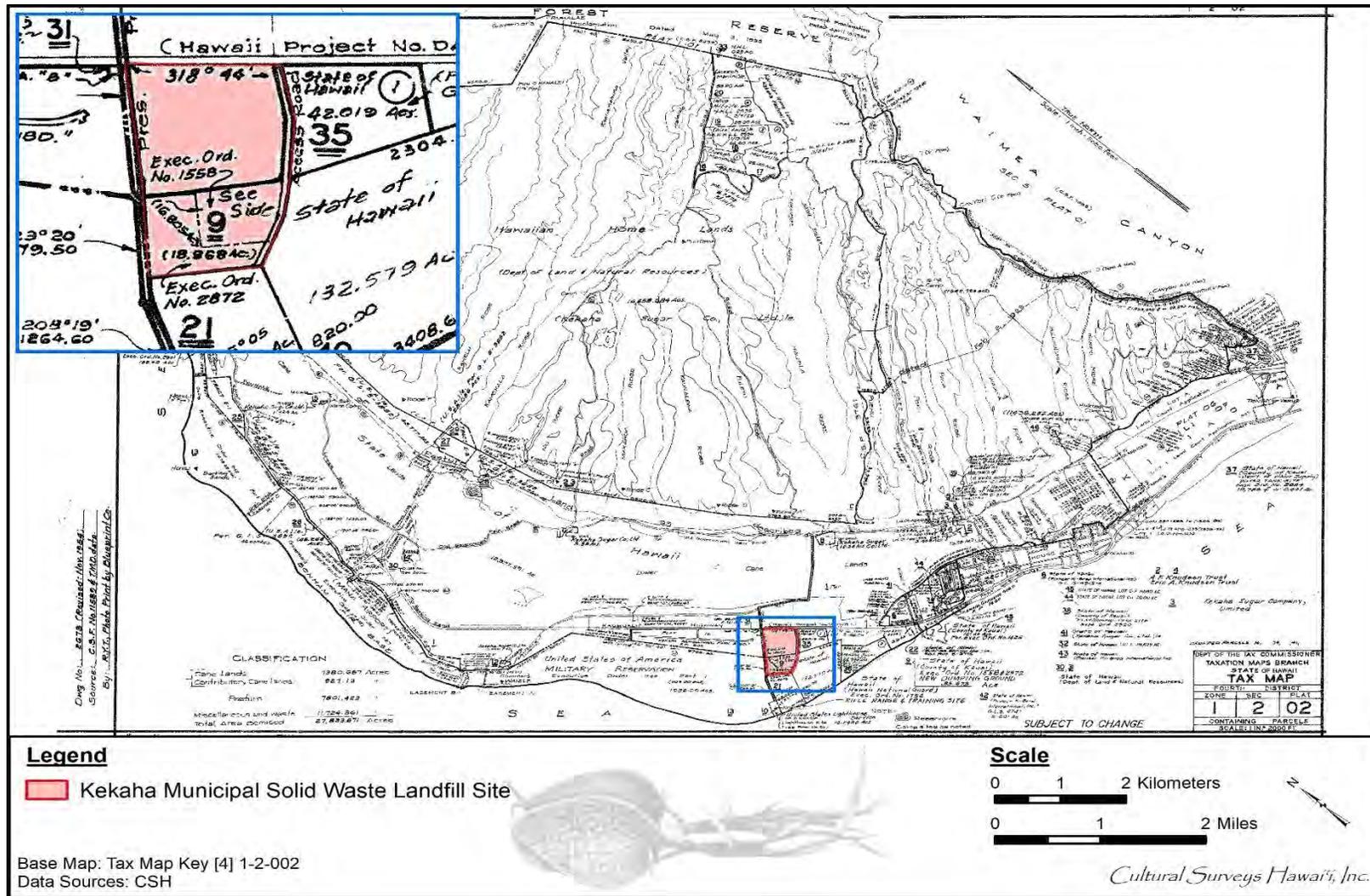


Figure 3. TMK: (4) 1-2-002 showing portions of the project area within portion of parcels 009 and 001 (Hawai'i TMK Service 2014)

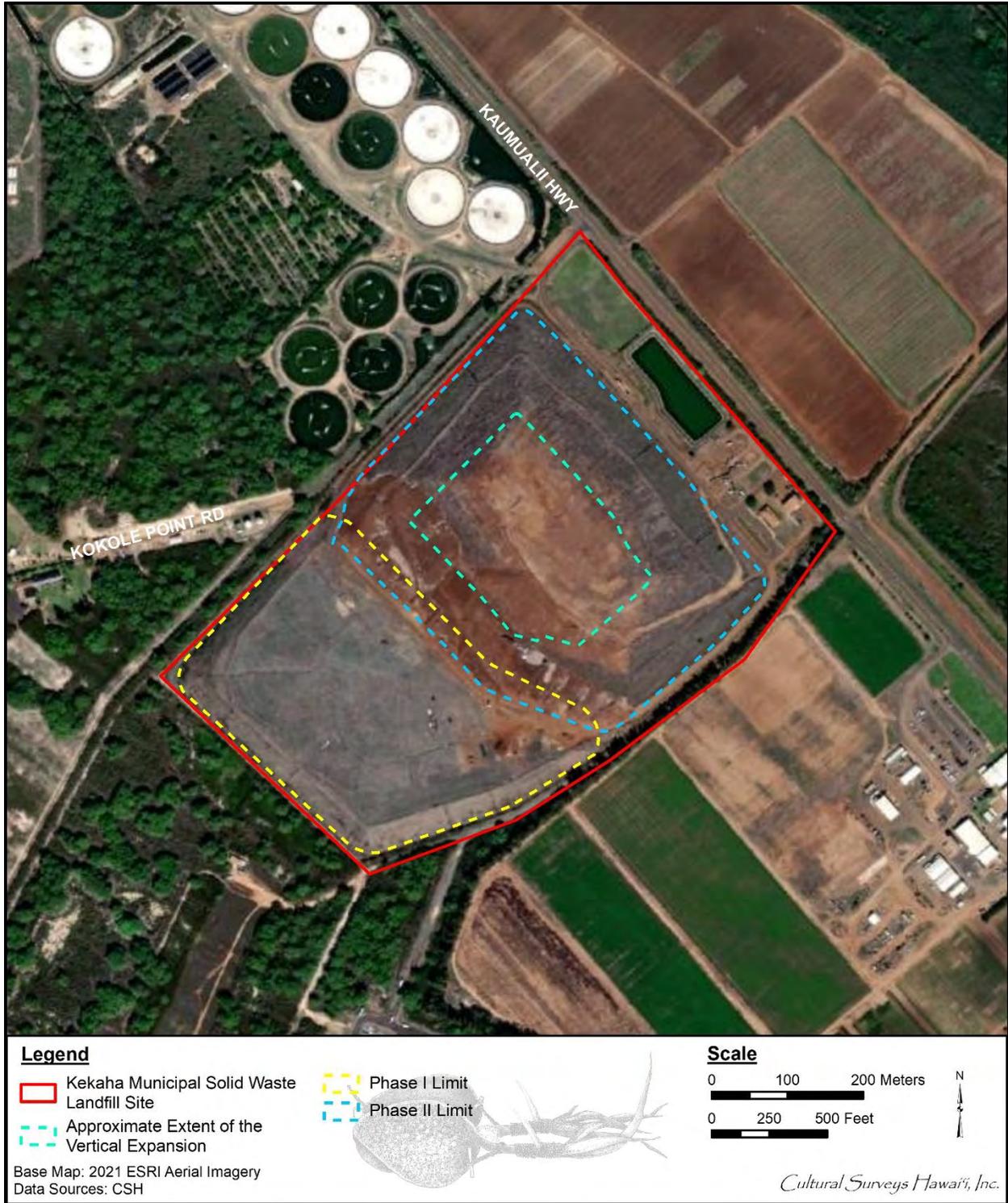


Figure 4. 2021 ESRI aerial image superimposed with the boundaries of Phase I and Phase II of the existing Kekaha Municipal Landfill and approximate extent of the proposed vertical expansion (ESRI 2021)

laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The county has previously attempted to site a new MSW landfill at another location on the island and continues to investigate alternative landfill sites. The county completed landfill siting studies in 2001/2002, 2007, and 2012. In 2018, the county completed an engineering design and Environmental Impact Statement (EIS) for a new MSW landfill and resource recovery park at Ma'alo. However, during the permitting process, the county had to abandon its plans to develop a new MSW landfill facility at Ma'alo due to the potential for the landfill to increase bird strikes at Līhu'e Airport. The county understands there is a critical need to identify a long-term MSW capacity solution for the island of Kaua'i and continues to evaluate alternative landfill sites and other long-term options for increasing the landfill capacity on Kaua'i.

### 1.1.2 Purpose and Need

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

### 1.1.3 Proposed Action

The major components of the Proposed Action would be located entirely within the Phase II area, TMK: (4) 1-2-002:001 (por.), and include the following:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 4 and Figure 5. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS):** Modern MSW facilities require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.

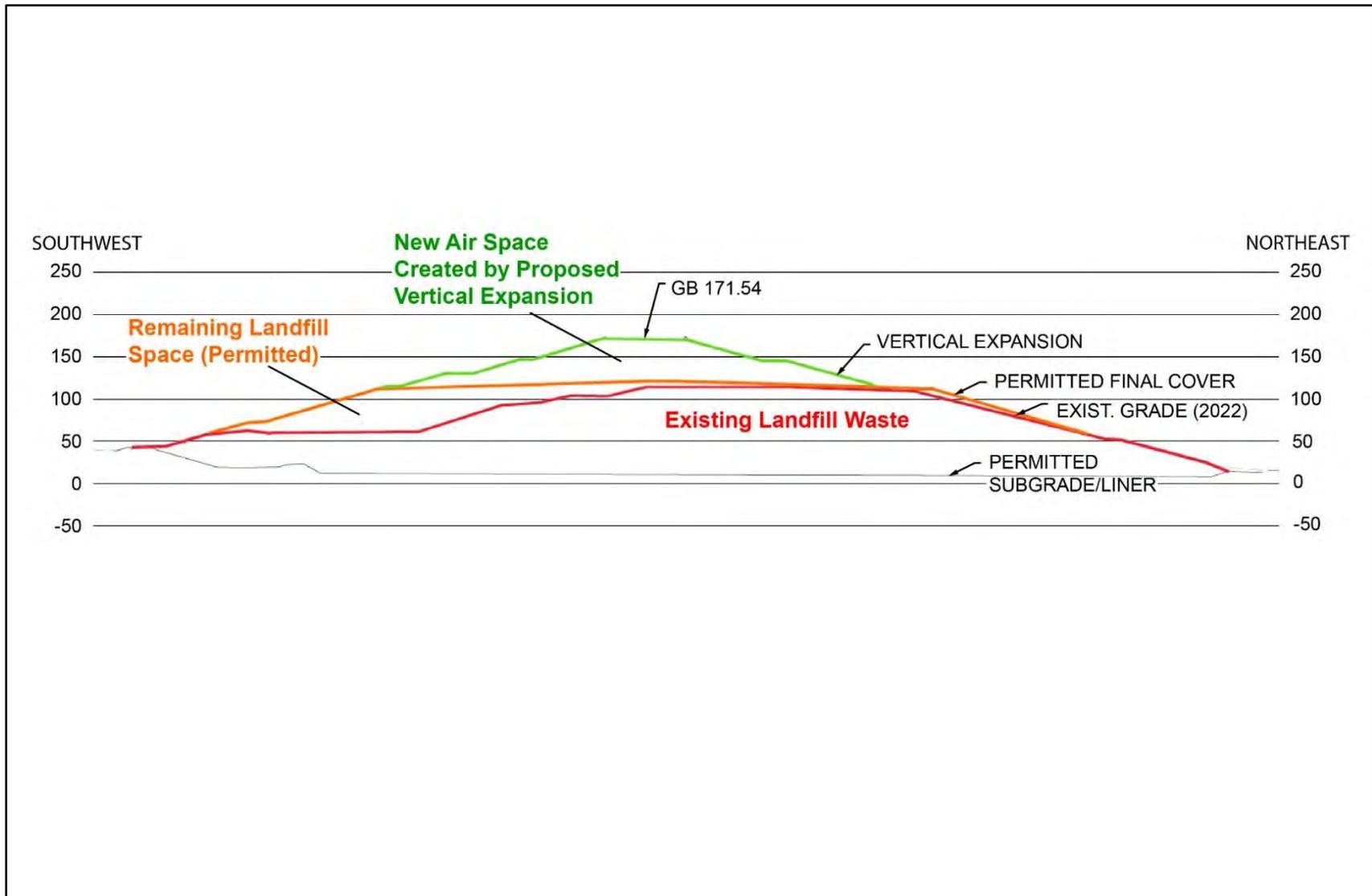


Figure 5. Profile drawing showing the proposed vertical expansion (courtesy of client)

- **Stormwater Management:** Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the proposed action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the proposed action. No substantial changes to KLF's operations are proposed. Operation of the Phase II vertical expansion would begin once all approvals are received.

## 1.2 Regulatory Context

This CIA supports compliance for the KLF Phase II Vertical Expansion project with:

- the mandate set forth by the Hawai'i State Constitution (Articles IX and XII), courts, Hawai'i Revised Statutes (HRS), Hawai'i Administrative Rules (HAR), and other Hawai'i State laws requiring government agencies promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups;
- the State of Hawai'i's environmental review process under HRS §343, which requires consideration of the proposed project's potential effects on cultural practices and cultural features in order to "promote responsible decision making" (HRS §343);
- and the State of Hawai'i's historic preservation review process under HAR §13-275-6 and §13-284-6, which requires the identification and mitigation of adverse effects proposed by a potential project in order to "promote the use and conservation of historic properties for the education of the citizens of Hawai'i" (HAR §13-275-6).

## 1.3 Document Purpose

This CIA contains information gathered from archival research and consultation, compiled to "analyze the impact of a proposed action on cultural practices and features associated with the project area" (Office of Environmental Quality Control 1997). Cultural practices and cultural features may include traditional cultural properties (TCPs), designated significant historic properties under State of Hawai'i significance Criterion e, pursuant to HAR §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that "have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6).

## 1.4 Scope of Work

The scope of work for this cultural assessment includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.
4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

## 1.5 Natural Environment

Kekaha lies in the *ahupua'a* (traditional land division) of Waimea on the southwest side of the island of Kaua'i, part of the traditional Hawaiian *moku* (district) of Kona and the current district of Waimea. Waimea Ahupua'a is by far the largest *ahupua'a* on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua'i. The *ahupua'a* encompasses all of the Waimea River Canyon area, the uplands of Kōke'e, the high swampy plateau of Alaka'i, and the northwestern coastal valleys of Nu'alolo and Miloli'i (Gray 1875:140–146).

The project area is located at the south end of the Mānā plain. The Mānā Plain is situated at the base of ancient sea cliffs at the extreme western end of Kaua'i Island. This plain is constructional in character with calcareous sands dominating the seaward margin, and terrigenous alluvium from the valleys of the western slopes of the island dominating the landward margin. The seaward margin of the plain is a beach ridge built upon a submerged wave-cut terrace (Macdonald and Abbott 1974:395). The beach ridge forms a barrier against the sea which created a shallow lagoon environment inland. The lagoon was filled during the mid-nineteenth century to create Mānā Plain as it appears today. Part of the seaward barrier of the plain consists of a formation of "Moderately to well cemented calcareous sand dunes [...] [that] appear to have formed during the Waipio stand of the sea" (Macdonald and Abbott 1974:395). Annual rainfall in the project area is less than 20 inches, occurring primarily in the fall and winter months (September to March) (Giambelluca et al. 1986). Maximum and minimum average temperatures throughout the year vary little from other coastal areas around Kaua'i, but it feels considerably hotter due in part to more variable and lighter winds on this leeward side of the island.

### 1.5.1 *Ka Lepo* (Soils)

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey gathered by Foote et al. (1972), the project area consists of Jaucas loamy fine sand, 0 to 8% slopes (JfB) (Figure 6). The Jaucas series is described by Foote et al. (1972) in the following excerpt:

This series consists of excessively drained, calcerous soils that occur as narrow strips on coastal places, adjacent to the ocean[...] They developed in wind- and

water-deposited sand from coral and seashells[...] Elevations range from sea level to 100 feet[...] The annual rainfall amount to 10 to 40 inches. [Foote et al. 1972:48]

### 1.5.2 *Nā Makani* (Winds)

For Native Hawaiians, *makani* (wind) were named for various reasons. Names of winds were assigned based on but not limited to their direction, strength, and geographic location. David Malo, a Native Hawaiian historian, explains some general terms related to wind:

[...] There was the *kona*, a wind from the south, of great violence and of wide extent. It affected all sides of an island, east, west, north, and south, and continued for many days [...] The *kona* wind often brings rain, though sometimes it is rainless. [...] The *hoolua*, a wind that blows from the north, sometimes brings rain and sometimes is rainless [...] The *hau* is a wind from the mountains, and they are thought to be the cause of it, because this wind invariably blows from the mountains outwards towards the circumference of the island. [Malo 1951:14]

Malo has supplied a foundation of names for winds, however, there is an abundance of names in various stories and chants. In the traditional story *The Wind Gourd of La'amaomao*, Pāka'a and his son Kūapāka'a are descendants of the wind goddess La'amaomao whose traditional home was in a gourd that contained all of the winds of Hawai'i. They are able to control the winds of Hawai'i contained in the gourd by chanting their names. Kūapāka'a's chant traces the winds of Kaua'i Island.

The following excerpt mentions the winds of Waimea ahupua'a, Kaua'i Island:

There they are, the winds of Kaua'i [...]  
 'Aiko'o is of Nu'alolo,  
 Kuehu-kai is the wind of Miloli'i,  
 Pu'ukapele is of Mānā,  
 Moeahua is of Kekaha,  
 Waipao is of Waimea [...]  
 [Nakuina 1992:53]

According to Nakuina (1992:138), 'Aiko'o means "canoe-eating" and is associated with Nu'alolo, located on the northwestern portion of Waimea Ahupua'a. The Kuehukai wind of Miloli'i is translated to mean, "stirring up the sea" by Nakuina (1992:139). Pukui and Elbert (1986:359) say Pu'ukapele wind is the "[s]ame as Pu'u-pele, the name of a wind at Mānā, Kaua'i, and of a place on Kaua'i." The wind of Waimea was Waipao, which means "wind-scooped" according to Kent (1986:443) or "the cool breeze" according to Nakuina (1992:140). A storm in the northeast portion of Waimea was called 'E'elekoa, meaning "stormy" (Pukui and Elbert 1986:37). Moeahua is the wind name of Kekaha, where the project area is located.

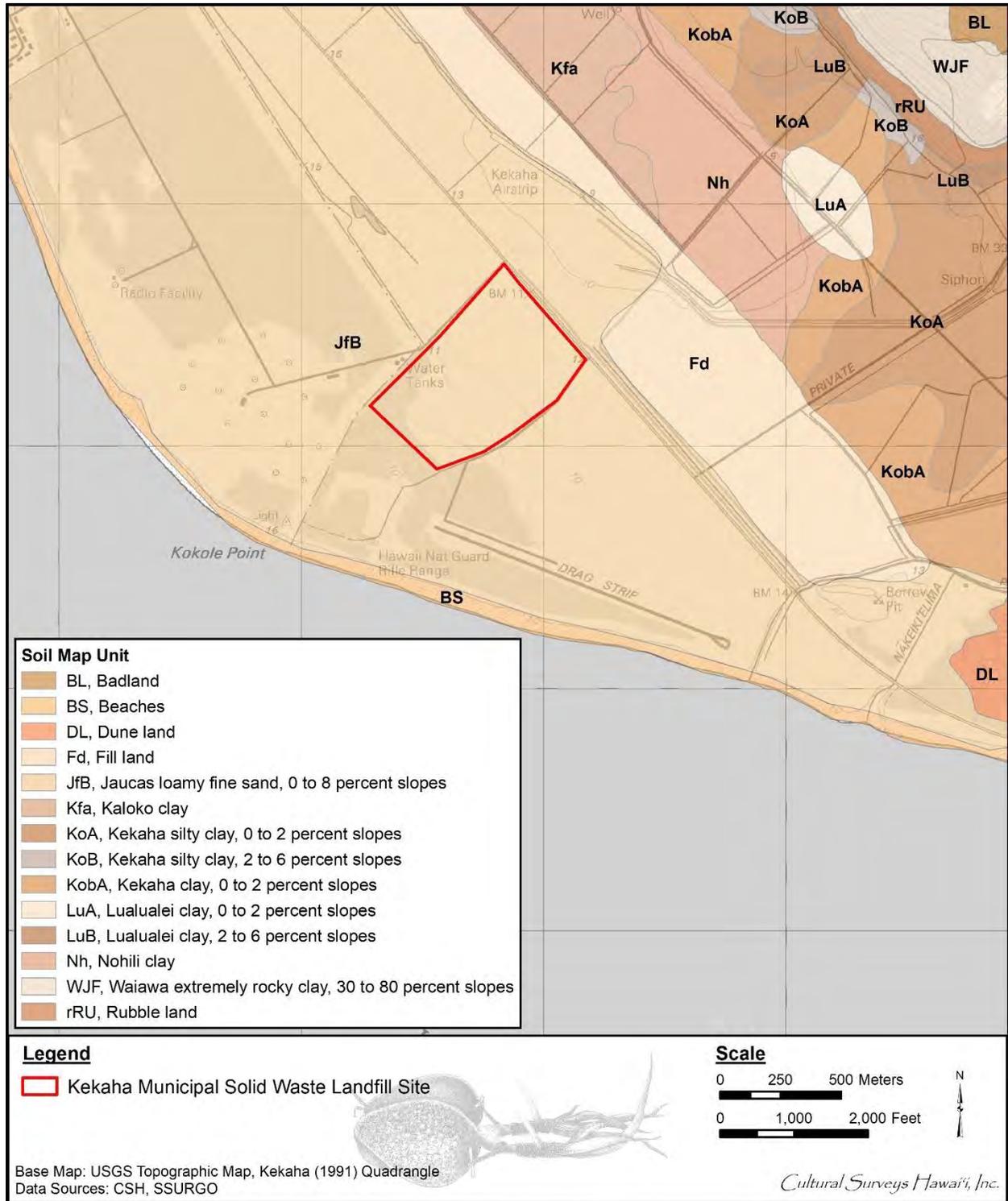


Figure 6. Overlay of *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (USDA SSURGO 2001)

Another wind of Waimea is the Naulu. The Naulu wind was identified within a *mele* (song) describing the wedding night of Wanahili, a princess of Puna (Hawai'i Island) and Manu'a, a king of Hilo and son of Kanehili (Emerson 1965:100). In the fourteenth stanza, the Naulu Wind of Waimea is identified:

<i>O Wanahili ka po loa ia Manu'a,</i>	Wanahili hides the whole night with Manu'a,
<i>O ka pu kau kama i Hawaii akea;</i>	By trumpet hailed through broad Hawaii,
<i>O ka pu leina kea a Kiha-</i>	By the white vaulting conch of Kiha-
<i>O kiha nui a Pii-lani-</i>	Great Kiha, offspring of Pii-lani,
<i>O Kauhi kalana-honu'-a-Kama;</i>	Father of eight-branched Kama-lala-walu.
<i>O ka maka iolena ke hoohaulani i-ō!</i>	The far-roaming eye now sparkles with joy,
<i>O kela kanaka hoali mauna,</i>	Whose energy erstwhile shook mountains,
<i>O Ka Lani ku'i hono i ka moku.</i>	The king who firm-bound the isles in one state,
<i>I waihona kapuahi kanaka ehā,</i>	His glory, symbolized by four human altars,
<i>Ai i Kauai, i Oahu, i Maui,</i>	Reaches Kauai, Oahu, Maui,
<i>I Hawaii kahiko o Keawe enaena,</i>	Hawaii the elder of Keawe,
<i>Ke a-a mai la me ko o-koko,</i>	Whose tabu, burning with blood-red blaze.
<i>Ke lapa-lapa la i ka makani,</i>	Shoots flame-tongues that leap with the wind,
<i>Makani kua, he Naulu.</i>	The breeze from the mountain, the Naulu.
<i>Kua ka Waihoa i ka Mikioi.</i>	Waihoa humps its back, while cold Mikioi
<i>Pu-ā ia lalo o Hala-li'i,</i>	Blows fierce and swift across Hala-li'i.
<i>Me he alii, alii, la no ka hele i Kekaha,</i>	It vaunts like a King at Kekaha,
<i>Ka hookiekie i ka li'u-la,</i>	Flaunting itself in the sun's heat,
<i>Ka hele i ke alia-lia la, alia!</i>	And lifts itself up in mirage,

<i>Alia-lia la 'a-laau Kekaha.</i>	Ghost-forms of Woods and trees in Kekaha-
<i>Ke kaha o Kala-ihi, Wai-o-lono.</i>	Sweeping o'er waste Kala-ihi, Water of Lono;
<i>Ke olo la ke pihe a ka La, e!</i>	While the sun shoots forth its fierce rays-

[Emerson 1965:100–101]

### 1.5.3 *Nā Ua* (Rains)

Precipitation is a major component of the water cycle, responsible for depositing *wai* (fresh water) on local flora. Pre-Contact *kānaka* (Native Hawaiians) recognized two distinct annual seasons. The first, known as *kau* (period of time, especially summer) lasts typically from May to October and is a season marked by a high-sun period corresponding to warmer temperatures and steady trade winds. The second season, *ho 'oilo* (winter, rainy season) continues through the end of the year from November to April and is a much cooler period when trade winds are less frequent, and widespread storms and rainfall become more common (Giambelluca et al. 1986:17). Each small geographic area on Kaua'i had a Hawaiian name for its own rains. According to Akana and Gonzalez (2015):

Rain names are a precious legacy from our kūpuna [elders] who were keen observers of the world around them and who had a nuanced understanding of the forces of nature. They knew that one place could have several types of rain, each distinct from the other. They knew when a particular rain would fall, its color, its duration, its intensity, its path, its sound, its scent, and its effect on the land and their lives [...] Rain names are a treasure of cultural, historical, and environmental information. [Akana and Gonzalez 2015:n.p.]

Rain in the Waimea Ahupua'a varies greatly depending on location. The Alakai Swamp and upper Kōke'e areas receive large amounts of rainfall; fresh water is especially plentiful in this locality. The coastal ridges and plains of the Kekaha-Mānā area receive some of the lowest rainfall on the island. On the drier leeward coast of Kaua'i, annual rainfall averages less than 500 mm (20 inches) and occurs primarily in the fall and winter months (September to March) (Giambelluca et al. 1986:86–98). The types of rain that are common where the project area is located, the Kekaha-Mānā area, consists of Nāulu, Kiu, and Ko'apuai'a. These rains along with other types of rain found within Waimea ahupua'a are discussed below.

#### 1.5.3.1 Waimea

In the *ahupua'a* of Waimea many rain names are associated with areas near or within the project area. Kapa'ahoa rain is known to be associated with Waimea according to Akana and Gonzalez (2015). The Kapa'ahoa rain of Waimea is mentioned in the following excerpts:

5. 'O Lu'anu'u a Laka, 'o Lu'anu'u ke keiki a Laka, 'o Hīkāwaelena ka makuahine, he ali'i wahine 'o ia no ka ua Kapa'ahoa no Waimea i Kaua'i.

Lu'anu'u of Laka, Lu'anu'u is the son of Laka; Hīkāwaelena is his mother; she is a chiefess of the Kapa'ahoa rain of Waimea in Kaua'i.

From the legend of Lu'anu'u. Hawaiian source: Kamakau, 'Ka moolelo Hawaii' 10/28/1869. English trans. by author. Additional source: Kamakau, Tales 147.

6. *Ku'u kāne, e ku'u kāne ho'i* My beloved husband, oh, my dear husband indeed

*Ku'u kāne mai ka wai 'ula 'iliahi* My dear husband of the red sandalwood  
*o Waimea* waters of Waimea

*Wai nono 'ula aka ua Kapa'ahoa* Red-glowing water of the Kapa'ahoa rain

From a kanikau, or lament, for Kamehameha IV by his wife, 'Emalani Kaleleonālanī. Source: Nogelmeier 339. Note: Pukui, 'Ōlelo 179, says that 'ka wai 'ula 'iliahi o Waimea' refers to Waimea Stream, which runs red following a storm 'where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called 'wai 'ula 'iliahi.'

7. *Kau ke Kiuwai'ahulu o Waimea* The Kiuwai'ahulu wind of Waimea settles

*Wai nono 'ula aka ua Kapa'ahoa* Blushing water of the Kapa'ahoa rain

*I ho'olu'u a kohu i ka pili* Dyed and stained by the closeness

*A 'ula mai he'a ka uka o Kahana* Becoming red, stained red are the uplands of Kahana

From a chant originally composed for Lunalilo and inherited by Kalakaua. This portion of the mele was composed by Ka'ahumanu. Hawaiian source: Na Mele Aimoku 147–48. English trans. by author. [Akana and Gonzalez 2015:66–67]

Furthermore, Nounou'ili meaning "to pelt the skin," is also a rain associated with Waimea. "*Ka ua Nounou'ili o Waimea*. The skin-pelting [Nounou'ili] rain of Waimea. A traditional saying. Source: Pukui, 'Ōlelo 172" (Akana and Gonzalez 2015:212).

### 1.5.3.1.1 Mānā

The project area is located within the Mānā Plains. Three rains are associated with Mānā: Nāulu, Kiu, and Ko'apuai'a. According to Akana and Gonzalez (2015), Nāulu is a sudden shower as well as the name of a shower cloud and wind; Kiu and Ko'apuai'a are rains associated with Kaua'i. The following excerpts mention these rains of Mānā:

Nāulu:

*A ua wai Nāulu ka uka o Mānā* The waters of the sudden Nāula showers cover Mānā

*Ke hahai lā i ka li 'ulā o Kaunalewa* Following the mirage of Kaunalewa

From a mele māka'ika'i, or travel chant, for 'Emalani Kaleleonālanī and her travels on Kaua'i. Hawaiian source: Nogelmeier 72. English trans. by author.

[Akana and Gonzalez 2015:187]

## Kiu:

<i>E Kū, e Lono, e Kāne, Kanaloa</i>	Kū, Lono, Kāne, Kanaloa
<i>‘Akahi ‘oe a ‘ike i ka mole wai</i>	You are just now seeing the source of water
<i>I nā mole wai pūhae a ka makani</i>	The water sources torn by wind
<i>I nā lile wai ‘one kau i ka pali</i>	The sparkling, delicious water placed on the cliffs
<i>I nā muliwai loloa a ka ua Kiu</i>	The long streams created by the Kiu rain
<i>‘Ololī ka wai ‘oloke‘a i Mānā</i>	Narrow are the waters crisscrossing at Mānā
<i>Uhala ‘ole ke kaha ‘ōkolo i ka helu</i>	Innumerable are the places across which they crawl

From a mele for Haili, the daughter of Kaumuali‘i. Hawaiian source: Pukui, *Nā Mele Welo* 38. English trans. by author. [Akana and Gonzalez 2015:106]

## Ko‘apuai‘a:

<i>Makemake au i ke inu wai o lalo</i>	I wish to sip of the waters below
<i>I ka ho‘onani mai a ke Ko‘apuai‘a</i>	Enhanced by the Ko‘apuai‘a showers
<i>Pāpa‘anā kō‘ele‘ele Mānā</i>	Mānā shudders and clamors in haste
<i>‘Eleu nō i ke kaha o Nohomalu ē, i laila</i>	Rushing to the sheltered strands of Nohomalu, yes, there

From a mele recalled by Ho‘oulumāhiehie as he described the fine physiques of Hi‘iakaikapoliopole and her companions. Hawaiian source: Ho‘oulumāhiehie, *Ka Mo‘olelo* 73. English trans.: Ho‘oulumāhiehie, *Epic* 70. Additional source: *Na Mele Aimoku* 169. [Akana and Gonzalez 2015:106]

**1.5.3.1.2 Nu‘alolo**

Nu‘alolo is located in the most northwestern portion of Waimea Ahupua‘a. Two rains are associated with Nu‘alolo: Hōli‘o and Kēhaupua. According to Akana and Gonzalez (2015), Hōli‘o is a rain associated with Hawai‘i, O‘ahu, and Kaua‘i and Kēhaupua is a misty rain. The following excerpts mention *Hōli‘o* and *Kēhaupua*:

## Hōli‘o:

<i>Nū ka leo o ke kai i ka haka lewa o Nu‘alolo</i>	The voice of the sea roars upon the floating platform of Nu‘alolo
<i>Kū ka ‘ehu o ka huna o ke kai i nā pali</i>	The mist of the sea ascends the cliffs
<i>Hū ka ‘ōmaka wai a ka ua i ka makani</i>	The source of the rain gushes in the wind

*Makani halihali i ka ua Hōli'o* Wind that carries the Hōli'o rain

From a mele māka'ika'i, or travel chant, for 'Emalani Kaleleonālanī and her travels on Kaua'i. Hawaiian source: Nogelmeier 72. English trans. by author. [Akana and Gonzalez 2015:39–40]

Kēhaupua:

*He ipu wai 'ala, wai aloha* A fragrant water bowl, the essence of affection

*Na ke Kēhaupua* By the Kēhaupua misty rain

*'O ke Kino ia o ka Ha'ikō makani* It is the embodiment of the Ha'ikō wind

*Hali 'ala o Nu'alolo* That carried the perfume to Nu'alolo

From a makena, or lament, for 'Emalani Kaleleonālanī. Source: Nogelmeier 348. [Akana and Gonzalez 2015:77]

### 1.5.3.1.3 Alaka'i Valley

The Alaka'i Valley is located in the northeastern corner of the *ahupua'a* of Waimea. There are five rains associated with Alaka'i: Ki'owao, Nahae, Puananaiea, and 'Ulalena. The following excerpt mentions these rains of Alaka'i Valley:

Ki'owao:

“Ki'o wai” means “upland root” (Akane and Gonzalez 2015:85) and is a “cool mountain rain accompanied by wind and fog, sometimes associated with Alaka'i Swamp on Mt. Wai'ale'ale, Kaua'i, as well as Nu'uanu Valley, O'ahu” (Akana and Gonzalez 2015:89).

Nahae:

“Nahae” means “to shred” (Akana and Gonzalez 2015:180)

*'Oiai 'o ka nanā 'o Kauaikananā* While the surly one is Kauaikananā

*'O ka mana o ka ua Nahae i Alaka'i* The power is in the shredding [Nahae] rain at Alaka'i

From a mele māka'ika'i, or travel chant, for Emalani Kaleleonālanī by Kapapa. Source: Nogelmeier 132. Note: Kuapuu, 'He wahi moololo' 4/10/1861, says that 'Kauaikananā' is the name of a valley in Waimea, Kaua'i. It is also the name of a stream there. [Akana and Gonzalez 2015:180]

Puananaiea:

*'O 'oe kā ia, e nā lehua i Alaka'i* It is you, O lehua at Alaka'i

*Ke pūhene 'ia maila e ka manu* Teased by the birds

*He nui ho'i na ka ua Puananaiea* A darling of the Puananaiea rain

*He punahele na ka Lawelawemālie* A favorite of the Lawelawemālie wind

*I lāhui nō i ka uka o Kawaineki*      Gathered together in the upland of  
Kawaineki

From a mele inoa, or name chant, by Keauka praising the child Kahelekūlani in the legend of Kamaakamahi'ai. Hawaiian source: Kaulilinoe, 'Ka moolelo' 10/1/1870. English trans. by author. Additional source: Kaulilinoe, 'Legend' 60-61. [Akana and Gonzalez 2015:246]

'Ulalena:

"Ua lena" means "yellowish-red" and is found on Maui, Kaho'olawe, O'ahu, and Kaua'i (Akana and Gonzalez 2015:262).

*Ku'u hoa o ka ua 'Ulalena*      My beloved companion of the 'Ulalena rain  
*O ka ua loku mai i ka nahele*      Of the rain that pours down upon the forest  
*Hāli'i maila i ke pili*      Spreading over the pili grass  
*Pulu pē i ka Noe o Alaka'i*      Soaked with the Noe of Alaka'i

From the song 'Pua koolau lei o Kaiulani' by Kapoli. Hawaiian source: Holstein 58. English trans. by author. [Akana and Gonzalez 2015:269]

#### 1.5.4 *Nā Kahawai* (Streams and Freshwater)

There exist numerous streams and waterways in Waimea Ahupua'a, however, there are no naturally occurring streams or surface waters located within the KLF site. Kauaikinanā Stream, translated to mean "the rain defied," rises at approximately 3,830 ft and meets Kawikio Stream at 2,565 ft to form Po'omau Stream. Po'omau Stream, translated as "constant source" or "constant head," is a major tributary to the Waimea River. Kawaikōi Stream rises to 4,160 ft at Alakai Swamp, drops down into Po'omau canyon and ends at Moeloa waterfall, meaning "long sleep." The name Kawaikōi is translated to mean "the flowing water" (Ulukau 2014) or "rushing stream" (Gay 1873:22). The Waiahulu stream begins at an elevation of 1,620 ft at the meeting of Halemanu and Kōke'e streams. Waiahulu joins the Po'omau Stream at 965 ft to produce the Waimea River. The Waimea River, which begins at an elevation of approximately 965 ft at the joining of Waiahulu and Po'omau streams, is translated to mean "reddish water" (Ulukau 2014). Wichman (2003) describes Waimea Stream at the time of early voyages to Kaua'i:

The river itself was generous in its gift of 'o'opu (goby). Once a year the spawn of the 'o'opu (*hinana*) swam down the rivers to the sea in such numbers that they touched the skin of anyone entering the water. *Hinana* were only one or two inches in length and were easily netted. They quickly became a favorite food. Better yet, after a season in the ocean the *hinana* returned as adult 'o'opu to their spawning grounds, and their life cycle began again. [Wichman 2003:6]

The spirited act of *hinana* harvesting is described in Margaret Titcomb's (1972) *Native Use of Fish in Hawaii*.

*Hinana* (spawn) were especially popular as dainty food.

By the mouth of the river of Waimea, Kauai, was a multitude of men and women along the banks, for those were good days in which to catch *hinana* in nets. The

fish were as plentiful as rubbish in that land when the *hinana* season came. The natives there call it '*ke i'a ili kanaka o Waimea*' (the fish of Waimea that touches the skin of man) (75.51).

The *hinana* was a fish of which the natives of Waimea and thereabouts were so fond that they hardly shared with others [...] *Hinana* was *i'a pi ia* (fish stingily regarded). There were people so lucky in fishing that they were said to have skins like Ku'ula ('ili Ku'ula). If there were such persons in a locality only they were allowed to dive into the water with *hinana* nets. No others went into the water at that time, for that would counteract the influence or *mana* of the diver. If there were only one such person she had to go alone. Strangely, all the '*ili Ku'ula* people I knew were women.

[...] The spawn, *hinana*, a very popular food, were gathered in vast quantities in certain areas. Even today the coming of this fish is worth talking about. (1940) An informant from Waimea, Kauai, says that the well-known fish of the land has appeared (May). This fish was well liked from the time of our ancestors. '*Ai wale i ka hinana, ka i'a kaulana o ka 'aina.*' (Eat freely of the *hinana*, the well-known fish of the land.) [Titcomb 1972:122–123]

Kekaha, an '*ili* (land section, next in importance to *ahupua'a* and usually a subdivision of an *ahupua'a*) within the *ahupua'a* of Waimea, and other settlements on the Mānā plain suffered from a definite lack of fresh surface water and variable rainfall. *Mauka* (toward the mountain) gulches had only intermittent stream flows, and water sources were primarily springs along the base of the cliffs (Handy and Handy 1972:268–270).

### 1.5.5 *Ka Likikikai a me Ka Moana (the Coast and Ocean)*

Mary Kawena Pukui of the Bishop Museum made a list of surfing spots mentioned in Hawaiian oral traditions. For Waimea, she recorded the names of Kaua (meaning “war”), Kualua (“twice”), and Po'o (“head”) (Finney and Houston 1996:31). John Papa 'Ī'ī, the early Hawaiian historian, had a similar list of Kaua'i surfing spots:

The surf of Kamakaiwa is in Kapaa, Kauai, and so is the surf of Kaohala and one that runs to the sand of Wailua. Others are the surfs of Poo, Koalua, and the one that runs to the mouth of the sand-bottomed stream of Waimea, and the surf of Manalau is in Waioli. ['Ī'ī 1959:135]

Clark (2002) adds that Waimea River mouth, located off the mouth of Waimea River, GI's, off Waimea State Recreation Pier, and Wright Beach Park, on the west bank of the Waimea River, are also popular surf sites in Waimea, Kaua'i. Clark also sites Waimea as a “Former interisland steamer landing at the end of Moana Road” and as “a fishing site used by the residents of West Kaua'i” (Clark 2002:381).

The Kaulakahi channel that runs between Waimea and Ni'ihau was said to be plentiful in marine resources supplying “such fishes as the *uluu* (jackfish), *mahimahi* (dolphin), *ono* (mackerel), and *a'u* (marlin), all large enough to feed many people” (Wichman 2003:6). Furthermore, Wichman states people in Waimea benefited from the “reef fish, sea urchins, squid, and seaweeds” (Wichman 2003:6) of the shallow water.

## 1.6 Built Environment

The project area is located 1.3 miles northwest of the town of Kekaha on the southwest side of the island of Kaua'i. It is adjacent to Kaumuali'i Highway and is approximately 1,700 ft from the shoreline of the Pacific Ocean. Southeast of the project area is the Mānā Drag Strip, owned by the State of Hawai'i, DLNR and leased to the Garden Isle Racing association. The Drag Strip began construction in 1969 and was completed in 1971. The Kauai Raceway Park was then established at the Drag Strip where drag racing events continue to occur. To the east of the project area is Hartung Brothers, Inc., a family owned and operated agribusiness. To the west is the Pacific Missile Range Facility (PMRF).

## Section 2 Methods

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### 2.1 Archival Research

Historical documents, maps, and existing archaeological information pertaining to Waimea Ahupua‘a, Waimea Moku and the project area vicinity were researched at the CSH library and other archives including the University of Hawai‘i at Mānoa’s Hamilton Library, the State Historic Preservation Division (SHPD) library, the Hawai‘i State Archives, the State Land Survey Division, and the archives of the Bishop Museum. Previous archaeological reports for the area were reviewed, as were historic maps and photographs and primary and secondary historical sources. Information on Land Commission Awards (LCAs) was accessed through Waihona ‘Aina Corporation’s Māhele Data Base (Waihona ‘Aina 2022) as well as a selection of CSH library references.

The definitive source for Hawaiian place names is Pukui et al.’s (1974) *Place Names of Hawai‘i*, but additional place name translations and interpretations were also gleaned from Soehren’s “Hawaiian Place Names” database on the internet (Soehren 2014), historical maps, Land Commission documents available at the Hawai‘i State Archives or on the internet at Waihona ‘Aina (2014), and from other place name texts such as Clark (1977) and Thrum (1922).

For cultural studies, research for the Traditional Background section centered on Hawaiian activities including religious and ceremonial knowledge and practices; traditional subsistence land use and settlement patterns; gathering practices and agricultural pursuits; as well as Hawaiian place names and *mo‘olelo*, *mele* (songs), *oli* (chants), *‘ōlelo no‘eau* (proverbs), and more. For the Historic Background section research focused on land transformation, development, and population changes beginning in the early post–European Contact era to the present day (see Scope of Work above).

### 2.2 Community Consultation

#### 2.2.1 Sampling and Recruitment

A combination of qualitative methods, including purposive, snowball, and expert (or judgment) sampling, were used to identify and invite potential participants to the study. These methods are used for intensive case studies, such as CIAs, to recruit people that are hard to identify, or are members of elite groups (Bernard 2006:190). Our purpose is not to establish a representative or random sample. It is to “identify specific groups of people who either possess characteristics or live in circumstances relevant to the social phenomenon being studied [...] This approach to sampling allows the researcher deliberately to include a wide range of types of informants and also to select key informants with access to important sources of knowledge” (Mays and Pope 1995:110).

We then begin with purposive sampling informed by referrals from known specialists and relevant agencies. For example, we contacted the SHPD, Office of Hawaiian Affairs, Kaua‘i/Ni‘ihau Island Burial Council (KNIBC), and community and cultural organizations in Kekaha and Waimea for their brief response/review of the project and to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and vicinity, cultural and lineal descendants, and other appropriate community representatives and

members. Based on their in-depth knowledge and experiences, these key respondents then referred CSH to additional potential participants who were added to the pool of invited participants. This is snowball sampling, a chain referral method that entails asking a few key individuals (including agency and organization representatives) to provide their comments and referrals to other locally recognized experts or stakeholders who would be likely candidates for the study (Bernard 2006:192).

CSH also employs expert or judgment sampling which involves assembling a group of people with recognized experience and expertise in a specific area (Bernard 2006:189–191). We utilized our previous contact list from previous CIA projects within the project area vicinity. CSH maintains a database that draws on over two decades of established relationships with community consultants: cultural practitioners and specialists, community representatives, and cultural and lineal descendants. We review this in-house database and compile a list of consultants to contact within the project area vicinity. The names of new potential contacts were also provided by colleagues at CSH and from the researchers' familiarity with people who live in or around the study area. Researchers often attend public forums (e.g., Neighborhood Board, Burial Council and Civic Club meetings) in (or near) the study area to scope for participants. Please refer to Table 7, Section 7 for a list of individuals and organizations who were contacted and responded for this CIA. Outreach was attempted to 61 parties.

CSH focuses on obtaining in-depth information with a high level of validity from a targeted group of relevant stakeholders and local experts. Our qualitative methods do not aim to survey an entire population or subgroup. A depth of understanding about complex issues cannot be gained through comprehensive surveying. Our qualitative methodologies do not include quantitative (statistical) analyses, yet they are recognized as rigorous and thorough. Bernard (2006:25) describes the qualitative methods as "a kind of measurement, an integral part of the complex whole that comprises scientific research." Depending on the size and complexity of the project, CSH reports include in-depth contributions from about one-third of all participating respondents; typically this means three to 12 interviews. For the current project, we were able to conduct one in-depth interview remotely via MS Teams and received two written testimonies from consultants.

### **2.2.2 Informed Consent Protocol**

An informed consent process was conducted as follows: 1) before beginning the interview, the CSH researcher explained to the participant how the consent process works, the project purpose, the intent of the study and how his/her information will be used; 2) the researcher gave him/her a copy of the Authorization and Release Form to read and sign (Appendix B ); 3) if the person agreed to participate by way of signing the consent form *or* by providing oral consent, the researcher started the interview; 4) the interviewee received a copy of the Authorization and Release Form for his/her records, while the original is stored at CSH; 5) after the interview was summarized at CSH (and possibly transcribed in full), the study participant was afforded an opportunity to review the interview notes (or transcription) and summary and to make any corrections, deletions or additions to the substance of their testimony/oral history interview; this was accomplished primarily via phone, post or email follow-up and secondarily by in-person visits; 6) participants received the final approved interview, photographs, and the audio-recording and/or transcripts of their interview if it was recorded. They were also given information on how

to view the draft report on the Environmental Review Program (ERP) website and offered a hard copy of the report once the report is a public document.

If an interviewee agreed to participate on the condition that his/her name be withheld, procedures were taken to protect his/her confidentiality (see Protection of Sensitive Information below).

### **2.2.3 Interview Techniques**

To assist in discussion of natural and cultural resources and cultural practices specific to the study area, CSH initiated semi-structured interviews (as described by Bernard 2006) asking questions from the following broad categories: gathering practices and *mauka* and *makai* (lowland, ocean) resources, burials, trails, historic properties and *wahi pana* (storied place/s). The interview protocol is tailored to the specific natural and cultural features of the landscape in the study area identified through archival research and community consultation. These interviews and oral histories supplement and provide depth to consultations from government agencies and community organizations that may provide brief responses, reviews and/or referrals gathered via phone, email, and occasionally face-to-face commentary.

#### **2.2.3.1 In-depth Interview and Oral Histories**

Interviews were conducted initially at a place of the study participant's choosing (usually at the participant's home or at a public meeting place) and/or—whenever feasible—during site visits to the project area. Generally, CSH's preference is to interview a participant individually or in small groups (two–four); occasionally participants are interviewed in focus groups (six–eight). Following the consent protocol outlined above, interviews may be recorded on tape or a digital audio device and in handwritten notes, and the participant photographed. The interview typically lasts one to four hours, and records the “who, what, when and where” of the interview. In addition to questions outlined above, the interviewee is asked to provide biographical information (e.g., connection to the study area, genealogy, professional and volunteer affiliations, etc.). Of those who responded to our request for consultation, only one in-depth interview was conducted remotely via MS Teams. Two consultants responded via an interview questionnaire that was initially sent along with our request for consultation letter.

#### **2.2.4 Protection of Sensitive Information**

It is sometimes the case that participants in cultural studies agree to contribute their comments or be interviewed for a study on the condition that their names are withheld from the report. Their reasons for doing so vary from concern about protecting the identity of resource collectors and/or revealing the precise location of certain natural and cultural resources to opposition to the proposed project. For the interviewee who agrees to participate on the condition that his/her name is withheld from public disclosure, CSH takes all precautions to make sure his/her contribution remains confidential. The confidentiality of subjects is maintained via protected files. For this reason, CIA reports sometime include a subsection of summaries of *kama 'āina* “talk-story” interviews entitled Additional Statements.

## **2.3 Compensation and Contributions to Community**

Many individuals and communities have generously worked with CSH over the years to identify and document the rich natural and cultural resources of these islands for cultural impact,

ethno-historical and, more recently, TCP studies. CSH makes every effort to provide some form of compensation to individuals and communities who contribute to cultural studies. This is done in a variety of ways: individual interview participants are compensated for their time in the form of a small honorarium and/or other *makana* (gift); community organization representatives (who may not be allowed to receive a gift) are asked if they would like a donation to a Hawaiian charter school or nonprofit of their choice to be made anonymously or in the name of the individual or organization participating in the study; contributors are provided their transcripts, interview summaries, photographs and—when possible—a copy of the CIA report; CSH is working to identify a public repository for all cultural studies that will allow easy access to current and past reports; CSH staff do volunteer work for community initiatives that serve to preserve and protect historic and cultural resources (for example in Lāna‘i and Kaho‘olawe). Generally our goal is to provide educational opportunities to students through internships, share our knowledge of historic preservation and cultural resources and the state and federal laws that guide the historic preservation process, and through involvement in an ongoing working group of public and private stakeholders collaborating to improve and strengthen the §343 environmental review process.

## Section 3 Traditional Background

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### 3.1 Traditional Land Settlement Patterns

Kekaha, Pōki'i, Wai'awa, and Mānā are *ahupua'a* located in the ancient district of Kona, Waimea District, on the southwest side of the island of Kaua'i. All of these *ahupua'a* are now *'ili 'āina* (land section) of the *ahupua'a* of Waimea. Waimea *Ahupua'a* is composed of several regions which are very different in climate and terrain. These differences essentially dictated the kinds of resources that were available, and hence had much to do with the way the *ahupua'a* was settled by pre-Contact Hawaiians. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture and represent the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972:393–397).

On the southwestern leeward coast, about 3 miles from Waimea Bay, a broad, flat plain stretches between the Waimea River delta and Polihale to the west (Handy and Handy 1972:394). It is here that Kekaha, Pōki'i, Wai'awa, and Mānā are located, backed on the *mauka* side by steep low cliffs and a series of small valleys and gulches.

Just below, *makai* of the ridges and valleys, lies the Kekaha Ditch, which winds its way down from the Waimea River in the mountains. From the edge of Kekaha Ditch to the ocean lie the former swamp lands of the Kekaha-Mānā plains, now planted in corn and truck produce, and previously in sugarcane. Between these former swamp lands and Kekaha Ditch is a strip of land that once housed many people in the villages of Pōki'i, Wai'awa, Kaunalewa, Mānā, and others. Between the villages were intermittent homes, with the Old and New Government roads to Mānā (also called the Mānā Road) linking each community between Mānā and Kekaha.

Kelly (1971:2) describes Kekaha on the island of Hawai'i as *'āina malo 'o* or “dry land,” and indeed the same could be said of Kekaha, Kaua'i, if one considers the area's low annual rainfall and lack of permanent streams. Kekaha, however, was neither void of water nor a prehistoric population that made use of the local resources.

### 3.2 *Nā ka'ao a me nā Mo'olelo* (Legends and Stories)

Hawaiian storytellers of old were greatly honored; they were a major source of entertainment and their stories contained teachings while interweaving elements of Hawaiian lifestyles, genealogy, history, relationships, arts, and the natural environment (Pukui and Green 1995:IX). According to Pukui and Green (1995), storytelling is better heard than read for much becomes lost in the transfer from the spoken to the written word and *ka'ao* (legends) are often full of *kaona* or double meanings.

*Ka'ao* are defined by Pukui and Elbert as a “legend, tale [...], romance, [and/or], fiction” (Pukui and Elbert 1986:108). *Ka'ao* may be thought of as oral literature or legends, often fictional or mythic in origin, and have been “consciously composed to tickle the fancy rather than to inform the mind as to supposed events” (Beckwith 1970:1). Conversely, Pukui and Elbert define *mo'olelo* as a “story, tale, myth, history, [and/or] tradition” (Pukui and Elbert 1986:254). The *mo'olelo* are generally traditional stories about the gods, historic figures or stories that cover historic events and locate the events with known places. *Mo'olelo* are often intimately connected to a tangible place or space.

In differentiating *ka'ao* and *mo'olelo* it may be useful to think of *ka'ao* as expressly delving into the *wao akua* (realm of the gods), discussing the exploits of *akua* in a primordial time. However, it is also necessary to note there are exceptions, and not all *ka'ao* discuss gods of an ancient past. *Mo'olelo* on the other hand, reference a host of characters from *ali'i* (chief), to *akua* and *kupua* (supernatural beings), to finally *maka'āinana* (commoners), and discuss their varied and complex interactions within the *wao kānaka* (realm of man). Beckwith elaborates, “In reality, the distinction between *ka'ao* as fiction and *mo'olelo* as fact cannot be pressed too closely. It is rather in the intention than in the fact” (Beckwith 1970:1). Thus, a so-called *mo'olelo*, which may be enlivened by fantastic adventures of *kupua*, “nevertheless corresponds with the Hawaiian view of the relation between nature and man” (Beckwith 1970:1).

Both *ka'ao* and *mo'olelo* provide important insight into a specific geographical area, adding to a rich fabric of traditional knowledge. The preservation and passing on of these stories through oration remains a highly valued tradition. Additionally, oral traditions associated with the study area communicate the intrinsic value and meaning of a place, specifically its meaning to both *kama'āina* as well as others who also value that place.

The following section presents traditional accounts of ancient Hawaiians living in the vicinity of the project area. Many relate an age of mythical characters whose epic adventures inadvertently lead to the Hawaiian race of *ali'i* (chiefly class) and *maka'āinana* (commoners). The *ka'ao* in and around the project area shared below are some of the oldest Hawaiian stories that have survived; they still speak to the characteristics and environment of the area and its people.

### 3.2.1 Pele

There are many stories of Pele and her siblings on the island of Kaua'i. There are two stories that Wichman mentions of Pele and her siblings arriving on the shores of Mānā, the southwestern portion of Waimea Ahupua'a. The first story, “Pele in Waimea,” discusses the naming origin of Pa'u o Hi'iaka. The second story, “Pele and Her Sisters: The Winds and Waters,” discusses place names within the *ahupua'a* of Waimea.

#### 3.2.1.1 Pele in Waimea

Before Pele found her home in Mauna Loa volcano, she journeyed around Kaua'i searching for a place to live. Pele first landed in Mānā along with her baby sister Hi'iaka-i-ka-poli-o-Pele (“Hi'iaka carried in the bosom of Pele”). Two plants, *'Ohai* (*Sesbania tomentosa*)—a shrub and *Inoa*—a vine, shaded the infant Hi'iaka upon her arrival to the shores of Mānā. Pele felt so much gratitude toward the plants that she offered them a favor:

‘What can I do to thank you?’ Pele asked.

‘Nothing for me,’ *'Ohai* said. ‘But you could help my friend.’

‘How?’ asked Pele.

‘She has no name,’ *'Ohai* said. ‘Can you give her one?’

‘That is all you ask?’ Pele said in surprise.

She reached to pick up Hi'iaka from her sandy and leafy bed. *Inoa* cast loose her newly grown tendrils, which draped themselves around Hi'iaka's waist like a skirt of the finest *tapa* made of small rounded leaves and wide-petaled blue flowers.

‘Your name shall be Pa‘u-o-Hi‘iaka, skirt of Hi‘iaka, the beloved of Pele’s heart.’

Thus it was that the little vine earned a name for herself. Ever after, when ‘Ohai spoke to her old friend, she was always careful to call her by name, Pa‘u-o-Hi‘iaka, for had they not been the first to help Pele find a home in a new land? [Wichman 2001:17]

Pa‘u o Hi‘iaka (*Jaquemontia ovalifolia*) also known as “The Skirt of Hi‘iaka” is an endemic subspecies found throughout the Hawaiian Islands at coastal sites and is traditionally used for medicine and landscaping (Hawaiian Native Plant Propagation Database 2001).

### 3.2.1.2 Pele and Her Sisters: The Winds and Waters

There are many legends of the Hawaiian volcano goddess Pele on the island of Hawai‘i. Pele and her sisters left their ancestral home of Hawaiiki (the Marquesan Islands) and journeyed to Hawai‘i. On Kaua‘i, Pele’s siblings, her sisters Kapo‘ulakina‘u (Kapo), a brother Kahuilaokalani (Kahuila), and the youngest sister, Kapokūlanimoeha‘unaiki (Moeha‘una) landed on the shores of Mānā, an *‘ili* of the western section of Waimea. A handsome chief, Limaloa, with a feather cape greeted the travelers. Limaloa fell in love with Moeha‘una and begged her to stay with him in Mānā as the other siblings traveled onward east toward Waimea village. The group stopped on a ridge, missing their sister, and looked back toward Mānā. To commemorate the spot, Kahuila suggested they name the ridge Pōki‘ikauna, meaning “the yearning for the little sister.” This may be a reference to the ridge near the project area called Pōki‘i (Wichman 1991:32–38).

When the Hawaiian goddess Pele traveled to Kaua‘i, she recited the winds of Kaua‘i to her lover Lohi‘au and his people. Several place names, generally names of *‘ili* and other place names within the *ahupua‘a* of Waimea and Makaweli are found.

The winds of Kaua‘i blow, urged on...	<i>A pa a noua ka makani o Kaua‘i...</i>
Kaua‘i is what I see and know	<i>‘O Kaua‘i ka ‘u i ‘ike</i>
A land where the winds assemble...	<i>He ‘āina na ka makani i ho‘olulu ai...</i>
Pōki‘i has a Lamalamapū‘ilikai wind...	<i>He Lamalamapū‘ilikai ko Pōki‘i...</i>
‘Āina‘ike has a Mau‘umae wind...	<i>He Mau‘umae ko ‘Āina‘ike...</i>
Kapa‘eli has a Holonaku wind	<i>He Holonaku ko Kapa‘eli</i>
Kekaha has a Moeahua wind	<i>He Moeahua ko Kekaha</i>
Pu‘upu‘upa‘akai has a Moehau wind	<i>He Moehau ko Pu‘upu‘upa‘akai</i>
Pāwehe has an Ulumano wind	<i>He Ulumano ko Pāwehe</i>
Pa‘ena‘ena has a Lapawai wind	<i>He Lapawai ko Pa‘ena‘ena</i>
Waimea has a Ho‘okomowaipao wind	<i>He Ho‘okomowaipao ko Waimea</i>
Kīkīlaola has a Kiuwai‘ula wind	<i>He Kiuwai‘ula ko Kīkīlaola</i>
Koai‘e has a Wai‘alae wind	<i>He Wai‘alae ko Koai‘e</i>

Mokihana has a Kumulipoho'ouluali'i    *He Kumulipoho 'ouluali'i ko Mokihana...*  
wind

Waiahulu has a Waikea wind [...]    *He Waikea ko Waiahulu [...]*

[Ho'oulumāhiehie 2008a:16–17; Ho'oulumāhiehie 2008b:16–17]

This chant also refers to Waimea and the land of “two beloved waters.” An *‘ōlelo no ‘eau*, a Hawaiian proverb, explains this reference.

*Ka wai‘ula‘ilahi of Waimea*    The red sandalwood water of Waimea.

This expression is sometimes used in old chants of Waimea, Kaua‘i. After a storm Waimea Stream is said to run red. Where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called *wai‘ula‘ilahi*. [Pukui 1983:179, No. 1662]

### 3.2.2 Kanaka-Nunui-Moe

The story *Kanaka-nunui-moe*, or “the sleeping giant,” mentions Kōke‘e, Waimea Canyon, and Mānā, all locations within Waimea Ahupua‘a. A long time ago a giant named Nunui, who only slept once every one hundred years, lived in the Kawaihau hills behind the town of Kapa‘a.

One time, while Nunui was still awake, the high chief of Kawaihau wanted to build a large heiau to honor one of his gods. This was to be no ordinary temple. The chief wanted water-polished rocks for the walls and hard koa wood from Koke‘e for the framework of the god’s house. So the chief told the Kawaihau people what he wanted them to do. They must gather rocks from the golden brown waters of the Koke‘e streams and cut koa trees on the edges of Waimea canyon, and gather pili grass that grew at Mana. ‘All this must be done in the turn of one moon,’ he ordered. [Wichman 1985:14]

The people knew the task the chief ordered was impossible to complete in one night. Noticing the villagers’ long faces, Nunui asked the village people what was wrong, they explained the chief’s lofty desire.

Nunui smiled gently. ‘Tend to your fields,’ he said. ‘This work is nothing for me, and I’ll gladly help you. Besides, it will give me something to do.’

The giant went to Koke‘e and scooped up smooth, round boulders from the golden brown waters and brought them to Kapa‘a. ‘Chief,’ he called to the astonished ruler, ‘show me where you wish to build this heiau.’

The amazed chief pointed out the place set aside for the temple. Nunui placed the rocks to form a wall, fitting them so closely together that not even a mouse could squeeze between the cracks. Within a week, he had built a strong, thick, handsome wall around the sacred place.

Nunui returned to the edge of Waimea canyon and cut down koa trees and trimmed them into the shapes he needed. He carried these back and made the framework of the house. He gathered pili grass from Mana and wrapped the stems into bundles,

tied these bundles to the framework, and within half the time the chief had set, the heiau was finished. [Wichman 1985:15]

### 3.2.3 The Girl and the *Mo'o*

Willian Hyde Rice (1977) retells the story “The Girl and the Mo-o” also obtained from Mr. Francis Gay. In this retelling a young girl living in the mountains above Makaweli caused her parents so many troubles that they sent her to live with a lizard or crocodile *mo'o* (reptile; water spirit). The *mo'o* raised the young girl until one day her parents longed to recover their child. Trapping the girl with a net she cried out to her parents:

‘In my youth you drove me from you. The mo-o cared for me. Now, why do you want me again?’

She was like a wild animal, struggling to be free. Not daring to keep her so near the cave the parents moved to Waimea, where gradually they tamed the girl, until she grew accustomed to her old life. She had become very beautiful and later she was married to the prince of Waimea. [Rice 1977:91]

A place called Wai-ka-mo'o, translated to mean the “Water-of-the-Lizard,” is a valley—said to have had pools and a small stream before the marshes of Mānā were drained—which opens to a plain opposite of Mānā ridge (Handy and Handy 1972). Whether the Wai-ka-mo'o valley is the location where the “Girl and the Mo'o” takes place is unknown, it can be speculated that this well-watered area was important to locals in the vicinity and could have been the *wahi pana* mentioned in the above *mo'olelo*.

### 3.2.4 The Rainbow Princess

In his collection of Hawaiian legends, Willian Hyde Rice (1977) of Kaua'i, retells the story “The Rainbow Princess” obtained by the Hawaiian language scholar Mr. Francis Gay. In this story, a family traveling to the valley of Nu'alolo on the Nāpali coast dropped their baby girl into the depths of Waimea valley. At that point:

The parents, in agony, watched their baby falling, but were overjoyed to see the *akua* of the rainbow catch her up before she struck the water and carry her on the rainbow over the mountains down to Waimea valley. In this valley, they placed her in a small cave beneath a waterfall. There she lived, watched over by the *akua*, who always sent the rainbow to care for her. There she grew, at length, into beautiful womanhood, and every day she sat in the sunshine on the rocks above the cave with a rainbow above her head.

Then it happened that a prince from Waimea fell deeply in love with the beautiful Rainbow Princess, as she was called. [Rice 1977:16]

The prince of Waimea tried to woo the Rainbow Princess but to no avail. The Princess insisted that “When you can call me by name, I will come to you” (Rice 1977:16). The Prince of Waimea set off on a journey to seek the counsel of the *kāhuna* (priests; expert) of Maui and Hawai'i regarding the girl's name. The *kāhuna* offered him no help on the matter so he returned to Waimea calling upon his grandmother for help. “I could have told you her name,” his grandmother exclaimed.

‘Go to the waterfall. When the princess laughs at you, call her *Ua*, which means rain.’ The prince hastened to the waterfall and when he called ‘*Ua*’ the beautiful maiden went to him. They were married and lived together many happy years. [Rice 1977:16]

### 3.2.5 The Story of Ola

In another tale, Rice’s (1977) “The Story of Ola” tells of the king of the Ke-na-mu on Kauai-o-mano-ka-lani-po; he was Kualu-nui-pauku-moku-moku, Big-Kualu-of-the-Broken-Rope. While living in Waimea, he falls in love with a princess by the name of Kuhapuola from Waimea. After having spent many happy days with her, the king returns to his duties at Kekaha. He calls Kuhapuola to his side giving to her his personal items such as his *malo* (loincloth), and *lei nihopalaoa*, a necklace made of many braided strands of human hair, fastened by a hooked ivory ornament. His instruction with these items that could be worn only by high chiefs, was that if a boy were born to her, she should name him after the king’s family, but if a girl were born, she might select the name herself. Here Rice relates how a princess saves her son from disaster:

After a time the princess gave birth to a boy, whom she called Kualu-nui, as she had been told. As the child grew older he became very mischievous and headstrong. He refused to regard the *kapu* [taboo, prohibition] of the *kahunas* [priests] and was always in trouble.

At one time the people had gathered to make a *kahe* or fishtrap in the Makaweli River to catch the fish which the freshet would carry down. An order was issued that no one was to touch the *kahe* until the *kahuna* had removed the *kapu*. But the boy disregarded this order and ate of the fish that had been caught. In great anger the *kahuna* caught him and took him to Kekaha where he was tried the following day before the king.

Hearing that her son was in trouble, the princess hurried to her *kahuna*, asking what she should do to save her boy. The *kahuna* answered, ‘Take the *malo* and the *lei palaoa* of the king and six *kukui* nuts. You must walk to Kekaha, and as you go you must be ever tossing the six nuts into the air and catching them. If you drop one, your child will die. If you catch all, his life will be spared.’ The princess at once set out for Kekaha. Her journey was successful, for not once did she let fall a nut.

When she came into the presence of the king, who was sitting in the *heiau* of Hauola, she saw her son bound, ready to be offered as a sacrifice for his crime of breaking the sacred *kapu*. Going before the king, she showed him his *malo* and *lei palaoa*. He at once recognized the princess and spared the life of his son, whom he called Ola, or Life, and named him as his successor. [Rice 1977:54–56]

Similar to Rice’s (1977) version, Wichman (1998) recounts the same *mo’olelo*. About a quarter of the way up the valley is an area called Wai’awa’awa, “bitter water,” where the spring Kukui-‘ula, “red candlenut tree,” gives fresh water. A red *kukui* tree was planted here by Kahapula, the mother of Ola, after she was banished to Mokuone by her husband, Kū’alunui-paukūmoku. When they parted, he gave her a loincloth, a feather cape, a helmet, and a spear as gifts for their unborn son and a *kukui* nut she was told to plant as soon as she arrived.

Many years later, Ola was captured by the evil high priest and condemned to death. Kahapula prayed and was told to pick two kukui nuts from the tree she had planted. Then she was to juggle them in the air as she walked from Mokuone to Waiawa, a distance of at least fifteen miles. If she arrived without dropping either nut, Ola would be saved. Going slowly and carefully, with her friends and retainers clearing the path ahead of her, Kahapula succeeded.

Ola is still remembered for having ordered the building of the Menehune Ditch in Waimea. In order to pay for Kīkīaola, the Waimea irrigation ditch, Ola promised the Menehune one shrimp each as payment for their work. Ola ordered his chief officer, Pi'i, to make sure there were enough shrimp. Naturally, Pi'i ordered every 'opae (shrimp) that could be found in the streams of the canyon complex to be gathered. He went himself to make sure, and in so doing, he left his name in several places.

One such place was 'Opae-pi'i, 'climbing shrimp' or 'Pi'i's shrimp,' for certainly he would have placed a taboo on all shrimp so that no one would eat them. A path in upper Mokuone is called Ala-pi'i, 'upward path' or 'Pi'i's path.' Near the end of the canyon is Hali'opae, 'fetched shrimp.' So it seems that the inhabitants of Mokuone where Ola had grown up provided all the shrimp they had. In the end, every Menehune did have one shrimp apiece. [Wichman 1998:23–24]

### 3.3 *Nā Wahi Pana* (Storied Places)

*Wahi pana* are legendary or storied places of an area. These legendary or storied places may include a variety of natural or human-made structures. Oftentimes dating to the pre-Contact period, most *wahi pana* are in some way connected to a particular *mo'olelo*, however, a *wahi pana* may exist without a connection to any particular story. Davianna McGregor outlines the types of natural and human-made structures that may constitute *wahi pana*:

Natural places have mana, and are sacred because of the presence of the gods, the akua, and the ancestral guardian spirits, the 'aumakua. Human-made structures for the Hawaiian religion and family religious practices are also sacred. These structures and places include temples, and shrines, or heiau, for war, peace, agriculture, fishing, healing, and the like; pu'uhonua, places of refuge and sanctuaries for healing and rebirth; agricultural sites and sites of food production such as the lo'i pond fields and terraces slopes, 'auwai irrigation ditches, and the fishponds; and special function sites such as trails, salt pans, holua slides, quarries, petroglyphs, gaming sites, and canoe landings [McGregor 1996:22].

As McGregor makes clear, *wahi pana* can refer to natural geographic locations such as streams, peaks, rock formations, ridges, offshore islands and reefs, or they can refer to Hawaiian land divisions such as *ahupua'a* or *'ili*, and man-made structures such as fishponds. In this way, the *wahi pana* of Waimea tangibly link the *kama 'āina* of Waimea to their past. It is common for places and landscape features to have multiple names, some of which may only be known to certain 'ohana (family) or even certain individuals within an 'ohana, and many have been lost, forgotten or kept secret through time. Place names also convey *kaona* (hidden meanings) and *huna* (secret) information that may even have political or subversive undertones. Before the introduction of

writing to the Hawaiian Islands, cultural information was exclusively preserved and perpetuated orally. Hawaiians gave names to literally everything in their environment, including individual garden plots and *'auwai*, house sites, intangible phenomena such as meteorological and atmospheric effects, *pōhaku* (rock, stone), *pūnāwai* (freshwater springs), and many others. According to Landgraf (1994), Hawaiian *wahi pana* “physically and poetically describes an area while revealing its historical or legendary significance” (Landgraf 1994:v).

### 3.3.1 *Nā Inoa 'Āina* (Place Names)

In the preface of *Place Names of Hawaii* (Pukui et al. 1974:x), Samuel Elbert states that

Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and heiau, canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place.

Place names are far from static [...] names are constantly being given to new houses and buildings, land holdings, airstrips, streets, and towns and old names are replaced by new ones [...] it is all the more essential, then to record the names and the lore associated with them [the ancient names] now. [Pukui et al. 1974:x]

Inherent in the statements of Elbert is the knowledge that the oldest place names held meaning and told the story of an area prior to European Contact. Literal translations of place names for land areas and divisions near the project corridor are listed in Table 1 below and may provide some insight into what this area was like prior to Western Contact. Unless otherwise noted, translations are by Pukui et al. (1974) and the Ulukau electronic library (Ulukau 2014), Hawaiian place name database, Soehren (2014), with references cited in text.

Pukui et al. (1974:106) give the literal translation of Kekaha as “the place.” However, Handy and Handy’s (1972) definition offers more insight into the place name: “Kaha was a special term applied to areas facing the shore but not favorable for planting. Kekaha in Kona, Hawaii, was one so named, and Kekaha on Kauai another” (Handy and Handy 1972:54).

Table 1. Place names within Waimea Ahupua‘a and project area vicinity

Name	Feature	Translation
Alaka‘i	Swamp and valley	Swamp and trail <i>Lit.</i> , to lead
Hau‘ola	Ridge	<i>Lit.</i> , dew [of] life
Hikimoe	Ridge and valley	<i>Lit.</i> , resting place
Hō‘ea	Valley	<i>Lit.</i> , to arrive
Ho‘one‘enu‘u	<i>Heiau</i>	Bennett’s Site 12. “...along the ditch line inland from the government road near the center of Kaunalewa ridge...Thrum...mentions that it was a heiau for circumcision.” Source: Bennett 1993:102. Quadrangle: 30-05.
Huluhulunui	Ridge	<i>Lit.</i> , many rootlets

Name	Feature	Translation
Kā'ana	Land section	Elev. 3440+ ft on west rim of Waimea Canyon. Source: USGS 1965. Quadrangle: 30-01. North: 98,000. East: 439,200. <i>Lit.</i> , division
Kahelu	Ridge and <i>heiau</i>	Bennett's Site 10. "Kahelu heiau, at Kahelu near Mana and described by Thrum as 'A heiau of platform character at the base of the hill, about 6 feet high in front, not of large size.'" Source: Bennett 1931:102. Quadrangle: 30-05. <i>Lit.</i> , the number or the scratch
Kahoana	Valley	<i>Lit.</i> , the whetstone
Kaua	Ancient surfing area	<i>Lit.</i> , war
Kauaikananā	Stream and valley	<i>Lit.</i> , the rain defied During a storm, a man found shelter in a small cave; his companion stood under a tree and shouted: <i>Ua 'oe ē ka ua, ka ua o ka nanā keia</i> , rain on, O rain, a rain defied is this. The man in the cave thought his companion had better shelter and ran out to see. The man under the tree then went into the cave.
Kaulakahi	Channel	Channel between Kaua'i and Ni'ihau <i>Lit.</i> , the single flame (streak of color)
Kaunalewa	Land section and ridge	A famous coconut grove was here. <i>Lit.</i> , swaying place (perhaps referring to coconuts)
Kawai'ele	<i>Loko</i> (pond)	One of three large ponds drained and filled for sugar plantation. Also written "Kawaieli" or "Waieli." Source: RM 1395; TM 1000; USGS 1963. Quadrangle: 30-05. North: 67,000. East: 406,000.
Kawaikōi	Stream	Stream inland of Waimea Canyon, northwest Kaua'i <i>Lit.</i> , the flowing water
Kekaha	<i>'Ili 'āina</i>	Land section, elementary school, town ditch, and plantation <i>Lit.</i> , the place
Kīkī-a-Ola	<i>'Ili kū</i>	Land division, small boat harbor, stream, and watercourse, now called Menehune Ditch. <i>Lit.</i> , container [acquired] by Old Chief Ola ordered the Menehune to build a watercourse here; each brought a stone, and the ditch was finished in a single night; HM 328-329.

Name	Feature	Translation
Kōke'e		State park, natural history museum, land division, and stream. <i>Lit.</i> , to bend <i>or</i> to wind
Kokole	Point	<i>Lit.</i> , raw
Kona	Ancient district	Leeward districts on Hawai'i, Kaua'i, Moloka'i, Ni'ihu, and O'ahu <i>Lit.</i> , leeward
Kualua	Ancient surfing area	<i>Lit.</i> , twice
Kuapa'a	Valley	Between Kaunalewa Ridge and Pulehu Ridge. Source: USGS 1963. Quadrangle: 30-05. North: 65,000. East: 421,000.
Makahoa	Ridge and <i>heiau</i>	Ridge and heiau near Kaunalewa, Kaua'i <i>Lit.</i> , friendly point
Mānā	<i>Ili 'āina</i>	Dry western end of Kaua'i, where an older sister of Pele, Nā-maka-o-Kaha'i (the eyes of Kaha'i), introduced the <i>kauna'oa</i> dodder. <i>Lit.</i> , arid
Miloli'i	Valley	Land sections, ridge, and valley, Nāpali coast, Kaua'i. <i>Lit.</i> , fine twist (as sennit cord) An alternate interpretation is "small swirling," as a current.
Nākeiki'elima	Area	<i>Lit.</i> , the five children
Niu	Ridge and valley	<i>Lit.</i> , coconut
Nohili	Area and point	Small area and point in Barking Sands Beach
Nu'alolo	Valley	Valley, stream, land section, and trail, Nāpali coast, northwest Kaua'i, proposed as a State reserve area. The <i>iliau</i> , a relative of the silversword, grows here. Also called Nu'ulolo, Nu'ololo
'Ō'ōmanō	Point	<i>Lit.</i> , shark spear
Paliuli	<i>Ili 'āina</i>	<i>Lit.</i> , green cliff. Source: PEM
Papa'ena'ena	<i>Mo'o</i>	Place name of the Waimea shore near the old wharf <i>Lit.</i> , red, hot, lowland (Gray 1873)
Paua	Valley	Between Pokii Ridge and Paua Ridge. Source: USGS 1963. Quadrangle: 30-05. North: 56,000. East: 428,000.

Name	Feature	Translation
Pe'ekaua'i	<i>'Auwai and 'ili 'āina</i>	A large ili with over 50 kuleana awarded, many supplied by the Peekauai Ditch. Source: IN 529; AB 9:448; NR 5:386. Quadrangle: 30-09. North: 49,400. East: 446,100.
Pōki'i	Ridge	The old name was Pōki'ikauna (chanting youngest brother or sister) Kapo, Pele's sister, left her younger female relative, Moehauna (lie struck), here and she chanted a farewell. <i>Lit.</i> , youngest brother or sister
Polihale		State park, beach, ridge, heiau, and land division, Waimea district, Kaua'i, famous for its seaweed ( <i>pahapaha</i> ) used in leis, a practice said to have been introduced by Pele's older sister, Nā-maka-o-Kaha'i. <i>Lit.</i> , house bosom
Po'o	Ancient surfing area	<i>Lit.</i> , head
Po'omau	Canyon and stream	<i>Lit.</i> , constant source or constant head
Pūlehu	Ridge	<i>Lit.</i> , broiled
Pu'ukapele	Peak	Peak (3,657 ft high), Waimea Canyon, Kaua'i. Voices of Menehune here were believed audible on O'ahu: <i>Wawā ka Menehune I Pu'u-ka-Pele ma Kaua'i, pū'oho ka manu o ka lolo o Ka-wai-nui ma Ko'olau-loa, O'ahu</i> , Menehune speak at Pu'uka-Pele, birds at Ka-wai Nui pond at Ko'olau Loa, O'ahu, are startled. <i>Lit.</i> , the volcano hill.
Waiahulu	Stream and <i>'ili 'āina</i>	LCAw 11299 to Kukanolu. "Aina kalo a me pahale ma ka ili o Waiahulu, ma Waimea..." TMK 1401. "This land is in the ili of Kukui" according to FT 13:234. Source: IN 532; AB 9:430. Quadrangle: 30-06.
Wai'aka	Valley and ridge	<i>Lit.</i> , laughing water
Waiakoali	Stream	Rises at 3920 ft in Alakai Swamp, enters Kawaikoi Stream at 3140 ft. elev. Source: USGS 1965. Qudrangle: 30-02. North: 108,800. East: 461,000.
Wai'awa	Reservoir	<i>Lit.</i> , milkfish water
Wailau		State park, land division, river, falls, valley, town, and golf course, Lihu'e qd., Kaua'i.

Name	Feature	Translation
		Heiau, a place of refuge, and birth stones here are said to be in excellent condition. <i>Lit.</i> , two waters
Waimea	<i>Ahupua'a</i> and <i>moku</i>	Town, bay, canyon, district, school, ditch, plantation, landing, river, road, and land division, southwest Kaua'i, where Captain Cook first landed (1778) <i>Lit.</i> , reddish waters (as from erosion of red soil)
Waineki	Swamp	Swampy mountains above Waimea town, Kaua'i, home of the Menehune (Jarrett 29); also spelled Waineke <i>Lit.</i> , bulrush water
Waipao	Gulch	<i>Lit.</i> , scooped water

### 3.3.1.1 The Menehune and the Kīkīaola Ditch

Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the *ahupua'a* possible. Especially noteworthy are the legends narrating the origins of the cut stone-lined *'auwai* (irrigation ditch) called Kīkīaola, popularly known as the “Menehune Ditch.” Wichman (1998:9) says the original settlers named the farmland in this area Pe'e Kaua'i, meaning “hidden Kauai,” after the name of their ancient homeland. In the Māhele land records, Pe'ekaua'i is listed as the name of an *'ili* near the Waimea coast and along the west bank of the Waimea River. The Pe'ekaua'i *'auwai* watered the plain west of the Waimea River, and its most notable section—the water along the face of a cliff some 20 ft above the river—by means of an aqueduct constructed of intricately fitted, cut, and dressed stones (Bennett 1931:23, 105–107).

Martha Beckwith (1970:329–330) associates the name Kīkīaola (meaning, “container acquired by 'Ola”; Pukui et al. 1974:110) with three versions of the legend of Ola, an *ali'i* of Waimea. In one version (Rice 1923:45), Ola, “desiring to bring water to the taro patches of the Waimea flats [...] summon[s] the Menehune people [who] each bring a stone and the watercourse (Kiki-a-Ola) is laid in a single night.” In another version (Thrum 1908:110–111), Kīkīaola is not the name of the watercourse itself: “Pi is the chief of Waimea who gets the Menehune to construct for him a dam across the Waimea river and a watercourse leading from it to a place above Kiki-a-ola.”

Thrum (1923) says of the *menehune*,

Their dwelling place was in the mountains, above Waimea, near, perhaps, to a place known as Waineki. [...] The watercourse of Kikiola, above the Waimea river, was built by this race of Menehunes [...] The chief that encouraged this race of Menehunes to the task rejoiced greatly at hearing of and seeing the completion of the watercourse of Kikiola, to benefit the laboring people residing at *Paliuli*, and the water flowing down its course to enable the taro to grow thriftily for their sustenance. [Thrum 1923:214, 216]

Thus, Thrum identifies the land east and adjacent to the Kīkīaola Ditch as the land (*'ili*) of Pali'uli, a Hawaiian word for “green cliff.” In the third version (Luomala 1951:23), “Kiki-a-ola is the chief of Waimea” who “seems to be the sacrifice to be offered” at the completion of the dam and watercourse of Waimea by the *menehune*.

Menehune, a Tahitian term meaning “commoner,” came to refer to a mythical race of small industrious people who were alleged to have built many of the fishponds, irrigation systems, and *heiau* (pre-Christian place of worship) on Kaua'i (Mills 1996:63). The *menehune* overseer of the Pe'ekaua'i *auwai* project was named Papa'ena'ena, which is the place name of the Waimea shore near the old wharf. Papa'ena'ena means “red, hot, lowland,” according to information on place names collected by Francis Gay in 1873 (Gay 1873:33). In Rice's version, Papa'ena'ena is the name of a stone on the Waimea shore. “At one time the Menehune hollowed out a huge stone, and carried it to Waimea, where the head Menehune fisherman used it as a house. It was called Papa'ena'ena, from his name. He sat in this house, and watched his men fish” (Rice 1923:36).

Wichman (1998:8) also states this is the stone Papa'ena'ena sat on to direct his *menehune* workers when they built the irrigation ditch, Kīkīaola, which means “container acquired by Ola.”

The chief Ola is also associated with several other sites in Waimea Ahupua'a, including Hau'ola Heiau (built by his father near Kekaha), Ahululu Heiau at the foot of Pu'ukapele Crater, and Kīpapa-a-Ola, a trail paved with sticks that crossed the Alaka'i Swamp and connected Kōke'e with Wainiha Valley on the island's north shore (Beckwith 1970:328–229). Any attempt to roughly date these sites or the Menehune Ditch through genealogical means would probably be fruitless. Although Ola is a very popular *ali'i* in legends, his name cannot be found in any surviving Kaua'i genealogy (Luomala 1955:132).

### 3.3.1.2 Hau'ola Heiau

Hau'ola Heiau is located at Waiawa, Kaua'i and named after a famous King of Kaua'i, Ola. The “Story of King Ola” by A.F. Knudsen (Thrum 1923) discusses how Ola succeeds his father and becomes the King of Kaua'i. Ola's father and the priesthood were in constant conflict with one another:

The father of King Ola lived a harassed life. The priesthood was degraded, the high priest a keen, intellectual, power-loving man, of no spiritual insight, and the king felt that the tabu was in danger. But in the second generation were growing up a number of splendid young men [...] [Thrum 1923:94]

The King was in search of a successor; however, the priestly party would continuously interfere and the chosen successor would die. During this time, Ola's mother was the wife of the King, a princess of high rank, however, she was thrown out and restricted to the confines of Koula valley. The following excerpt describes how Ola reunited with his father and became the King of Kaua'i:

[...] And then when the bright *ohia*'s blossoms came out and reddened the forest in the deep, dark valleys, with a promise of their rich red apples in the fall, the banished princess opened a wooden calabash that had been mysteriously left with her the day of her banishment, and therein she found the cloak, the apron, the helmet, the dagger and the sacred breast ornament of a prince of the blood, and this she hung upon her son's neck, calling him *Ola* (life), and telling him to present himself at the door of the inner temple, where that day all the young warriors were

to present themselves for initiation, to take the vow of preserving the tabu with their life's blood. The old king stood in the East, barely suppressing his emotion and expectation. His old arch enemy, gray-haired but erect, stood in the West, and in marched Ola with his regalia. He wore the sacred emblems, but the instant the high priest saw him he knew that his game was at an end. He did not recognize the youth, but of course he recognized the regalia, and divined the trick of the king. Forgetting himself, he hurled a javelin of office, the sacred spear, emblem of the creative power, at the youth, but Ola, trained as a warrior, struck it aside with his mace, and took his position [...] The king arose in his seat. He said the tabu had been broken. Life had been stricken with the emblem of creation. The only salvation was that one died in defense of the tabu [...] and the old priest saw that whether there was truth in their belief or not, there was nothing left for him to do but to die in the defense of the tabu. And he walked to the altar and leaned back across the great flat stone [...] and he plunged his own dagger into his own breast [...] Ola was initiated [...] elected heir apparent to the king [...] Soon after that the old king died in peace, and King Ola began at twenty-four years of age to reign for fifty-six years, a reign that has gone down in Hawaiian history as the reign of peace, of fine arts, and of great public works, for the benefit of the masses.

The last work of the old king, his father, was to enlarge and improve the temple, and make the hill above it a fortress, and consecrate the whole with a new name '*Hauola*'—'The stricken ola.' [Thrum 1923:95-97]

### 3.3.1.3 Keonekanionohili (Nohili)

Keonekanionohili, also known as "barking sands of Nohili," was named after Nohili, a fisherman, and his dogs. Unlike most Native Hawaiians who only raised dogs as livestock or for sacrificial purposes, Nohili kept his dogs like pets and would not eat or kill his dogs (Wichman 1991:24).

[...] Nohili had collected the nine colors of native dogs. The largest of these was an '*īlio mo'ō*, a dog brindled like a lizard's skin. There was an '*īlio apowai*, a gray-brown dog whose eyes and nose were the same color. The '*īlio pe'elua* was striped like a caterpillar and the '*īlio makue* was a solid brown. There was an '*īlio 'ōlohe*, a hairless dog noted for its fierceness and cunning. The four small dogs were the '*īlio i'i 'ā'ula*, reddish brown like the seaweed; the '*īlio i'i ke'oke'ō* that was like the whiteness of breaking waves; the '*īlio i'i hinahina*, the dog that was the gray of the low spreading beach plant; and the '*īlio i'i 'ea 'ula*, the dog colored like a turtle shell. [Wichman 1991:24]

Nohili would tie up his nine dogs to three different pegs (three dogs per peg) as he went fishing. On one of his fishing trips, he was caught in a storm that pushed him out to the island of Nihoa. Nohili's dogs would run around, bark, and dig into the sand to help guide Nohili home. When Nohili finally made it ashore to Kaua'i, his dogs were gone. The only trace of them were the circles and markings they have left running around and barking. As he continued on his way, he could hear his dogs barking as if it was coming from below. It is believed that in the dogs' attempt to guide Nohili back home, they buried themselves in the sand (Wichman 1998:160–161).

### 3.3.1.4 Polihale Heiau

Deemed one of the oldest and most sacred *heiau* on Kaua‘i, Polihale (House Blossom) Heiau is dedicated to Kāne and Kanaloa as this was their first home in Hawai‘i. According to Wichman:

Chief Polihale had a daughter, Nā-pihe-nui, who attracted the attention of Kū, the first of the four great Polynesian gods to come to Kaua‘i. In the form of a white dog, he [Kū] would play with her [Nā-pihe-nui] and her maidens as they swam and bathed in the nearby pond. He asked Polihale for his daughter, but he was refused. Kū said he would kill all the inhabitants one by one until Polihale would agree to the marriage. Kū did so in his form as a large black dog. Polihale prayed to Kāne and Kanaloa, two more of the great gods, to help him in this uneven battle. The gods came in their seagoing bird forms and defeated Kū. In thanks, Polihale built this *heiau* that bears his name as the first home in Hawai‘i of Kāne and Kanaloa. [Wichman 1998:162]

It is also believed that the spirits of the dead would gather at Polihale, by Kā‘ana (divide). Here the spirits would follow Hikimoe (to arrive prostrated) Stream to Polihale Heiau. The spirits would rest here before continuing their journey up the cliff and leaping into the ocean into Pō (Wichman 1998:162).

## 3.4 *Oli* (Chants)

*Oli*, according to Mary Kawena Pukui (Pukui 1995:xvi–xvii) are often grouped according to content. Chants often were imbued with *mana* (spiritual power); such *mana* was made manifest through themes and *kaona* (hidden meanings). According to Pukui, chants for the gods (prayers) came first, and chants for the *ali‘i*, “the descendants of the gods,” came second in significance. Chants “concerning the activities of the earth peopled by common humans,” were last in this hierarchy (Pukui 1995:xvi–xvii). Emerson conversely states,

In its most familiar form the Hawaiians—many of whom [were lyrical masters]—used the *oli* not only for the songful expression of joy and affection, but as the vehicle of humorous or sarcastic narrative in the entertainment of their comrades. The dividing line, then, between the *oli* and those other weightier forms of the *mele*, the *inoa*, the *kanikau* (threnody), the *pule*, and that unnamed variety of *mele* in which the poet dealt with historic or mythologic subjects, is to be found almost wholly in the mood of the singer. [Emerson 1965:254]

While *oli* may vary thematically, subject to the perspective of the *ho‘opa‘a* (chanter), it was undoubtedly a valued art form used to preserve oral histories, genealogies, and traditions, to recall special places and events, and to offer prayers to *akua* (gods) and *‘aumākua* (family gods) alike. Perhaps most importantly, as Alameida (1993:26) writes, “chants [...] created a mystic beauty [...] confirming the special feeling for the environment among Hawaiians: their *one hānau* (birthplace), their *kula iwi* (land of their ancestors).”

### 3.4.1 *Ho‘ao* (Marriage) *oli*

In an *oli* that would be chanted during a woman’s pregnancy, in hopes of producing desired qualities for the offspring, Kekaha of Waimea Ahupua‘a is mentioned (Gutmanis 1983). Today, this *oli* may be used as a marriage prayer according to Gutmanis (1983).

[...] *Me he alii, alii, la no ka hele i Kekaha,  
Ka hookiekie i ka li'u-la,  
Ka hele i ke alia-lia la, alia!  
Alia-lia la 'a-laau Kekaha.  
Ke kaha o Kaia-ihi, Wai-o-Lono.*

[...] It vaunts like a king at Kekaha,  
Flaunting itself in the sun's heat,  
And lifts itself up in mirage,  
Ghost-forms of woods and trees in Kekaha  
Sweeping o'er waste Kala-ihi, Water-of-Lono.  
[Gutmanis 1983:46]

### 3.4.2 Pele and Oli of Waimea

Many *oli* that mention places of Waimea are related to Pele, her family, friends, and her journeys. Places within Waimea are mentioned in an *oli* transcribed in the *The Epic Tale of Hi'iakaikapoliopole* (Ho'oulumāhiechie 2008). Several place names, generally names of *'ili* within the *ahupua'a* of Waimea, are found in a chant by the volcano goddess Pele, as she called out the names of the winds of the island of Kaua'i.

*A pā a noua ka makani o Kaua'i* [...] The winds of Kaua'i blow, urged on [...]  
*He Lamalamapū'ilikai ko Pōki'i* Pōki'i has a Lamalamapū'ilikai wind  
*Aloha wale o'u pōki'i* Beloved indeed are my pōki'i, my younger siblings  
*He Mau'umae ko 'Āina'ike* 'Āina'ike has a Mau'umae wind  
*A 'ike mai nō 'oe ia'u, e ke aloha* As you 'ike, see and know me, my love  
*Mai ho'ohewahewa mai 'oe* Be not mistaken  
*He Holonaku ko Kapā'eli* Kapā'eli has a Holonaku wind  
*He Moeāhua ko Kekaha* Kekaha has a Moeāhua wind  
*He Moehau ko Pu'upu'upa'akai* Pu'upu'upa'akai has a Moehau wind  
*He Ulumano ko Pāwahe* Pāwahe has an Ulumano wind  
*He Lapawai ko Pā'ena'ena* Pā'ena'ena has a Lapawai wind  
*He Ho'okomowai'pao ko Waimea* Waimea has a Ho'okomowai'pao wind  
*He Kiuwai'ula ko Kīkīaola* Kīkīaola has a Kiuwai'ula wind  
 [Ho'oulumāhiechie 2008a:16; 2008b:15–16]

When Pele's beloved sister, Hi'iaka, and her companions were sailing in a canoe past the shore of Waimea, she called the following chant:

*'O a'u mau wai aloha 'elua lā* My two beloved waters  
*'O ka wai 'ula lā a me ka wai kea* Water running red and water running white

<i>Ke wilia maila e ka makani</i>	Swirled together by the wind
<i>'O a'u mau makani aloha i ka pali o Kīkīaola</i>	My beloved winds on the cliffs of Kīkīaola
<i>'O Kaho'okomowaipao me Kiuwai'ula</i>	The Kaho'okomowaipao and the Kiuwai'ula
<i>E keuhu nei i ke one kahakai lā</i>	Stirring up the sand there at the shore
<i>Aloha wale Papa'ena'ena lā</i>	Beloved indeed in Papa'ena'ena
<i>I ka mālie a'e ho'i ē.</i>	There beyond, in the calm.

[Ho'oulumāhiechie 2008a:252, 2008b:236]

While in Hā'ena, Kaua'i, Pele was intent on winning over Lohi'au as her lover and bringing him back to Hale-ma'uma'u with her. In this moment Pele offered the following chant to Lohi'au which mentions the Alaka'i swamp of Waimea:

Hanalei is beaten down by the heavy rains  
Falling from the clouds over Alaka'i swamp.  
The rain reaches Manu'a-kepa  
Where the traveler falls on slippery moss.  
Where is one to lead the newcomer safely?  
I search for one to give me life  
To bring life to me here! [Wichman 2001:79]

### 3.5 *Nā Mele* (Songs)

The following section draws from the Hawaiian art of *mele*, poetic song intended to create two styles of meaning.

Words and word combinations were studied to see whether they were auspicious or not. There were always two things to consider the literal meaning and the *kaona*, or 'inner meaning.' The inner meaning was sometimes so veiled that only the people to whom the chant belonged understood it, and sometimes so obvious that anyone who knew the figurative speech of old Hawai'i could see it very plainly. There are but two meanings: the literal and the *kaona*, or inner meaning. The literal is like the body and the inner meaning is like the spirit of the poem. [Pukui 1949:247]

The Hawaiians were lovers of poetry and keen observers of nature. Every phase of nature was noted and expressions of this love and observation woven into poems of praise, of satire, of resentment, of love and of celebration for any occasion that might arise. The ancient poets carefully selected men worthy of carrying on their art. These young men were taught the old *meles* and the technique of fashioning new ones. [Pukui 1949:247]

#### 3.5.1 Kaua'i Mele

This *mele* from Kaua'i highlights the complexities of local color and topography with mention of the Waimea area.

*Pale I*

*Auhea wale oe, e ka Makani Inu-wai?  
Pa kolonahe i ka ili-kai,  
Hoohui me ka Naulu,  
Na ulu hau i ka hapapa.  
Anō au ike i ke ko Hala-li'i,  
I keia wa nana ia Lehua.*

*Pale II*

*Aia i Waimea ku'u haku-lei;  
Hui pu me ka wai ula ili-ahi,  
Mohala ka pua i ke one o Pawehe;  
Ka lawe a ke Koolau*

*Noho pu me ka ua punonohu ula i ka nahele,  
Ike i ka wai kea o Makaweli;*

*Ua noho pu i ka nahele*

*Me ka lei hinahina o Maka-li'i.  
Liilii ka uka o Koae'a;  
Nana i ka ua lani-pili,  
Ka o-ō, manu le'a o ka nahele.  
I Pa-ie-ie au, noho pu me ke anu.  
E ha'i a'e oe I ka puana:  
Ke kahuna kalai-hoe o Puu-ka-Pele.  
[Emerson 1965:110–111]*

## Canto I

Whence art thou, thirsty wind,  
That gently kissest the sea,  
Then, wed to the ocean breeze,  
Playest fan with the bread-fruit tree?  
Here sprawl Hala-ili's canes,  
There stands bird-haunted Lehua.

## Canto II

My wreath-maker dwells at Waimea.  
Partnered is she to the swirling river;  
They plant with flowers the sandy lea,  
While the bearded surf tossed by the  
breeze,

Vaunts on the hills as the sun-bow,  
Looks on the crystal stream  
Makaweli,

And in the wildwood makes her  
abode.

With Hinahina of silvern wreaths.  
Koae'a's a speck to the eye,  
Under the low-hanging rain-cloud,  
Woodland home of the plaintive o-ō.  
From frost-bitten Pa-ie-ie  
I bid you, guess me the fable:  
Paddle-maker of Pele's mount.

The author mentions the *Naulu* sea-breeze of Waimea; *Lehua*—a bird-island visible from Waimea; *Puu-ka-Pele*—a volcanic hill near Waimea; and the wreath-maker—*haku-lei*, who dwells at Waimea, which is thought to be ocean-vapor (Emerson 1965:111).

**3.5.2 Kōke'e**

Written for the forests above Waimea, *Kōke'e*, composed by Dennis Kamakahi in 1983, describes the beauty and landscape of the *Kōke'e* mountains of Waimea.

*'Upu a'e, he mana'o  
I ka wēkiu o Kōke'e  
I ka nani, o ka 'āina  
O ka noe pō'ai'ai*

*~hui*

*'O Kalalau he 'āina la'a  
I ka ua li'ili'i  
'O Waimea ku'u lei aloha  
Never more to say goodbye*

Thoughts well up in me  
Of the highlands of *Kōke'e*  
Of the beauty of the land  
And the swirling mists

chorus:

Kalalau, a sacred land  
In the fine, passing rains  
Waimea is my lei of love  
Never more to say goodbye

<i>E ho 'i mai ana i ka hikina</i>	Returning to the east
<i>I ka lā welawela</i>	In the sun, clear and hot
<i>I ke kai hāwanawana</i>	To the whispering seas
<i>I Po 'ipū ma Kōloa</i>	At Po 'ipū and Kōloa
<i>Mele au no ka beauty</i>	I sing of the beauty
<i>I ka uka 'iu 'iu</i>	In the far highlands
<i>I Kōke 'e ua 'ike au</i>	At Kōke 'e I have seen
<i>I ka noe pō 'ai 'ai</i>	The mists that swirl about
[Wilcox 2003:130]	

### 3.5.3 Maika 'i Kaua 'i

Composed by Henry Waiua, the choir director of Lihu 'e Hawaiian Congregational Church, this *mele* is said to be based on a chant composed for Kaumuali 'i, the Kaua 'i chief.

<i>Maika 'i nō Kaua 'i</i>	Fine indeed is Kaua 'i
<i>Hemolele i ka mālie</i>	So perfect in the calm
<i>Kuahiwi Wai 'ale 'ale</i>	Beautiful mountain, Wai 'ale 'ale
<i>Lei ana i ka mokihana</i>	Wears the mokihana lei
<i>Hanohano wale 'o Hanalei</i>	So glorious is Hanalei
<i>I ka ua nui hō 'eha 'ili</i>	With pounding rain that stings the skin
<i>I ka wai o 'u 'inakolo</i>	And the rustling water
<i>I ka poli o Nāmolo kama</i>	In the heart of Nāmolo kama
<i>Ua nani wale 'o Līhu 'e</i>	So very beautiful is Līhu 'e
<i>I ka ua pa 'u pili hale</i>	In the drenching rain that clings to the house
<i>I ka wai hu 'ihu 'i anu</i>	With the cold refreshing waters
<i>Kahi wai a 'o Kēmamo</i>	From the springs of Kēmamo
<i>Kaulana wale 'o Waimea</i>	So renowned is Waimea
<i>I ke one kani o Nohili</i>	With the roaring sands of Nohili
<i>I ka wai 'ula 'iliahi</i>	Amidst the red tinged waters
<i>A he wai na ka malihini</i>	Water that visitors enjoy
<i>Maika 'i wale nō Kaua 'i</i>	So very fine is Kaua 'i
<i>Hemolele wale i ka mālie</i>	So perfect in the calm
<i>Kuahiwi nani Wai 'ale 'ale</i>	Beautiful mountain, Wai 'ale 'ale
<i>Lei ana i ka mokihana</i>	Wears the mokihana lei
[Wilcox 2003:160]	

### 3.5.4 Hele On To Kaua 'i

This *mele* by Israel Kamakawiwo 'ole, recorded and released in 1995, represents a more contemporary ode to Kaua 'i and the canyons of Waimea—which have long captivated the attention of visitors and residents alike.

There's a place I recall  
 Not too big, in fact its kinda small  
 The people there know they got it all

The simple life for me

Hele on to Kauai

Hanalei by the bay

Wailua river valley is where I used to play

The canyons of Waimea standing all aglow

The magic of the garden isle is calling me back home

When I was young, not too smart

I left my home, looking for a brand new start

To find a place that's better still

now I know, I know I never will

[Huapala n.d.]

### 3.6 *Nā 'Ōlelo No'eau* (Proverbs)

Hawaiian knowledge was shared by way of oral histories. Indeed, one's *leo* (voice) is oftentimes presented as *ho'okupu* ("tribute," a gift given to convey appreciation, to strengthen bonds); the high valuation of the spoken word underscores the importance of the oral tradition (in this case, Hawaiian sayings or expressions), and its ability to impart traditional Hawaiian "aesthetic, historic, and educational values" (Pukui 1983:vii). Thus, in many ways these expressions may be understood as inspiring growth within the reader or between speaker and listener:

They reveal with each new reading ever deeper layers of meaning, giving understanding not only of Hawai'i and its people but of all humanity. Since the sayings carry the immediacy of the spoken word, considered to be the highest form of cultural expression in old Hawai'i, they bring us closer to the everyday thoughts and lives of the Hawaiians who created them. Taken together, the sayings offer a basis for an understanding of the essence and origins of traditional Hawaiian values. The sayings may be categorized, in Western terms, as proverbs, aphorisms, didactic adages, jokes, riddles, epithets, lines from chants, etc., and they present a variety of literary techniques such as metaphor, analogy, allegory, personification, irony, pun, and repetition. It is worth noting, however, that the sayings were spoken, and that their meanings and purposes should not be assessed by the Western concepts of literary types and techniques. [Pukui 1983:vii]

Simply, *'ōlelo no'eau* may be understood as proverbs. The Webster dictionary notes it as "a phrase which is often repeated; especially, a sentence which briefly and forcibly expresses some practical truth, or the result of experience and observation." It is a pithy or short form of folk wisdom. Pukui equates proverbs as a treasury of Hawaiian expressions (Pukui 1995:xii). Oftentimes within these Hawaiian expressions or proverbs are references to places. This section draws from the collection of author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs describing *'āina* (land), chiefs, plants, and places.

#### 3.6.1 *'Ōlelo No'eau* #686

*He keiki kālai hoe na ka uka o Pu'ukapele.*

A paddle-making youth of Pu'ukapele.

A complimentary expression. He who lives in the uplands, where good trees grow, can make good paddles. Pu'ukapele is a place above Waimea Canyon on Kaua'i. [Pukui 1983:76]

### 3.6.2 'Ōlelo No'eau #1028

*Ho 'i hou ka pa 'akai i Waimea.*

The salt has gone back to Waimea.

Said when someone starts out on a journey and then comes back again. The salt of Waimea, Kaua'i, is known for its reddish brown color. [Pukui 1983:110]

### 3.6.3 'Ōlelo No'eau #1104

*Ho 'onohonoho i Waineki kauhale o Limaloa.*

Set in order at Waineki are the houses of Limaloa.

Limaloa, the god of mirages, made houses appear and disappear on the plains of Mana. This saying applies to the development of ideas, the setting of plans, or the arranging of things in order. [Pukui 1983:118]

### 3.6.4 'Ōlelo No'eau #1662

*Ka wai 'ula 'iliahi of Waimea*

The red sandalwood water of Waimea.

This expression is sometimes used in old chants of Waimea, Kaua'i. After a storm Waimea Stream is said to run red. Where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called *wai 'ula 'iliahi*. [Pukui 1983:179]

### 3.6.5 'Ōlelo No'eau #1339

*Ka i 'a ho 'pā 'ili kanaka o Waimea.*

The fish of Waimea that touch the skins of people.

When it was the season for *hinana*, the spawn of 'o 'opu, at Waimea, Kaua'i, they were so numerous that one couldn't go into the water without rubbing against them. [Pukui 1983:146]

### 3.6.6 'Ōlelo No'eau #1775

*Ke one kapu o Kahamalu 'ihi.*

The sacred sand of Kahamalu 'ihi.

A city of refuge for those of Waimea, Mana, and the Kona side of Kaua'i. [Pukui 1983:190]

### 3.6.7 'Ōlelo No'eau #2910

*Waikāhi o Mānā.*

The single water of Mānā.

When schools of *ōpehu* and *kawakawa* appeared at Mana, Kaua'i, news soon reached other places like Makaweli, Waimea, Kekaha, and Poki'i. The uplanders hurried to the canoe landing at Keanapuka with loads of *poi* and other upland products to exchange for fish. After the trading was finished, the fishermen placed their unmixed *poi* in a large container and poured in enough water to mix a whole batch at once. It didn't matter if the mass was somewhat lumpy, for the delicious taste of fresh fish and the hunger of the men made the *poi* vanish. This single pouring of water for the mixing of *poi* led to the expression, '*Waikāhi o Mana.*' [Pukui 1983:318–319]

### 3.6.8 *Ōlelo No'eau* #2920

*Wawā ka menehune i Pu'ukapele ma Kaua'i, puoho ka manu o ka loko o Kawainui ma O'ahu.*

The shouts of the menehune on Pu'ukapele on Kaua'i startled the birds of Kawainui Pond on O'ahu.

The menehune were once so numerous on Kaua'i that their shouting could be heard on O'ahu. Said of too much boisterous talking. [Pukui 1983:320]

## Section 4 Historical Background

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### 4.1 Pre-Contact to Early Post-Contact Period

The large size of Waimea Ahupua'a is admittedly unusual as single *ahupua'a* do not typically occupy such a large percentage of the land area of a major Hawaiian island. It could be argued that the comparatively low agricultural productivity of the Mānā plain, where the project area is located, due to the scarcity of water, is the basis for its inclusion in Waimea. However, the same cannot be said for the well-watered valleys of Nu'alolo and Miloli'i, both of which could easily support typical and self-contained valley settlements of perhaps small but stable populations.

One could also speculate that Waimea, being one of the two areas of the island that traditionally served as the domain of the high chiefs (the other being Wailua), commanded the resources of the large upland region of Kōke'e and Alaka'i, among them the large *koa* trees out of which the hulls of canoes were hewn, and forest birds that supplied the feathers for cloaks, capes, and other items associated with the *ali'i*. It is quite possible that at one time, Waimea was divided into several smaller *ahupua'a*, perhaps before the Māhele, or even in pre-Contact times.

Waimea is thought to have first been settled by voyagers from Tahiti, led by Kūalu-nui-kini-akua. The first settlers of Waimea utilized a native tree they named *waimea* (also known as *māmaki*. *Waimea pipturus* or *Pipturus albidus*) to make *kapa* (cloth) until the *wauke* trees they had brought with them were mature enough to be used (Wichman 2003:6). The *kapa* made from the *waimea* or *māmaki* tree was not as soft as that made from *wauke* and was thus only utilized for *kapa* production when *wauke* was unavailable. The fruit of the *māmaki* tree was also used by early Hawaiians as a laxative while the leaves, today as well as in past, are used to brew a tea that is drunk to reduce blood pressure and high cholesterol (Hawaiian Electric Company and Partners 2002).

The Pi'i-ali'i (*Colocasia esculenta*) variety of taro, brought to Kaua'i by its namesake Pi'i-ali'i, Ku'alu-nui-kini-akua's *kalaimoku* (chief counselor), was used as an offering to the gods and kept for use only by *ali'i*. Pi'i-ali'i makes a red-colored *poi* (the Hawaiian staff of life, made from cooked taro corms) held in high regard for its flavor and quality. This variety of taro is one of the oldest taro varieties grown in the Hawaiian Islands and is still grown in Kaua'i today (Wichman 2003:7; Whitney et al. 1939:41).

Under the leadership of Ola, Kūalu-nui-kini-akua's grandson, the island was further explored and many of Kaua'i's current place names were established.

Waimea, Kaua'i was also a site of great significance for *po'e kuhikuhi pu'uone* (site experts) and *po'e kilo hoku holo moana* (navigators) of the pre-Contact time. *Po'e kilo hoku* (astronomers) of O'ahu and Kaua'i, "who were very skilled in discerning the ways of the sun, the moon, and the stars, as well as knowing the configuration of the earth (*papa hulihonua*)" (Kamakau 1976:14), gathered in Waimea, Kaua'i to make their observations.

In Fredrick B. Wichman's work in *Nā Pua Ali'i o Kaua'i (Ruling Chiefs of Kaua'i)* (2003), he gives a rich description of the Waimea area in pre-Contact times. Wichman describes the land ashore of the Waimea River upon the arrival of voyager Ku'alu-nui-kiniakua saying,

There was abundant water from the swift rivers and streams that flowed within a protected canyon complex. The climate was warm and dry, useful for people who wore clothes of beaten bark. The area was cooled by Wai-paoa ('Scooped Water'), a daytime breeze from the sea, and Wai-pa'u ('Water Drenched') from the mountains at night. There was good soil within the canyon valleys behind the cliff that blocked easy access into the interior [...] Taro could easily be grown in fields that took water from the river upstream, fed by ditches to each connected lo'i (taro patch) before returning the water to the river. Sweet potatoes and yams grew well [...] [Wichman 2003:5–6]

Speaking more broadly of the early people of Kaua'i, Wichman (2003) describes unique cultural developments on the island:

From the beginning the Kaua'i people developed unique tools never seen on other islands. These included *pohaku ku'i poi* (ring and stirrup pounders), double-grooved stone club heads, and a broad anvil for beating kapa. They learned how to weave intricately designed mats of *makaloa* (sedge) so soft it could be used for clothing. They discovered a method for decorating their *ipu* (bottle gourds), which they used as containers for food and water. They strung the tiny seashells found on the beaches into necklaces. Brightly feathered birds abounded from seashore to mountaintop, and their feathers were collected and woven into wreaths, capes, and helmets. Throughout their entire history, the people of Kaua'i created things of beauty from even the most ordinary objects. [Wichman 2003:6–7]

## 4.2 Early Historic Period

### 4.2.1 Observations of Early Explorers and Visitors

#### 4.2.1.1 Captain Cook in Waimea (1778)

By the time the British vessels *Discovery* and *Resolution*, under the command of Captain James Cook, anchored at Waimea Bay on 20 January 1778, the *ahupua'a* of Waimea had long been a focus of settlement, agriculture, and *ali'i* residence on Kaua'i. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture, and represent the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972:393–397). Cook, anchored off Waimea, observed the following:

The road, or anchoring place, which we occupied, is on the south-west side of the island, about six miles from the west end, before a village which has the name of Wymoa [Waimea]. As far as we sounded, we found the bank has a fine grey sand at the bottom, and is free from rocks; except a little to the eastward of the village, where there spits out a shoal, on which are some rocks and breakers; but they are not far from the shore. [Cook 1821:206]

According to Hawaiian tradition, Cook's landing site was seaward of the native village on a beach of fine black sand called Luhi or Keoneluhi (Joerger and Streck 1979:8). *Luhi* means "tedious or tired," as in the saying, *Ho'i i ke one o Luhi* ("Go back to Tired Beach"). This saying refers to one returning to an unpleasant task (Pukui et al. 1974:135). Aletha Kaohi, quoting her father William Kapahukaniolono Goodwin of Waimea, relates that the beach was named this

because warriors used the area for training, running on the sand to strengthen their legs, which made them very tired and weary (Joerger and Streck 1979:8). Kaohi reported the ancient landing site of Waimea was midway between the river mouth and the pier; this may also have been the landing area for Cook's men.

Cook's observations during an excursion on shore in 1778 reveal the profusion of population, agriculture, and cultural/religious expression that had evolved at Waimea by the latter eighteenth century:

Our road [...] lay through the plantations. The greatest part of the ground was quite flat, with ditches full of water intersecting different parts, and roads that seemed artificially raised to some height. The interspaces were, in general, planted with *taro*, which grows here with great strength, as the fields are sunk below the common level, so as to contain the water necessary to nourish the roots. This water probably comes from the same source, which supplies the large pool from which we filled our casks. On the drier spaces were several spots where the cloth-mulberry was planted in regular rows; also growing vigorously, and kept very clean. The cocoa-trees were not in so thriving a state, and were all low; but the plantain-trees made a better appearance, though they were not large. In general the trees round this village, and which were seen at many of those which we passed before we anchored are the *cordia sebestina* [*kou*; *Cordia subcordata*]; but of a more diminutive size than the product of the southern isles. The greatest part of the village stands near the beach, and consists of above sixty houses there; but, perhaps, about forty more stand scattered about, farther up the country, toward the burying-place [*heiau*]. [...]

I found a great crowd assembled at the beach, and a brisk trade for pigs, fowls, and roots going on there, with the greatest good order, though I did not observe any particular person who took the lead amongst the rest of his countrymen. [Cook 1821:189]

While provisioning on this particular excursion, Cook's party acquired nine tons of water, 60 to 80 pigs, some fowl, potatoes, a small quantity of plantains and taro—all this in exchange for nails and iron pieces. Captain Cook's first visit to Waimea was brief, but it left a major impact on the small village. Cook's own lieutenants (Portlock, Dixon, Vancouver) returned to Waimea repeatedly and established it as a major port and entry point. While Waimea may have always been a royal center for the *ali'i* of Kaua'i, this position was greatly reinforced after Western Contact (Zulick et al. 2000:14).

#### 4.2.1.2 William Broughton (1787)

In 1786 and 1787, two fur-trading ships, the *King George* and the *Queen Charlotte*, visited Waimea for revictualing and refurbishing. The ships were under the command of Captains Nathaniel Portlock and George Dixon. William Broughton, who served under Dixon, described Waimea in February 1787:

There are a number of houses scattered here and there all the way from this village to the beach; and as we walked leisurely along, the inhabitants were continually pressing us to stop a while, and repose ourselves under the trees, which generally grow about their habitations. [...]

The valley all the way we walked along to the beach, is entirely planted with taro; and these plantations are laid out with a great deal of judgment.

The ground is very low, and taro grounds are entirely covered with water, and surrounded with trenches, so that they can either be drained, or fresh watered, from the river at pleasure. They are laid out in a variety of forms, according to the fancy of the different owners, whose various shares are marked with the most scrupulous exactness: these are intersected at convenient distances by raised foot-paths, about two feet wide. I should observe that these plantations range entirely along the river-side, and the houses I have been speaking of are situated to the westward of the extreme path. The trees, which are pretty numerous about the houses, are generally the cloth mulberry. [Dixon 1789:130–131]

#### 4.2.1.3 Captain George Vancouver and Menzies (1792)

In March 1792, Captain George Vancouver walked through the same area, but traveled deep enough into the valley to give the first western account of the Menehune Ditch. Vancouver writes the following:

I proceeded along the river-side, and found the low country which stretches from the foot of the mountains toward the sea, occupied principally with the taro plant, cultivated much in the same manner as at Woahoo; interspersed with a few sugar canes of luxuriant growth, and some sweet potatoes. The latter are planted on dry ground, the former on the borders and partitions of the taro ground, which here, as well as at Woahoo, would be infinitely more commodious were they a little broader, being at present scarcely of sufficient width to walk upon. This inconvenience may possibly arise from the principle of economy, and the scarcity of naturally good land. The sides of the hills extending from these plantations to the commencement of the forest, a space comprehending at least one half of the island, appeared to produce nothing but a coarse spiry grass from an argillaceous soil, which had the appearance of having undergone the action of fire. [...] Most of the cultivated lands being considerably above the level of the river, made it very difficult to account for their being so uniformly well watered. As we proceeded, our attention was arrested by an object that greatly excited our admiration, and at once put an end to all conjecture on the means to which natives resorted for the watering of their plantations. A lofty perpendicular cliff now presented itself, which, by rising immediately from the river, would have effectually stopped our further progress in to the country, had it not been for an exceedingly well constructed wall of stones and clay about twenty-four feet high, raised from the bottom by the side of the cliff, which not only served as a pass into the country, but also as an aqueduct, to convey water brought thither by great labour from a considerable distance; the place where the river descends from the mountains affording the planters an abundant stream, for the purpose to which it is so advantageously applied. This wall, which did no less credit to the mind of the projector than to the skill of the builder, terminated the extent of our walk; from which we returned through the plantations, whose highly improved state impressed us with a very favorable opinion of the industry and ingenuity of the inhabitants. [Vancouver 1798:170–171]

Archibald Menzies, a surgeon and naturalist aboard the *Discovery*, accompanied Vancouver on the inland expedition and left his own account. Menzies writes the following:

We landed on a sandy beach near the mouth of the river where we were received by the natives with great order and regularity [...]

I walked with Captain Vancouver into the plantation and passed over a place where a number of houses had recently burnt down. This I knew to be formerly the site of Ka'eo's residence, for whom these houses had been particularly tabooed, and as, according to the custom of the country, no one could inhabit them after him, it is probable that they were thus destroyed when he departed on his present warlike expedition.

Through this plantation, which is tolerably level, the village of Waimea is irregularly scattered over the bottom of a valley facing the bay by a fine sandy beach, where it is about half a mile wide and gets gradually narrower as it recedes back from the shore. It is sheltered on both sides by steep, rocky banks, in the caverns of which the natives in many places form habitations. The river which here glides on so smoothly as to form a pleasing sheet of water, takes the direction of the eastern side of the valley for nearly two miles back, where it divides into two branches which fall from the mountains by separate valleys formed by steep, rocky precipices that give them a wild and romantic appearance. [Menzies 1920:27–28]

Ka'eo, whose residence Menzies mentions, was the king of Kaua'i. Since the high chiefs of the island made their principal residences in Wailua on east Kaua'i, it is noteworthy that Ka'eo had a residence at Waimea on the east side of the river, perhaps an indication of the area's prestige and importance at the end of the eighteenth century. Menzies reported several hundred orange plants were brought by Vancouver's ships to be distributed among the Hawaiian Islands (Menzies 1920:12). Apparently, some of these plants never left Waimea and during following decades oranges would be among the goods traded to whaling ships stopping there.

#### 4.2.1.4 William Beresford (1798)

A thorough search of major Hawaiian myths and legends found no mention of Kekaha, but the first western description of the place comes only nine years into the post-Contact era. William Beresford was the supercargo on board the British ship *Queen Charlotte* under Captain George Dixon, which along with the *King George*, captained by Nathaniel Portlock, sailed on an exploratory voyage to the northwest coast of America. In 1798, both ships wintered in Hawai'i, spending much time off Waimea, Kaua'i. On one of the several shore outings, Beresford visited nearby Kekaha, which he called "A Tappa."

Having frequently heard our people who had been on shore speak of a village, called by the natives A Tappa, where a great number of people were commonly employed in manufacturing cloth, curiosity prompted me to walk to that place first, as I found it was not more than three miles distant, so that I could easily get back by Tyheira's dinner time.

The country, from the place where we landed to A Tappa is tolerably level, and for the space of two miles, very dry. The soil here is a light red earth, and with proper cultivation, would produce excellent potatoes, or anything that suits a dry soil; but

at present, it is entirely covered with long coarse grass: the inhabitants, I suppose, finding plenty of ground near their habitations, more conveniently situated for their various purposes. So far, the space from the beach to the foot of the mountains is about two miles in breadth; but from hence to A Tappa, it grows gradually narrower, till it terminates in a long sandy point, which I have already observed, is the West extreme of Wymea Bay.

A Tappa is a pretty large village, situated behind a long row of coconut trees, which afford the inhabitants a most excellent shelter from the scorching heat of the noonday sun. Amongst these cocoa-trees is a good deal of wet swampy ground, which is well laid out in plantations of taro and sugar cane.

I had laid my account in seeing their method of manufacturing cloth; but here I was mistaken. A number of our people, prompted by the same curiosity as myself, were got to A Tappa before, where 'Labour stood suspended as we passed.' The people flocked eagerly about us; some asking us to repose ourselves under the shady branches of trees planted about their doors; other running to the trees for cocoanuts and presenting them to us with every mark of kindness and good nature; in short, every inhabitant of the village was fully employed, either in relieving our wants, or gratifying their curiosity in looking at us.

The day being very sultry, we walked leisurely back, and I returned by a different path from that I had taken, in going to A Tappa. On examining the grass, which in most places is higher than the knee, I found it not altogether of a rough coarse sort, but intermixed with various sorts of flowers, together with different grasses, of the meadow kind; so that I have no doubt, with proper management, it would make excellent hay. [Dixon 1968:124–126]

Beresford's remark that the dry soil conditions in the area would be most suitable for potatoes is in line with Handy and Handy's (1972:410) assertion that the sweet potato was probably the prime staple of the village, rather than taro, because of the limited water resources.

While Beresford described taro, sugarcane, and coconut being cultivated in Kekaha, no mention is made of *wauke* (the inner bark of the mulberry tree) used as the raw material for making *kapa*. This seems curious in light of his statement that cloth making was a major activity of the village and the main purpose of his trek there was to observe this process.

Due to climatic conditions, the Mānā plain was probably not a prime *wauke* growing area (Handy and Handy 1972:209). However, Beresford did note on a later excursion through the lower Waimea Valley that "cloth mulberry" trees were numerous around the house sites there (Dixon 1968:131). It is possible there was some sort of trade going on between the residents of Waimea and Kekaha, for raw material and the labor that turned it into cloth.

#### 4.2.2 Missionary Accounts

The American Board of Commissioners for Foreign Missions (ABCFM), headquartered in Boston, sent its first company of missionaries to the Hawaiian Islands in 1819, leaving Boston on 23 October aboard the brig *Thaddeus*. The vessel came in sight of Mauna Kea on 30 March 1820 and anchored at Kawaihae Bay a couple of days later. There they learned of Kamehameha's death in May 1819 and of the recent overturning of the *kapu* (taboo) system. In May 1820, two American

Protestant missionary couples landed at Waimea, Kaua'i with the intention of establishing a station there. Their party consisted of Samuel and Mercy Whitney and Samuel and Nancy Ruggles (Damon 1931:284).

Kaumuali'i's son, Prince George, who had been sent away to school in New England, accompanied the missionaries. Kaumuali'i granted Waimea Ahupua'a to George, along with the fort and houses. In July 1820, the two missionary couples were established in a house *makai* of the fort. The house's *lānai* (porch) served as the schoolroom and meetinghouse.

By the mid-1820s, the Ruggles had left Kaua'i and the Whitneys had moved to a new house at Māha'iha'i on the east side of the Waimea River. The Whitneys were visited in 1824 by another missionary, Hiram Bingham, who described the idyllic Waimea landscape he encountered:

The valley contains about four hundred habitations, including those on the sea-shore. The numerous patches of the nutritious arum, and the huts or cottages of the people, were beautifully interspersed with the bread-fruit, the cocoanut, and the furniture kou, the medicinal Palma Christi, and oleaginous candlenut, the luscious banana, and sugar-cane [...]

To a spectator from the missionary's door, or from the fort, or either precipice, is presented a good specimen of Sandwich Islands scenery. On a calm and bright summer's day, the wide ocean and foaming surf, the peaceful river, with verdant banks, the bold cliff, and forest covered mountains, the level and fertile vale, the pleasant shade-trees, the green tufts of elegant fronds on the tall cocoanut trunks, nodding and waving, like graceful plumes, in the refreshing breeze; birds flitting, chirping, and singing among them, goats grazing and bleating, and their kids frisking on the rocky cliff, the natives at their work, carrying burdens, or sailing up and down the river, or along the sea-shore, in their canoes, propelled by their polished paddles that glitter in the sun-beam, or by a small sail well trimmed, or riding more rapidly and proudly on their surf-boards, on the front of foaming surges, as they hasten to the sandy shore, all give life and interest to the scenery. [Bingham 1847:217–218]

Bingham's account suggests life in Waimea retained much of its pre-Contact character well into the nineteenth century. However, in August 1824 peace in Waimea was shattered during a rebellion of Kaua'i chiefs led by Prince George. Kaumuali'i, George's father and the last king of Kaua'i, had died in Honolulu on 26 May 1824. On 8 August, George and a band of rebellious Kaua'i chiefs and their followers attacked the garrison at the Waimea fort, outpost of the Hawaiian Kingdom ruled by Liholiho. Ten rebels and six defenders were killed. The attack failed and George and his men retreated southeast to Hanapēpē Valley (Joesting 1984:106). The rebellion was crushed, George was taken captive and sent to Honolulu, and, according to the pioneering nineteenth century historian Samuel Kamakau,

Ka-lani-moku [prime minister of the Hawaiian kingdom] redistributed the lands of Kauai [...] The last will of Ka-umu-ali'i, who had the real title to the lands, was not respected [...] The lands were again divided. Soldiers who had been given lands but had returned to Oahu had their lands taken away, chiefs who had large lands

were deprived of them, and the loafers and hangers-on (*palaualelo*) of Oahu and Maui obtained the rich lands of Kauai. [Kamakau 1992:268–269]

Missionary journals and documents recount the events shaping Waimea from the 1820s onwards. The people of the *ahupua'a* were struck in May 1826 by an influenza epidemic and a great flood that wreaked havoc upon taro *lo'i* and damaged structures built by the missionaries. In 1828, a new stone house for the Whitney family was built on the western side of the river, and in 1848, the new missionary George Rowell built his own house. The original mission church was built west of the project area in 1834 of stones and mud. Rowell began construction of a new church on the same site built of sandstone blocks taken from a quarry in Waimea. Construction of the exterior was completed by 1854. This church was called the Waimea Foreign Church; in 1996, the church was renamed the Waimea United Church of Christ. The church has an associated cemetery. In 1874, Rowell left the Hawaii Board of Missions and started an independent church called the Waimea Hawaiian Church. This structure was *makai* of Kaumuali'i Highway near the *makai* end of Menehune Road.

At the end of Ola Road, the Hawaiian governor of Kaua'i, Kaikioewa, built a house in 1926 on the bluff overlooking Waimea. The cellar was used for the burial of several high *ali'i*. Aubrey Robinson purchased the lot in 1935 and constructed a large house. The lot was later bequeathed to the Waimea Foreign Church, which used the buildings for their parsonage.

#### 4.2.3 Population Decline

Beginning in 1831, censuses taken by Protestant missionaries throughout the Hawaiian Islands provide the earliest documentation of the size of the native population after the first decades of Western Contact. In 1833, Rev. Samuel Whitney estimated a population of 3,883 persons within 6 miles of the Waimea station. More ominously, he also estimated ten deaths were occurring for every birth (Kauai Bicentennial Committee 1977: n.p). Subsequent missionary station reports from Waimea recorded the continuing diminishment of the district's population. In 1838 the total population was 3,272; in 1840 it was 2,819; and, in 1841 it was 2,779 (Schmitt 1973:14). Whitney himself died in 1845 and was replaced by Rev. George Rowell who moved to Waimea from Wai'oli with his family in 1846.

### 4.3 The Māhele and the Kuleana Act

The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—that introduced private property into Hawaiian society. On 27 January 1848, the Crown and the *ali'i* began to receive their land titles as Konohiki (land manager) awards. The *ahupua'a* of Waimea was retained by the monarch, Kamehameha III, as crown land.

For *konohiki* lands, a claim first had to be approved by the Land Commissioners. Upon confirmation of the claim, a certificate was awarded to the claimant. This certificate was called a Land Commission Award (LCA), which confirmed the claim of an individual for a parcel. The awardee could then obtain from the Minister of the Interior a Royal Patent (RP), which indicated the government's interest in the land had been settled by the payment of a commutation fee. Commutation means “an exchange, or replacement.” The commutation fee was usually set at a maximum of one-third of the value of the unimproved land. The fee could be settled by the exchange of cash but was usually settled by the return of one-third of the lands (or cumulative value of the lands) originally awarded to the claimant (Chinen 1958:13).

On 19 October 1849, the Hawaiian Privy Council adopted resolutions to protect the rights of native tenants, the *maka ʻāinana*, or the “common” people. The Kuleana Act of 1850 confirmed these rights. Under this act, the claimant was required to produce two witnesses who knew the claimant and the boundaries of the land, knew the claimant had lived on the land for a minimum of two years, and knew no one had challenged the claim. The land also had to be surveyed. Native tenants or naturalized foreigners who could prove occupancy on the parcels before 1845 could be awarded lands they occupied or that they cultivated as *kuleana* (land holding of a tenant or *hoa ʻāina* residing in the *ahupua ʻa*) awards. No commutation fee was necessary to apply for a Royal Patent for a *kuleana* award, as the commutation fee had presumably already been paid by the *ali ʻi / konohiki* who had been awarded the entire *ahupua ʻa*, or *ʻili* in which the native tenant claimed his own small parcels (Chinen 1958:29–30).

Over 150 *kuleana* awards were granted in Waimea. It is through records for Land Commission Awards generated during the Māhele that the first specific documentation of life in Hawai'i as it had evolved up to the mid-nineteenth century comes to light. Although many Hawaiians did not submit or follow through on claims, or simply were not granted the claims for their lands, the distribution of LCAs can provide insight into patterns of residence and agriculture; many of these patterns probably had existed for centuries past. The *kuleana* awardees in the *ahupua ʻa* do not reflect the total population of Waimea. As Russell Apple notes,

They probably represent the local elite, those who could afford the survey and commutation [that were part of the award procedure], had proper authority for permanent occupancy, had reputable witnesses to sustain both the authority [to occupy] and continuous use [of the parcel], and who chose to apply. [Apple 1978:62]

However, the records associated with these awards illuminate the character of the Hawaiian settlement and livelihood within Waimea by 1850. The upper and lower valley were extensively cultivated. The Peʻekauaʻi Ditch, along with a system of lateral *ʻauwai*, watered *lo ʻi kalo* on the western flats of the river all the way to the shore. Interspersed among the *lo ʻi* were house sites, small plots of *kula* on which were cultivated traditional native dry land crops as well as introduced ones, and also pasture land. In the upper canyon past the Makaweli fork, the degree of settlement thinned out greatly with *lo ʻi* and house sites dispersed along the banks of the Waimea River. The furthest *mauka* extent of settlement was Kalakahi's LCA 11286 which was approximately 2,000 ft into Koai'e Valley.

There were 38 *ʻili ʻāina* in mid-nineteenth century land documents: ʻEleao (aphid), Hakila, Halepua, Hopeʻō (wasp, yellow jacket), Kahuamoa (chicken egg), Kekauakaloha, Kalooloa, Kamuliwai (the river mouth, estuary), Kanaʻana (Canaan), Kapalawai (the bottom lands), Kapele, Kaulu (ledge, grove) or Kaʻulu (breadfruit), Kekaha (the place), Koaiʻe (acacia koaia tree), Koai, Koolaiki, Koolanui, Kukui (candlenut lamp, light of any kind), Laumahi, Miloliʻi (find twist as sennit cord), Mokihana (*Pelea anisata*), Nāmāhana (the twins), Nania, Nuʻalolo, ʻŌpelu (variety of taro), Paliuli (green cliff), Pauwa, Peekauai, Pepekanaka, Pōkiʻi (youngest brother or sister), Puehulunui (big feathers on the back of a bird), Waiāhulu, Waiʻalae (mudhen water), Waiawa (milkfish water), Waiʻawaʻawa (bitter water), Waikolu (three waters), Waimea (reddish water, as from erosion of red soil), and Waiōhole (mature *āhole* [*Kuhlia sandvicensis*] water).

Only three claims were made in and nearby Kekaha. All land information was found on the Waihona 'Aina database (Waihona 'Aina 2022). Additional LCA information can be found in Table 2.

Keaona (No. 8841) claimed a house lot, six *lo'i* (irrigated plots) and some *kula* (land used for dryland agriculture or pasture) near the base of the *pali* (cliff) at Pōki'i, about a mile north of Kekaha (Board of Commissioners 1929: Native Register 1848 Vol. 9:397) (Figure 7). Elia Lihau (No. 6698) claimed all the land of Wai'awa (just west of Pōki'i), most of which was unused *kula*, but included a restricted fishery. This claim was never awarded (Board of Commissioners 1929: Native Testimony, Vol 11:155).

The only one to claim land in Kekaha was B. Naumu (No. 5386). Mentioned in this claim are *lo'i*, a house lot, a salt bed (*aliapa'akai*) and a *muliwai* (a pool near the mouth of a stream or an estuary) called Kapenu. Naumu developed the *lo'i* in 1844, stating that it was previously overgrown land (Board of Commissioners 1929: Native Testimony, Vol 11:146). Naumu was also awarded a parcel in Kekaha at the base of the *makai*-facing *pali* of Hululunui Ridge.

Table 2. LCAs awarded in the vicinity of Kekaha

LCA	Claimant	Ahupua'a	'Ili	Notes
5362	B. Naumu	Waimea	Pe'ekaua'i, Kekaha	'Āpana (lot) 1: House lot, fishpond, <i>kula</i> 'āina (plain) 'Āpana 2: House lot 'Āpana 3: Coconut grove 'Āpana 4: <i>Loko pa'akai</i> (salt bed)
6698	Lihau, Elia	Waimea	Waiawa	All the land in the sub <i>ahupua'a</i> / <i>'ili</i> of Waiawa located in Waimea; land was a gift from Kaikio'ewa, governor of Kaua'i; land was not awarded to claimant
8841	Keaona	Waimea	Poki'i, Paka	'Āpana 1: <i>Ahupua'a</i> and <i>'ili</i> of Poki'i, Kalana of Kona, Kaua'i; claimant held land from his ancestors to the present time 'Āpana 2: Four taro patches in the <i>ahupua'a</i> and <i>'ili</i> of Paka, Kalana of Kaua'i

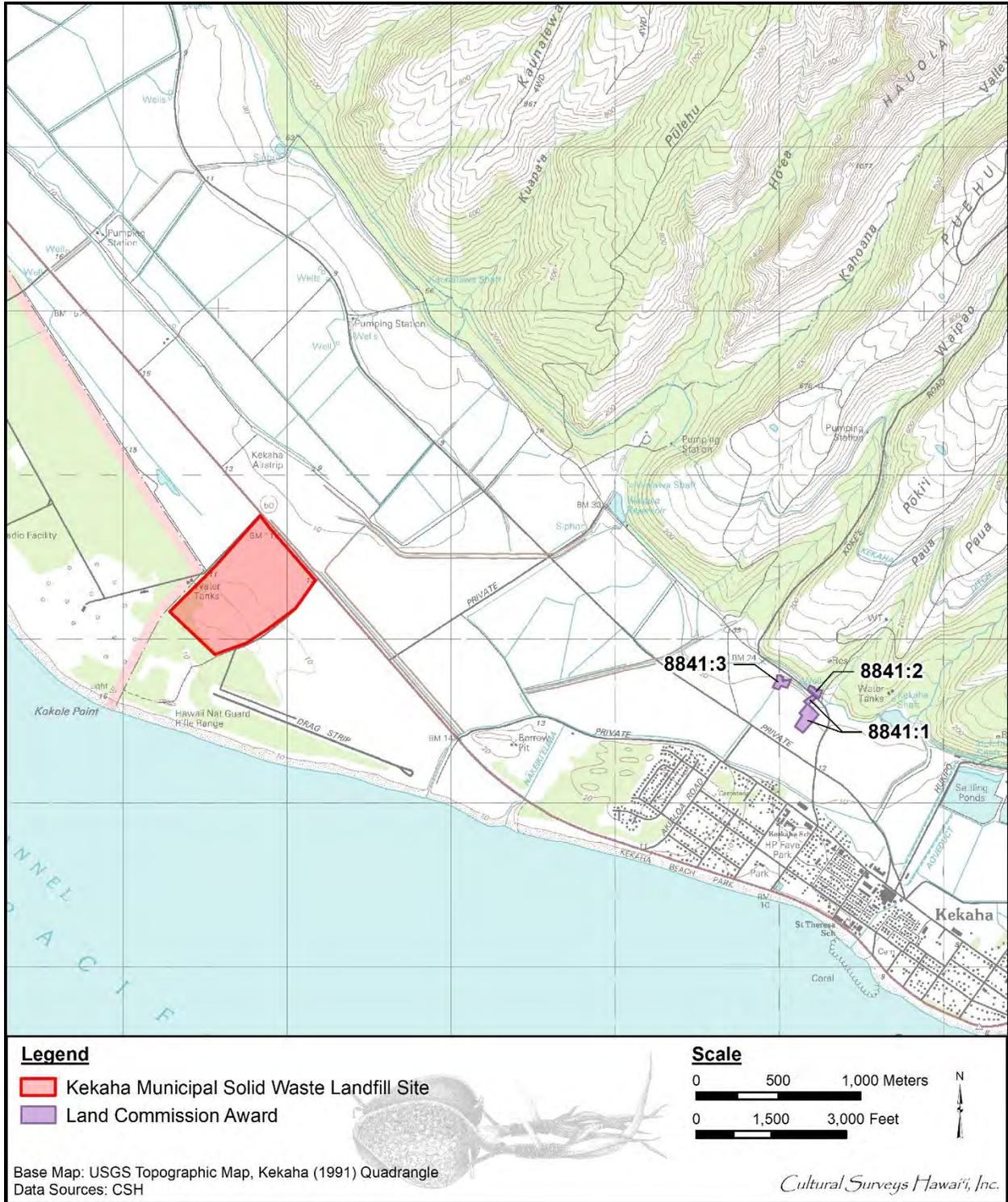


Figure 7. Portion of 1991 Kekaha USGS 7.5-minute topographic quadrangle depicting LCA 8841

## 4.4 Mid- to Late 1800s

In 1850, Waimea was designated a government port, opening it to foreign commerce. At the time, Waimea was exporting a respectable variety of agricultural goods and livestock. A report of the Royal Hawaiian Agricultural Society noted the listed exports from the port of Waimea between 1 July 1850 and 30 June 1851 (Table 3; Damon 1931:291). Most of these goods were brought to the port of Waimea for shipment off the island; they were not necessarily products of the *ahupua'a* itself. Within a few years, the government port facility was moved to Kōloa, and Waimea declined in importance as a shipping destination.

Table 3. Waimea Port exports between 1850 and 1851

Item	Quantity	Item	Number
Sweet potatoes	3,009 bbls	Oranges	4,000
Yams	9 bbls	Squashes	100
Onions	568½ bbls	Cattle	4
Sugar	5,000 lbs	Sheep	108
Salt	50 lbs	Swine	110
Pineapples	2,000	Turkeys	110
Cocoanuts	1,400	Fowls	1,202
Bananas	20 bunches	Ducks	12
Dried pork	1,200 lbs	<b>Total Value</b>	<b>\$9,030.62</b>

### 4.4.1 Kekaha

Most of the historical accounts of Kekaha during this period are found in the letters, papers, and books authored by Valdemar Knudsen and his immediate offspring, Eric A. Knudsen and Ida Elizabeth Knudsen Von Holt. Knudsen came to Hawai'i from Norway via the continental United States where he had business dealings. He settled at Waiawa in 1856 as a rancher, agriculturalist and eventually sugar planter (Veech 1979:6–8).

Knudsen assumed the lease of government land from Archibald Archer and a Mr. Gruben. The two men were involved in a failing tobacco farming enterprise. A Mr. Clifford, who made cigars, was also associated with the enterprise (Lydgate 1991:92).

Eventually Knudsen controlled the entire district, excluding *kuleana* (tenant) lands, from Nu'alolo to Waimea, including all the *mauka* area (Knudsen and Noble 1945:35). In this post-Māhele era, he held the title of *konohiki* (overseer), and Hawaiians with no *kuleana* of their own who lived in the district, reportedly numbering three to four hundred people, worked for Knudsen three days out of the month as “rental” payment (Von Holt 1985:61).

Knudsen described Kekaha as “a low marsh land, full of fish ponds and coconut-trees, but the ponds are overgrown with bullrushes and would cost more than they are worth to bring in order. I tried once and it cost me circa \$200.00. There is not much grazing lands belonging to Ketaha and it is chiefly pili grass” (Knudsen 1866:304).

Valdemar's son Eric later made this observation. Evidently the area had changed little since Beresford's visit in 1787:

From Waimea towards Mana there were no trees, no fences, no cane, all was open country; along the taro patches of Kekaha and Pokii grew quite a number of cocoanuts. The mango trees were planted by my father. Numbers of Hawaiians lived about Kekaha and Pokii, where there were springs and taro land. Then the land was bare again until you reached Waiawa. Above the road in Pokii, where the cane loaders now stand, was a row of thatched houses and the natives planted a lot of tobacco. [Knudsen 1991:98]

The perpetual swamplands of the plain apparently were greatly enlarged during periods of heavy winter rains. It was possible on these occasions to paddle a canoe from Mānā to Waimea on this inland waterway (Figure 8; Knudsen 1991:99; Von Holt 1985:77–78). Waterfowl present in the wetlands provided a food resource for the area residents. Among them the *kōloa* (Hawaiian duck) and especially the *'alae* (Hawaiian gallinule) and *āe'o* (*kukuluāe'o*; Hawaiian stilts) were numerous (Von Holt 1985:78). All three were traditionally caught and consumed by the Hawaiians (Malo 1951:39).

Kekaha was watered by a spring called Kauhika located at the base of the *pali*. The spring had a fishpond, then taro *lo'i* and rice fields before flowing into the swamp (Knudsen and Noble 1945:62).

Most of the residents also lived in this area, near the water source and cultivatable lands. Eric Knudsen provides an anecdotal description:

A row of grass houses extended all the way along the foothills from Waimea to Mana. Every house site had a name. To find a man you had to find his house name. The natives seemed to know every name and would keep sending you along until you finally came to the spot you were looking for.

At certain hours all the women sat in their houses and beat tapa cloth and as they beat they talked to one another in a tapa beater's code. They could send a message with great speed from Waimea to Mana. When the men returned from the mountains with fire wood or canoes, the woman that saw them at once tapped out the news and it flew from house to house with the result that every man, when he came home, found his house in order and no surprised visitors hanging around. The men tried to learn this secret code but never did, though an old man at Mana told my father that the men had tried for years to learn the secrets of the tapa code but were never able to do so.

The grass houses were all built in one general design—one big living room and two doors—one on each side and opposite to one another. One day my father noticed that all were built with their gable-ends east and west and the doors facing the ocean and the hills. He asked one of the men why that was so and he replied, 'Why, you know that Po, the abode of the dead, lies under the ocean just outside Polihale, where the cliffs and the ocean meet, and the spirits of the dead must go there. As the spirits wander along their way to Po, they will go around the gable-

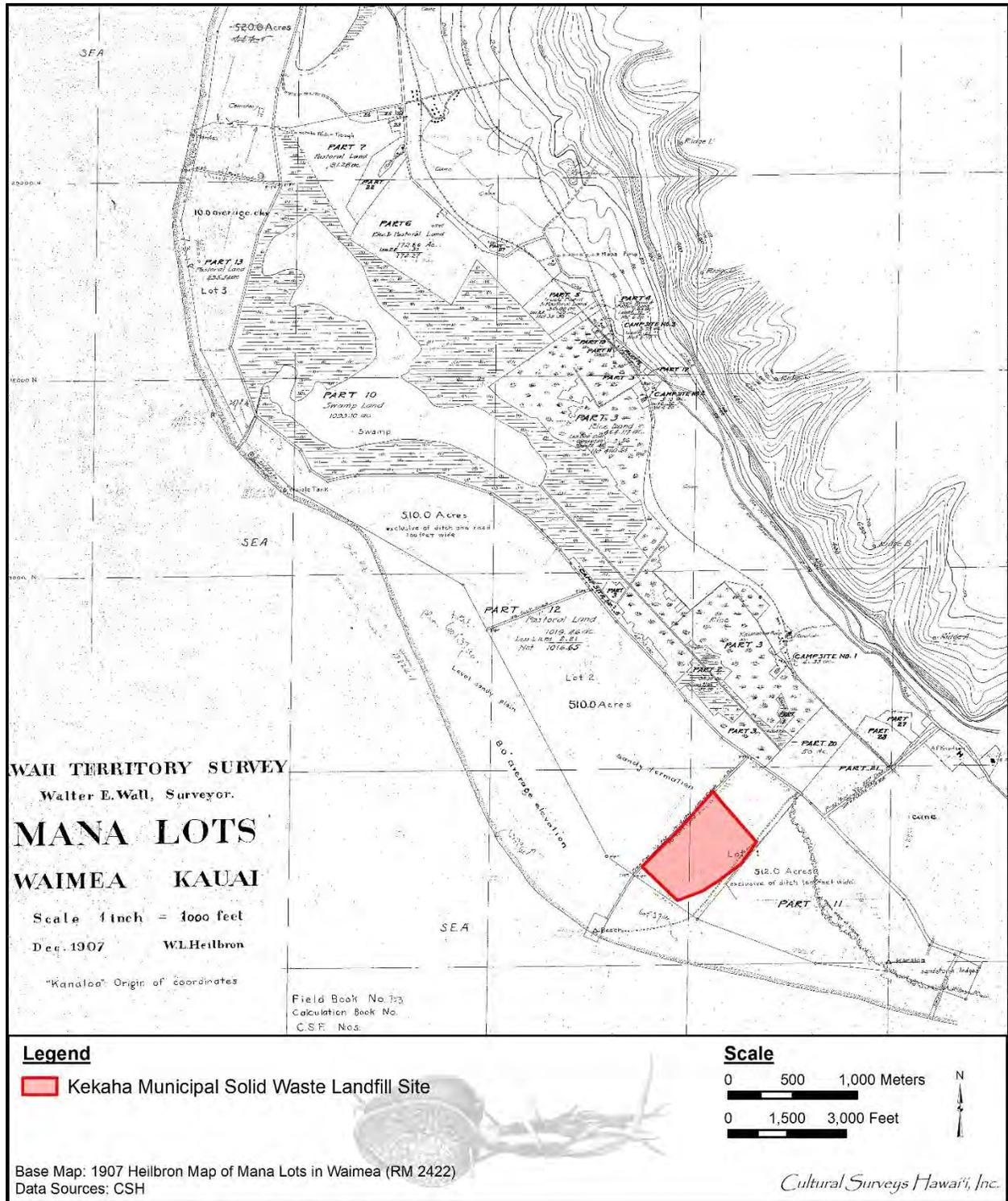


Figure 8. 1907 Helibron map of Mānā lots in Waimea and swamplands

end of a house but if the house stood facing the other way, the spirits would walk straight through and it would be very disagreeable to have a spirit walk past you as you were eating your meal' 'In fact,' he continued, 'we can always tell when a battle has been fought by the number of spirits passing at the same time.' [Knudsen 1991:101, 102]

#### 4.4.2 Rice and Sugar Cultivation

Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. The Chinese originally came to the Islands to work on the sugar plantations. As the commercial sugar industry expanded throughout the Hawaiian Kingdom, the need for increased numbers of field laborers prompted passage of contract labor laws. In 1852, the first Chinese contract laborers arrived in the Islands. Contracts were for five years and pay was \$3 a month plus room and board. Upon completion of their contracts, a number of the immigrants remained in the Hawaiian kingdom, many becoming merchants or rice farmers. The Hawaiian Islands were well positioned for rice cultivation. A market for rice in California had developed as increasing numbers of Chinese laborers immigrated there since the mid-nineteenth century. Similarly, as Chinese immigration to the Islands also accelerated, a domestic market opened (Coulter and Chun 1937:8–9).

At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. Overall, by 1892, 2,055 acres of Kaua'i lands were planted in rice (Coulter and Chun 1937:20). Sadly, the taro lands' availability throughout the Islands in the later 1800s reflected the declining demand for taro, as the Native Hawaiian population diminished. Censuses taken during the second half of the nineteenth century record the dwindling population of the Waimea District. In 1838 there were 3,272 persons living in the district; by 1853 a total of 2,872 persons were recorded in Waimea. Twenty-five years later, in 1878, the total population had diminished further to 1,374 (Schmitt 1977:12–13).

Rice farming declined sharply throughout the Hawaiian Islands after the first decade of the twentieth century. Total acreage dropped from a high of 9,425 acres in 1909 to 1,130 acres in 1935. By the 1930s the rice industry had ceased entirely on the islands of Hawai'i, Maui, and Moloka'i (Coulter and Chun 1937:62). Though rice continued to be grown at Waimea and Makaweli into the 1930s, many of the rice fields were being reclaimed for sugar planting.

During the last decade of the nineteenth century, the population of Waimea rebounded, growing from a total of 2,739 in 1890 to 4,595 in 1896, and 5,886 in 1900 (Schmitt 1977:13). That growth was spurred by the establishment of commercial sugarcane planting at Waimea. Population figures up to World War II reflect the continued growth of the Waimea District as the sugar industry prospered; in 1910 the population total was 8,195 and by 1940 it had grown to 10,852 (Schmitt 1977:13–14).

In the 1880s, two planters named Conrad and Borchgrevink attempted to grow cane at Waimea. They had little success, but in 1884 H. Schmidt organized the mill enterprise and other entrepreneurs on O'ahu were organizing the Waimea Sugar Mill Company to begin operations on land leased from the Rowell family. Soon, a ditch was constructed to bring Waimea River water to the fields, which covered about 200 acres (Condé and Best 1973:203). The extent of Waimea Plantation in 1906 is shown in Figure 9. This map of Kaua'i also shows the location of the wetlands, at first used for rice and then taro, and the location of pastureland.

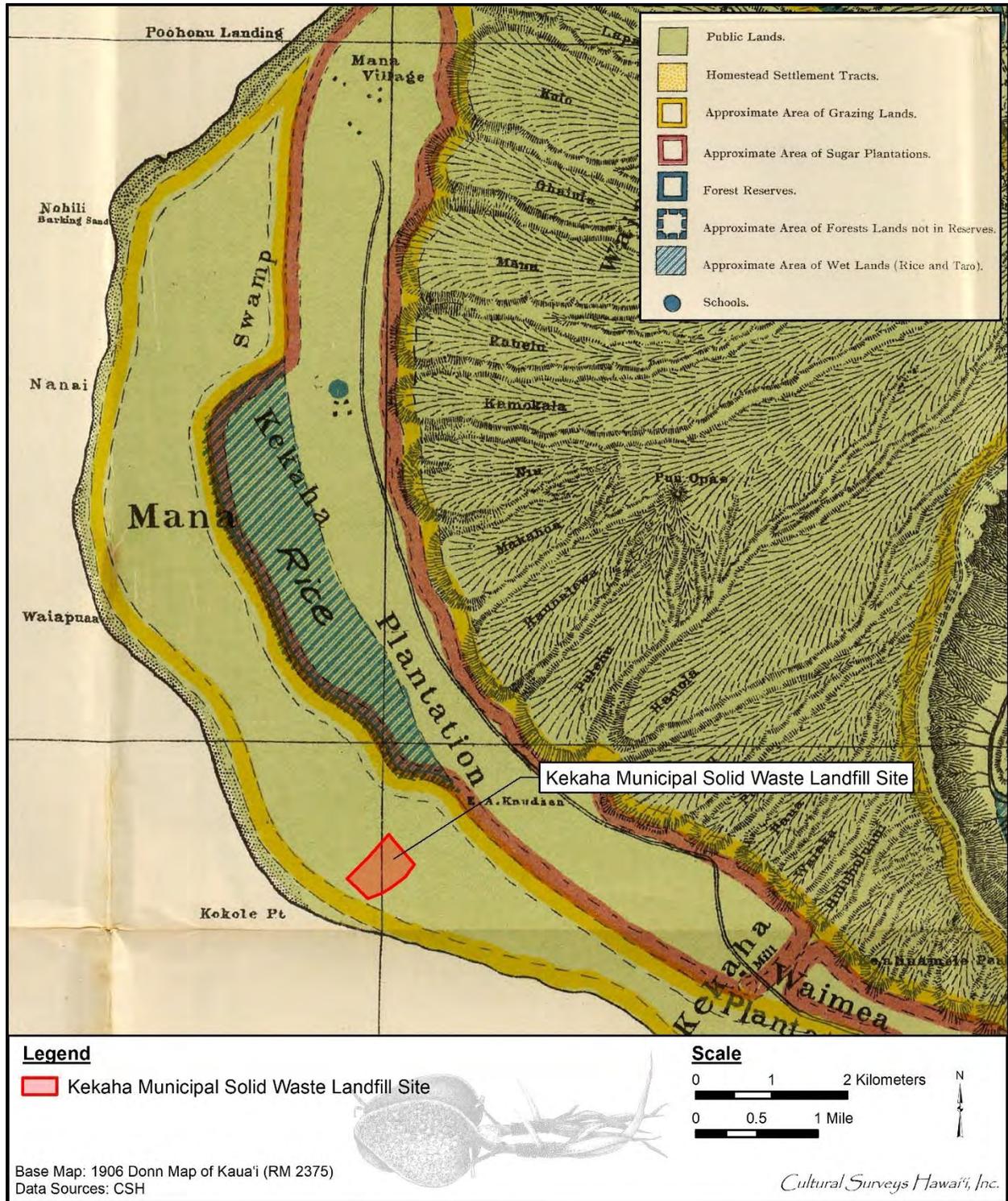


Figure 9. 1906 Donn map of Kaua'i Island with land use (RM 2375) showing the current project area

## 4.5 1900s

In 1898 Kekaha Sugar Company was established through consolidation of three Kaua'i sugar interests. The fate of plantation agriculture in the arid zones of Waimea Ahupua'a hinged on water supply development in the twentieth century. Following a series of droughts and water overuse in the late nineteenth century, groundwater was increasing in salt content and well water levels decreased. Valdemar Knudsen, founder of Kekaha Sugar Company, looked to the Waimea River as a source of sugarcane irrigation—pushing forward the Kekaha Ditch project. Construction of the Kekaha Ditch started in May 1906 and was completed in September 1907 (Wilcox 1996:93) (Figure 10 and Figure 11). The Kekaha Ditch has also been known as the Waimea Ditch and as the Waimea-Kekaha Ditch. The ditch diverges water from the Waiiahulu stream, Koaia stream, and Waimea River and originally extended through 16 miles of *mauka* lands and 4 miles through the lowlands (Wilcox 1996:93). This water was used to irrigate plantation lands of the Kekaha-Mānā Plain.

Hans Peter Fayé came to Kaua'i from Norway in 1880 at the age of 21. Four years later, with a loan from Isenberg and a lease from his uncle, sugar pioneer Valdemar Knudsen, Fayé founded H.P. Fayé & Company, a sugar plantation in Mānā, the westernmost town in Kaua'i. In 1906 Fayé acquired the Waimea Sugar Mill, which had been founded in 1884. In 1910 the Waimea Sugar Mill Company was bought by Hans Peter Fayé, Ltd., operator of the neighboring Kekaha Sugar Company.

A 1910 newspaper article in the *San Francisco Chronicle* describes the sugar lands and the railroad line built to haul the cane to the mill:

Waimea has a bit of flat land hemmed in by two neighbors, Kekaha and Hawaiian Sugar Company, just over a half mile long and a little wider. It lies only a few feet above sea level. Cane is transported from the fields over a railway system which consists of two miles of permanent track and one mile of portable track, thirty eight cars and a locomotive. [Condé and Best 1973:203]

The railroad line described above was built by the Kekaha Sugar Company in about 1884, and used to transport sugar from its own mill to the pier at Waimea Landing. Initially the train also stopped at the Waimea Sugar Mill Company to transport their sugar to the landing. By 1910, the railroad system was laid from Kekaha sugar mill to Polihale for transporting sugarcane, labor, and freight. The steam locomotives acquired for this purpose were named “Poli Hale,” “Mana,” “Kolo,” “Nohili,” and “Pokii” after places of the area. They were eventually replaced with diesel locomotives in 1928. By the early 1930s, about 670 acres of land were cultivated by the Waimea Sugar Mill Company. Most of Waimea Town's commercial buildings were constructed during this period of the sugar industry's growth. The railroad system was eliminated in 1947 when trucks were utilized for hauling sugarcane to the mill (Condé and Best 1973:141–146).

From 1923 to 1926 the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands (Wilcox 1996:93–97). This system is comprised of 21 miles of channels which divert water from the Kauaikinana, Kawaikoi, Waiakoali, and Kōke'e streams.



Figure 10. Historic photo of the upper reaches of the Kekaha Ditch showing the general nature of the ditch (Wilcox 1996:94)



Figure 11. Kekaha irrigation ditch photo, n.d. (University of Chicago)

At the time of statehood in 1959, H.P. Fayé & Company was incorporated as Kikiaola Land Company and is still owned by about 100 of the founder's descendants. Linda Collins, a granddaughter of H.P. Fayé is now the president of Kikiaola Land Company.

During World War II the U.S. Army Corps of Engineers used the plantation shop yard as their headquarters; the sugarcane from the fields was taken to Kekaha Sugar Mill to be processed (Figure 12). Following World War II, the fortunes of the Waimea Sugar Mill Company changed. The Waimea mill stopped operating in 1945, though the Waimea Sugar Company continued to cultivate cane on its lands until 1969. The milling equipment was sold, and the mill building was used for grain storage (Fayé 1997:26). After the company closed, its fields were leased to the Kekaha Sugar Company. Kekaha Sugar Company was the first in the Territory to switch to diesel power. In June 1928, the first diesel locomotive in the Islands was placed in service at Kekaha (Condé and Best 1973:145). Diesel was found to be more cost effective than steam and persisted as the primary means of transporting sugarcane until the 1940s when transportation by truck proved more efficient. In 1947, the railroad system was eliminated, completing the full conversion to truck transport (Condé and Best 1973:146).

In 1950, the Waimea Sugar Mill Company was reorganized into the Waimea Sugar Mill Inc., which continued to process cane, and the Kikiaola Land Company, which was created to manage the property. In 1982, one of the former plantation cottages opened as a vacation rental and was so successful that the Fayés decided to construct a plantation-type resort. The renovated plantation houses, built between 1900 and 1920, became part of the Waimea Plantation Cottages (Chang 1988:49–52), with 48 rental units and a conference center.

In the *mauka* portion of Waimea Ahupua'a land was divided and preserved by the creation of state parks such as Kōke'e State Park and Waimea Canyon State Park. The twentieth century history of Kōke'e State Park and Waimea Canyon State Park include the following chronology of activities: the presence of cattle during the first decades of the century, the opening of leased cabin sites at Kōke'e beginning in 1919, the planting of tree stands and construction of new trails by the Civilian Conservation Corps during the 1930s and '40s, the construction of military and communications facilities beginning in the 1960s, and the development of the parks themselves, beginning in the late 1940s at the instigation of Joseph M. Souza, Jr.

A 1910 USGS map (Figure 13) of Kaua'i shows no urban development within and around the project area in the early twentieth century. However, a 1952 Awana map (Figure 14) does show the location of the Kekaha Landfill Phase I within the project area as well as the adjacent Kaumuali'i Highway. A mid-1960s USGS map (Figure 15) and a 1977 aerial photograph (Figure 16) show the continued lack of urban development within and around the current project area.

## 4.6 Contemporary Land Use

Kekaha Sugar Company continued to produce sugar until 17 November 2000 when the parent company, AmFac, closed the factory down due to financial hardship (Kojima 2000). During recent decades, growth in Waimea has focused on development of the former sugar plantation lands and structures into tourist-oriented facilities and diverse agricultural development. After sugar operations ceased, lands previously under contract to Kekaha Sugar Company reverted



Figure 12. Kekaha Sugar Mill (CSH 2010)

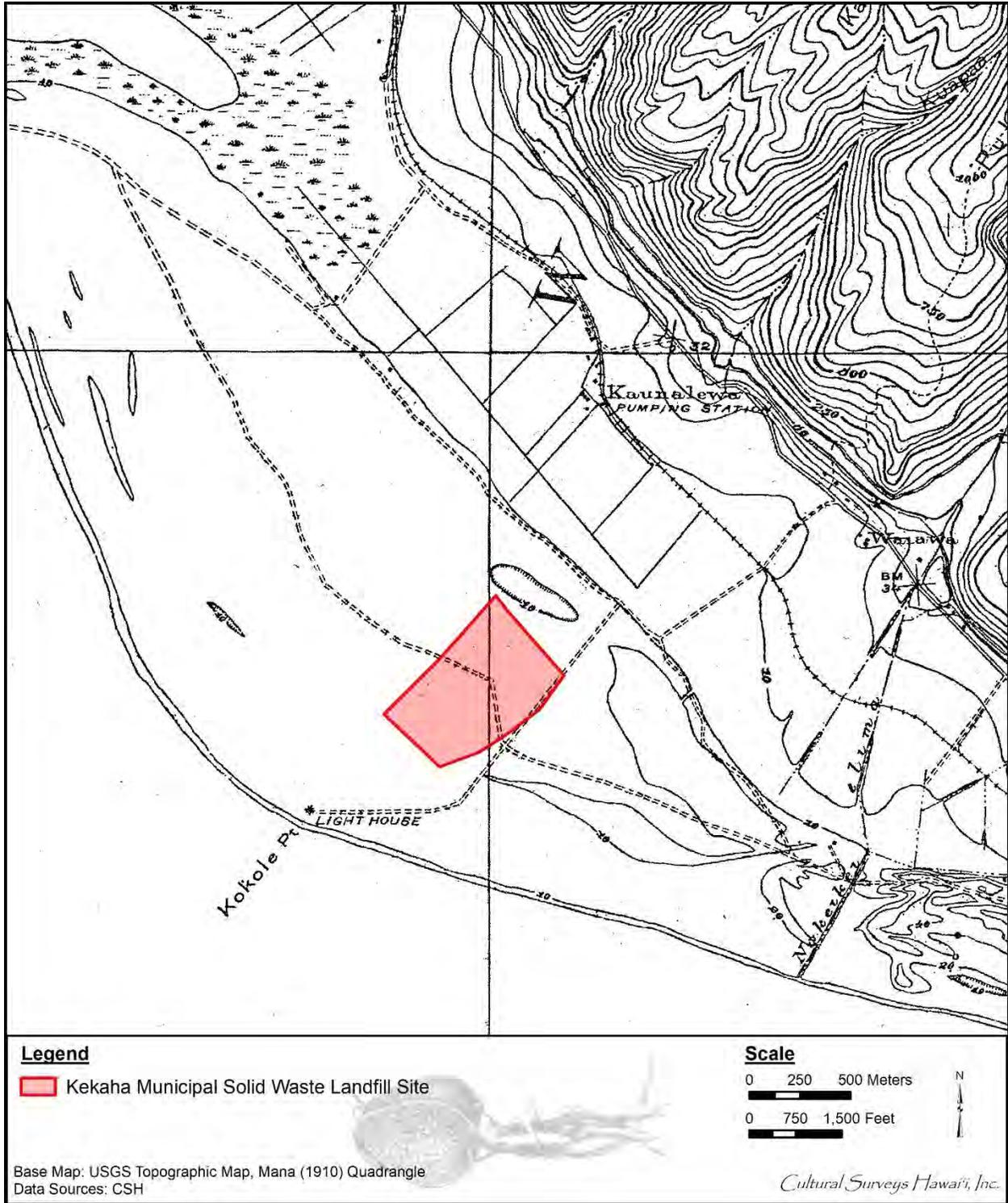


Figure 13. 1910 Mana USGS topographic quadrangle showing railroad route and no urban development within and around the project area

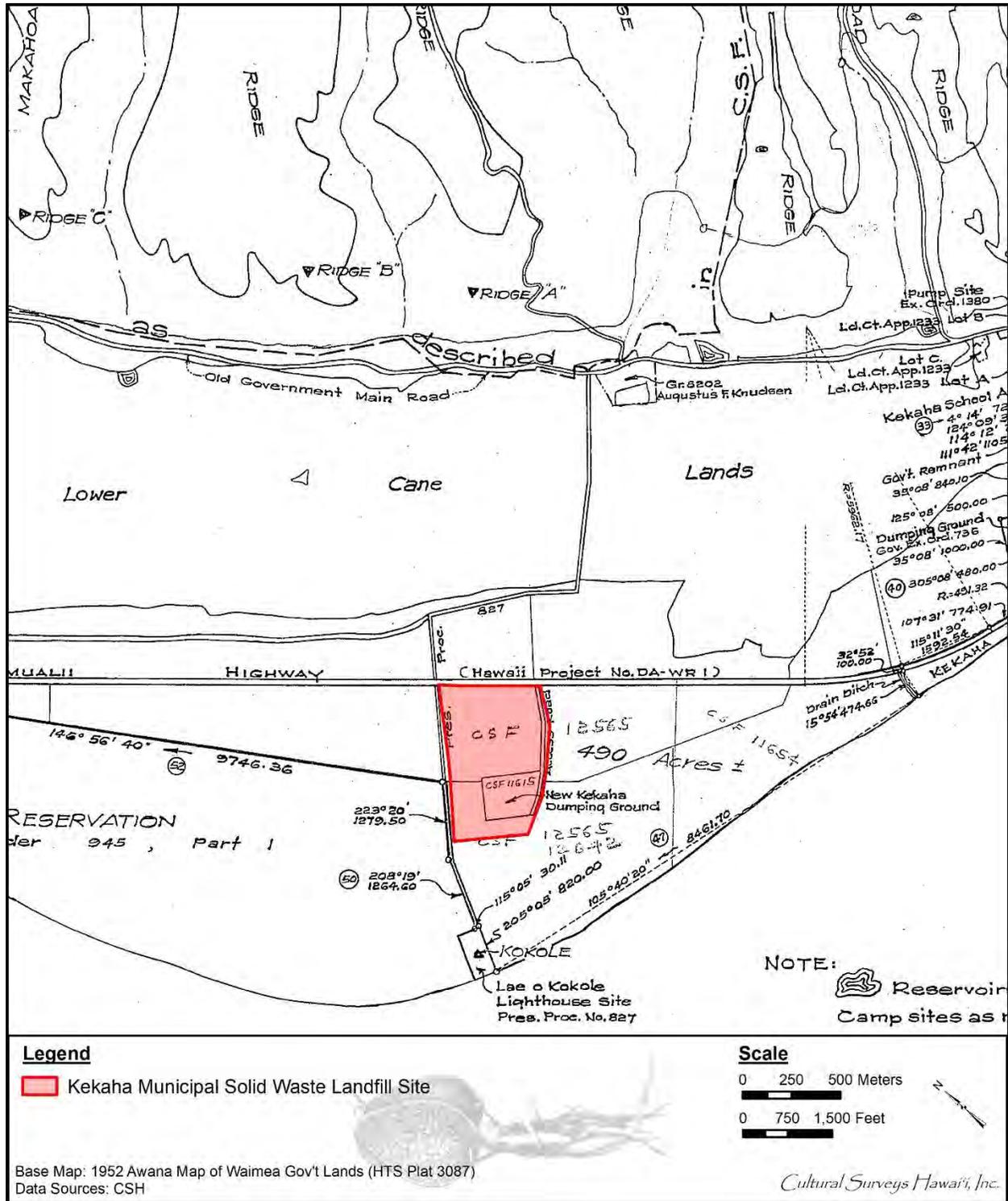


Figure 14. 1952 Awana map of Waimea government lands showing development within and around the project area

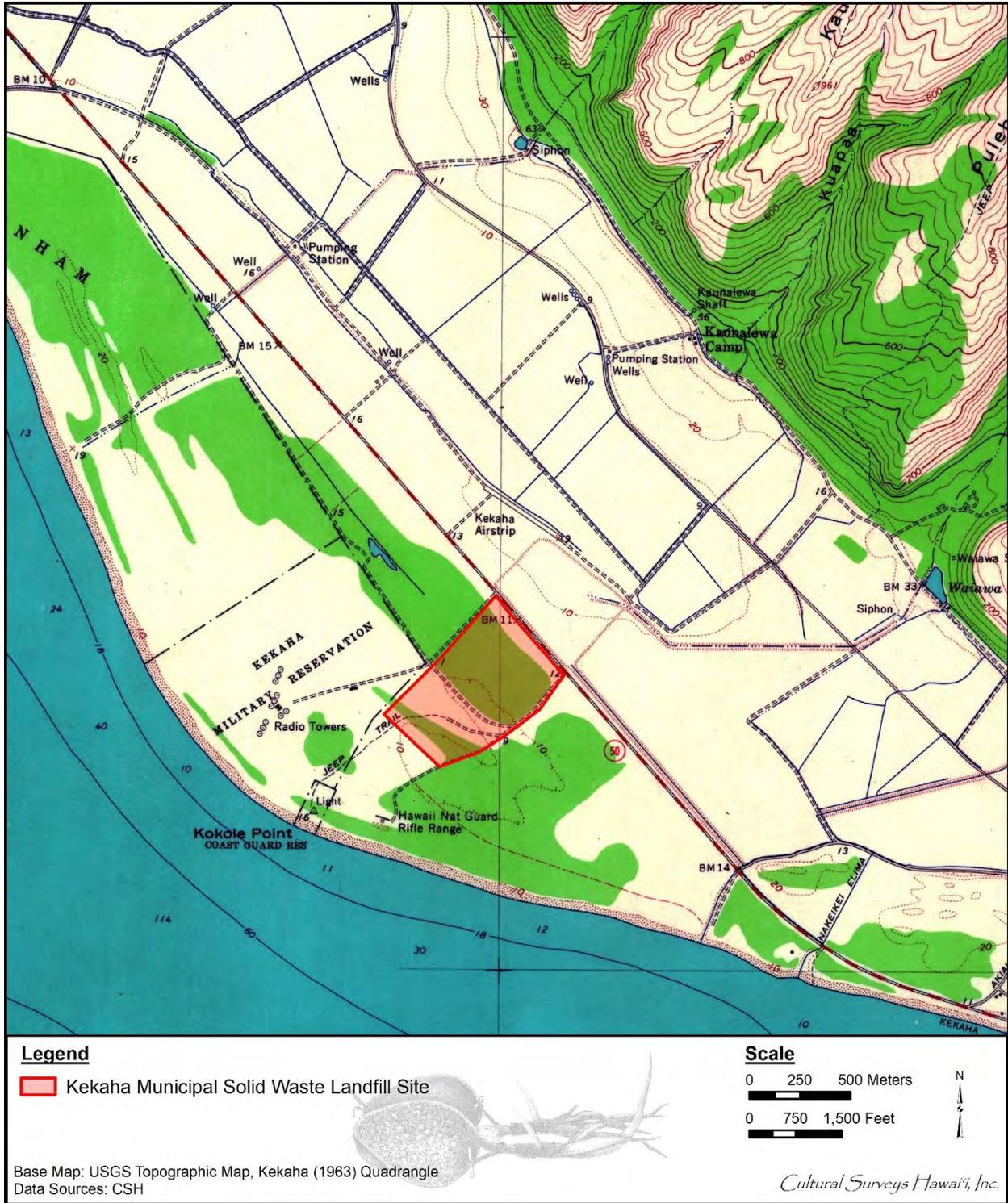


Figure 15. 1963 Kekaha USGS topographic quadrangle showing project area



Figure 16. 1977 USGS Orthophotoquad aerial photograph of Kekaha quadrangle, showing development within and around the project area

back to the State of Hawai'i. These lands were subsequently divided among multiple state agencies based on use and management strategies.

As noted above, during the second half of the nineteenth century, two newly arrived settlers on Kaua'i—Archibald Archer and Valdemar Knudsen—built cabins in upland Waimea, in what would become the Kōke'e State Park. These early initiatives set the stage for developments throughout the twentieth century focused on creation of the present state parks. Koke'e State Park and Waimea Canyon State Park draw many visitors and local residents to Waimea Ahupua'a today. Additional cabins have been added in the Koke'e State Park and many local families use the cabins for vacation get-aways. Campgrounds are also located in Koke'e State Park near the Waiakoali, Kawaikōi, and Kauaikinanā Stream diversions.

Hunting and fishing are both popular activities in Koke'e and Waimea Canyon State Parks. Puu Lua Reservoir trout fishing is a well-known and very popular activity among Kaua'i residents, and many people frequent the Pu'u Lua and Koke'e areas during the season to collect plums.

In September 2003, land situated in Kekaha, Kaua'i was transferred through Executive Order No. 4007 to the Agribusiness Development Corporation (ADC) for agricultural and related purposes. The lands were identified as "Portion of the Government (Crown) Land of Waimea," containing a gross area of 12,860.642 acres and a net area of 12,592.133 acres, a portion of which has been under active agricultural use for the last several years under the management of the Kekaha Agricultural Association (Aiona 2003). The Pacific Missile Range Facility, Barking Sands (PMRF) is also located on the Mānā Plains on the shoreline between Kekaha and Pōlihale with additional facilities just north of the Mana Reservoir.

## Section 5 Previous Archaeological Research

### 5.1 Overview

A discussion of previously identified archaeological resources in the project area vicinity is included in this CIA to inform understandings of land and local communities from the initial Hawaiian discovery and settlement of the islands through the historic era, and to provide additional context for the historic documentation, traditional cultural practices, and oral histories associated with the project area and vicinity. Table 4 presents a list of previous archaeological studies; these are shown in Figure 17. Table 5 lists the historic properties documented in the vicinity of the project area and presented in Figure 18. A brief description of archaeological studies in the area of the proposed action follows.

Table 4. Previous archaeological studies in the vicinity of the project area

Reference	Type of Study	Location	Results (SIHP # 50-30-05****)
Bordner 1977	Reconnaissance survey	Kekaha Beach Park	No significant findings
Ching 1982	Reconnaissance survey	Proposed landfill near Barking Sands	No significant findings
McMahon 1988	Field inspection	Mānā near land fill; TMK: (4) 1-2-002:040	No significant findings
Gonzalez et al. 1990	Archaeological inventory survey with subsurface testing	Kauai Test Facility (KTF) at PMRF	Recent trash scatter, bone fragments of unknown species, porcelain fragments, and one <i>cypraea</i> sp. discovered
Walker and Rosendahl 1990	Archaeological inventory survey	Three areas at PMRF and four areas in Kōke'e Park Geophysical Observatory	No significant findings
Kennedy 1991a	Archaeological subsurface testing	Family housing area at PMRF	No significant findings
Kennedy 1991b	Supplemental to archaeological subsurface testing	Family housing area at PMRF	Further discussion of historic ditch (SIHP # -00754) and testing of low sand mounds discussed in Kennedy 1991a
Spear 1992	Archaeological monitoring	West of Kekaha Town	No significant findings

Reference	Type of Study	Location	Results (SIHP # 50-30-05****)
Folk and Hammatt 1993	Inventory survey with subsurface testing	Proposed landfill expansion near Barking Sands; TMK: (4) 1-2-002:009	No significant findings
Hammatt and Ida 1993	Archaeological assessment	Two separate parcels; <i>makai</i> of Kaumuali'i Hwy and <i>mauka</i> parcel located on Kaleinamanu Ridge in Kekaha	No significant findings
Folk and Hammatt 1994	Archaeological inventory survey with subsurface testing	National Guard Rifle Range, Barking Sands	No significant findings
Masterson, Hammatt, Folk, and Ida 1994	Inventory survey with subsurface testing	Proposed agricultural park near Barking Sands	SIHP # 03650, two human burials identified
Drolet et al. 1999	Archaeological monitoring	Site of Project H-134 in PMRF	No significant findings
Dye and Dye 2008	Archaeological monitoring	PMRF <i>makai</i> of Kekaha Landfill	No significant findings
engineering-environmental Management 2009	Survey and evaluation of historic buildings	Hanapēpē Armory and adjacent to SE boundary of PMRF	TS Kekaha WETS at PMRF, a single building (Building 00001) documented; Hanapēpē Armory is modern with exception of one building: flammable material storage building (Building 29) built in 1963
Altzer and Hammatt 2010	Archaeological inventory survey	Access roads from Mānā Rd NE through agricultural fields, encompasses portions of New and Old Government roads	Eight historic properties identified: SHIP #s 02107, portions of New and Old Government Rd and associated structural remnants; -02108 and -02112, habitation terraces; -02109, wall remnant; -02110 and -02111, mounds; -02113, historic house site; and -02114, <i>heiau</i>

Reference	Type of Study	Location	Results (SIHP # 50-30-05****)
Coward and Hammatt 2011	Archaeological literature review and field inspection	10-acre Agricultural Field Office, TMK: (4) 1-2-002:001	No significant findings
Hammatt and Shideler 2011	Literature review	Eight possible locations for Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, TMK: (4) 1-2-002	Discusses history of area, previous archaeological studies, and historic properties identified during previous studies
Fong 2012	Archaeological monitoring	Central and southern segments of PMRF	No significant findings
Hammatt and Shideler 2013	Archaeological monitoring	Kaumuali'i Hwy, vicinity of Kekaha, MP 27	No significant findings
Blackwell and Barnes 2014	Historic building survey and evaluation	Eight locations: focus on Kekaha Weekend Training Site (WETS)	KD Range #0: Constructed in 1961 as 300-yard known-distance rifle range that provided firearms training for Guardsmen on Kaua'i
Watanabe et al. 2014	Archaeological monitoring	Mānā Drag Racing Strip, TMKs: (4) 1-2-002:001, 009, 035, 036, 040	No significant findings
Clark et al. 2015	Archaeological inventory survey with subsurface testing	Mānā Drag Racing Strip, TMKs: (4) 1-2-002:009, 036, and 040	No significant findings

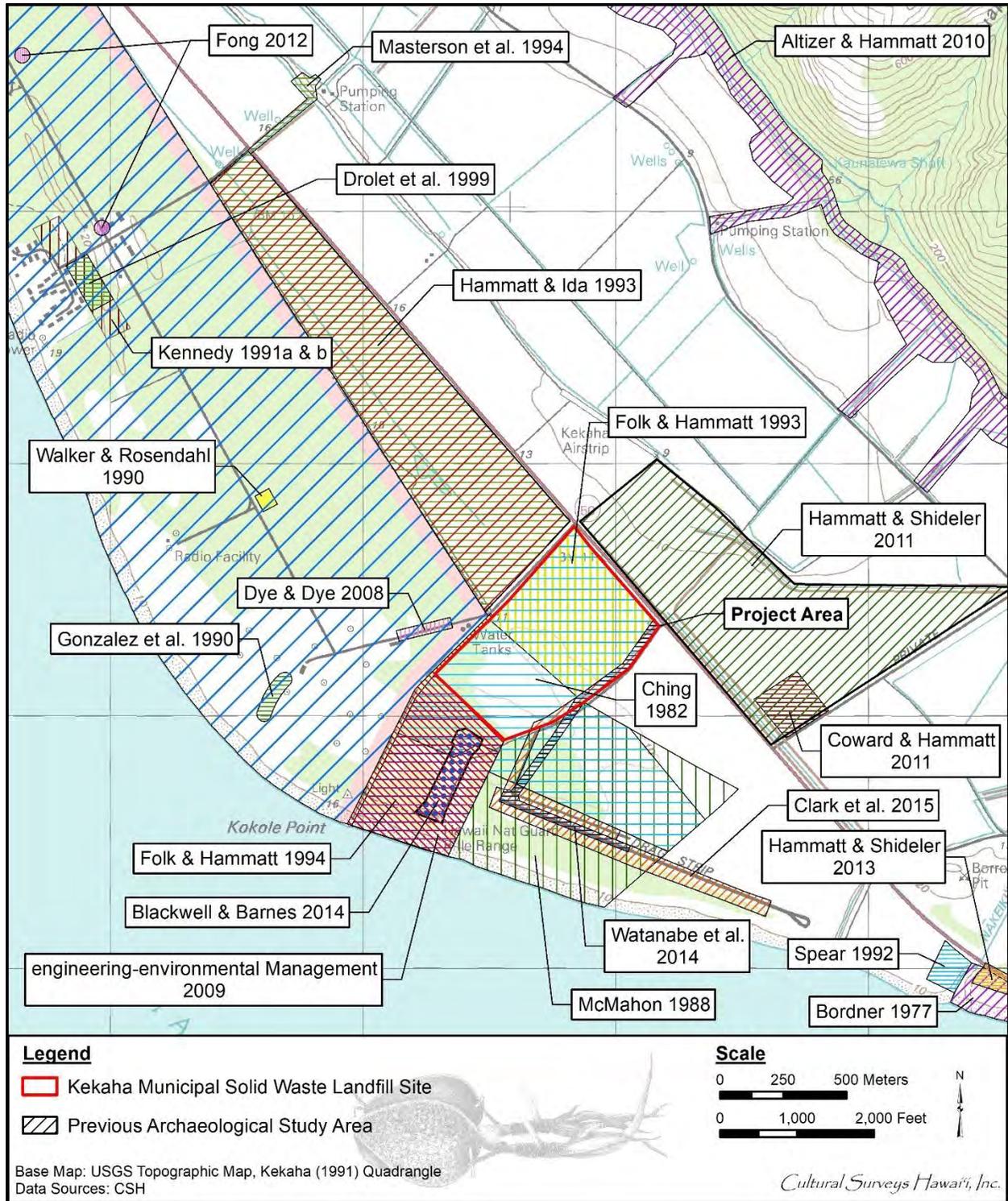


Figure 17. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the project area

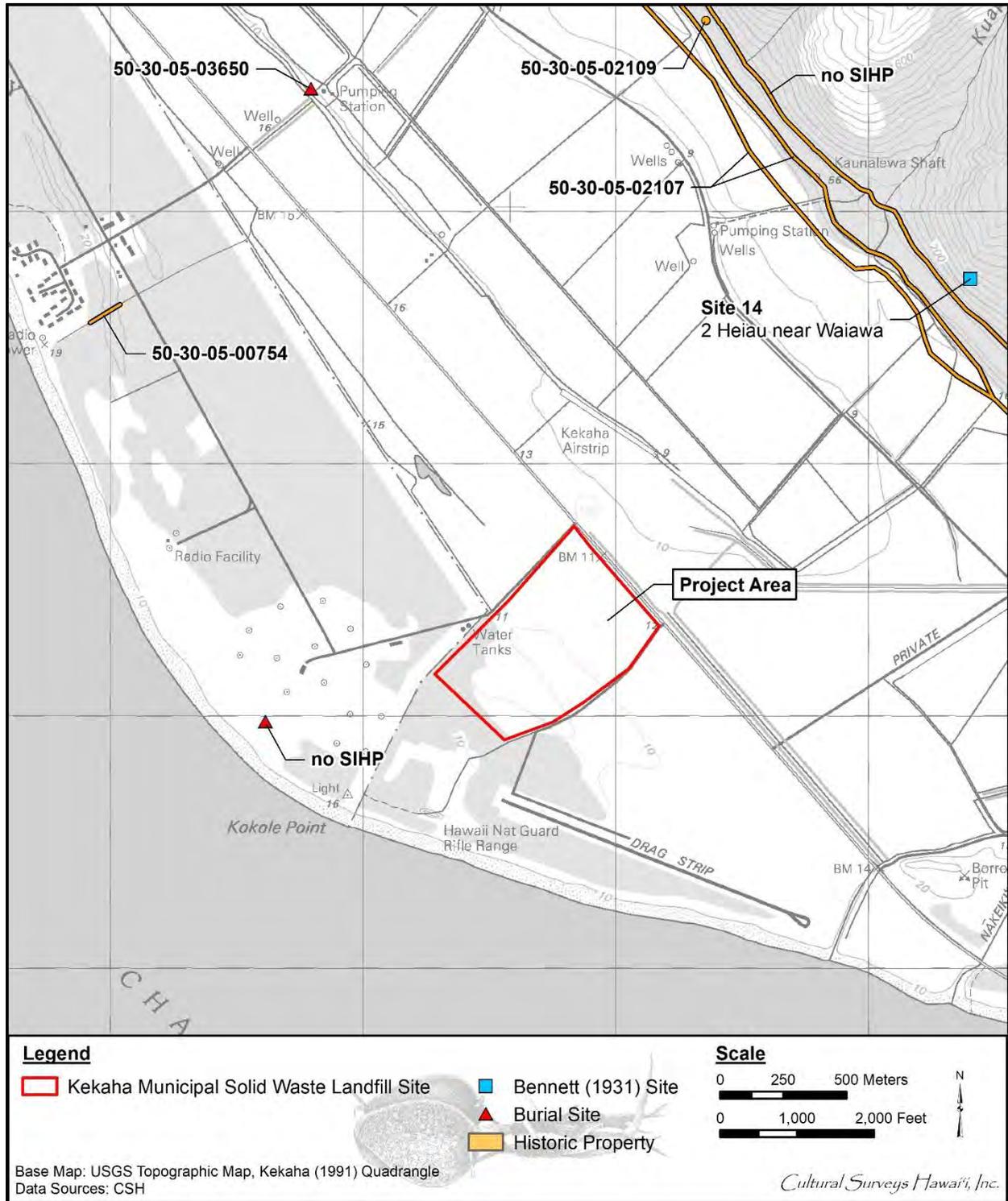


Figure 18. A portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle with overlay of historic properties in the vicinity of the project area

Table 5. Archaeological historic properties in the project area vicinity

SIHP # 50-30-05-	Type	Reference
00754	Drainage ditch	Kennedy 1991a and b
02107	Portions of New and Old Government Rd and associated structural remnants	Altizer and Hammatt 2010
02109	Basalt stacked wall remnants	Altizer and Hammatt 2010
03650	Human skeletal remains	Masterson, Folk, and Hammatt 1994
Site 14	<i>Heiau</i>	Bennett 1931
no SIHP	Kekaha ditch	Thrum 1908:158–159; 1910 USGS topo map; 1963 USGS topo map; 1970 USGS topo map; Altizer and Hammatt 2010:20–23; Lyman and Dega 2015
no SIHP	Bone fragments of unknown origin	Gonzalez et al. 1990

## 5.2 Previous Archaeological Research in the KLF (Ching 1982; Folk and Hammatt 1993)

In 1982, Archaeological Research Center Hawaii, Inc. (ARCH) conducted an archaeological reconnaissance survey for a proposed landfill site on a parcel adjacent to the south side of Barking Sands military installation. At the time of the reconnaissance, part of the area was already utilized as a “sanitary land fill” and the other part was used as a dump site for bagasse for Kekaha Plantation (Ching 1982:2). Ching noted the land prior to being a land fill and a dump site was once pasture lands owned by Kekaha Plantation. Holding pens for cattle and horses were also once there. The area, he stated, had “been bulldozed countless times” (Ching 1982:2). There were no historic properties present.

In 1993, CSH conducted an archaeological inventory survey with subsurface testing for the proposed Phase II of the existing landfill. The proposed Phase II area would extend to the east from the existing landfill toward Kaumuali'i Highway, what is now the current project area. During the surface survey, an abandoned irrigation canal and a low linear sand mound was observed (Folk and Hammatt 1993:26). Extensive subsurface testing was conducted throughout the proposed Phase II area. A total of 55 backhoe test trenches “were distributed roughly one per acre” and excavated (Folk and Hammatt 1993:25). The typical profile revealed the area, once a place of sand dunes, was modified and destroyed for plantation purposes. A weak A horizon was observed across the majority of the area since the removal of the upper portion of the sand dunes, except where it has been disturbed. Beneath the A horizon, loose coralline sand was observed overlying a layer of cemented coralline sand (Folk and Hammatt 1993:26–27). The linear mound and canal were excavated and revealed that stratigraphically, both features post-date the removal of the sand dunes. Through oral resources, residents and plantation employees, the features were constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28).

### 5.3 Discussion and Overview of Archaeological Historic Properties in the Project Area Vicinity

Seven historic properties were previously identified within the project area vicinity (see Figure 18). The closest historic property, southwest of the current project area, is a burial site with no SIHP number along the shoreline near Kokole Point. Other historic properties within the project area vicinity consist of ditches (SIHP #-00754; Kekaha Ditch with no SIHP #), portions of the New and Old Government Road (SIHP # -02107), wall remnants (SIHP # -02109), human skeletal remains (SIHP # -03650), and *heiau* (Site 14). Folk and Hammatt (1993) did identify an abandoned irrigation canal and a low linear sand mound, however, both features post-date the removal of the sand dune and were constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28). AECOM later concluded that these features were no longer present within the project area. No new historic properties were identified within the project area.

## Section 6 Previous Cultural Research

### 6.1 Overview

A review of previous cultural impact assessments has been conducted for the study area. Unlike archaeological inventory survey reports, the study areas for CIAs include the immediate project area and extend to the wider land regions which can include the entire *ahupua'a* and possibly the *moku*. Since Native Hawaiian traditions recognize and value the relationship with land from *mauka* to *makai*, the project area denotes the location of the project; however, the term “study area” denotes the larger context of land that is critical in any CIA investigation. An effort was made to locate community members with ties to Waimea Ahupua'a who live or had lived in the region or who, in the past, used the area for traditional and cultural purposes. Previous CIA projects (Chiogioji et al. 2003; Mason 2007; Fernandes et al. 2010; Walden and Collins 2015) and a cultural study (Flores and Kaohi 1993) in close proximity to the project area are shown in Figure 19 and presented below in Table 6. A CIA was conducted in 2007 for the initial Kekaha Landfill Phase II Lateral Expansion, however, no report was produced. The EA report that this CIA was included in stated that there were no cultural practices identified within the project area (Earth Tech 2007:4-3).

Table 6. Previous cultural studies within the vicinity of the project area

Reference	Location	Community Participants	Traditional Cultural Practices Identified
Flores and Kaohi 1993	Nohili, Mānā	Anderson Kilauano, Margaret Aipoalani, Julia Smith Chandler, and Patrick Malama	Agricultural practices; marine resources; burial practices; gathering practices; <i>hula</i>
Chiogioji et al. 2003	Sandwich Isles Fiber Optic Cable Landing; TMK: (4) 1-3-001:999	Kaipo Akana, Aletha Goodwin-Kaohi, and Teruo Oshiro	Agricultural practices; marine resources; burial practices; <i>mele</i>
Fernandez-Farias et al. 2010	Along New and Old Government roads; TMK: (4) 1-2-002:001	Louis Parrage III, Antonio “Tony” Wong, Isabel Takekawa, Carolyn Uluwehi Kilauano, Osamu Ashiro, and Clisson Kunane Aipoalani	Burial practices; religious practices; marine resources; agricultural practices; recreational activities
Walden and Collins 2015	Mānā Drag Racing Strip; TMKs: (4) 1-2-002:009, 036, 040	Aletha Kaohi, Kunane Aipoalani, and Debbie Ruiz	<i>Wahi pana</i>

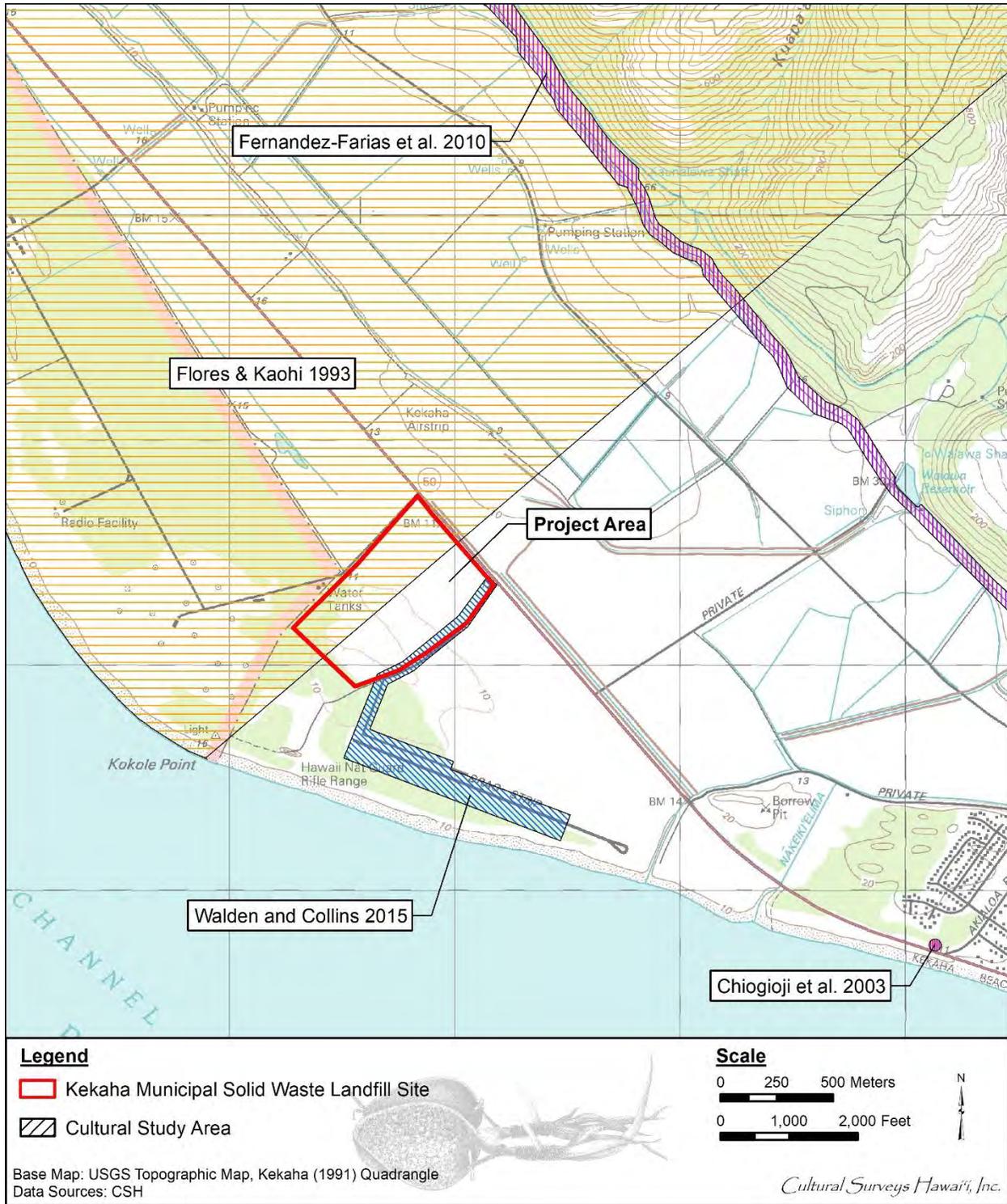


Figure 19. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous cultural studies in the vicinity of the project area

## 6.2 Hawaiian Cultural and Historical Survey of Nohili, Mānā (Flores and Kaohi 1993)

E. Kalani Flores and Aletha G. Kaohi conducted ethnographic and ethnohistorical research of Nohili, Mānā, on behalf of Advanced Sciences, Inc. to support the Archaeological Survey and Testing Report for the U.S. Army, Strategic Defense Command's Proposed EDX project in 1992. Four individuals were interviewed for this project (Anderson Kilauano, Margaret Aipoalani, Julia Smith Chandler, and Patrick Malama) and five other individual's oral histories are included within this project that were conducted in the early 1980s by David Penhallow (Howard Danford, Isabel Faye, Margaret Lindsey Faye, William Goodwin, and Ruth Knudsen Hanner). Their accounts are categorized and summarized below.

### 6.2.1 Agriculture

According to Flores and Kaohi (1993:IV-5), *kalo* (taro), *'uala* (sweet potatoes), and *ipu* (gourds) were some of the crops grown in the valley and gulches along the Mānā Ridges, as well as at Limaloa, Kaheluiki, and Kolo on the Mānā coastal plain. In Kolo, wetland taro cultivation was the typical method of taro cultivation used. According to Anderson Kilauano, everyone owned a taro patch in Kolo. Taro was being grown on rafts during the rainy seasons when the area flooded. At Limaloa, the Kilauano family once cultivated taro patches irrigated by freshwater springs. Anderson Kilauano cultivated the taro variety *lehua* and sometimes *kāī* during the 1940s, however, taro cultivation in Mānā is no longer practiced, especially after the swamps were drained and sugarcane came into the area.

### 6.2.2 Gathering Practices and Resources

Flores and Kaohi (1993:VI-16) describe the following gathering resources and practices from the uplands, streams, coastal plain, and shoreline of Mānā:

From the uplands—items such as *'ōhi'a lehua* wood for house posts, *pili* grass for thatching, *koa* trees for canoes & other wooden articles, *kauila* & *koai'e* wood for paddles, *'i'iwi* & other native birds for feathers, *'uwa'u* birds for food, *olonā* plants for cordage, or *wauke* plants for tapa making were collected. From the streams—items such as *'ōpae*, *'o'opu*, and *wī* were caught for food. From the coastal plain—items such as *makaloa* & *neki* rushes for weaving, *'a'ali'i* shrubs for firewood, *hi'aloa* & other plants for medicine, *limu pahapaha* & flowers for *lei* making, or *leho* shells for octopus lures were acquired. And from the shoreline—items such as *limu*, *wana*, *hā'uke'u*, *'opihi*, *'ōhiki*, and *he'e* for food were collected. [Flores and Kaohi 1993:VI-16]

### 6.2.3 Fishing Practices and Resources

Various methods of fishing were utilized along the shoreline and in the deep ocean of Mānā. Some fishing methods mentioned by informants (Julia Smith Chandler, Patrick Malama, and Anderson Kilauano) include *hukilau*, throw net, lines with hooks and bait, torching with spears and scoop nets, lay nets, and hand gathering. These informants also discussed the different types of marine resources, "*pāpio*, *ulua*, *kala*, *'ū'ū*, *kūmū*, *āholehole*, *'anae*, *akule*, *manini*, *nenuē*, *'opihi*, *hā'uke'u*, *pipipi*, and *paiea*" (Flores and Kaohi 1993:V-14). Flores and Kaohi (1993:IV-5) also

mentioned fishing activities were not limited to the ocean and shoreline of Mānā, but also took place in the swamps and ponds on the coastal plain.

#### 6.2.4 Hula

Margaret Kilauano Aipoalani, Anderson Kilauano's sister, and her sister were "taught *ōlapa* (a form of *hula* that was accompanied by chanting and drumming with an *ipu*) by their mother, [Kawehiwa Kaholoiki] who was taught by their grandfather, Kaholoiki (a *hula* instructor and schoolteacher from Kalalau)" (Flores and Kaohi 1993:V-21).

#### 6.2.5 Weaving

Isabel Fayé described the following about the *makaloa nekis* of Mānā:

There was a great deal of connection between Hawaiians in Mānā and Hawaiians of Ni'ihau, because of the *nekis*. The *makaloa nekis* that were grown in swamps [of Mānā] are different from that of any other part of the Hawaiian Islands, that's why the *makaloa* mats are called *ni'ihau* mats, because the Ni'ihau Hawaiians traded with the Hawaiians of Mānā. They exchanged with shells and fish, and did a lot of trade [..] [Fayé 1981 in Flores and Kaohi 1993:V-66]

She continued and stated the following:

They [*makaloa* mats] were made from those *nekis* from Mānā. It's the only place in the Hawaiian Islands where this type of *neki* grew and they had to be prepared, cleaned out of this stiff outer portions, they were reeds that were fairly substantial reeds and they had to be undressed to get to the center.

*Nekis* [are] all gone. Kolo pond was one of the places where they grew—there was another pond. These were that places that Hawaiians also had their taro patches and they had areas that were swampy that were left to the *nekis*.

First they soaked them and got the right ingredients from the pieces that were too coarse and wouldn't bend were discarded and I still don't know all the details. I think it's all forgotten even by the Hawaiians. Then they could braid them or work on them because they didn't break as they twisted them because they were so pliable as silk. And the Hawaiians had this know-how, this knowledge that had come down through generations of know-how. I think it's one of the most exciting things in the Hawaiian islands. [Fayé 1981 in Flores and Kaohi 1993:V-67]

#### 6.2.6 Burials

Anderson Kilauano mentioned four graves he oversees at Po'oahonu (Queen's Pond). The four graves consist of his grandfather, Kaholoiki, Pakana (his mother's sister), Eddie Ka'iwa's mother, and another whose name could not be recalled. He will bring flowers daily to the graves.

### 6.3 Kekaha Cable Landing Project (Chiogioji et al. 2003)

The following oral histories are interviews previously conducted by CSH in 2003 for the Proposed Sandwich Isles Fiber Optic Cable Landing project located on the outskirts of Kekaha, east of the current project area (see Figure 19). Below are the accounts of Kaipō Akana, Aletha

Goodwin-Kaohi, and Teruo Oshiro and their memories or knowledge of the Kekaha area and more broadly, Waimea Ahupua'a.

### 6.3.1 Habitation

A family member told Mr. Akana what Kekaha was like in traditional Hawaiian times before the plantation:

From what I learned from my great-grandmother, on my father's side of the family, she told me that in old Hawaiian times that was all beach land before, where Kekaha is now, and people used to live [more *mauka*] around Pōki'i, Kaunalewa, and Waiawa. But below [*makai* of these areas] nobody lived there because it was all beach. And toward Mānā it was all swamp land. [Chiogioji et al. 2003:29]

### 6.3.2 Trails

Mr. Akana mentioned the following:

As I remember there was no highway in the front around the beach at that time [in the early 1940s]. There was no highway. The sand extended, the beach extended, about a quarter- to a half-a-mile out from our house. There was a small dune and on the dune there were hau trees along the beach line. Actually, where you see the waves breaking right now, that's where the beach used to be. . . [T]he military put a road from just outside of Waimea, alongside the beach, headed for Barking Sands. Before that the road went up toward the *pali* side—Waiawa and Kaunalewa—and then ended up in Mānā itself. [Chiogioji et al. 2003:28]

### 6.3.3 Agriculture

Because of the low plantation wages (“\$1.27 one day—not one hour—one day”), Mr. Oshiro stated that Kekaha people also hunted and fished for their food. As for poi:

Well, they had some taro patches over here in Kanalewa, Limaloa, where Gaspar used to live. Where the pump was. Oh, Andy guys used to raise taro. I went to his taro patch [to] get taro. [Chiogioji et al. 2003:33]

Mrs. Goodwin-Kaohi also mentioned taro cultivation in Mānā and stated the following:

[...] Kekaha is a very arid area. You have to remember it's a plantation. So they go in and they drain the land so that they can cultivate it. So then there's no water for [the Hawaiians] to plant taro. And they were accustomed to planting taro out in Mānā, close to the *pali* and also on these little rafts. So they leased some properties further out into the Mānā area because Kekaha could not [provide] that kind of resource. [...] [Chiogioji et al. 2003:30]

### 6.3.4 Fishing

Informants (Mr. Akana, Mrs. Goodwin-Kaohi, and Mr. Oshiro) mentioned shoreline fishing occurred both in the past and the present day. Mr. Akana mentioned people shoreline fishing every day and stated the following:

They still fish. Mostly shoreline fishing. Casting from the shoreline. You always see people all along this beach here. Everyday. Weekdays and weekends. You'll

see people parked there and casting lines out there. So I would say, because of the reefs out there, that there's still good fishing in the area. [Chiogioji et al. 2003:29]

Mrs. Goodwin-Kaohi also mentioned shoreline fishing, throw net, and other fishing methods:

But I know they did fishing [in Kekaha] and part of it, they could have gone out on canoes and do deep-sea fishing. But [shoreline fishing] was throw net. They didn't do pole [fishing]. Mostly, it was throw net or go out and *hukilau*. [Chiogioji et al. 2003:31]

Mr. Oshiro was a fisherman in his youth and continues to fish today. He described fishing in his youth and some of the Kekaha mentors who guided him:

We caught only whatever we needed. Well, if you had anything extra you shared with the other guys. The neighbors were really happy because they weren't in a position to get fish. I was lucky because I had the connection with Joe Kumalama. He was the best [fisherman] over here. And next to him was Anderson Kilauano. I was bag boy for the two guys so I know. I know. When they catch fish they really catch fish. I was lucky because they took me on the boat. I used to be the smallest boy over there. Helping, all that. They appreciated me because I could do something. And I appreciated them because they took care of me. That's how it was—back and forth. [Chiogioji et al. 2003:33]

Mr. Oshiro also described the *hukilau* net fishing that occurred off the Kekaha coastline:

I tell you, this area here before—Those days, from here, somebody up on the hill look for where get fish. Now, it's so modern: they get a plane flying. But for us, in the old days, they had the one guy, the spotter, he had his special rock spot. And then they call all the guys, get the nets and go out. Then they set the nets.

All over here. You see, wherever the fish is. [Chiogioji et al. 2003:33]

He notes, however, that the fish were more plentiful where the plantation ditch emptied into the ocean:

But, like I say, like here [where the plantation ditch drains into the ocean] that's where [the fish] want to come back to. So the fish used to come close by where the fresh water goes out. So, it depends—anywhere over here. But, I say, [the fish] like the fresh water. In the old days you couldn't hold back anything. Anything come from the mountain it go right out to the ocean. But now these guys stop 'em, lock up this and that. That's why they get lots of problems. [Chiogioji et al. 2003:33]

Mr. Oshiro was asked if there were any special fishing, diving, or reef areas:

As far as diving over there, not much. I used to dive more toward the Mānā side, the ditch area [where the ditch emptied into the ocean]. Right inside here [where the ditch emptied] get the reef over here. I used to work up Kōke'e. We see: 'Ooh, the water nice today.' Take my spear and go down. Get lobster. [Chiogioji et al. 2003:34]

### 6.3.5 Burials

Mr. Akana mentioned three burials were found in the sand (referring to a 1994 archaeological survey he participated in). Mrs. Goodwin-Kaohi also mentioned skeletal remains were identified when Kekaha Gardens was created. She also shared that there were burial grounds at the sand dunes in Mānā where Queen's Pond is located as well as in the caves. She stated,

The families still went out to Mānā because they had burial grounds in the sand dunes there, which they now call Queen's Pond, toward the base. South of Queen's Pond, the families still had [burial grounds] and they maintained them. And family buried up in the caves. [Chiogioji et al. 2003:30–31]

### 6.3.6 Mele

Mrs. Goodwin-Kaohi did note that songs have been written about the area, including one “about the *‘ūlili* bird. That's about the plovers and that refers to Kekaha. Because that's where the *‘ūlili* birds would come—on the beach there, in that area. Of course, you know, it was not developed, like now, so there used to be flocks of *‘ūlili* birds” (Chiogioji et al. 2003:31).

## 6.4 Proposed Rock Crushing Establishment Project (Fernandes-Farias et al. 2010)

CSH conducted consultation in 2010 for the Proposed Rock Crushing Establishment project located along the New and Old Government roads in Waimea Ahupua'a, *mauka* of the current project area (see Figure 19). Six individuals (Louis Parrage III, Antonio “Tony” Wong, Isabel Takekawa, Carolyn Uluwehi Kilauano, Osamu Ashiro, and Clisson Kunane Aipoalani) were interviewed, and their oral histories are summarized below.

### 6.4.1 Habitation

When asked about the locations of houses in the region, Mrs. Goodwin-Kaohi and Ms. Kilauano shared,

AK: The houses were always close to the cliff side.

UK: Built *mauka* by the cliff, above the water, cause of the swamp and the water from *mauka* that came down the hills, so the houses were built up high, so the water could flow underneath.

[...]

AK: You know Hawaiians knew where to build. They knew the terrain, they watched the waves. The sand dunes are important you know, to keep the water out of the low lands. The swamp water is separated from the ocean by sand. [Fernandes-Farias et al. 2010:58]

### 6.4.2 Trails

Regarding the Old Government/Mānā Road, Mrs. Takekawa mentioned the following:

This road used to go all the way to Mānā. There was Mānā camp, with the old Mānā store and movies. But it's gone now. All the workers used this road. The surrounding areas were all in sugar cane. There was no other agriculture out here, no *lo'i*, gardens...just sugar cane. There used to be lots of plum trees along the road too. I don't see too many of them growing now. We used to walk all the way from Kekaha, to get the plums. [Fernandes-Farias et al. 2010:54]

Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani mentioned the Old Government/Mānā Road as well in the following:

UK: From Kekaha all the way along this road from Pōki'i we traveled on that road, a one way lane. All along the ditch all the way we go till Limaloa, and then we follow the ditch and go to the beach. That's the road you folks are using for this Project. That's the old road. We go that road all the way, to Mānā, Limaloa, Kaunalewa. Because never have that highway. That highway is 1945. So before that we used this road, along the ditch.

AK and UK and KA: They call it the Old Government Road and the Mānā Road, same difference, same thing.

AK: It's the old road is along the cliff-side, along the foot of the hill. The new road is different. From Waiawa you go all

UK: That was the ditch right there. The road followed the ditch.

KA: The original road. That was the drag. The plantation people built it up to reinforce the road, where it is higher in places, or whatever.

AK: They had to, cause of the swamp. The ditch probably, cause the ditch is close by, yeah.

UK: That's the only road we use, going to Mānā. We go up to a certain point, if you like go Polihale, you go a little bit more and you walk to Polihale. You park the car and you walk. [Fernandes-Farias et al. 2010:59–60]

### 6.4.3 Freshwater Resources

Regarding stream resources, Mr. Wong stated the following about *'o'opu* :

The *'o'opu* was there, it's just that, because now they get da kine, the *'o'opu* no can go back anymore up there. You see, they're raised up there, they like the cold water.

And when they gonna *hānau* [give birth] they come down, and then they *make* [die] down here. And then they—the small ones go back up, you know? But now get plenty things going, so, the *'o'opu* no go. Used to get plenty back then, but, now get water in control. Before there was plenty more water coming over. They gather the *'a'a* now. Because, when get big water, like, I was up there in 1949, right, had a big flood in Waimea. And, what happened was, when the stones would move, and the *'o'opu*, he get the suction, but he no like stay on the stones because they move, so he go by the side, so when the water flows really hard, they no can hold on. When the big water come and they stay *hānau*, or *hāpai* [pregnant], is when they end up *hānau* in *makai*. And then the *hinana* [the offspring of the *'o'opu*] go back

up. That's how see, the 'o 'opu no come down because the stones shake, and they no like go in the stone. So they go by the side and the water bring 'em down. [Fernandes-Farias et al. 2010:50]

Mr. Wong also mentioned the following regarding freshwater resources:

[...]

So, on top from Camp 6 and Camp 8, Okay? That waters not enough. So they went make one road by the *pali* to catch Koai'e River water, but the bank went broke, so, they no could get the water. They was getting the water from Koai'e, yeah? It would flow to Camp 8, and at the tunnel go inside, go into Koai'e Stream, and then come underneath, out by the *pali*, and come underneath the da kine and come behind by Julia Nataya's house, and then go inside the reservoir. That's how the thing go. Not enough water, see, from Alakai and, ah, Waipahoe Stream. They leased the water rights for the plantation to use. The *mauka* hydroplant was where the tunnel comes in to Waiawa *mauka*, in Waihulu.

So Camp 8, they went make one ditch along the *pali* but the bank broke, the ditch was broke. That ditch never had name. They was taking water from the other river, Koai'e River. [Fernandes-Farias et al. 2010:51]

#### 6.4.4 Agriculture

Regarding upland plant resources and the growing of vegetables, Mr. Wong stated the following:

But that's where the Hawaiian Homes stay, they used to make garden before that. They raise vegetables up there for the store, or they raise 'em for the people, for the market. So, Masao Okamoto the supervisor for the garden was there when I came in 1943. He was up there.

*Maile* stay more up, on top the mountain. Stay loaded on top Wai'alae. We go with the horse and gather *mokihana* in the uplands, it is loaded in *mokihana*, because, you know how you see the coffee? That's how the *mokihana* stay, up there, not along the ridges. Each plant has its certain level of elevation where you can find them. *Mokihana* cannot grow any kind place, just like the *maile*. No can grow down here, 'cause would die. [Fernandes-Farias et al. 2010:51]

Mrs. Goodwin-Kaohi stated the following:

AK: I would say that the early use of the property, that area, was probably heavily populated by native Hawaiians, many of them were related to one another, they were family, and it was a community related by koko [blood, common—Hawaiian blood]. And then Knudsen got the lease and moved a lot of the people out of the Mānā area. Later sugar plantation, which Knudsen is an uncle to H. P. Faye and so then the sugar plantation began to drain the entire area, cause it had a lot of water in the area so they drained it cause you can't plant cane in wetland, and so much prior to what there is there now was pretty much sugar, and then there was, maybe not in the area that you're looking at, but Mānā as a whole, there was prawn at one time, they had prawn patches in that area. Today it's pretty much corn, but then

sugar was king, and it is getting to be that corn is king. Pretty much that's how it was. They drained the wetlands. You see Nohili ditch, it was built to drain. So, lots of pumps along the shoreline to drain the wetland. [Fernandes-Farias et al. 2010:57]

Ms. Kilauano and Mrs. Goodwin-Kaohi mentioned Kekaha and Kaunalewa had *lo'i* for taro and watercress. Regarding taro, Mrs. Goodwin-Kaohi stated, "Mānā swamps were the only place in all of Hawai'i that we planted our taro on rafts. They built them because the *huli* [taro top] would drown, and so they built these wooden rafts and they put the mud inside and they planted. They floated on the water" (Fernandes-Farias et al. 2010:57). She further described it by stating,

They would attach it so maybe it was close to the shoreline so it's floating, take the mud and fill up these rafts, because they put sides, and plant the *huli*. Cause you have enough water, but you can't plant in the swap 'cause it was too deep yeah. They used the swamp for fish, mullet and ducks too. [Fernandes-Farias et al. 2010:57]

Ms. Kilauano and Mrs. Goodwin-Kaohi mentioned *makaloa* mats:

UK: And the *makaloa*, I think it was *makaloa* reeds [stalks] were used to make mats. They used to dry them, and our Tutu used to make mats. Ni'ihau is the home of the *makaloa*.

AK: Because *makaloa* grew in the Mānā area and Ni'ihau. Ni'ihau was where they had the most *makaloa*, so our mats, many of our mats came from Ni'ihau. The *makaloa* mats. So it was probably *makaloa* that grew in the swamp. It's an interesting area. [Fernandes-Farias et al. 2010:58]

#### 6.4.5 Fishing

Regarding ocean fishing, Mr. Wong stated the following:

I used to fish, from McBride, I'd fish all the way from Ni'ihau Island. Fish, lobster, you know. I catch fish every week.

Before time, right there by the office, at McBride, we'd go straight out, over there had one boat house over there. But wasn't Hawaiians, one Korean, he had one, a boat over there. When they made the boat harbor, that's when they had to make the wall, the current would change and beat up on the road before. You see it now, no more sand.

Before, I would cast-net over there, that's where I learn to cast-net, I stay learning all the other kind [fishing styles]. You know I can do any kind, because I learn. [Fernandes-Farias et al. 2010:50]

#### 6.4.6 Hunting

Regarding hunting, Mr. Parrage III mentioned hunting up *mauka*:

Been hunting up *mauka* most of my life. Nobody goes now to the old hunting places because now the cornfield takes over, and they get gates all over the place. Sometimes I used to go hunting mostly alone, sometimes with some other people, and with my father. With my father for pheasant, sometimes pig, but mostly

pheasant, we do in pheasant season. My father taught me how to hunt. Then I taught my cousin to hunt and I taught my sons to hunt. I had two sons, but one son died. He was gonna be 54 years old, my oldest son, Wayne. But people not hunting those areas now, too many gates, they hunt up in Kōke'e now...gotta be Kōke'e.

But when Robinson took over here, he would let the workers hunt around there...only the workers that were working for Robinson. Was Robinson that took over the cane field after the plantation had shut down, eh?

You know what Tony Wong used to do? Yeah, he goes hunting in that area but he circled around. He never comes back the same place. You know Tony Wong, he's the only guy I think could make one horse go down the ridge. Riding the horse! He never goes down from the horse! Straight down the ridge not sideways, front ways. His horses was unreal I tell you! Go down the ridge, the horse gonna fall down, or you gonna fall down! But his horse was so trained, he never, he never walk!  
[Fernandes-Farias et al. 2010:47]

Mr. Wong stated the following regarding hunting, "I hunt all the time when I was 27 years old or so, I used to go nighttime, late, about ten, eleven o'clock in the night. And you go through inside the valley, inside the place, you go up to the ridge, you know" (Fernandes-Farias et al. 2010:50).

Mrs. Takekawa mentioned, "My husband and I used to come pheasant hunting in this area, though. But, I don't know if they still use this area for that. I know that some people used to do some hunting, around here" (Fernandes-Farias et al. 2010:55).

#### 6.4.7 Historical and Cultural Properties

Informants (Mr. Parrage III, Mr. Wong, Mrs. Takekawa, Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) mentioned a variety of cultural and historical properties. Mr. Parrage III mentioned many pre-Contact cultural properties throughout Waimea Ahupua'a. On the ridges, Mr. Parrage III shared that he would often come across adzes and fireplaces while hunting. In Pōki'i and Waiawa, Mr. Parrage III saw a *heiau* and described it in the following:

Waiawa, we had a house, the poison house, in the back there, had a big *heiau*. I think it's still—do they still get the remains of the poison house, eh, there? Yeah. In the back there, that's where they had one big *heiau*, the remains of a *heiau*...Waiawa. The poison house was to store the pesticides to spray the weeds [...]

Cause see this one... 'cause it starts right...right *mauka* of Kekaha, yeah [pointing at the ridges on the map]? Then get Pōki'i right here...and then Waiawa...and then all to Mānā. So it starts around the beginning of Waiawa starts around like Pōki'i, yeah? I think it would be right about here, the *heiau*. I think so [pointing at Waiawa ridge, *mauka*]. That's the only thing I saw of *heiau*...nothing else...all through that place that I used to go...ah, hunt, whatever. By the *heiau* up there get plenty obake [spooky] stories...by the *heiau* at Waiawa. And you know when I used to go through there...thinking about it I'd get a feeling. Hard to explain...like...some kind of energy. Because you know the *heiau* was so big, and it's right in the bottom of that valley, and, when I walked—the cow trail used to be right through. The

*heiau* all broken, eh, you know? Ho, that thing is big! like one big enclosure. I would say, maybe from here to that house I think! And had a trail right through the *heiau*. But like I say, if you don't know it, you know...cannot tell, because all the stones all scattered, eh? Oh! In the *heiau*, ah...Kimo...ah, what's their last name now...they claim because I used to see flowers, once in a while and *tī* leaf one place. That was one of their families or what, had something to do with that. Ah...Michael and Kimo Nakahiki. Had something to do with that *heiau*. But let me see who was the other, ah...Benny was the last one I think and he just died some years, not too long ago. So, they said, one of their families or what? Was something to do with that, so they used to go put *tī* leaf and flowers sometimes. The Nakahiki family is still around, the girls I think is. That you gotta ask some Hawaiians I think. [Fernandes-Farias et al. 2010:46–47]

Mr. Wong and Mrs. Takekawa also mentioned a *heiau* in Waiawa. Mrs. Takekawa stated, “You know back there [in Waiawa] I think there was a *heiau*. But I don't see any rocks around there now” (Fernandes-Farias et al. 2010:55). Mr. Wong shared, “Inside Waiawa get plenty *heiau*. And Waiawa Valley get the—the oven, and all da kine inside there. That the people used to bake in. None by the road, but up inside the valley *mauka* side. Robinson put in a lot of roads up *mauka*, with plenty gates. Some of the roads go by the *heiau*. So, I not sure about that” (Fernandes-Farias et al. 2010:51). Mr. Wong also mentioned a *heiau* on top of Niu and a canoe factory above Kōke'e Road.

Informants (Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) also mentioned a birthing *heiau* located near Saki Mānā (“Second Mānā,” a former plantation camp). They shared that the birthing rock is shaped naturally like a chair with a stirrup for your feet. There was also a flat area to lay the baby when it was born. Mrs. Goodwin-Kaohi stated,

AK: This is unusual, cause Hawaiians as a whole they squat yeah when they give birth. But this is kind of an inclined because it's the gravitation yeah that you want. Gravity that the baby comes naturally, that's why they squat when they deliver. But this one is natural. I went there years and years ago, but I cannot remember where it is. [Fernandes-Farias et al. 2010:61]

Ms. Kilauano also mentioned the following:

UK: It's a big big *heiau*, with all the big stones. That *heiau* is where they offer food instead of sacrifices, not human, they bring all their food that they harvest from the fields, a Lono Heiau. They bring and they lay over there. Get that baby place, and there's an image of a dog, and that dog is the *nakoa*, the watch person over there.

UK: It has a stone like that and that stone tells the story of the island. It doesn't have writing or petroglyphs, it has like a river... it's... um...It's...It's a stone this high, and she says this water comes from Hā'ena [Fernandes-Farias et al. 2010:61]

Both Mrs. Goodwin-Kaohi and Ms. Kilauano shared that there was a groove on the stone that says “[...] the water came from Hā'ena. She says this... the water comes and was bringing the water to this land. This water came from Hā'ena, Wai'ale'ale, goes to all this land in Mānā, to raise their food” (Fernandes-Farias et al. 2010:61).

### 6.4.8 Burials

Mr. Wong mentioned seeing a *heiau* and burials while hunting up *mauka*. While Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani mentioned burials located in Polihale, Kaunalewa and Pōki'i. In Polihale, Mrs. Goodwin-Kaohi and Ms. Kilauano stated there was a cemetery in the sand dunes that they continued to maintain. Mr. Aipoalani continued and stated why *iwi* were buried in the sand dunes, "Cause during those days when you *hala*, you just go in the backyard and bury your loved one. This made it convenient to visit the gravesite. So the *iwi* was placed in the sand dunes" (Fernandes-Farias et al. 2010:58).

Mrs. Goodwin-Kaohi and Ms. Kilauano mentioned their family burials are in Kaunalewa above the ditch. While Mr. Aipoalani stated that his family's burials are in Pōki'i. Mr. Aipoalani further described burial practices in the following:

KA: For others hunting, for us it is about our spiritual purposes regarding our *iwi kūpuna* and our burials up there on the ridges and in the valleys, and in the caves that we *mālama*. We need to be able to access the ridges and valleys behind the old Government road and Kekaha ditch. It is our right and a part of our cultural practices for generations...before 1700s. Even though they are gone they are still part of the family. [Fernandes-Farias et al. 2010:63]

## 6.5 Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha (Walden and Collins 2015)

Consultation for the CIA for the Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha project was conducted in 2014, however, since no organization or individuals responded to the request for consultation, separate consultations were conducted in support of the archaeological inventory survey (AIS) for this project. The Mānā Drag Racing Strip is located adjacent to the current project area (see Figure 19). Three individuals responded (Ms. Alethea Kaohi, Mr. Kunane Aipoalani, and Ms. Debbie Ruiz), however, only Ms. Kaohi had information regarding traditional cultural practices associated with the area. According to Walden and Collins (2015:19), "Ms. Kaohi stated that the former place name for lands in the vicinity of what is now the Mānā Drag Racing Strip was 'Limaloa'."

## Section 7 Community Consultation

### 7.1 Overview

Throughout the course of this assessment, an effort was made to contact and consult with Native Hawaiian Organizations (NHO), agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the *ahupua'a* of Waimea. CSH initiated its outreach effort in February 2023 and letters requesting consultation (Appendix A along with a map, an aerial photograph, and profile drawing were sent via email and USPS. CSH completed the community consultation in May 2023. CSH reached out to 72 individuals and organizations; 14 responded, three provided written testimonies, and one informant, Leanora “Lea” Kaiaokamalie, participated in an in-depth interview. Unfortunately, we did not review approval in time for one written testimony to be included in this report.

### 7.2 Acknowledgements

The authors and researchers of this report extend our deep appreciation to everyone who took the time to speak and share their *mana'o* (perspective) and *'ike* (knowledge) with CSH, whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors be reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

### 7.3 Community Consultation Table

A total of 72 NHOs, individuals, organizations, and agencies were sent letters requesting consultation for this project. Table 7 contains names, affiliations, dates of contact, and comments from those who responded.

Table 7. Summary of community consultation efforts

Name	Affiliation	Notes
Castillo, Wendy	Principal, St. Theresa Catholic School Kauai	Letter and figures sent via email 27 February 2023 Second round letter and figures sent via USPS 3 April 2023 Second round letter and figures sent via email 4 April 2023 Ms. Castillo responded via email the same day asking if she could distribute the letter to some of the school families who may be interested in participating. CSH responded on 6 April 2023 stating that the letter was for her, but she can share it with others who may want to participate. CSH sent a follow-up email on 1 May 2023

Name	Affiliation	Notes
Farden, Hailama	President, Association of Hawaiian Civic Club	Letter and figures sent via email 27 February 2023 Mr. Farden responded on 28 February 2023 and recommended Mālia Nobrega-Olivera CSH responded same day
Fayé, Chris	Executive Director, Hui O Laka – Kōke'e Natural History Museum; Family ties to Waimea; Former Curator of the Kaua'i Museum	Letter and figures sent via email 28 February 2023 Ms. Fayé responded on 1 March 2023 via email with the sample interview questions answered as an attachment. CSH responded via email on 2 March 2023 with authorization form attached. Ms. Fayé responded via email same day: <i>Ok to use as is, maybe take out the questions as I didn't quite answer them in any particular order.</i> <i>Chris</i> CSH responded via email same day and stated a summary of her answer's will be drafted for her review. Ms. Fayé responded via email 3 March 2023 CSH sent Ms. Fayé a summary of the interview question answers for review via email on 10 March 2023 CSH sent a follow-up email with a revised summary of her answers for review via email on 6 April 2023 CSH sent another follow-up email on 1 May 2023 Ms. Fayé responded on 2 May 2023 with revisions of the summary, signed authorization form, and requested a copy of the CIA report when it's finished. CSH responded same day.
Griffin, Pat	Former Chair, Kaua'i Historic Preservation Review Commission; Member, Hawai'i Historic Places Review Board; Hawai'i Historic Foundation; Historian	Recommended by Chris Fayé Letter and figures sent via email 13 March 2023 Ms. Griffin responded on 15 March 2023 and recommended Leanora Kaiaokamalie CSH responded on 16 March 2023
Hussey, Sylvia	Chief Executive Officer, Office of Hawaiian Affairs (OHA)	Letter and figures sent via email 27 February 2023 Second round letter and figures sent via email 4 April 2023 Mrs. Hussey responded same day and asked to send consultation request to OHA's Compliance Unit CSH responded on 6 April 2023

Name	Affiliation	Notes
Ing, Nicholas	Planner, Watershed Partnerships Program Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW)	Nicholas Ing responded to the consultation request sent to Katie Ersbak via email and cc'd Leimana DaMate and Katie Roth on 9 March 2023: CSH responded same day and sent an authorization form to include comment in report CSH sent a follow-up email on 6 April 2023 CSH sent another follow-up email on 1 May 2023 Did not receive signed authorization form in time
Kaiaokamalie, Lenora "Lea"	Lineal descendant of Mānā	Letter and figures sent via USPS 1 March 2023 Ms. Kaiaokamalie called on 10 March 2023 Ms. Kaiaokamalie wanted to know if she could respond as both a cultural practitioner and as a planner. CSH responded with yes, as long as cultural related information is shared since this is a CIA and we want to focus on the cultural aspects. Letter and figures sent via email 16 March 2023 Second letter and figures sent via email 4 April 2023 Ms. Kaiaokamalie responded on 2 May 2023 asking if CSH is still accepting interviews CSH responded same day Interview via Microsoft Teams on 8 May 2023 CSH sent an email on 11 May 2023 with clarification questions for the interview summary Ms. Kaiaokamalie responded on 16 May 2023 CSH sent interview summary via email on 19 May 2023 Ms. Kaiaokamalie responded same day with revisions CSH sent authorization form on 20 May 2023 CSH sent follow-up email on 25 May 2023 Received signed authorization form same day
Markell, Kai	OHA Compliance Enforcement	Letter and figures sent via email 27 February 2023 Mr. Markell responded via email on 28 February 2023: <i>Aloha and mahalo Tehani!</i> <i>We added this to our case intake.</i> <i>Mālama...kai</i> Second round letter and figures sent via email 4 April 2023 Mr. Markell responded same day: <i>Aloha and mahalo! I will add it to our intake.</i> <i>Malama all and much Aloha...kai</i>

Name	Affiliation	Notes
Nobrega-Olivera, Mālia	Moku o Manokalanipō; Pelekikena (President), Kaua'i Council of the Association of Hawaiian Civic Clubs	<p>Letter and figures sent via email 27 February 2023 Mālia responded on 28 February 2023 through the email thread with Hailama Farden: <i>Aloha kākou!</i> <i>Mahalo e Hailama for sharing this info with us. This is the first time I'm seeing this information and haven't received a letter as indicated below. Which email did you send it to or was it by snail mail? I'll definitely review the info to share some feedback before the deadline.</i></p> <p><i>Mahalo,</i> <i>Malia</i> CSH responded same day Mālia responded same day: <i>Mahalo e Tehani! I did a search earlier and couldn't find it and only now went to check the spam folder and of course I found it buried there.</i></p> <p><i>ke aloha,</i> <i>Malia</i> CSH sent a follow-up email on 6 April 2023 CSH sent another follow-up email on 1 May 2023</p>
Rodrigues, Vincent Hinano	History & Culture Branch Chief, SHPD	<p>Letter and figures sent via email 27 February 2023 Second round letter and figures sent via email 4 April 2023 Mr. Rodrigues responded same day: <i>Mahalo for asking.</i></p> <p><i>The main purpose of a CIA is to discuss whether or not a defined area was subject to past traditional and customary uses and practices, whether those uses and practices are still continuing, and whether a specific project may affect the same in the future. The most meaningful way of obtaining that information is to visit the location, knock on doors, and ask questions. Another way is to use social media. As our lifestyles changed over the last 200 years and people moved away, there still are many who continue their cultural practices not on a daily basis, but perhaps when they return home for a visit. Thus, knowledgeable persons may not necessarily be living there either.</i></p>

Name	Affiliation	Notes
		<p><i>Hope this helps.</i></p> <p><i>Hinano</i> CSH responded on 6 April 2023</p>
Solis, Ka'āhiki	Cultural Historian (O'ahu, Kaua'i, and Ni'ihau)	<p>Letter and figures sent via email 27 February 2023 Ms. Solis responded on 28 February 2023: <i>Please submit all inquiries to HICRIS. Thank you! Self-check for you-- see the checklist I created so that you understand if your work meets the guidelines.</i> <i>Mahalo</i> CSH responded same day</p>
Tabata, Lyle	Part-owner, B&T Contractors; Kauai County Member, Agribusiness Development Corporation (ADC) Board of Directors	<p>Letter and figures sent via USPS 1 March 2023 Second round letter and figures sent via USPS 3 April 2023 Mr. Tabata called on 6 April 2023 and asked for a copy of the sample questions mentioned in the letter. He left his phone number and email. CSH sent an email with a copy of the interview questions same day Mr. Tabata responded same day: <i>I am available to either respond to the questions in person or other means. I have Team and Zoom on my computer, Live in Lihue, and office in Hanamaulu Kauai. Let me know. My history of the area was that I grew up in Kekaha from 1966 before relocating to Oahu in 1972. Then coming back to Kauai after college to work for AMFAC Sugar, both Lihue and Kekaha, and was the last Manger for AMFAC Sugar Kauai overseeing both Lihue and Kekaha Sugar Companies. Then spent much time on the West as the County of Kauai County Engineer under Mayor Bernard Carvalho Jr. Cabinet.</i></p> <p><i>Mahalo</i> CSH responded same day Mr. Tabata responded with the sample interview questions answered via email on 24 April 2024 CSH responded on 28 April 2023 with clarification questions</p>

Name	Affiliation	Notes
		<p>Mr. Tabata responded same day with questions answered</p> <p>CSH responded same day</p> <p>CSH sent Mr. Tabata's interview summary for his review via email on 19 May 2023</p> <p>CSH received approval and signed authorization form same day</p>
Valenciano, Marisa	Planner, County of Kaua'i, Planning Department	<p>Letter and figures sent via email 27 February 2023</p> <p>Ms. Valenciano responded via phone on 28 February 2023 asking about the timeline and permits for this project.</p> <p>CSH returned phone call 13 March 2023 and left a voicemail</p> <p>Ms. Valenciano called on 21 March 2023 and stated that the commission wouldn't comment until permitting or section 106 was triggered.</p>
Wichman, Randy	Former Historian, Kaua'i Historical Society President	<p>Letter and figures sent via email 27 February 2023</p> <p>Kauai Historical Society replied same day: <i>E Komo Mai and Aloha!</i> <i>Thank you for your email. Our staff will get back to you as soon as possible. We look forward to being of service.</i></p> <p><i>For a sales, order pickups, donations, or membership inquiries, please email:</i> <a href="mailto:info@kauaihistoricalsociety.org">info@kauaihistoricalsociety.org</a>.</p> <p><i>For a research archive appointments or volunteer inquiries, please email:</i> <a href="mailto:archives@kauaihistoricalsociety.org">archives@kauaihistoricalsociety.org</a>.</p> <p><i>For society business, please email:</i> <a href="mailto:director@kauaihistoricalsociety.org">director@kauaihistoricalsociety.org</a>.</p> <p>Second round letter and figures sent via USPS 3 April 2023</p>

## 7.4 Written Responses

### 7.4.1 Ms. Christine "Chris" Fayé

On 28 February 2023, CSH sent Chris Fayé a set of interview questions along with a letter requesting consultation for the Kekaha Municipal Solid Waste Landfill Phase II Vertical

Expansion project. Ms. Fayé responded the following day having completed the interview questions (Appendix C Ms. Fayé's answers are summarized below.

Ms. Fayé is the executive director of Hui o Laka (Koke'e Museum) and a former curator of Kauai Museum. She was born in Woodland, California to Barbara Grace Cleghorn Fayé, from Wahiawa and Lana'i, and Lindsay Anton "Tony" Fayé Jr., from Kekaha, in 1957. Ms. Fayé resided in Hawai'i for 65 years, and she was living on and off in Kekaha for 45 of those years.

While discussing the changes in the landscape over time, Ms. Fayé described the following:

The general history of the area was unique due to the landscape. The plain is the output of sediment from the Waimea River. The highest elevation is along the sea where the sediment buried a barrier reef. The land then dips down to nearly sea level and sometimes lower until it starts to rise at the base of the foothills. The foothills, fortunately had many springs, and that is where people lived at the time my great grandfather came to Kauai. There were many small villages. He settled next to a large spring, Kumumao (more recently in plantation times called 'Cold Pond'). He employed a Hawaiian water finder to seek out other sources of water.

Up until the late 1890s there were forests of 'Ohi'a Lehua above Mana. There was a very bad fire that burnt even the roots in the ground so nothing regenerated. My grandfather, Lindsay Faye, remembered there would be freshets when it poured, and water would run off the mountain in the gullies.

Ms. Fayé described her family connection to the area in the following excerpt:

My family, the Fayes, have been living in Polihale to Waimea for 6 generations. My great grandfather Hans Peter Faye started a sugar plantation at Mana – H.P. Faye and Co. in 1884 after 4 years on Maui and Kauai learning the trade. He served as manager of Kekaha Sugar Co from 1898 to 1928. His son, my grandfather Lindsay Anton Faye was manager from 1933 to 1963 and his son, my father Lindsay Anton 'Tony' Faye, was manager twice from the 80s to his retirement in 1992. My great-grandfather Hans Peter Faye came to Kauai to work for his maternal uncle Valdemar Knudsen. Other members of the family also worked for or leased land from Knudsen including Captain Henrich Christian L'Orange and Anton Faye.

I opened a visitor center for Gay & Robinson's sugar operations at Kaumakani in 1999. We provided a field and factory tour based on what used to be given for sugar planters. We had engineers from all over the world on the tour from farmers to space engineers and received many compliments. During that time, between my father and many plantation supervisors, my staff and I learned a lot about the industry and were able to share it.

The second portion of the sample interview questions focused on historical information within the vicinity of the project area. As mentioned previously, the Fayés have a long history that dates to the plantation era. Ms. Fayé went into further detail of her family's history in the following:

The original family member that came to west Kauai was Valdemar Knudsen. He took over a lease from Scots/Norwegian named Archibald Archer about 1854.

Archer and a partner had been growing tobacco which failed. I'm not sure if the lease was renegotiated. Knudsen's lease was a portion of crown lands from Kamehameha V. It was from Kekaha to Milolii to Kokee. I would have to look up what the lease rent was, but it was something like \$2000. My memory serves that the reason the land was crown land was its unusual and unique products. Like Niihau, the Hawaiian people on the plain produced makaloa mats and the decorated gourds which were highly prized by alii in the past. Knudsen settled at Waiawa at the mouth of Hoesa Valley which was also his ranch headquarters. Today the landfill would block the view of the ocean. There was a big spring there and a famous heiau Hauola where the menehune were paid their shrimp for completing the Kikiaola or Peekauai Ditch.

With the Reciprocity Treaty in 1875, sugar ventures started up all over the islands. George Wilcox and Paul Isenberg worked it out to put a mill at Kekaha while Valdemar Knudsen teamed up with a nephew-in-law, Henrick Christian L'Orange to plant some cane in 1879. Knudsen and L'Orange were too much alike and hot tempered so the partnership failed quickly. Knudsen was too old for the physicality of the job by that time and his sons were young, but on his wedding trip to Norway a decade before, he had bragged about all his land and easily enticed relatives to come that were the right age. Anton Faye arrived and with a partner harvested the cane and then leased out the lands around Kekaha. Hans Peter Faye arrived in 1880, but Knudsen had left for a trip with his family that took several years. So he joined L'Orange who was married to his sister at a plantation near Paia. That lasted two years and was good training. L'Orange was the agent that brought Norwegian labor to Hawaii. H.P. Faye met and admired Henry Perrine Baldwin on Maui who was building his first irrigation ditch. Due to his brother's death in a flash flood on Maui, H.P. Faye returned to Kauai to organize and plant the first cane for the Sinclair Family in Hanapepe. The crop went to the Eleele mill. He did well but realized he would never prosper working for other people. By that time his uncle had returned and was able to lease the last but worst piece of land from Mana to Polihale. He had two Norwegian assistants E.K. Bull and K.S. Gierdrum and a number of Hawaiians from Mana that worked for him for years. Both Norwegians eventually became managers of sugar plantations on Oahu and Maui. For the planting and harvest, Faye rented Chinese rice baron Pa On's laborers and eventually cleared the land of rocks. H.P. Faye put in the second artesian well in Hawaii (the first was in Ewa). He used a Hawaiian waterfinder. His supplies came in at the old canoe landing (it sounds like it was at Major's Bay.) To fund the expenses of his first crop, he received a \$2000 loan from Paul Isenberg who was then head of Hackfeld & Co. the predecessor of American Factors. He got the loan on the fact that he wore a nice suit his father had made for him in Norway prior to coming to Hawaii. He only wore the suit once to impress Isenberg.

Otto Isenberg managed the mill until he retired before WWI. George Wilcox remained Chairman of the Board for a long time – maybe until he died. When they consolidated the plantations and mill into Kekaha Sugar in 1998, Wilcox was one third owner as well as Faye. The remaining interests were bought and sold so that

the original sugar planters could retire or go elsewhere. The Knudsen lease was soon to expire, and the land was still government land with 20 year leases that had to be negotiated for in Washington D.C. The takeover by the United States was soon to be completed and many incorporations took place about the same time. Many plantation interests were European and Kingdom of Hawaii citizens and there was a rush to incorporate under U.S. law.

The Knudsen lease was over in 1907, although they did try to retain some of the land, they failed. Kekaha Sugar eventually purchased their ranch. Because they paid lease rent on all the land, the cattle could be raised where sugar couldn't. They were generally in the valleys between foothills or near the ocean.

One of the things my great grandfather Hans Peter was instrumental in was expanding the plantation from a small holding to what it became was in the creation of irrigation projects. By the time Kekaha Sugar was formed, the use of artesian wells had pulled up much of the fresh water below the fields. Fresh water from springs and rainfall forms a layer underground over salt water. So, the roots of the cane were becoming saltier and not producing well. The crops were declining. Kekaha was located far from any freshwater source. My great-grandfather developed the Kekaha Ditch that used no electricity to bring water from about 8 miles up the Waimea River up to the foothill above Waimea Town all the way to Polihale. He had to convince the company's board that this would work. George Wilcox had a degree in engineering and also experience with his own ditch projects and backed him up. They also consulted with engineers in California, and it took several redesigns to bring the cost down. Most of the project was conceived and executed by the plantation and local crews. Remember that they only had a 20 year lease and any capital projects had to pay off quickly.

After obtaining the lease again in 1920 the Kokee Ditch project was started in 1922. It was a very ambitious project and the Kawaikoi Dam was and is still the highest elevation reservoir in Hawaii. My grandfather Lindsay's first job in the sugar industry was on that project. He oversaw Camp 10 far in Mohihi. His experience on a US Army supply train in World War I made him a good candidate. Of my great grandfather's 6 sons, only Lindsay was interested in becoming a sugar man. He then was groomed at Waimea Sugar and, when his father died, he was put in place as assistant manager at Kekaha under William Danford.

Lindsay was at Kekaha a long time and was young when he started as manager in 1932. He was keen on athletics and made sure there were physical outlets on the plantation. He was on numerous boards that promoted the welfare of Kauai people. He rode a horse in the fields for years and actively maintained the ranching activities. There was a lot of fallow land at Kekaha and remote areas on the plains that were used for pasturage for not just the plantation work animals but also for food production. The area where the landfill is now was pasture. It was very sandy and considered "wasteland" in the early years of the Territory.

He witnessed and participated actively in the early years of aviation when an 'international airfield' was created at Mana. His wife packed sandwiches and

thermos of coffee for the crew of the Southern Cross as they continued their hop across the Pacific in the first cross-Pacific flight in 1928. In World War II, the airfield began as an Army base. World War II was a challenge, and although he didn't serve in the military, Lindsay took his role as manager and head of civil defense for Kekaha and its surrounds seriously. He claimed the first troops that arrived in March of 1942 were family men called up by the National Guard, but those that came after were totally different and it was a fine line to protect the community. He made sure his people were fed and the plantation's truck farm at Puu Opae was exceptional. Even his children worked with the rest of the schoolchildren in the gardens and farms. After the war, the plantation continued to excel and became one of the world's best producers of sugar per acre in the world. One field, until the end, had the world's record of 29 tons of sugar per acre.

Gradually over the years, more and more stock came into the hands of Amfac. In 1972, the remaining stockholders, including the Fayes who now had about 25% of the company, were forced to sell out and Kekaha was no longer an independent plantation.

The plantation shrunk from about 1200 employees to about 200 through attrition during my dad's tenure starting in 1980. In a way my great grandfather built the plantation, my grandfather nurtured it through its peak and the upheavals of post war labor unionization, while my father had the sad duty of keeping things going as long as possible facing the reality of closure at any time by its mainland ownership. He was proud that he managed to talk Amfac/JMB into taking care of the employees when they decided on selling off nonstrategic holdings. Amfac owned most of Lihue then and Kekaha was mostly leased land except for the camps and mill. The results were subdividing and selling off plantation houses to employees and working with the county to create a retirement complex for all the retired single men.

I have memories of Kekaha Sugar Plantation. I was 3 when we first lived there as Dad was a trainee I was 4-6 years of age when my dad had his first full-time job with Amfac. I remember a Christmas party at the Supervisor's clubhouse in Mana (my great grandfather's original house), and plantation parties with backyard singing and dancing on the cement lanais. Food was memorable, especially fresh fish and whole sides of plantation beef roasting on the rotisserie. Cowboys, ditchmen, canefires, the rumbling of the factory, the silence during the offseason, sound of trucks downshifting as they came down the steep hills loaded with cane. The stink of ditchwater. The whole gamut.

I also spent 5 years from first through fifth grade walking home from school through the camps of Oahu Sugar in Waipahu. I gained a very thorough background in what the camps were like. Kekaha was different in that it was on a much smaller scale and well organized around the mill and business district.

Regarding land use in Kekaha:

There were 3 large brackish water lakes seen on maps prior to 1920. The sugar acreage was quite small when it started. It was said when it flooded (not necessarily a yearly occurrence) the lakes would fill up and become one and with a flat-bottomed boat you could pole your way to Waimea. There were lots of ducks in the lakes and people enjoyed shooting them for food and sport. We have a photo of one of the boats and shooters.

The village of the mirage was near Limaloa Pond. Limaloa was Lohiau's brother.

Rice farming started early on in Waimea Valley and the 'lakes', especially Limaloa, by Chinese after the Gold Rush. Pa On Leong, who made money in the gold fields, became a rice baron and employed many single men. His mill was in Waimea where the library is now. He had barracks for them at Kaunalewa and Mana. Some of these men were rented by my great grandfather to bring in his sugar crop. He and Pa On had a handshake agreement regarding the swampy land which was eventually overthrown by other investors in Kekaha Sugar around 1920.

There were plantation villages or Hawaiian villages at Polihale, Saki Mana, Mana, Kaunalewa, Waiawa, Pokii, Kekaha near the foothills, and another I forgot the name too between Kekaha and Waimea, and Waimea. Up on the foothills there was Puu Opae and Hukipo. My great aunt Isabel said there was a carriage road near the ocean (the highway is fairly modern) that in good weather the Hawaiian rode carriages to Church on Sundays. A government dirt road ran along the pali. There were no roads elsewhere because of the swamps.

There was a ship landing at Kekaha by what is now called 'first ditch.' There was a shed and pasture for holding livestock in transit. It isn't so much a ditch as a drainage canal first dug by hand by the Knudsens to expand farming and ranching near Kekaha. It was named Keikielima (5 children) after Knudsen's five children. My great grandfather purchased salvage equipment and pumps from the Sacramento, California reclamation project to begin draining the swamps between Kekaha and Polihale and at Waimea. It took decades to drain. The pumps are what made a difference and there were several on the canals that drained at the shoreline. One of them, I think Kiele, had an engine that was used at Senator Miyake's power company in Waimea. It was a diesel ship engine that is now by the Waimea Mill. The company that made the engine still exists and the serial number identified it as one of the oldest of their engines still in existence.

Kekaha is a plantation town. It was the site chosen to put the sugar mill. The area's Hawaiian people generally lived close to the foothills where springs were located. Along the shore were temporary fishing shelters, but water had to be carried there so it wasn't someplace to permanently live then.

The plantation railroad was a bit different than others. It was operated from about 1898 to 1945 on nearly flat land. Like other plantations, flumes were used to transport cane from the top of the hills down to the flat where it could be taken to the mill for processing. It was one of the first plantations to convert to mechanical harvesting, only keeping its rail through the war for military use. The plantation has

the claim to the only train robbery in 1920 where a masked man held up the railroad between Kaunalewa and Mana and ran off with about \$10,000 in cash including the payroll books for the Mana Division. The paymaster was instrumental in locating the suspected robber because he didn't want to recreate the payroll books. The railroad also had an interesting tradition of being the first party train. For its opening inaugural run, cane cars were cleaned and chairs put in for dignitaries in their finest to ride from Kekaha to Polihale (there are photos!). For special occasions, this occurred including the last run of the train in 1946.

Regarding any cultural or historic sites near the project area, Ms. Fayé stated, "As far as I know, the nearest house and heiau was at Waiawa/Hoea and Kekaha." Ms. Fayé then discussed a historic site, "The Mana Drag Strip was the old Mana Airport in use as the principal public airport during and after the war until the present Lihue airport was built."

When asked about cultural practices, Ms. Fayé stated, "Most of the activities take place at or near first ditch and Kekaha. Currently there are agricultural companies around the landfill as well as military activities and housing." She continued with the following:

The uplands above Kekaha were important in Hawaiian culture for farming koa at PuukaPele.. Kokee was integral to plantation life – many of the families of Kekaha had summer camps at Kokee and the plantation had a cabin for employees. The heat in Kekaha made the summer months miserable. My family spent easily spent 3 months a year at Kokee either with the Knudsens and later from 1904, at our own cabin Maluapoha.

Ms. Fayé mentioned some *wahi pana* and *mo'olelo* in the following excerpt:

Some of the unique cultural things that were mentioned by Eric Knudsen (Kanuka of Kauai) was that the dead gathering at the hills above Polihale to enter Po and the wandering spirits could be trapped in homes – all the villagers had two doors in their homes to allow them to pass through.

Another story is of the unfolding mat – the view from Nohili of the long white sand beach as far as the eye can see.

Another is the unusual way taro was cultivated on floating mats in the brackish water lakes. There was also a saying that the Hawaiians at Polihale never needed to make poi – they traded fish for poi because they were such good fishermen and could trade for all the poi they needed.

Many of the place names in the landscape are named for the story of the arrival of Pele's sisters.

There were three trails Ms. Fayé mentioned:

Trail from Mana to Puuopae, which used to be a village, to Kokee.

Canoe road from PuukaPele to Mana (the road still exists)

Trail made by the Knudsens to PuukaPele to travel every summer to Halemanu.

Finally, the last portion of the sample interview questions focused on any concerns or recommendations Ms. Fayé may have regarding this project:

Besides the drastic change to the landscape by creating mountains near the ocean of what used to be flat land, it concerns me that a whole hillside is being mined of dirt as part of the project. I hope the same scrutiny of the cultural landscape is being made for the new project.

We need to acknowledge that native water fowl are thriving in the settling pond at the landfill. Taking away reservoirs and ditches/canals reduces their habitat. The newly created bird sanctuaries don't have the nutrients for the bugs and fish they eat to thrive – they are too clean.

The cane fields were a habitat for bats, pueo, and nonnative ground birds that people like to hunt. Maybe lands that are going fallow or returning to swamp need to be managed better for habitat purposes rather than making new habitats out of dry land.

#### **7.4.2 Mr. Lyle Tabata**

On 6 April 2023, CSH emailed Mr. Lyle Tabata a set of interview questions along with a letter requesting consultation for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion project. Mr. Tabata responded on 24 April 2023 via email having completed the interview questions (Appendix C Mr. Tabata's answers are summarized below.

Lyle Tabata is currently part-owner of B&T Contractors and sits on the Agribusiness Development Corporation (ADC) Board of Directors. He previously worked as the County Engineer of Public Works for the County of Kaua'i for nine years, from 2011 to 2020, eight years in Mayor Carvalho's cabinet, and one year with Mayor Kawakami.

Mr. Tabata was born on 28 June 1956 in Lāhaina, Maui to Marilyn Tagomori and Teruo Tabata from Maui. Mr. Tabata stated that he grew up in Wailua, Kaua'i (from 1959-1966), Kekaha (1966-1972), Waipahū (1972-1974), went to college in Illinois at Bradley University (1974-1978), then finally moved back to Kaua'i (1978-present). He currently resides in Līhu'e, Kaua'i.

Regarding Mr. Tabata's connection to Waimea Ahupua'a, as mentioned previously, he grew up in Kekaha from 1966-1972. He shared a memory of how he spent many days traveling on his bicycle with friends from Mānā camp to Waimea during the six years he lived in Kekaha. He was also the Factory Manager of American Factors (Amfac) Sugar Kaua'i and in charge of the Kekaha Sugar Mill and Lihue Plantation Mill operations from 1993-1997. Then from 1997-2000, he was the last Plantation Manager for Amfac Sugar Kaua'i and oversaw the operations of both Lihue Plantation and Kekaha Sugar Companies.

Regarding historic or cultural events practiced in the area, Mr. Tabata stated the following:

The renaissance of the push to reintroduce the Hawaiian culture of the day is in terms of years only recently re-established. I did, however, during my elementary school days at Kekaha School attend the summer schools while Bertha Kawakami was principal and taught the Kamehameha School curriculum of what we know as Explorations today. We learned the language, the music, games and culture in more detail than was taught in the public schools.

Mr. Tabata continued and described a memory of attending Kekaha Summer Fun and being told the stories and tales of the area, such as night marchers and burial caves.

When asked to describe those stories told by Ms. Martha Kruse at Summer Fun, Mr. Tabata responded with the following:

Well, I remember she said that if you hear them, they will be chanting while marching, not to wake up and look for them, they will take you with them. No can't remember others; I only remember I couldn't sleep for days after hearing them. She did mention that the royal kupuna were buried in caves in the walls of the valleys, we were not to disturb them.

Regarding cultural practices in the project area, Mr. Tabata shared,

I lived a block in from Davidson Beach where I learned to surf, we would dive for fish, pole fish out all over from 1st ditch to Polihale. Catch o'opu nakea when the first fall rains would push them down from Kōke'e to the Waimea River out to sea, in Waimea valley with makeshift spears made for us by the plantation welders. Hunt up in Kōke'e for pigs, goats, and newly introduced deer, Hawaiian 'moose' the plantation run away cattle, bird hunt for pheasant, quail, and franklins.

When asked where the first ditch is located, Mr. Tabata explained the following:

1st ditch the canal drains to the ocean, is right next to the shrimp hatchery at the concrete bridge after MacArthur Beach Park at what is called 'Inters' today. 2nd ditch is further down toward the County Landfill also a concrete bridge crossing. Then the next fishing spot was Target Range, behind the landfill was a shooting range, then next was on base they call it Majors Bay, then Kinikini, then Barking Sands point or Rocket Launcher, then Queens Pond, then Polihale all the sand until the rocks at the end.

Regarding past land use, Mr. Tabata mentioned agricultural uses and stated, "Rice and taro were grown in the area." He also mentioned the Mānā Swamp that was drained during plantation time and stated, "I remember Martha Kruse telling us in the old days you could paddle canoe from Waimea to Mānā in the wetlands."

Regarding *mauka-makai* relationships, Mr. Tabata described the Mill Ditch ravine in the ocean and stated, "The water used to come from *mauka* and today this location is where the black and white sand intersect and dive down in this ravine separating the two types of sand in Kekaha."

Mr. Tabata did not have any concerns with the current project, however, within the vicinity of the current project area, Mr. Tabata shared the following, "As the County Engineer, I had the County obtain [a] permit to execute [the] clearing of stone and soil from the sugar operations. Rock and mud removal from the mill came cleaner which was disposed at Paua Valley gulch to restore the location back to what it was." When asked if there were any negative impacts by disposing of stone and soil at Paua Valley, he stated the following:

Well during the day the valley used to open and in its natural state, the plantation filled much of the valley during its time with mud and rock, by clearing these rocks and the dirt now being used as cover soil for the present landfill. Restoration back to the valley's original state is always good if it can be done in a respectful way.

Mr. Tabata stated, “I support the project as the island does not have alternatives for refuse disposal if not approved.”

## 7.5 Summaries of Community Interviews

### 7.5.1 Ms. Leanora “Lea” Dizol Kaiaokamalie

On 8 May 2023, CSH interviewed Leanora “Lea” Dizol Kaiaokamalie via Microsoft Teams regarding the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion project. Ms. Kaiaokamalie is a lineal descendant and ‘*ohana* (family) representative of the Kilauano family for projects in the Mānā area. She is also a community planner and GIS analyst for the County of Kaua‘i.

The Kilauano family are part of the ‘*Ohana* Papa O Mānā group, lineal descendants of the Mānā area, which includes areas such as Kekaha, Nohili, and Polihale. Ms. Kaiaokamalie stated that her family coordinates with the Pacific Missile Range Facility (PMRF) for any activities that occur on the base. She also described how the PMRF recently built the Lua Kupapa‘u O Nohili Crypt that their ‘*ohana* goes to every year during the solstice. Her family reinters the *iwi kūpuna* (ancestral Hawaiian skeletal remains) that have been exposed either by erosion or by, unfortunately, construction or other activities on the base. The PMRF will call her ‘*ohana* and hold the *iwi kūpuna* until her family comes down to do a ceremony and then reinter the *iwi kūpuna* or ask to leave them in situ. Ms. Kaiaokamalie also explained they have connections to the State of Hawai‘i DLNR, however, this is still a work in progress. The ‘*ohana* are currently participating in other projects such as the Polihale Master Plan and the Mānā Plain Wetland Restoration.

Other responsibilities her family oversees include taking care of the family grave sites located at Po‘oahonu (also known as “Queen’s Pond”) in Polihale. Ms. Kaiaokamalie described her great-great-grandparents, Kaholoiki and Niho, buried at Po‘oahonu. Her great-great-grandparents are from Kalalau, Kaua‘i and her great-great-grandfather, Kaholoiki, was a schoolteacher there. Her grandfather, Anderson Kaholoiki Kilauano, was the caretaker of the graves and her family continues to take care of those graves. As Ms. Kaiaokamalie stated, it became an “unbroken chain of *mālama ‘āina* of Mānā [passed on from generation to generation] from Saki Mānā in Polihale to Kekaha.” She also stated that although there were other recognized families in the area, her family has “never really moved out of the area mentally. Although the parents have passed and the children moved away, they continued to take care of the graves.”

Regarding burials in the project area or within the project area vicinity, Ms. Kaiaokamalie shared that her family never spoke of burials near the project area. Her family’s concentration of burials is in Nohili and Polihale. She did question whether sand dunes existed before the landfill was built since it’s located along the shoreline and Jaucas sand is present. According to previous archaeological studies of the current project area, a low linear sand mound was observed (Folk and Hammatt 1993:26). The area was once a place of sand dunes but was modified and destroyed for plantation purposes. The sand mound post-dates the removal of the sand dunes and previous oral history states it was constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28). Ms. Kaiaokamalie noted that the landfill is located along the shoreline, meaning there is a possibility of encountering a burial even though previous archaeological studies within the area say otherwise. However, the proposed action would take place on top of the Phase II landfill and no new areas or native soil would be disturbed as part of the proposed action.

Ms. Kaiaokamalie stated she lived in Kōloa, Kaua'i, however, she was often in the Kekaha-Mānā area with her mother's side of the family on most weekends. She was the youngest girl and granddaughter of her family, and her brother was the only grandson and youngest grandchild. She spoke of not being allowed to swim at Kekaha Beach because of the strong currents and she wasn't a great swimmer. Ms. Kaiaokamalie stated that the currents were strong and there was a saying, "yeah watch out, you gonna end up in Ni'ihau." She further explained that when there were a lot more cows around the area, sometimes the current would take wayward cows and they would end up in Ni'ihau.

There have always been concerns about the impact to the ocean in the vicinity of the project area due to the strong currents. Ms. Kaiaokamalie stated that people would often say, "oh they bringing more fish" or "oh, they bringing more sharks," meaning the currents would bring in more marine species or other things into the area. Also, the smell from trash from the landfill and the "dirty" or murky water would attract more predators, like hammerhead sharks, to the area.

While describing the area as it was in the past, Ms. Kaiaokamalie mentioned there was a lot more access along the shoreline. During her grandfather's time, you could drive from Kekaha to Polihale on the sand. However, after the PMRF base and other developments were established along the shoreline, it was no longer possible to do so. She mentioned some of the cane roads were built on the old trails or ditches and would lead more inland. Ms. Kaiaokamalie did state that in the area Roads in Limbo (RIL) were created by the plantation. Her family used them to access the beach, to fish, and drive around.

Regarding previous land use, Ms. Kaiaokamalie stated there was no known previous land use she is aware of where the landfill is located. However, Mānā was known for *kalo* and her grandfather, Anderson Kilauano, had pig farms and produced salt. Ms. Kaiaokamalie also mentioned Mānā had many springs.

*Mauka* of the landfill, rice and sugarcane was being cultivated. Ms. Kaiaokamalie's great-grandfather, Louis Kilauano, was a *luna* (supervisor) for Hans Peter Fayé, who developed and filled in the wetlands in Mānā for cane fields.

Regarding native birds in the area, Ms. Kaiaokamalie stated there were "‘*auku‘u* (black-crowned night heron), *ae‘o* (Hawaiian stilt), ‘*alae‘ula* (Hawaiian common moorhen), *koloa maoli* (Hawaiian duck), *nēnē* (Hawaiian goose), ‘*iwa* (great frigatebird), *pueo* (Hawaiian short-eared owl), and ‘*ōpe‘ape‘a* (Hawaiian hoary bat)." When asked about the vegetation in the area, Ms. Kaiaokamalie mentioned there used to be *kulu‘i* (*Nototrichium humile*) and *wiliwili* (*Erythrina sandwicensis*). In the past, there also used to be sandalwood; now you can find random flora such as mango or banana trees.

Regarding marine resources and cultural practices, Ms. Kaiaokamalie mentioned there used to be more "lettuce-looking" *limu* that could be found up and down the shoreline. She stated she hasn't seen this type of *limu* around for at least a couple decades. They used to pick *limu* off the rocks and eat them. Ms. Kaiaokamalie also shared that they would fish at 1st and 2nd Ditch, as well as use them as markers for where to swim.

Regarding *mo‘olelo* and *wahi pana* about the area, Ms. Kaiaokamalie shared that the area was frequented by Pele and Poliahu. She also mentioned a story about how the ridge, Pōki'ikauna, received its name. Pele left her youngest sister, Moeha'una, in Mānā with her lover Limaloa. Pele

and the rest of her siblings headed toward Waimea Village and stopped on a ridge; missing their sister they looked back toward Mānā. To commemorate this spot, Kahuila (Pele's brother) suggested they name the ridge Pōki'ikauna, meaning "the yearning for the little sister."

Regarding cultural and historical sites, Ms. Kaiakamalie mentioned many sites documented by SHPD and published in CSH reports. There was a *heiau* where the Proposed Rock Crushing Establishment project occurred, located along the New and Old Government roads, *mauka* of the current project area. She noted there were some sites around MacArthur Park ("Kekaha Beach") and at the PMRF. One site Ms. Kaiakamalie mentioned was Saki Mānā ("Second Mānā"), a former plantation camp located closer to Mānā. She further described the site being located near "Cold Pond," where her family would often swim, a spring created by the plantation. According to Kaohi and Flores (1993:II-16), "Saki later became a varied pronunciation of the word Second." The site itself is "completely razed to the ground," and can no longer be viewed from above by satellite.

A concern Ms. Kaiakamalie had regarding cultural sites is that there were no previously identified cultural sites within the project area even though previous archaeological studies have identified multiple sites in the surrounding areas. There were sites located in Kekaha, PMRF, and *mauka* of the project area. The project area is also located along the shoreline, meaning there's a higher possibility of sites or burials in the area. Ms. Kaiakamalie said she was not questioning whether the people who did the original surveys of the project area did their jobs or not. She understands the landfill was built when laws for cultural resource management and land use were just being developed and were less strict than they currently are. There were also a lot of developments, such as subdivisions, and changes in the land such as the drainage of the wetlands in Mānā and the development of rice and cane fields, that may have resulted in the destruction of many historic and cultural sites. She recommends integrating the initial report of the project area and including in the current report how the site was studied for future reference. If another survey were to be conducted in the future, she's hoping it can be done more thoroughly.

Regarding land use laws, Ms. Kaiakamalie mentioned they were established around the time that people were coming back from the Vietnam War. During this time, veterans were using their G.I. Bills to buy land, land use laws allowed the first subdivisions and first zoning codes to be established, the landfill was being built, and plantations were operating. After the war, a lot of money was coming into the economy and the land was changing.

The main concern Ms. Kaiakamalie has regarding the vertical expansion of the Kekaha Landfill is the impact on natural and cultural resources. The landfill already impacts the visual beauty of the landscape and she's worried about it going higher. She stated that when you "look out into the places that you love, you expect to see them." Before the landfill was developed, the land was flat, now there is a *pu'u* (hill) where the landfill stands. She had an emotional reaction when she realized the size of the landfill and stated that it felt as if she was robbed of something. She felt sick. Ms. Kaiakamalie stated that people have asked her, "well what's the difference between that and a building?" and her response was that she would react the same, it doesn't make a difference. She continued and said, "there's nothing else there. There's nothing else, but that. It's not right."

A recommendation Ms. Kaiakamalie discussed was the county implementing more recycling and upcycling opportunities. It could be economically and environmentally advantageous. She

stated, "There is so much for us to reuse and recover before it gets to the landfill." She understands it's difficult to do, especially financially for the county.

Her main recommendation is for the county to develop a long-term solution for getting rid of the *pu'u*. She stated, "If gotta go higher, can we at least have an eye toward looking or keeping an eye on technologies that would help us recover the things that were buried or at least recover and just incinerate it or something." She wants the county to make mitigation efforts toward removing the vertical expansion once a long-term solution for the landfill is established. The vertical expansion is not something that should remain long-term. Ms. Kaiaokamalie stated, "Long-term, the County needs to remove it or flatten it down. Recover the views. Try to design out of what they're creating." She's tired of seeing the next generation having to deal with the issues the previous generation left behind:

Today, left by the generation not so far removed from us, all this stuff that we are needing to deal with now. All the shoreline entitlements, all these infrastructures along the coast, and all these filled in wetlands. Like thanks man, you know? And now we're in this project, where it's staring in front of us. If we have to do it, can we help the people in the future, or us in the future, to say hey...this is a little bit of a stub out to undo this later on, if we can't get away with doing it now cause we kind of have to. I just want us to stop throwing things to the next generation because it sucks having to clean that kind stuff up.

She continued and stated that the solution doesn't need to be discovered today, but gathering data on ideas and designs that people around the world with similar issues are dealing with will allow more ideas to be created and that will lead us closer to discovering a solution. At least by creating a "trail," it will help guide others to creating a possible solution in the future. She suggested that when drafting a project, they need to input possible impacts and solutions others have come up with, as well as the outcome of those solutions. The county should have a working group or policy where they must revisit the issues and determine how to implement the ongoing feasible technologies for solid waste study.

She also stated the county should be more involved in terms of projects like wetland restoration. There is currently a lot of movement toward supporting wetland restoration in the entire Mānā area. The State of Hawai'i Division of Forestry and Wildlife (DOFAW), DLNR, PMRF, and watershed *hui* (groups) and landowners are contributing to this movement. Flooding and draining issues are impacting Kekaha and Waimea. The land was previously wetland and now that the land changes are exacerbated, Ms. Kaiaokamalie stated that "maybe it's not us who will have to deal with the *pu'u*. It's gonna come down naturally because the tides are gonna take it out." Ms. Kaiaokamalie asked, "Where does the landfill stand in this? What is the County doing to look toward that and support those efforts [wetland restoration], even if we have to go this way [horizontal expansion] and this way [vertical expansion] for a little while?"

## Section 8 Traditional Cultural Practices and Resources

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### 8.1 Overview

Timothy R. Pauketat succinctly describes the importance of traditions, especially regarding the active manifestation of one's culture or aspects thereof. According to Pauketat,

People have always had traditions, practiced traditions, resisted traditions, or created traditions [...] Power, plurality, and human agency are all a part of how traditions come about. Traditions do not simply exist without people and their struggles involved every step of the way. [Pauketat 2001:1]

It is understood that traditional practices are developed within the group, in this case, within the Hawaiian culture. These traditions are meant to mark or represent aspects of Hawaiian culture that have been practiced since ancient times. As with most human constructs, traditions are evolving and prone to change resulting from multiple influences, including modernization as well as other cultures. It is well known that within Hawai'i, a "broader "local" multicultural perspective exists" (Kawelu 2015:3). While this "local" multicultural culture is deservedly celebrated, it must be noted that it has often come into contact with "traditional Hawaiian culture." This contact between cultures and traditions has undoubtedly resulted in numerous cultural entanglements. These cultural entanglements have prompted questions regarding the legitimacy of newly evolved traditional practices. The influences of "local" culture are well noted throughout this section, and understood to represent survivance or "the active sense of presence, the continuance of native stories, not a mere reaction, or a survivable name. Native survivance stories are renunciations of dominance, tragedy and victimry" (Vizenor 1999:vii). Acknowledgement of these "local" influences help to inform nuanced understandings of entanglement and of a "living [Hawaiian] contemporary culture" (Kawelu 2015:3). This section strives to articulate traditional Hawaiian cultural practices as were practiced within the *ahupua'a* in ancient times, and the aspects of these traditional practices that continue to be practiced today; however, this section also challenges "tropes of authenticity," (Cipolla 2013) and acknowledges the multicultural influences and entanglements that may "change" or "create" a tradition.

This section integrates information from Sections 3–7 in examining cultural resources and practices identified within or in proximity of the project area in the broader context of the encompassing Waimea landscape. No traditional cultural practices or resources were identified within the current project area. Those listed below were identified within the project area vicinity and the broader Waimea *ahupua'a*. Excerpts from interviews are incorporated throughout this section where applicable.

### 8.2 Habitation and Freshwater Resources

Ms. Fayé mentioned the Native Hawaiian people in Kekaha "[...] generally lived close to the foothills where springs were located. Along the shore were temporary fishing shelters, but water had to be carried there so it wasn't someplace to permanently live then." Ms. Kilauano also stated that houses were "Built *mauka* by the cliff, above the water, cause of the swamp and the water from *mauka* that came down the hills, so the houses were built up high, so the water could flow underneath." Mr. Akana also shared that "[...] people used to live [more *mauka*] around Pōki'i,

Kaunalewa, and Waiawa” (Chiogioji et al. 2003:29). This is backed by Yent (2005 in DLNR 2013:73), who stated that “Hawaiian settlements on the Mana Plain were small and concentrated along the foothills and mauka or upland valleys and temporary habitation, including fishing camps, occurred on the coastal sand dunes.”

According to Knudsen and Noble (1945:62), Kekaha was watered by a spring called Kauhika, located at the base of the *pali*. The spring has a fishpond, then taro *lo'i* and rice fields before flowing into the swamp. Ms. Fayé mentioned another large spring, Kumumao (also known as “Cold Pond”) next to which her grandfather. Ms. Kaiakamalie also mentioned “Cold Pond,” while describing Saki Mānā and stated that her family would often swim there, and a spring was created by the plantation. Ms. Fayé also mentioned another spring and famous *heiau*, Hau'ola, where “the menehune were paid their shrimp for completing the Kikiaola or Peekauai Ditch.”

The second artesian well in Hawai'i was placed on the land leased to Hans Peter Fayé by Valdemar Knudsen, which consisted of Mānā to Polihale. Ms. Fayé further described the artesian well in the following:

By the time Kekaha Sugar was formed, the use of artesian wells had pulled up much of the fresh water below the fields. Fresh water from springs and rainfall forms a layer underground over salt water. So, the roots of the cane were becoming saltier and not producing well. The crops were declining. Kekaha was located far from any freshwater source.

Mr. Wong shared that the plantations needed water for the sugarcane and took it from Koai'e river:

[...] So, on top from Camp 6 and Camp 8, Okay? That waters not enough. So they went make one road by the *pali* to catch Koai'e River water, but the bank went broke, so, they no could get the water. They was getting the water from Koai'e, yeah? It would flow to Camp 8, and at the tunnel go inside, go into Koai'e Stream, and then come underneath, out by the *pali*, and come underneath the da kine and come behind by Julia Nataya's house, and then go inside the reservoir. That's how the thing go. Not enough water, see, from Alakai and, ah, Waipahoe Stream. They leased the water rights for the plantation to use. The *mauka* hydroplant was where the tunnel comes in to Waiawa *mauka*, in Waihulu.

So Camp 8, they went make one ditch along the *pali* but the bank broke, the ditch was broke. That ditch never had name. They was taking water from the other river, Koai'e River. [Fernandes-Farias et al. 2010:51]

Ms. Fayé also mentioned that since “Kekaha was located far from any freshwater source,” her great-grandfather developed the Kekaha Ditch to “bring water from about 8 miles up the Waimea River up to the foothill above Waimea Town all the way to Polihale.” The ditch was created for the purpose of providing freshwater for sugarcane. Ms. Fayé also mentioned the Kokee Ditch started in 1922 and the Kawaikoi Dam was developed as well and is known as the highest elevation reservoir in Hawai'i.

Mr. Wong mentioned how *o'opu* was once abundant in the streams and stated the following:

The 'o'opu was there, it's just that, because now they get da kine, the 'o'opu no can go back anymore up there. You see, they're raised up there, they like the cold water.

And when they gonna *hānau* [give birth] they come down, and then they *make* [die] down here. And then they—the small ones go back up, you know? But now get plenty things going, so, the 'o'opu no go. Used to get plenty back then, but, now get water in control. Before there was plenty more water coming over. They gather the 'a'a now. Because, when get big water, like, I was up there in 1949, right, had a big flood in Waimea. And, what happened was, when the stones would move, and the 'o'opu, he get the suction, but he no like stay on the stones because they move, so he go by the side, so when the water flows really hard, they no can hold on. When the big water come and they stay *hānau*, or *hāpai* [pregnant], is when they end up *hānau* in *makai*. And then the *hinana* [the offspring of the 'o'opu] go back up. That's how see, the 'o'opu no come down because the stones shake, and they no like go in the stone. So they go by the side and the water bring 'em down. [Fernandes-Farias et al. 2010:50]

### 8.3 Trails

Ms. Fayé mentioned that her great aunt Isabel told her about a carriage road near the ocean and a government dirt road along the *pali*:

My great aunt Isabel said there was a carriage road near the ocean (the highway is fairly modern) that in good weather the Hawaiian rode carriages to Church on Sundays. A government dirt road ran along the *pali*. There were no roads elsewhere because of the swamps.

There were three trails Ms. Fayé mentioned:

Trail from Mana to Puuopae, which used to be a village, to Kokee.

Canoe road from PuukaPele to Mana (the road still exists)

Trail made by the Knudsens to PuukaPele to travel every summer to Halemanu.

Informants (Mrs. Takekawa, Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) have mentioned the Old Government/Mānā Road, which ran from Waiawa to Mānā. Mrs. Takekawa mentioned there was “Mānā Camp, with the old Mānā store and movies. But it's gone now. All the workers used this road. The surrounding areas were all in sugar cane. There was no other agriculture out here, no *lo'i* gardens...just sugar cane” (Fernandes-Farias et al. 2010:54) Ms. Kilauano stated,

From Kekaha all the way along this road from Pōki'i we traveled on that road, a one way lane. All along the ditch all the way we go till Limaloa, and then we follow the ditch and go to the beach. [...] That's the old road. We go that road all the way, to Mānā, Limaloa, Kaunalewa. Because never have that highway. That highway is 1945. So before that we used this road, along the ditch.

[...]

That was the ditch right there. The road followed the ditch. [Fernandes-Farias et al. 2010:59]

Mrs. Goodwin-Kaohi mentioned the Old Government Road was along the cliff-side, at the foot of the hill. Mr. Aipoalani added, “The original road. That was the drag. The plantation people built it up to reinforce the road, where it is higher in places, or whatever.” Ms. Kilauano also shared that it was the only road they used to go to Mānā and stated, “We go up to a certain point, if you like go Polihale, you go a little bit more and you walk to Polihale. You park the car and you walk” (Fernandes-Farias et al. 2010:59-60).

Mr. Akana mentioned the following:

As I remember there was no highway in the front around the beach at that time [in the early 1940s]. There was no highway. The sand extended, the beach extended, about a quarter- to a half-a-mile out from our house. There was a small dune and on the dune there were hau trees along the beach line. Actually, where you see the waves breaking right now, that’s where the beach used to be. . . [T]he military put a road from just outside of Waimea, alongside the beach, headed for Barking Sands. Before that the road went up toward the *pali* side – Waiawa and Kaunalewa – and then ended up in Mānā itself. [Chiogioji et al. 2003:28]

Ms. Kaiaokamalie mentioned some of the old can roads were built on the old trails or ditches that would lead more inland. She also shared that in the area there were Roads in Limbo (RIL) created by the plantation. Her family used them to access the beach, fish, and drive around.

## 8.4 Flora and Fauna

Waterfowl present in the wetlands provided a food resource for the area residents. Among them the *kōloa* (Hawaiian duck) and especially the *‘alae* (Hawaiian gallinule) and *āe‘o* (*kukuluāe‘o*; Hawaiian stilts) were numerous (Von Holt 1985:78). All three were traditionally caught and consumed by the Hawaiians (Malo 1951:39).

Regarding native birds in the area, Ms. Kaiaokamalie stated there were “*‘auku‘u* (black-crowned night heron), *ae‘o* (Hawaiian stilt), *‘alae‘ula* (Hawaiian common moorhen), *koloa maoli* (Hawaiian duck), *nēnē* (Hawaiian goose), *‘iwa* (great frigatebird), *pueo* (Hawaiian short-eared owl), and *‘ōpe‘ape‘a* (Hawaiian hoary bat).” When asked about native plants, Ms. Kaiaokamalie mentioned there used to be *kulu‘i* (*Nototrichium humile*) and *wiliwili* (*Erythrina sandwicensis*). In the past, there used to be sandalwood. Now, you can find random flora such as mango or banana trees.

Mrs. Takekawa also mentioned plum trees along the Old Government/Mānā Road stating, “[...] There used to be lots of plum trees along the road too. I don’t see too many of them growing now. We used to walk all the way from Kekaha, to get the plums” (Fernandes-Farias et al. 2010:54).

## 8.5 Agriculture

*Mauka* of the landfill, rice and sugarcane was being cultivated. Ms. Kaiaokamalie’s great-grandfather, Louis Kilauano, was a *luna* for Hans Peter Fayé, who changed and filled in the wetlands in Mānā for cane fields. Mrs. Goodwin-Kaohi mentioned the sugar plantation draining

the wetlands of Mānā to plant cane. She also mentioned prawn patches in that area at one point in time.

The perpetual swamplands of the plain apparently were greatly enlarged during periods of heavy winter rains. It was possible on these occasions to paddle a canoe from Mānā to Waimea on this inland waterway (Knudsen 1991:99; Von Holt 1985:77–78). Mr. Tabata mentioned the Mānā Swamp that was drained during plantation time and stated, “I remember Martha Kruse telling us in the old days you could paddle canoe from Waimea to Mana in the wetlands.” Ms. Fayé shared something similar and mentioned three large brackish water lakes that were seen on maps prior to 1920:

The sugar acreage was quite small when it started. It was said when it flooded (not necessarily a yearly occurrence) the lakes would fill up and become one and with a flat-bottomed boat you could pole your way to Waimea. There were lots of ducks in the lakes and people enjoyed shooting them for food and sport. We have a photo of one of the boats and shooters.

Ms. Fayé mentioned the following regarding rice farming:

Rice farming started early on in Waimea Valley and the ‘lakes’, especially Limaloa, by Chinese after the Gold Rush. Pa On Leong, who made money in the gold fields, became a rice baron and employed many single men. His mill was in Waimea where the library is now. He had barracks for them at Kaunalewa and Mana. Some of these men were rented by my great grandfather to bring in his sugar crop. He and Pa On had a handshake agreement regarding the swampy land which was eventually overthrown by other investors in Kekaha Sugar around 1920.

Informants (Mr. Tabata, Ms. Kilauano, Mrs. Goodwin-Kaohi, Mr. Oshiro, and Ms. Kaiaokamalie) have mentioned that *kalo* was grown in the Kekaha-Mānā area. According to Flores and Kaohi (1993: IV-5), *kalo*, *‘uala*, and *ipu* were some of the crops grown in the valley and gulches along the Mānā Ridges, as well as at Limaloa, Kaheluiki, and Kolo on the Mānā coastal plain. Yent (2005 in DLNR 2013:73) also mentioned that “The majority of inhabitants on the Mana Plain were fishermen and gourd cultivators whose products were traded for poi and other upland products with other inhabitants of the island.” Ms. Kilauano and Mrs. Goodwin-Kaohi mentioned Kekaha and Kaunalewa had *lo ‘i* for taro and watercress, while Mr. Oshiro shared that there were taro patches in Kaunalewa and Limaloa.

In Kolo, wetland taro cultivation was the typical method used for taro cultivation. According to Anderson Kilauano, everyone owned a taro patch in Kolo. Taro was being grown on rafts during the rainy seasons when the area flooded. Ms. Fayé mentioned taro being cultivated on floating mats in the brackish water lakes. Mrs. Goodwin-Kaohi stated, “Mānā swamps were the only place in all of Hawai‘i that we planted our taro on rafts. They built them because the *huli* [taro top] would drown, and so they built these wooden rafts and they put the mud inside and they planted. They floated on the water” (Fernandes-Farias et al. 2010:57). She further described it by stating,

They would attach it so maybe it was close to the shoreline so it’s floating, take the mud and fill up these rafts, because they put sides, and plant the huli. Cause you have enough water, but you can’t plant in the swap ‘cause it was too deep yeah.

They used the swamp for fish, mullet and ducks too. [Fernandes-Farias et al. 2010:57]

At Limaloa, the Kilauano family once cultivated taro patches irrigated by freshwater springs. Anderson Kilauano cultivated the taro variety *lehua* and sometimes *kāī* during the 1940s, however, taro cultivation in Mānā is no longer practiced, especially after the swamps were drained and sugarcane came into the area. Ms. Kaiaokamalie also mentioned that her grandfather, Anderson Kilauano, had pig farms and produced salt. According to Pukui (1983:110), “The salt of Waimea, Kaua‘i is known for its reddish-brown color.”

## 8.6 Fishing and Marine Resources

Fishing occurred all along the shoreline from what is known as “first ditch” to Polihale. According to Mr. Tabata, “first ditch” is where “the canal drains to the ocean, is right next to the shrimp hatchery at the concrete bridge after MacArthur beach park at what is called ‘inters’ today. 2nd ditch is further down toward the County Landfill also a concrete bridge crossing.” Ms. Kaiaokamalie shared that they would fish at first and second ditch, as well as use them as pointers for where to swim.

Mr. Tabata also shared the following:

[...] Then the next fishing spot was target range, behind the landfill was a shooting range, then next was on base they call it Majors Bay, then Kinikini, then Barking Sands point or rocket launcher, then Queens Pond, then Polihale all the sand until the rocks at the end.

Mr. Wong mentioned where he would do ocean fishing in the following:

I used to fish, from McBride, I’d fish all the way from Ni‘ihau Island. Fish, lobster, you know. I catch fish every week.

Before time, right there by the office, at McBride, we’d go straight out, over there had one boat house over there. But wasn’t Hawaiians, one Korean, he had one, a boat over there. When they made the boat harbor, that’s when they had to make the wall, the current would change and beat up on the road before. You see it now, no more sand.

Before, I would cast-net over there, that’s where I learn to cast-net, I stay learning all the other kind [fishing styles]. You know I can do any kind, because I learn. [Fernandes-Farias et al. 2010:50]

There were various methods of fishing utilized along the shoreline and in the deep ocean of Mānā. Some fishing methods mentioned by informants (Julia Smith Chandler, Patrick Malama, and Anderson Kilauano) include *hukilau*, throw net, lines with hooks and bait, torching with spears and scoop nets, lay nets, and hand gathering. Shoreline fishing was a common method used by many informants (Mr. Akana, Mrs. Goodwin-Kaohi, and Mr. Oshiro). Mr. Akana often saw people along the shoreline every day casting lines. He also stated, “[...] So I would say, because of the reefs out there, that there’s still good fishing in the area” (Chiogioji et al. 2003:29). Mrs. Goodwin-Kaohi also mentioned shoreline fishing consisted of throw net or they would go out and *hukilau*.

Mr. Oshiro also mentioned the fish were more plentiful where the plantation ditch emptied into the ocean. He described *hukilau* net fishing that occurred off the Kekaha coastline:

I tell you, this area here before – Those days, from here, somebody up on the hill look for where get fish. Now, it's so modern: they get a plane flying. But for us, in the old days, they had the one guy, the spotter, he had his special rock spot. And then they call all the guys, get the nets and go out. Then they set the nets.

All over here. You see, wherever the fish is. [Chiogioji et al. 2003:33]

Mr. Tabata mentioned he would use makeshift spears made by the plantation welders in Waimea Valley to catch 'o 'opu *nakea* “when the first fall rains would push them down from Kokee to the Waimea River.” According to Pukui (1983:146), “When it was the season for *hinana*, the spawn of 'o 'opu, at Waimea, Kaua'i, they were so numerous that one couldn't go into the water without rubbing against them.”

Flores and Kaohi (1993:IV-5) mentioned fishing activities were not limited to the ocean and shoreline of Mānā, but also took place in the swamps and ponds on the coastal plain. Informants (Julia Smith Chandler, Patrick Malama, and Anderson Kilauano) also discussed the different types of marine resources, “*pāpio, ulua, kala, 'ū'ū, kāmū, āholehole, 'anae, akule, manini, nenuē, 'opihi, hā'uke'uke, pipipi, and paiea*” (Flores and Kaohi 1993:V-14). The Kaulakahi channel that runs between Waimea and Ni'ihau was said to be plentiful in marine resources supplying “such fishes as the *ulua* (jackfish), *mahimahi* (dolphin), *ono* (mackerel), and *a'u* (marlin), all large enough to feed many people” (Wichman 2003:6). Furthermore, Wichman states that people in Waimea benefited from the “reef fish, sea urchins, squid, and seaweeds” (Wichman 2003:6) of the shallow water.

Ms. Kaiaokamalie stated there used to be more “lettuce-looking” *limu* that could be found up and down the shoreline. She stated she hasn't seen this type of *limu* around for at least a couple decades. They used to pick them off the rocks and eat them.

## 8.7 Hunting

Informants (Mr. Tabata and Mr. Wong) have mentioned hunting in Kōke'e. Mr. Wong stated he would go at night at about ten or eleven o'clock on the ridge. Some of the animals they would hunt in Kōke'e included pigs, goats, newly introduced deer, Hawaiian “moose,” the plantation run away cattle, pheasant, quail, and franklins. Mrs. Takekawa also mentioned hunting with her husband and coming across pheasant. Mr. Parrage III shared that no one goes to the old hunting area because it has become cornfields and there are gates that restrict access to those areas. He also shared that he would hunt mostly alone, sometimes with other people, and other times with his father. He would catch pheasants and sometimes pigs with his father.

## 8.8 Gathering Practices and Resources

Ms. Fayé mentioned *koa* farming in the uplands of Kekaha:

The uplands above Kekaha were important in Hawaiian culture for farming *koa* at PuukaPele. Kokee was integral to plantation life – many of the families of Kekaha had summer camps at Kokee and the plantation had a cabin for employees. The heat in Kekaha made the summer months miserable. My family spent easily spent

3 months a year at Kokee either with the Knudsens and later from 1904, at our own cabin Maluapoha.

Regarding upland plant resources, Mr. Wong mentioned *maile* and *mokihana* in the following:

*Maile* stay more up, on top the mountain. Stay loaded on top Wai'alae. We go with the horse and gather *mokihana* in the uplands, it is loaded in *mokihana*, because, you know how you see the coffee? That's how the *mokihana* stay, up there, not along the ridges. Each plant has its certain level of elevation where you can find them. *Mokihana* cannot grow any kind place, just like the *maile*. No can grow down here, 'cause would die. [Fernandes-Farias et al. 2010:51]

Flores and Kaohi (1993:VI-16) described gathering resources and practices from the uplands, streams, coastal plain, and shoreline of Mānā:

From the uplands—items such as *'ōhi'a lehua* wood for house posts, *pili* grass for thatching, *koa* trees for canoes & other wooden articles, *kauila* & *koai'e* wood for paddles, *'i'iwi* & other native birds for feathers, *'uwa'u* birds for food, *olonā* plants for cordage, or *wauke* plants for tapa making were collected. From the streams—items such as *'ōpae*, *'o'opu*, and *wī* were caught for food. From the coastal plain—items such as *makaloa* & *neki* rushes for weaving, *'a'ali'i* shrubs for firewood, *hi'aloa* & other plants for medicine, *limu pahapaha* & flowers for *lei* making, or *leho* shells for octopus lures were acquired. And from the shoreline—items such as *limu*, *wana*, *hā'u'ke'u'ke*, *'opihi*, *'ōhiki*, and *he'e* for food were collected. [Flores and Kaohi 1993:VI-16]

Wichman (2003) described unique cultural developments on the island saying:

From the beginning the Kaua'i people developed unique tools never seen on other islands. These included *pohaku ku'i poi* (ring and stirrup pounders), double-grooved stone club heads, and a broad anvil for beating kapa. They learned how to weave intricately designed mats of *makaloa* (sedge) so soft it could be used for clothing. They discovered a method for decorating their *ipu* (bottle gourds), which they used as containers for food and water. They strung the tiny seashells found on the beaches into necklaces. Brightly feathered birds abounded from seashore to mountaintop, and their feathers were collected and woven into wreaths, capes, and helmets. Throughout their entire history, the people of Kaua'i created things of beauty from even the most ordinary objects. [Wichman 2003:6–7]

Many informants (Ms. Fayé, Ms. Kilauano, Mrs. Goodwin-Kaohi, and Isabel Fayé) mentioned the *makaloa nekis* of Mānā. Ms. Fayé mentioned, “Like Niihau, the Hawaiian people on the plain produced makaloa mats, and the decorated gourds which were highly prized by alii in the past.” She stated this was the reason the land was classified as “Crown Land.” Ms. Kilauano and Mrs. Goodwin-Kaohi also mentioned *makaloa* reeds (stalks) were grown in the swamps and used to make mats by drying them. They also mentioned that many of the *makaloa* mats came from Ni'ihau.

Isabel Fayé described in greater detail the *makaloa nekis* of Mānā:

There was a great deal of connection between Hawaiians in Mānā and Hawaiians of Ni'ihau, because of the *nekis*. The *makaloa nekis* that were grown in swamps [of Mānā] are different from that of any other part of the Hawaiian Islands, that's why the *makaloa* mats are called *ni'ihau* mats, because the Ni'ihau Hawaiians traded with the Hawaiians of Mānā. They exchanged with shells and fish, and did a lot of trade [..] [Fayé 1981 in Flores and Kaohi 1993:V-66]

She continued and stated the following:

They [*makaloa* mats] were made from those *nekis* from Mānā. It's the only place in the Hawaiian Islands where this type of *neki* grew and they had to be prepared, cleaned out of this stiff outer portions, they were reeds that were fairly substantial reeds and they had to be undressed to get to the center.

*Nekis* [are] all gone. Kolo pond was one of the places where they grew—there was another pond. These were that places that Hawaiians also had their taro patches and they had areas that were swampy that were left to the *nekis*.

First they soaked them and got the right ingredients from the pieces that were too coarse and wouldn't bend were discarded and I still don't know all the details. I think it's all forgotten even by the Hawaiians. Then they could braid them or work on them because they didn't break as they twisted them because they were so pliable as silk. And the Hawaiians had this know-how, this knowledge that had come down through generations of know-how. I think its one of the most exciting things in the Hawaiian islands. [Faye 1981 in Flores and Kaohi 1993:V-67]

## 8.9 Hula

Margaret Kilauano Aipoalani, Anderson Kilauano's sister, and her sister were “taught *ōlapa* (a form of *hula* that was accompanied by chanting and drumming with an *ipu*) by their mother, [Kawehiwa Kaholoiki] who was taught by their grandfather, Kaholoiki (a *hula* instructor and schoolteacher from Kalalau)” (Flores and Kaohi 1993:V-21).

## 8.10 Historical and Cultural Properties

Many *heiau* were mentioned by informants (Ms. Fayé, Mr. Parrage III, Mrs. Takekawa, Mr. Wong, Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) within the Kekaha and Mānā region. Mr. Wong mentioned a *heiau* on top of Niu Ridge. Another *heiau* in Waiawa was also mentioned by many informants (Mr. Fayé, Mr. Parrage III, Mrs. Takekawa, and Mr. Wong). Mr. Parrage III mentioned the following regarding the *heiau* in Waiawa:

[...] Cause see this one... 'cause it starts right... right *mauka* of Kekaha, yeah [pointing at the ridges on the map]? Then get Pōki'i right here... and then Waiawa... and then all to Mānā. So it starts around the beginning of Waiawa starts around like Pōki'i, yeah? I think it would be right about here, the *heiau*. I think so [pointing at Waiawa ridge, *mauka*]. That's the only thing I saw of *heiau*... nothing else... all through that place that I used to go... ah, hunt, whatever. By the *heiau* up there get plenty obake [spooky] stories... by the *heiau* at Waiawa. And you know when I used to go through there... thinking about it I'd get a feeling. Hard to

explain...like...some kind of energy. Because you know the *heiau* was so big, and it's right in the bottom of that valley, and, when I walked—the cow trail used to be right through. The *heiau* all broken, eh, you know? Ho, that thing is big! like one big enclosure. I would say, maybe from here to that house I think! And had a trail right through the *heiau*. But like I say, if you don't know it, you know...cannot tell, because all the stones all scattered, eh? Oh! In the *heiau*, ah...Kimo...ah, what's their last name now...they claim because I used to see flowers, once in a while and *tī* leaf one place. That was one of their families or what, had something to do with that. Ah...Michael and Kimo Nakahiki. Had something to do with that *heiau*. But let me see who was the other, ah...Benny was the last one I think and he just died some years, not too long ago. So, they said, one of their families or what? Was something to do with that, so they used to go put *tī* leaf and flowers sometimes. The Nakahiki family is still around, the girls I think is. That you gotta ask some Hawaiians I think. [Fernandes-Farias et al. 2010:46-47]

Mrs. Goodwin-Kaohi, Ms. Kiluano, and Mr. Aipoalani mentioned a birthing *heiau* with a birthing rock that was naturally shaped like a chair, with a stirrup for your feet, and a flat area to place your baby after giving birth. These informants also mentioned the following regarding the *heiau*:

AK: This is unusual, cause Hawaiians as a whole they squat yeah when they give birth. But this is kind of an inclined because it's the gravitation yeah that you want. Gravity that the baby comes naturally, that's why they squat when they deliver. But this one is natural. I went there years and years ago, but I cannot remember where it is.

UK: It's a big big *heiau*, with all the big stones. That *heiau* is where they offer food instead of sacrifices, not human, they bring all their food that they harvest from the fields, a Lono Heiau. They bring and they lay over there. Get that baby place, and there's an image of a dog, and that dog is the *nakoa*, the watch person over there.

AK: I cannot remember what valley it is in.

UK: It has a stone like that and that stone tells the story of the island. It doesn't have writing or petroglyphs, it has like a river... it's... um...It's...It's a stone this high, and she says this water comes from Hā'ena

AK: Like a groove. It has like a groove, right. It's a groove on the stone.

UK: Yeah. And she says the water came water from Hā'ena. She says this... the water comes and was bringing the water to this land. This water came from Hā'ena, Wai'ale'ale, goes to all this land in Mānā, to raise their food.

AK: That's not a legend you know, that's true. And so sometimes you got to...

UK: Yeah, and so you go on... it's flat...Big stones all set, but flat. And you walk on. [Fernandes-Farias et al. 2010:61]

Other pre-Contact sites mentioned by informants (Mr. Parrage and Mr. Wong) included adzes along the ridges, an oven in Waiawa Valley, fireplaces, and a canoe factory above Kōke'e Road. According to Ms. Kaiakamalie, there were sites around MacArthur Park and at the PMRF.

Regarding historic sites, Ms. Fayé mentioned the Mānā Drag Strip and how it used to be the old Mānā Airport during and after the war until the present Līhue Airport was built.

Another historic site mentioned by many informants (Ms. Kaiaokamalie, Mrs. Goodwin-Kaohi, and Ms. Kilauano) is Saki Mānā, also known as “Second Mānā,” a former plantation camp. Ms. Kaiaokamalie mentioned it was located near “Cold Pond,” where her family would often swim, and a spring was created by the plantation. According to Kaohi and Flores (1993:II-16), “Saki later became a varied pronunciation of the word Second.” The site itself is “completely razed to the ground,” it is unable to be seen from the satellite anymore. Mrs. Goodwin-Kaohi and Ms. Kilauano mentioned the camp was established after everyone was forced to move away from Mānā so that the plantations could plant sugarcane.

## 8.11 Burials

Regarding burials, many are found in caves along the cliff sides of the valley or along the shoreline in sand dunes. Informants who mentioned burials in caves included Mr. Tabata and Mrs. Goodwin-Kaohi. Mr. Tabata stated that Martha Kruse told him about the royal *kūpuna* buried in caves in the walls of the valleys. Mrs. Goodwin-Kaohi also mentioned there were families buried up in the caves and in the sand dunes located in Mānā.

Ms. Kaiaokamalie shared that her family’s (Kilauano) concentration of burials is located in Nohili and Polihale. Her family grave sites are located at Po‘oahonu (“Queen’s Pond”). Anderson Kilauano, Ms. Kaiaokamalie’s grandfather, mentioned four graves that he oversees at Po‘oahonu. The four graves consist of his grandfather, Kaholoiki, Pakana (his mother’s sister), Eddie Ka‘iwa’s mother, and another whose name could not be recalled. He brings flowers daily to the graves. Mrs. Goodwin-Kaohi also described these burial grounds with the following:

[...] The families still went out to Mānā because they had burial grounds in the sand dunes there, which they now call Queen’s Pond, toward the base. South of Queen’s Pond, the families still had [burial grounds] and they maintained them. [Chiogioji et al. 2003:30–31]

Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani also mention burials at Polihale, as well as Kaunalewa and Pōki‘i. Mrs. Goodwin-Kaohi mentioned a cemetery in the sand dunes that her family continues to maintain. Mr. Aipoalani explained why Native Hawaiians buried their people in sand dunes, “Cause during those days when you *hala*, you just go in the backyard and bury your loved one. This made it convenient to visit the gravesite. So the *iwi* was placed in the sand dunes” (Fernandes-Farias et al. 2010:58). His family was buried in Pōki‘i, while Mrs. Goodwin-Kaohi’s family was buried in Kaunalewa. The PMRF base also has many burials due to the sand dunes.

## 8.12 Wahi Pana, Mo‘olelo, and Mele

According to Walden and Collins (2015:19), “Ms. Kaohi stated that the former place name for lands in the vicinity of what is now the Mānā Drag Racing Strip was ‘Limaloa.’” Ms. Fayé stated, “The village of mirage was near Limaloa Pond. Limaloa was Lohiau’s brother.”

Ms. Fayé also mentioned some *wahi pana* and *mo‘olelo* in the following excerpt:

Some of the unique cultural things that were mentioned by Eric Knudsen (Kanuka of Kauai) was that the dead gathering at the hills above Polihale to enter Po and the wandering spirits could be trapped in homes – all the villagers had two doors in their homes to allow them to pass through.

Another story is of the unfolding mat – the view from Nohili of the long white sand beach as far as the eye can see.

Many of the place names in the landscape are named for the story of the arrival of Pele's sisters.

Ms. Kaiaokamalie shared that the area was frequented by Pele and Poliahu. She also mentioned a story about how the ridge, Pōki'ikauna, received its name. Pele left her youngest sister, Moeha'una, in Mānā with her lover Limaloa. Pele and the rest of her siblings headed toward Waimea village and stopped on a ridge, missing their sister, and looked back toward Mānā. To commemorate the spot, Kahuila (Pele's brother) suggested they name the ridge Pōki'ikauna, meaning "the yearning for the little sister."

Mr. Tabata did mention hearing stories about Night Marchers from Martha Kruse. When asked to describe those stories, he stated, "Well, I remember she said that if you hear them, they will be chanting while marching, not to wake up and look for them, they will take you with them."

Mrs. Goodwin-Kaohi noted songs have been written about the area, including one about the 'ūlili bird. That's about the plovers and refers to Kekaha. Because that's where the 'ūlili birds would come—on the beach there, in that area. Of course, you know, it was not developed, like now, so there used to be flocks of 'ūlili birds" (Chiogioji et al. 2003:31).

## Section 9 Summary and Recommendations

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### 9.1 Results of Background Research

Background research for the proposed project yielded the following information:

1. Kekaha lies in the *ahupua'a* of Waimea on the southwest side of the island of Kaua'i, part of the traditional Hawaiian *moku* of Kona and the current district of Waimea. Waimea Ahupua'a is by far the largest *ahupua'a* on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua'i (Gray 1875:146).
2. Many legends are associated with the Hawaiian gods, such as Pele and her siblings, and *ali'i*, such as Ola'a (Wichman 1998:23–24; Wichman 2001:17).
3. Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the *ahupua'a* possible, such as the Kīkīola Ditch, also known as the “Menehune Ditch” (Wichman 1998:9).
4. Waimea, Kaua'i was also a site of great significance for *po'e kuhikuhi pu'uone* and *po'e kilo hoku holo moana* of the pre-Contact time. *Po'e kilo hoku* of O'ahu and Kaua'i, “who were very skilled in discerning the ways of the sun, the moon, and the stars, as well as knowing the configuration of the earth (*papa huluhonua*)” (Kamakau 1976:14), gathered in Waimea, Kaua'i to make their observations.
5. While Waimea may have always been a royal center for the *ali'i* of Kaua'i, this position was greatly reinforced after Western Contact (Zulick et al. 2000:14).
6. Over 150 *kuleana* awards were granted in Waimea, however, only three claims were made in and nearby Kekaha (LCAs 5362, 6698, and 8841) (OHA 2022; Waihona 'Aina 2022).
7. Valdemar Knudsen assumed the lease of government land from Archibald Archer and a Mr. Gruben. The two men were involved in a failing tobacco farming enterprise. A Mr. Clifford, who made cigars, was also associated with the enterprise (Lydgate 1991:92). Eventually Knudsen controlled the entire district, excluding *kuleana* lands, from Nu'alolo to Waimea, including all the *mauka* area (Knudsen and Noble 1945:35).
8. Waterfowl present in the wetlands provided a food resource for the area residents. Among them the *kōloa* (Hawaiian duck) and especially the *'alae* (Hawaiian gallinule) and *āe'o* (*kukuluāe'o*; Hawaiian stilts) were numerous (Von Holt 1985:78). All three were traditionally caught and consumed by Hawaiians (Malo 1951:39).
9. Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. By the 1930s the rice industry had ceased entirely on the islands of Hawai'i, Maui, and Moloka'i (Coulter and Chun 1937:62).
10. In 1898, Kekaha Sugar Company was established through the consolidation of three Kaua'i sugar interests (Wilcox 1996:93).

11. Valdemar Knudsen, founder of Kekaha Sugar Company, looked to the Waimea River as a source of sugarcane irrigation—pushing forward the Kekaha Ditch project. Construction of the Kekaha Ditch started in May 1906 and was completed in September 1907 (Wilcox 1996:93).
12. Hans Fayé founded H.P. Fayé & Company, a sugar plantation in Mānā, the westernmost town in Kaua'i. In 1906 Fayé acquired the Waimea Sugar Mill, which had been founded in 1884. In 1910 the Waimea Sugar Mill Company was bought by Hans Peter Fayé, Ltd., operator of the neighboring Kekaha Sugar Company. From 1923 to 1926 the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands (Wilcox 1996:93–97).
13. The railroad line was built by the Kekaha Sugar Company in about 1884, and was used to transport sugar from its own mill to the pier at Waimea Landing. Initially the train stopped at the Waimea Sugar Mill Company to also transport their sugar to the landing (Condé and Best 1973:203).
14. In 1950, the Waimea Sugar Mill Company was reorganized into the Waimea Sugar Mill Inc., which continued to process cane, and the Kikiaola Land Company, which was created to manage the property.
15. At the time of statehood in 1959, H.P. Fayé & Company was incorporated as Kikiaola Land Company and it is still owned by about 100 of the founder's descendants. Linda Collins, a granddaughter of H.P. Fayé, is now the president of Kikiaola Land Company.
16. Kekaha Sugar Company continued to produce sugar until 17 November 2000 when the parent company, AmFac, closed the factory down due to financial hardship (Kojima 2000).
17. In September 2003, land situated in Kekaha, Kaua'i was transferred through Executive Order No. 4007 to the Agribusiness Development Corporation (ADC) for agricultural and related purposes.
18. Seven historic properties were previously identified within the project area vicinity. Folk and Hammatt (1993) identified an abandoned irrigation canal and a low linear sand mound for irrigation control within the project area (Folk and Hammatt 1993:26, 32). These historic properties were confirmed by AECOM to no longer be present within the project area.
19. There were three cultural studies that included the current project area. One CIA was conducted for the KLF in 2007 as part of the EA process, however, no report was produced. The EA report did state that no cultural practices were identified during consultation (Earth Tech 2007:4-3). The other two cultural studies included a portion of the current project area (Flores and Kaohi 1993; Walden and Collins 2015) and no ongoing cultural practices were identified as well.

## 9.2 Results of Community Consultation

CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 71 individuals or groups;

14 responded, three provided written testimony, and one *kama 'āina* met with CSH for a more in-depth interview. Unfortunately, we received approval in time to include only two of three written testimonies. Consultation was received from the following:

1. Christine “Chris” Fayé, Executive Director of Hui o Laka – Kōke‘e Natural History Museum
2. Lyle Tabata, Part-owner of B&T Contractors and Kauai County Member of the Agribusiness Development Corporation (ADC) Board of Directors
3. Leanora “Lea” Dizol Kaiaokamalie, Lineal descendant and family representative for the Kilauano family

### 9.3 Identification of Cultural Practices

Consultation identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Waimea Ahupua‘a:

1. Freshwater resources
2. Flora and Fauna
3. Marine resources
4. *Iwi kūpuna*

Based on the results of community consultation and background research conducted as part of this CIA, CSH has identified the following cultural practices within Waimea Ahupua‘a:

1. Fishing
2. Farming (*kalo*, rice, and sugarcane)
3. *Limu* gathering
4. Hunting
5. Salt production
6. Canoe production
7. Recreational activities
8. Weaving practices
9. Hula
10. *Mo 'olelo*, *wahi pana*, and *mele*
11. Religious activities and burial practices

No ongoing cultural practices were identified within the project area during background research and community consultation. However, the project area is located in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.

### 9.4 Identification of Impacts to Cultural Practices

No impacts to ongoing cultural practices were identified within the project area during community consultation for this CIA. Consultation has identified a number of concerns related to the environment and the broader community:

1. Ms. Fayé is concerned about the reduction of native bird habitats and food sources. Native waterfowl use reservoirs and ditches/canals as habitats and food sources, and currently thrive in the settling pond at the landfill.

2. Ms. Fayé and Ms. Kaiaokamalie are concerned with altering the cultural landscape by creating mountains near the ocean where it was originally flat. This also impacts the visual aesthetics of the area.
3. Ms. Kaiaokamalie is concerned about the depletion of marine resources in the area due to the strong currents and increase of predators, like hammerhead sharks, which are attracted to the smell of the trash from the landfill and the murky water.

## 9.5 Conclusions and Recommendations

As no impacts to ongoing cultural practices were identified within the project area, no mitigation actions are necessary. There is no construction as part of the proposed action, meaning no native soil will be excavated and there will be no new disturbance. Therefore, inadvertent cultural finds are unlikely, however, CSH recommends the following in the unlikely event of inadvertent cultural finds:

1. Landfill personnel should be informed of the possibility of inadvertent cultural finds, including human remains. In the unlikely event that any potential historic properties are identified during landfill operations, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the unlikely event that *iwi kūpuna* are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended.
2. In the event that *iwi kūpuna* and/or cultural finds are encountered during landfill operations, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and a cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.

As detailed in Section 7, community participants provided broad recommendations related to environmental stewardship and landfill management. These should be considered by the county as appropriate:

1. In response to Ms. Fayé's concern for the reduction of native bird habitats, she recommends better management of the lands that are becoming fallow or return to wetlands for habitat purposes rather than making new wetlands out of dry land.
2. Ms. Kaiaokamalie recommends integrating previous archaeological studies conducted within the project area and including in the current CIA report how the site was studied for future reference. If another archaeological survey was to be conducted in the future, she's hoping it can be done more thoroughly.
3. Ms. Kaiaokamalie also recommends the county of Kaua'i implement more recycling and upcycling opportunities to prevent overfill at the landfill.
4. Ms. Kaiaokamalie suggests the county develop mitigation efforts toward removing the vertical expansion once a long-term solution for the landfill is established. It needs to be removed or flattened to recover the cultural landscape.
5. Ms. Kaiaokamalie also suggests including possible impacts, solutions, and outcomes from projects around the world with similar solid waste management issues. This will create a trail that allows people in the future to further develop a solution. She also

recommends the county have a working group or policy where they must revisit the issue and discuss how to implement ongoing solid waste management technologies.

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## Section 10 References Cited

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**Aiona, James R. Jr.,**

2003 *Executive Order No. 4007 Setting Aside Land for Public Purposes, Agribusiness Development Corporation, A Public Body Corporate and Politic and Instrumentality and Agency of the State of Hawaii.* Department of Hawaiian Home Lands, Honolulu.

**Akana, Collette Leimomi with Kiele Gonzales**

2015 *Hānau Ka Ua, Hawaiian Rain Names.* Kamehameha Publishing, Honolulu.

**Alameida, Roy Kakulu**

1993 Land Tenure and Land Use in Kawaihapai, O'ahu. Master's thesis in History. University of Hawai'i at Mānoa, Honolulu.

**Altizer, Kendy and Hallett H. Hammatt**

2010 *An Archaeological Inventory Survey for a Rock Crushing Project Along Portions of the New and Old Government Roads, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Apple, Russell A.**

1978 *Pahukanilua: Homestead of John Young, Kawaihae, Kohala, Island of Hawai'i.* National Park Service, Hawai'i State Office, Honolulu.

**Awana, T. Y.**

1952 Map compiled from survey and map by R.M. Towill dated December, 1952, adjacent Land Court Applications and available records on file in the Survey Office by T. Y. Awana and Joseph A. Aiu, December, 1952. HTS Plat 3087. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at <http://dags.hawaii.gov/survey/search.php>

**Beckwith, Martha**

1970 *Hawaiian Mythology.* University of Hawaii Press, Honolulu.

**Bennett, Wendell C.**

1931 *The Archaeology of Kaua'i.* Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

**Bernard, H. Russell**

2006 *Research Methods in Anthropology: Qualitative and Quantitative Approaches.* Fourth edition. Rowman Altamira, Lanham, Maryland.

**Bingham, Hiram**

1847 *A Residence of Twenty-One Years in the Sandwich Islands.* Hezekiah Huntington, Hartford, Connecticut.

**Blackwell, Chad and Jeanne Barnes**

2014 *Historic Building Survey and Evaluation Report at Six Facilities, Hawai'i Army National Guard, Project No. CA-1330.* HDR, Honolulu.

**Board of Commissioners**

1929 *Indices of Awards by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands, Native Register and Native Testimony*. Hawai'i State Archives, Honolulu.

**Bordner, Richard M.**

1977 *Cultural Reconnaissance Report for Kekaha Beach Shore Protection, Kekaha, Kona, Kaua'i, State of Hawaii*. Archaeological Research Center Hawaii, Inc., Lawa'i, Kaua'i, Hawai'i.

**Chang, Melissa**

1988 Kikiaola: Waimea's Sugar Shacks. *Hawaii Business*, July 1899:49–52.

**Chinen, Jon J.**

1958 *The Great Mahele, Hawaii's Land Division of 1848*. University of Hawaii Press, Honolulu.

**Ching, Francis K.W.**

1982 *Archaeological Reconnaissance of 3 Sites for Proposed Kauai Central Sanitary Landfill Project, Kekaha, Kipu, and Kumukumu, Kauai Island TMK 1-2-02:1, 9, 21, 40; 3-4-06:12; and 4-7-04:1*. Archaeological Research Center Hawaii, Inc., Honolulu.

**Chiogioji, Rodney, Gerald Ida, and Hallett H. Hammatt**

2003 *Cultural Impact Assessment in Support of the Proposes Sandwich Isles Fiber Optic Cable Landing at 'Akialoa Road, Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i (TMK 4-13-001:999)*. Cultural Surveys Hawai'i, Inc., Kailua.

**Cipolla, Craig N.**

2013 Native American Historical Archaeology and the Trope of Authenticity. *Historical Archaeology*. Vol. 47, ed. 3:12–22.

**Clark, John R.K.**

1977 *The Beaches of O'ahu*. University of Hawaii Press, Honolulu.

2002 *Hawaii Place Names: Shores, Beaches, and Surf Sites*. University of Hawai'i Press, Honolulu.

**Clark, Stephen, Katharine A. Shiroma, Melanie A. Mintmier, Jackie Walden, and Sara Collins**

2015 *Archaeological Inventory Survey and Testing in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i, TMK (4) 1-2-02: 009, 036, & 040*. Pacific Consulting Services, Inc., Honolulu.

**Condé, Jesse C. and Gerald M. Best**

1973 *Sugar Trains*. Glenwood Publishers, Felton, California.

**Cook, James P.**

1821 *The Three Voyages of Captain James Cook Round the World*. Vol. VI. Longman, Hurst, Rees, Orme, and Brown, London.

**Coulter, John Wesley and Chee Kwon Chun**

1937 *Chinese Rice Farmers in Hawaii*. Bulletin 16:5. University of Hawai'i, Honolulu.

**Coward, Erin and Hallett H. Hammatt**

2011 *An Archaeological Literature Review and Field Inspection for a 10-acre Agricultural Field Office, Kekaha, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001(por.)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Damon, Ethel M.**

1931 *Koamalu*. 2 vols. Privately printed by the Honolulu Star-Bulletin Press, Honolulu.

**Dixon, George**

1789 *A Voyage Round the World: But More Particularly to the North-West Coast of America*. Geo. Goulding, London.

1968 *A Voyage Round the World: But More Particularly to the North-West Coast of America*. Da Capo Press, New York.

**DLNR**

2013 *Mānā Plain Wetland Restoration Project at the Mānā Plains Forest Reserve, Island of Kaua'i*. State of Hawai'i Department of Land and Natural Resources Division of Forestry and Wildlife, Honolulu.

**Donn, John M.**

1906 Based on 1903 map of "Kauai Hawaiian Islands" by Walter E. Wall with data from private surveys by John M. Donn. Land use as of 1906 added to map. Registered Map 2375. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at <http://dags.hawaii.gov/survey/search.php>

**Drolet, Robert, James Powell, and Allan J. Schilz**

1999 *Archaeological Monitoring at the Site of Project H-134, New Family Housing, Pacific Missile Range Facility (PACMISRANFAC), Kaua'i, Hawai'i*. Ogden Environmental and Energy Services Company, Inc., Honolulu.

**Dye, Kekapala and Thomas S. Dye**

2008 *Archaeological Monitoring Report for the Extended High Accuracy Network Determination System, Pacific Missile Range Facility, Barking Sands, Kaua'i, Hawai'i, TMK:(4)1-2-002:013*. T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

**Earth Tech**

2007 *Final Environmental Assessment Kekaha Landfill Phase II Lateral Expansion Kekaha, Kaua'i, Hawai'i*. Earth Tech, Inc. Honolulu, HI.

**Emerson, Nathaniel B.**

1965 *The Unwritten Literature of Hawaii: The Sacred Songs of the Hula*. Collected by Nathaniel B. Emerson. Charles E. Tuttle Company, Rutland, Vermont and Tokyo.

**engineering-environmental Management, Inc. (e<sup>2</sup>M)**

2009 *Historic Buildings Survey and Evaluation Report of Ten Facilities Hawaii Army National Guard*. engineering-environmental Management, Inc. Englewood, Colorado.

**ESRI, Inc.**

2021 *Map Image Layer*, Raster. ESRI, Inc. Redlands, California.

**Fayé, Christine**

1997 *Touring Waimea*. Kaua'i Historical Society, Līhu'e, Kaua'i, Hawai'i.

**Fernandes-Farias, Malia Luika, Aulii Mitchell, and Hallett H. Hammatt**

2010 *Cultural Impact Assessment for a Proposed Rock Crushing Establishment Along Portions of the New and Old Government Roads, Waimea Ahupua'a, Waimea District, Island of Kaua'i TMK: [4] 1-2-002:001*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Finney, Ben and James D. Houston**

1996 *Surfing. A History of the Ancient Hawaiian Sport*. Pomegranate Artbooks, Rohnert Park, California.

**Flores, Kalani E. and Aletha G. Kaohi**

1993 *Hawaiian Cultural & Historical Survey of Nohili, Mānā, Kona District, Island of Kaua'i, State of Hawai'i*. dba Hawai'i Pono'i, 'Ele'ele, Hawai'i.

**Folk, William H. and Hallett H. Hammatt**

1993 *Archaeological Inventory Survey and Subsurface Testing at the Kekaha Phase II Landfill Site (TMK 1-2-02:9)*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

1994 *Archaeological Inventory Survey and Subsurface Testing at the Hawaii Army National Guard Firing Range at Kekaha, Kaua'i (TMK 1-2-02:21), with Historical Research by Gerald K. Ida*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

**Fong, Jeffrey W.K.**

2012 *Archaeological Monitoring Report in Support of the Installation of RFID, Seismic, Microwave/Infrared and LIDAR Sensors, Sensormatic Hawaii Response Technology Group Video Sensors, and Six Runway Markers along Runway 34 at Pacific Missile Range Facility (PMRF), Niu and Waiawa Ahupua'a, Waimea District, Kaua'i, TMK: [4] 1-2-02: 13, 26*. Naval Facilities Engineering Command Pacific, Pearl Harbor, Honolulu.

**Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens**

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service. Government Printing Office, Washington, D.C.

**Gay, Francis**

1873 *Kauai Place Names in Laauokala, Mahinauli, and Ukula*. Hms. Misc. 4. Bishop Museum Library, Honolulu.

**Giambelluca, T., M. Nullet, and T. Schroeder**

1986 *Rainfall Atlas of Hawaii Report R76*. State of Hawai'i, Department of Land and Natural Resources, Division of Water and Land Development, Honolulu.

**Gonzalez, Tirzo, Judy Berryman, and Daniel Welch**

1990 *Archaeological Survey and Testing Department of Energy, Kauai Test Facility Barking Sands, Kauai, Hawaii. Prepared as Supplement for the Kauai Test Facility*

*Environmental Assessment*. International Archaeological Research Institute, Inc., Honolulu.

**Gray, James W.**

1875 *No. 28 Certificate of Boundaries, Land of Waimea, District of Waimea, Island of Kaua'i*. Commissioner of Boundaries for the Island of Kaua'i, Hawai'i.

**Gutmanis, June**

1983 *Na Pule Kahiko: Ancient Hawaiian Prayers*. Editions Limited, Honolulu.

**Hammatt, Hallett H. and Gerald K. Ida**

1993 *Archaeological Assessment of Two Locations for a Proposed State Agricultural Park Waimea, Kaua'i*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

**Hammatt, Hallett H. and David W. Shideler**

2011 *Archaeological Literature Review of Eight Possible Locations for a Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, Kekaha Ahupua'a, Pu'u o Pāpa'i, Makaweli Ahupua'a, Umi, Wahiawa Ahupua'a, Kōloa, Pā'ā Ahupua'a, Kīpū, Ha'ikū Ahupua'a, Kālepa, Hanamā'ulu Ahupua'a, Ma'alo, Wailua Ahupua'a, and Kumukumu, Keālia Ahupua'a*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

2013 *Archaeological Monitoring Report for the Kaumualii Highway Emergency Shoreline Improvements, Vicinity of Kekaha, MP 27 Project No. 50A-01-13, Waimea Ahupuaa, Waimea District, Kauai Island TMK: (4) 1-2-002: Kaumualii Highway ROW por. and 007 por.* Cultural Surveys Hawai'i, Inc., Kailua Hawai'i.

**Handy, E.S. Craighill and Elizabeth G. Handy**

1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

**Hawaii TMK Service**

2014 Tax Map Key [2] 5-1-003. Hawaii TMK Service, Honolulu.

**Hawaiian Electric Company and Partners**

2002 *Common Hawaiian Trees*. Hawaiian Electric Company Arbor Day Program. Hawaiian Electric Company, Honolulu.

**Hawaiian Native Plant Propagation Database**

2001 *Jacquemontia ovalifolia*. Available online, <https://www.ctahr.hawaii.edu/hawnprop/plants/jac-oval.htm>. University of Hawai'i, Mānoa, Honolulu.

**Heilbron, W.L.**

1907 *Mana Lots Waimea Kauai*. Registered Map 2422. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at <http://dags.hawaii.gov/survey/search.php>

**Ho'oulumāhiehie**

2008a *Ka Mo'olelo o Hi'ikaikapoliopole*. Original Hawaiian text taken from series of articles in *Ka Na'i Aupuni* 1905-1906. Awaiaulu Press, Honolulu.

2008b *The Epic Tale of Hi'ikaikapoliopole. As Told by Ho'oulumāhiehie*. M. Puakea Nogelmeier, translator. Awaiaulu Press, Honolulu.

**Huapala.org**

n.d. *Hele On To Kaua'i*. Electronic document, [https://www.huapala.org/Hea/Hele To Kauai.html](https://www.huapala.org/Hea/Hele%20To%20Kauai.html)

**'I'i, John Papa**

1959 *Fragments of Hawaiian History as Recorded by John Papa 'I'i*. Bishop Museum Press, Honolulu.

**Joerger, Pauline King and Charles F. Streck, Jr.**

1979 *A Cultural Resource Reconnaissance of the Waimea River Flood Control Study Area, Kauai, Hawaii*. Hawai'i Marine Research, Inc., Honolulu.

**Joesting, Edward**

1984 *Kauai, The Separate Kingdom*. University of Hawaii Press and Kauai Museum Association, Ltd., Honolulu.

**Kamakau, Samuel M.**

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

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

**Kauai Bicentennial Committee**

1977 *Waimea, Island of Kauai, 1778-1978*. Kaua'i Bicentennial Committee, Līhu'e, Kaua'i, Hawai'i.

**Kawelu, Kathleen L.**

2015 *Kuleana and Commitment: Working Toward a Collaborative Hawaiian Archaeology*. University of Hawai'i Press, Honolulu.

**Kelly, Marion**

1971 *Kekaha: 'Āina Malo 'o: Historical Survey and Background of Kaloko and Kuki'o ahupua'a, North Kona, Hawaii*. Department of Anthropology Report 71-2, Bernice Pauahi Bishop Museum, Honolulu.

**Kennedy, Joseph**

1991a *Archaeological Subsurface Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands, Island of Kauai, TMK 1-2-02:13, Por.25 Revised October 1991*. Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.

1991b *Supplement to Archaeological Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands, Island of Kauai, TMK 1-2-02:13, Por.25*. Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.

**Kent, Harold Winfield**

1986 *Treasury of Hawaiian Words in One Hundred and One Categories*. Masonic Public Library of Hawai'i, Honolulu.

**Knudsen, Eric A.**

1991 *Early Days at Waiawa. The Kauai Papers*. Kauai Historical Society, Līhu'e, Kaua'i, Hawai'i.

**Knudsen, Eric A. and Gurre P. Noble**

1945 *Kanuka of Kauai*. Tongg Publishing Company, Honolulu.

**Knudsen, Valdemar**

1866 Letter to John Dominis, Commissioner of Lands for the Crown and Land Agent, Dated 1 August 1866. Hawai'i State Archives, Honolulu.

**Kojima, Craig T.**

2000 Final Harvest for Sugar Fields. *Honolulu Star-Bulletin*. 16 November 2000.

**Landgraf, Anne Kapualani**

1994 *Nā Wahi Pana O Ko'olau Poko: Legendary Places of Ko'olau Poko*. Fred Kalani Meinecke, translator. University of Hawai'i Press, Honolulu.

**Luomala, Katharine**

1951 *The Menehune of Polynesia and other Mythical Little People of Oceania*. Bishop Museum Bulletin 203. Bernice Pauahi Bishop Museum, Honolulu.

1955 *Voices on the Wind. Polynesian Myths and Chants*. Bishop Museum Press, Honolulu.

**Lydgate, John M.**

1991 William E. Rowell's Reminiscences of Waimea. *The Kauai Papers*. Kauai Historical Society, Līhu'e, Kaua'i, Hawai'i.

**Lyman, Kepa and Michael Dega**

2015 *Archaeological Inventory Survey of a 17-Acre Parcel at the Kekaha Ditch Siphon Headwall, Waimea Ahupua'a, Waimea District, Island of Kaua'i [TMK: (4) 1-5-001:001 por. and 002 por.]*. Scientific Consultant Services, Inc., Honolulu.

**Macdonald, Gordon A. and Agatin T. Abott**

1974 *Volcanoes in the Sea*. University of Hawaii Press, Honolulu.

**Malo, David**

1951 *Hawaiian Antiquities (Moolelo Hawaii)*. Second edition. Nathaniel B. Emerson, translator. Bishop Museum Press, Honolulu.

**Masterson, Ian, Hallett H. Hammatt, William H. Folk, and Gerald K. Ida**

1994 *Archaeological Inventory Survey of Kekaha Housing Project (TMK 1-2-12:38, 1-2-02:32, 34 & 38)*, Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Masterson, Ian A., William H. Folk, and Hallett H. Hammatt**

1994 *Archaeological Inventory Survey and Sub-surface Testing of the Proposed Kekaha Agricultural Park in 157 Acres at Kekaha, Kaua'i, (TMK 1-2-02:1 portion)*, Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

**Mays, Nicholas and Catherine Pope**

1995 Rigour and Qualitative Research. *British Medical Journal* 311:109–112.

**McGregor, Davianna Pomaika'i**

1996 *Nā Kua'āina: Living Hawaiian Culture*. University of Hawai'i Press, Honolulu.

**McMahon, Nancy**

1988 *Field Check of Northrup King Digging, Mana, Waimea, Kauai, TMK 1-2-02:40*. State Historic Preservation Division, Honolulu.

**Menzies, Archibald**

1920 *Hawaii Nei: 128 Years Ago*. W.F. Wilson, Honolulu.

**Mills, Peter R.**

1996 *Transformations of a Structure: The Archaeology and Ethnohistory of a Russian Fort in a Hawaiian Chiefdom, Waimea, Kaua'i*. Dissertation. University of California at Berkley, California.

**Nakuina, Moses K.**

1992 *The Wind Gourd of La'amaomao*. Second edition. Esther T. Mookini and Sarah Nākoa, translators. Kalamakū Press, Honolulu.

**Office of Environmental Quality Control**

1997 *Guidelines for Assessing Cultural Impacts*. Office of Environmental Quality Control, Honolulu.

**Office of Hawaiian Affairs**

2015 *Papakilo Database*. Office of Hawaiian Affairs cultural and historical database. Electronic document, <http://papakilodatabase.com/main/index.php>.

**Pauketat, Timothy R.**

2001 *The Archaeology of Traditions*. University Press of Florida, Gainesville, Florida.

**Pukui, Mary Kawena**

1949 Songs (meles) of Old Ka'u Hawai'i. In *Journal of American Folklore*, Volume 26, No. 245 July to September 1949:247–258.

1983 *‘Ōlelo No ‘eau: Hawaiian Proverbs and Poetical Sayings*. Bishop Museum Special Publication No.71. Bishop Museum Press, Honolulu.

1995 *Na Mele Welo: Songs of Our Heritage*. University of Hawai'i Press, Honolulu.

**Pukui, Mary Kawena and Samuel H. Elbert**

1986 *Hawaiian Dictionary*. Second edition. University of Hawaii Press, Honolulu.

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

1974 *Place Names of Hawaii*. University of Hawaii Press, Honolulu.

**Pukui, Mary Kawena and Laura C.S. Green**

1995 *Folktales of Hawai'i*. Bishop Museum Press, Honolulu.

**Rice, William Hyde**

1923 *Hawaiian Legends*. Bishop Museum Bulletin 3. Bernice Pauahi Bishop Museum, Honolulu.

1977 *Hawaiian Legends*, Bishop Museum Press, Honolulu

**Schmitt, Robert C.**

1973 *The Missionary Censuses of Hawaii*. Bernice Pauahi Bishop Museum, Honolulu.

1977 *Historical Statistics of Hawaii*. University of Hawaii Press, Honolulu.

**Soehren, Lloyd J.**

2014 *Hawaiian Place Names*. Electronic database, [ulukau.org/cgi-bin/hpn?l=haw](http://ulukau.org/cgi-bin/hpn?l=haw).

**Spear, Robert L.**

1992 *Archaeological Survey of a Portion of the Known Boundaries of Site 50-30-07-4000, Island of Kaua'i*. Scientific Consulting Services, Honolulu.

**Thrum, Thomas G.**

1908 Kekaha–Waimea Ditch. *The Hawaiian Almanac and Annual for 1908*. Thomas G. Thrum, Honolulu.

1922 Hawaiian Place Names. In *A Dictionary of the Hawaiian Language*. Originally published 1865. Revised by Henry Parker. Board of Commissioners of Public Archives of the Territory of Hawaii, Honolulu.

1923 *More Hawaiian Folk Tales: A Collection of Native Legends and Traditions*. A.C. McClurg & Company, Chicago.

**Titcomb, Margaret**

1972 *Native Use of Fish in Hawaii*. With the collaboration of Mary Kawena Pukui. University of Hawaii Press, Honolulu.

**Tomonari-Tuggle, M.J. and Ann Yoklavich**

2005 *Integrated Cultural Resources Management Plan for the Pacific Missile Range Facility (PMRF), Kauai, State of Hawaii*. International Archaeological Research Institute and Mason Architects, Honolulu.

**Ulukau**

2014 *Māhele Database*. Hawaiian Electronic Library, <http://ulukau.org/cgi-bin/vicki?l=en>.

**University of Chicago**

n.d. Photograph of Kekaha irrigation ditch. University of Chicago, Illinois.

**USDA (U.S. Department of Agriculture)**

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

**USGS (U.S. Geological Survey)**

1910 Mana USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1963 Kekaha USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

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

1970 Kaua'i Island USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1977 USGS Orthophotoquad aerial photograph of Kekaha quadrangle. USGS Information Services, Denver, Colorado.

- 1991 Kekaha USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.
- Vancouver, George**  
1798 *A Voyage of Discovery to the North Pacific Ocean and Round the World Performed in the Years 1790-95*. 3 vols. G.G. and J. Robinson and J. Edwards, London.
- Veech, J.A.**  
1979 *Ruth Knudsen Hanner*. The Watumull Foundation, Oral History Project. Honolulu.
- Vizenor, Gerald**  
1999 *Manifest Manners: Narratives on Postindian Survivance*. University of Oklahoma Press, Lincoln, Oklahoma.
- Von Holt, Ida Elizabeth Knudsen**  
1985 *Stories of Long Ago Niihau, Kauai, Oahu*. Daughters of Hawaii, Honolulu.
- Waihona 'Aina**  
2022 *The Māhele Database*. Electronic document, <http://waihona.com>
- Walden, Jackie and Sara L. Collins**  
2015 *Cultural Impact Assessment in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i TMK (4) 1-2-02:009, 036, 040*. Pacific Consulting Services, Inc., Honolulu.
- Walker, Alan T. and Paul H. Rosendahl**  
1990 *Archaeological Inventory Survey USN Radio Telescope Project Area, Land of Waimea, Waimea District, Island of Kauai*. Paul H Rosendahl, Inc., Hilo, Hawai'i.
- Watanabe, Tae, Jackie Walden, Stephen D. Clark, Melanie Mintmier, and Sara Collins**  
2014 *Archaeological Monitoring Report in Support of Improvements to the Western Portion of the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i. TMK (4) 1-2-002: 001, 009, 035, 036, 040*. Pacific Consulting Services, Inc., Honolulu.
- Whitney, Leo D., F.A.I. Bowers, and M. Takahashi**  
1939 *Taro Varieties in Hawaii*. Agricultural Experiment Station, Honolulu.
- Wichman, Frederick B.**  
1985 *Kaua'i Tales*. Bamboo Ridge Press, Honolulu.  
1991 *Polihale and other Kaua'i Legends*. Bamboo Ridge Press, Honolulu.  
1998 *Kaua'i. Ancient Place-Names and Their Stories*. University of Hawai'i Press, Honolulu.  
2001 *Pele Mā: Legends of Pele from Kaua'i*. Bamboo Ridge Press, Honolulu.  
2003 *Nā Pua Ali'i o Kaua'i., Ruling Chiefs of Kaua'i*. University of Hawai'i Press, Honolulu.
- Wilcox, Carol**  
1996 *Sugar Water: Hawai'i's Plantation Ditches*. University of Hawai'i Press, Honolulu.

- 2003 *He Mele Aloha: A Hawaiian Songbook*. 'Oli 'Oli Productions, L.L.C., Honolulu.
- Zulick, Loren A., Ka'ohulani McGuire, Leilani Pyle, Victoria S. Creed, David W. Shideler, Gerald K. Ida, and Hallett H. Hammatt**
- 2000 *Archaeological Inventory Survey Report for 170 Acres including a 6-Acre Inland Fish Pond for the Proposed Kapalawai Resort, Kapalawai, Kaua'i, Hawai'i, (TMK 1-7-05:Por. 1)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

# Appendix A Community Outreach Letter

## CULTURAL SURVEYS HAWAII

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES - SINCE 1982



P.O. Box 1114

Kailua, Hawai'i 96734

Ph: (808) 262-9972

Fax: (808) 262-4950

*Aloha mai kākou,*

With this letter, Cultural Surveys Hawai'i (CSH) humbly requests your *mana'o* and *'ike* (experience, insights, and perspectives) regarding past and ongoing cultural, practices, beliefs, and resources within the Waimea Ahupua'a.

Consultation with traditional cultural practitioners, *kūpuna*, *kama'āina*, and Hawai'i's diverse ethnic communities is an important and deeply valued part of our work and the environmental review process for proposed projects in Hawai'i. Your contributions will revitalize and keep alive knowledge of cultural practices, storied places, and life experiences that will remind Hawai'i's children of their history for generations to come.

### **Project Background and Proposed Action**

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF is a municipal solid waste (MSW)<sup>1</sup> landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The Proposed Action would extend Phase II upward from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion are delineated on a map (Figure 1) and aerial photo (Figure 2) attached to this invitation. Information regarding the purpose and need for this Proposed Action is provided below.

The County is preparing an Environmental Assessment (EA) under Hawaii Revised Statutes (HRS) Chapter 343 for the Proposed Action. As part of the EA process, the County of Kaua'i has requested CSH to conduct a cultural impact assessment (CIA) for the Proposed Action located in Waimea Ahupua'a, Waimea District, Kaua'i Island. Under Act 50, the Hawaii State Department of Health "Guidelines for Cultural Impact Assessments" mandate that the subject property be studied as well as surrounding areas where construction or development have impact potential. These guidelines also recommend personal interviews with traditional cultural practitioners and knowledgeable informants on cultural practices.

The existing KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953) and Executive Order 2872 (signed October 6, 1977) places the

<sup>1</sup> MSW is waste collected by County of Kauai from residential, commercial, industrial, and construction and demolition sources. The KLF accepts both organic wastes such as paper, cardboard, food, yard trimmings, and plastics, and inorganic wastes such as metal and glass. The KLF does not accept toxic or hazardous waste.

## WAIMEA 49 – CIA for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

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control and management of the lands underlying the KLF to the County of Kaua'i. The KLF is situated adjacent to Kaunuali'i Highway and approximately 1,700 ft from the shoreline of the Pacific Ocean.

### History of KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II. The KLF Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. The KLF Phase II is an active, lined<sup>2</sup> landfill that began accepting solid waste on October 9, 1993 and is predicted to reach its capacity in October of 2026.

KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The County has previously attempted to site a new MSW landfill at another location on the island and continues to investigate alternative landfill sites. The County completed landfill siting studies in 2001/2002, 2007, and 2012. In 2018, the County completed an engineering design and Environmental Impact Statement (EIS) for a new MSW landfill and resource recovery park at Ma'alo. However, during the permitting process, the County had to abandon its plans to develop a new MSW landfill facility at Ma'alo due to the potential for the landfill to increase bird strikes at Lihu'e Airport. The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua'i and continues to evaluate alternative landfill sites and other long-term options for increasing the landfill capacity on Kaua'i.

### Purpose and Need

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October of 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

<sup>2</sup> The Phase II portion of the landfill was constructed with Resource Conservation and Recovery Act (RCRA) Subtitle D base liner which protects the underlying soils and aquifer from landfill leachate.

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**Proposed Action**

The major components of the Proposed Action would include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 2 and Figure 3 (attached). The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS)<sup>3</sup>:** Modern MSW facilities require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.
- **Stormwater Management<sup>4</sup>:** Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the Proposed Action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls<sup>5</sup> to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its

<sup>3</sup> Landfill gases are produced when bacteria break down organic waste. Landfill gases are primarily made up of methane and carbon dioxide but may also be made up of small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, and various other gases. Gas Collection and Control Systems (GCCS) are a common and major component of most landfills. They are designed to help control odors, minimize releases to the atmosphere, and increase safety by controlling migration and reducing landfill fire risk.

<sup>4</sup> Stormwater is water from rain and can soak into the soil (infiltrate), be held on the surface and evaporate, or run off and end up in a nearby stream, river, or other water body. Stormwater management systems are a common and major component of most landfills. They are designed to prevent stormwater from coming into contact with waste and other contaminants, control the flow of stormwater into drainage features, and prevent run-off into nearby water bodies.

<sup>5</sup> Engineering and operational controls are measure to keep our environment (groundwater, surface water, air, and ecosystem) clean from the gas, leachate, and stormwater contamination caused by a landfill.

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operational controls and plans under the Proposed Action. No substantial changes to KLF's operations are proposed.

As no construction is required to begin operating the vertical expansion, the Proposed Action can begin once all approvals are received.

**Purpose of this Study**

The purpose of a CIA is to gather information on Hawai'i's cultural resources, practices, or beliefs that have occurred or still occur within the KLF site and Waimea Ahupua'a. This is accomplished through consultation and background research using previously written documents, studies, and interviews. This information is used to assess potential impacts by the proposed project to the specific identified cultural resources, practices, and beliefs in the KLF site and throughout Waimea Ahupua'a. As a traditional cultural practitioner and holder of long-term knowledge, your insight, input, and perspective provide a valuable contribution to the assessment of potential effects of this project and an understanding of how to protect these resources and practices.

Insights focused on the following topics in the KLF site (shown on the attached Figure 1 and Figure 2) are especially helpful and appreciated:

- Your knowledge of traditional cultural practices of the past within the KLF site and the Waimea Ahupua'a
- Your specific traditional cultural practice and its connection to the KLF site and the Waimea Ahupua'a
- The different natural resources associated with your specific traditional cultural practice
- Legends, stories, or chants associated with your specific traditional cultural practices and their relationships to the KLF site and the Waimea Ahupua'a
- Referrals to other *kūpuna*, *kama'āina*, and traditional cultural practitioners knowledgeable about the KLF site and the Waimea Ahupua'a
- Your comments or thoughts on the potential impacts the proposed project may have on your ongoing traditional cultural practices and natural resources within the KLF site and the Waimea Ahupua'a
- Your knowledge of cultural sites and *wahi pana* (storied places) within the KLF site and the Waimea Ahupua'a
- Your comments or thoughts on the potential impacts the proposed project may have on cultural sites and *wahi pana* within the KLF site and the Waimea Ahupua'a

**Consultation Information**

Consultation is an important and deeply valued part of the CIA and environmental review process. With your agreement to participate in this study, your contributions will become part of the comprehensive understanding of traditions of the area, and part of the public record. The study will be included as an appendix to the project's EA. The EA and CIA will be available for future access through the State Office of Planning and Sustainable Development (OPSD), Environmental

**WAIMEA 49 – CIA for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion**

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Review Program (ERP) (<https://planning.hawaii.gov/erp>) and at the State Historic Preservation Division Library (<https://dlnr.hawaii.gov/shpd/about/research-resources-library>). The County anticipates publication of the Draft EA (including the CIA report) later this year.

As a part of this process, your knowledge may be used to inform future CIAs and other heritage studies of cultural practices and resources that need protection from impacts of proposed future projects. If you engage in consultation, and the *mana'o* and *'ike* you provide appears in the study, we would like to recognize your contribution by including your name. If you prefer not to allow your name to be included, your information can be attributed to an anonymous source.

The consultation interview structure and format are flexible. We will accommodate your preference on how to get together; talk story, over the phone, by email correspondence, remotely via Zoom, MS Teams, Google Chat or other remote meeting platforms.

Your knowledge of the resources and potential effect of the project on traditional practices in the KLF site and Waimea Ahupua'a focusing on the topics in the bullet points above can also be submitted in a written statement. CSH will provide return postage of your written statement on request.

Along with this letter, CSH has provided a structured questionnaire of sample interview questions for your usage. CSH is happy to provide any other assistance that might be helpful.

If you have questions regarding consultation, or are interested in participating in this study, please contact CSH Cultural Researcher Tehani Baculpo by email at [tbaculpo@culturalsurvevs.com](mailto:tbaculpo@culturalsurvevs.com) and Kellen Tanaka at [ktanaka@culturalsurvevs.com](mailto:ktanaka@culturalsurvevs.com). We are both available by phone at (808) 965-6478. **Please respond no later than 3/29/2023.**

*Mahalo mui loa* for your time and attention to this request for consultation.

Yours with much aloha and appreciation,

Tehani Baculpo

*CSH Cultural Researcher*

# Appendix B Permissions/Release Forms

**Cultural Surveys Hawai'i, Inc.**  
 Archaeological and Cultural Impact Studies  
 Hallett H. Hammatt, Ph.D., President



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

Job code: WAIMEA 49      [fbaculpo@culturalsurveys.com](mailto:fbaculpo@culturalsurveys.com)      [www.culturalsurveys.com](http://www.culturalsurveys.com)

**AUTHORIZATION AND RELEASE FORM**

Cultural Surveys Hawai'i (CSH) appreciates the generosity of the *kūpuna* and *kama'āina* who are sharing their knowledge of cultural and historic places, experiences of past and present cultural practices. At the request of Tetra Tech, Inc., on behalf of the County of Kaua'i, Cultural Surveys Hawai'i (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project.

We understand our responsibility to respect the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript or notes of our interview with you. At that time, you may make any additions, deletions, or corrections you wish.
3. You will be given a copy of the interview transcript or notes for your records.
4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to use the complete transcript and/or interview quotes for reports on cultural sites and practices, historical documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

I, Christine Faye, agree to the procedures outlined above and, by my signature, give my consent and release for this interview and/or photograph to be used as specified.



\_\_\_\_\_  
 (Signature)

5/2/2023  
 (Date)

\_\_\_\_\_

**Cultural Surveys Hawai'i, Inc.**  
Archaeological and Cultural Impact Studies  
Hallett H. Hammatt, Ph.D., President



P.O. Box 1114      Kailua, Hawai'i 96734      Ph: (808) 262-9972      Fax: (808) 262-4950  
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3. You will be given a copy of the interview transcript or notes for your records.
4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

I, Lyle Tabata, agree to the procedures outlined above and, by my signature, give my consent and release for this interview and/or photograph to be used as specified.  
(Please print your name here)

  
\_\_\_\_\_  
(Signature)

May 19, 2023  
\_\_\_\_\_  
(Date)

\_\_\_\_\_

**Cultural Surveys Hawai'i, Inc.**  
Archaeological and Cultural Impact Studies  
Hallett H. Hammatt, Ph.D., President



P.O. Box 1114                      Kailua, Hawai'i 96734                      Ph: (808) 262-9972                      Fax: (808) 262-4950  
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- 3. You will be given a copy of the interview transcript or notes for your records.
- 4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

- 1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
- 2. You agree that the interview shall be made available to the public.

I,           Leanora Kaiakamalie          , agree to the procedures outlined above and, by my  
(Please print your name here)  
signature, give my consent and release for this interview and/or photograph to be used as specified.

*Leanora Kaiakamalie*

\_\_\_\_\_  
(Signature)

5/25/23

\_\_\_\_\_  
(Date)

\_\_\_\_\_

# Appendix C Interview Questionnaires

## Chris Fayé

**Cultural Surveys Hawai'i, Inc.**  
Archaeological and Cultural Impact Studies  
Hallett H. Hammatt, Ph.D., President



P.O. Box 1114      Kailua, Hawai'i 96734      Ph: (808) 262-9972      Fax: (808) 262-4950  
Job code: WAIMEA 49      [tbaculpo@culturalsurveys.com](mailto:tbaculpo@culturalsurveys.com)      [www.culturalsurveys.com](http://www.culturalsurveys.com)

### INTERVIEW QUESTIONS

**Cultural Impact Assessment for the  
Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project,  
Waimea Ahupua'a, Waimea District, Kaua'i Island,  
TMKs: [4]1-2-002-009 and 001 (por.)**

#### Part I: Contact information

1. Name  
Chris Faye
2. Where were you born?  
Woodland, California (father going to UC Davis)
3. Where did you grow up?  
Hawaii
4. When were you born?  
1957
5. Parents. Mother. Father.  
Barbara Grace Cleghorn (Wahiawa and Lanai) and Lindsay Anton (Tony) Faye Jr. (Kekaha)
6. Occupation/Affiliation  
Executive Director Hui o Laka (Kokee Museum) and former curator (Kauai Museum)
7. Area of residence:  
Kekaha
8. How long have you lived here?  
On and off for 45 years in Kekaha. 65 years in Hawaii.

9. Personal and/or family connection to *ahupua'a*:

My family, the Faye's have been living in Polihale to Waimea for 6 generations. My great grandfather Hans Peter Faye started a sugar plantation at Mana – H.P. Faye and Co. in 1884 after 4 years on Maui and Kauai learning the trade. He served as manager of Kekaha Sugar Co from 1898 to 1928. His son, my grandfather was manager from 1933 to 1963 and his son, my father, was manager twice from the 80s to his retirement in 1992. My great-grandfather Hans Peter Faye came to Kauai to work for his maternal uncle Valdemar Knudsen. Other members of the family also worked for or leased land from Knudsen including Captain Christian L'Orange and Anton Faye. I opened a visitor center for Gay & Robinson's sugar operations at Kaumakani in 1999. We provided a field and factory tour based on what used to be given for sugar planters. We had engineers from all over the world on the tour from factory to space engineers and received many compliments. During that time, between my father and many plantation supervisors, we learned a lot about the industry and were able to share it.

10. Referrals

Aletha Kaohi, Waimea Sugar Mill Museum visitor center manager  
 Pat Griffin, historian and author  
 Kirsten Faulkner, Historic Hawaii Foundation

**Part II: Historical information**

11. Is there anything you would like to say about the general history of the area, or past and present land use?

The general history of the area was unique due to the landscape. The plain is the output of sediment from the Waimea River. The highest elevation is along the sea where the sediment buried a barrier reef. The land then dips down to nearly sea level and sometimes lower until it start so rise at the base of the foothills. The foothills, fortunately had many springs, and that is where people lived at the time my great grandfather came to Kauai. There were many small villages. He settled next to a large spring, Kumumao (more recently in plantation times as Cold Pond.) He employed a Hawaiian water finder to seek out other sources of water.

Up until the late 1890s there were forests of Lehua above Mana. There was a very bad fire that burnt even the roots in the ground so nothing regenerated. My grandfather remembered there would be freshets when it poured, and water would run off the mountain in the gullies.

Some of the unique cultural things that were mentioned by both Eric Knudsen (Kanuka of Kauai) was that because of the dead gathering at the hill above Polihale to enter Po, the wandering spirits could be trapped in homes – all the villagers had two doors in their homes to allow them to pass through.

Another story is of the unfolding mat – the view from Nohili of the long white sand beach as far as the eye can see.

Another is the unusual way taro was cultivated on floating mats in the brackish water lakes. There was also a saying that the Hawaiians traded fish for poi because it wasn't easy to grow in Polihale and Mana.

Many of the place names in the landscape are named for the arrival of Pele's sisters.

12. Do you have any memories of what existed in that area or cultural events that were practiced?

I have memories of Kekaha Sugar Plantation. I was 3 when we first lived there as Dad was a trainee, then 4-6 years of age when my dad had his first full-time job with Amfac. Then in the 80s until the plantation folded and the post plantation days. I remember a Christmas party at the Supervisor's clubhouse in Mana (my great grandfather's original house), and plantation parties with backyard singing and dancing on the cement lanai's. Food of course, especially fresh fish and whole sides of plantation beef roasting on the rotisserie. Cowboys, ditchmen, canefires, the rumbling of the factory, the silence during the offseason, sound of trucks downshifting as they came down the steep hills loaded with cane. The stink of ditchwater. The whole gamut. I also spent 5 years from first through fifth grade walking home from school through the camps of Oahu Sugar in Waipahu. Very thorough background in what the camps were like. Kekaha was different in that it was much smaller and well organized around the mill and business district.

13. How about personal and/or family history in the area?

The original family member that came to west Kauai was Valdemar Knudsen. He took over a lease from Scots/Norwegian named Archibald Archer about 1854. Archer and a partner had been growing tobacco which failed. I'm not sure if the lease was renegotiated. Knudsen's lease was a portion of crown lands from Kamehameha V. It was from Kekaha to Milolii to Kokee. I would have to look up what the lease rent was, but it was something like \$2000. My memory serves that the reason the land was crown land was its unusual and unique products. Like Niihau, the Hawaiian people on the plain produced makaloa mats and the decorated gourds which were highly prized by ali'i in the past. Knudsen settled at Waiawa at the mouth of Hōea Valley which was also his ranch headquarters. Today the landfill would block the view of the ocean. There was a big spring there and a famous heiau Hauola where the menchune were paid their shrimp for completing the Kikiaola or Peekauai Ditch.

With the Reciprocity Treaty in 1875, sugar ventures started up all over the islands. George Wilcox and Paul Isenberg worked it out to put a mill at Kekaha while Valdemar Knudsen teamed up with a nephew-in-law, Christian L'Orange to plant some cane in 1879. Knudsen and L'Orange were too much alike and hot tempered so the partnership failed quickly. Knudsen was too old for the physicality of the job by that time and his sons were young, but on his wedding trip to Norway a decade before, he had bragged about all his land and easily enticed relatives to come that were the right age. Anton Faye arrived and with a partner harvested the cane and then leased out the lands around Kekaha. Hans Peter Faye arrived in 1880, but Knudsen had left for a trip with his family that took several years. So he joined L'Orange who was married to his sister at a plantation near Paia. That lasted two years and was good training. L'Orange was the agent that brought Norwegian labor to Hawaii. H.P. Faye met and admired Henry Perrine Baldwin on Maui who was building his first irrigation ditch. Due to his brother's death in a flash flood on Maui, H.P. Faye returned to Kauai and planted the first cane for the Sinclair Family in Hanapepe. The crop went to the Elecle mill. He did well but realized he would never prosper working for other people. By that time his uncle had returned and was able to lease the worst piece of land from Mana to Polihale. He had two Norwegian assistants E.K. Bull and Gjerdrum and a number of Hawaiians from Mana that worked for him for years. Both Norwegians eventually became managers of sugar plantations on Oahu and Maui. For the planting and harvest, Faye rented Pa On's laborers and eventually cleared the land of rocks. H.P. Faye put in the second artesian well in Hawaii (the first was in Ewa). He used a Hawaiian waterfinder. His supplies came in at the old

canoe landing (it sounds like it was at Major's Bay.) To fund all his first crop, he received a \$2000 loan from Paul Isenberg who was then head of Hackfeld & Co. the predecessor of American Factors. He got the loan on the fact that he wore a nice suit his father had made for him in Norway prior to coming to Hawaii. He only wore the suit once to impress Isenberg.

Otto Isenberg managed the mill until he retired before WWI. George Wilcox remained Chairman of the Board for a long time – maybe until he died. When they consolidated the plantations and mill into Kekaha Sugar in 1998, Wilcox was one third owner as well as Faye. The remaining interests were bought and sold so that the original sugar planters could retire or go elsewhere. The Knudsen lease was soon to expire, and the land was still government land with 20 year leases that had to be negotiated for in Washington D.C.. The takeover by the United States was soon to be completed and many incorporations took place about the same time. Many plantation interests were European and Kingdom of Hawaii citizens and there was a rush to incorporate under U.S. law. The Knudsen lease was over in 1907, although they did try to retain some of the land, they failed. Kekaha Sugar eventually purchased their ranch. Because they paid lease rent on all the land, the cattle could be raised where sugar couldn't. They were generally in the valleys between foothills or near the ocean.

One of the things my great grandfather was instrumental in was expanding the plantation from a small holding to what it became was in the creation of irrigation projects. By the time Kekaha Sugar was formed, the use of artesian wells had pulled up much of the fresh water in below the fields. Fresh water from springs and rainfall forms a layer underground over salt water. So, the roots of the cane were becoming saltier and not producing well. The crops were declining. Kekaha was located far from any freshwater source. My great-grandfather developed the Kekaha Ditch that at the time, used no electricity, to bring water from about 8 miles up the Waimea River up to the foothill above Waimea Town all the way to Polihale. He had to convince the company's board that this would work. George Wilcox had a degree in engineering and also experience with his own ditch projects and backed him up. They also consulted with engineers in California, it took several redesigns to bring the cost down but most of the project was conceived and executed by the plantation and local crews. Remember that they only had a 20 year lease and any capital projects had to pay off quickly. After obtaining the lease again in 1920, despite real competition, the Kokee Ditch project was started in 1922. It was a very ambitious project and the Kawaikoi Dam was and is still the highest elevation reservoir in Hawaii. My grandfather had his first job in the sugar industry on that project. He oversaw Camp 10 far in Mohihi. His experience on a US Army supply train in World War I made him a good candidate. Of my great grandfather's 6 sons, only Lindsay was interested in becoming a sugar man. He then was groomed at Waimea Sugar and then when his father died put in place as assistant manager at Kekaha under William Danford.

Lindsay was at Kekaha a long time and was young when he started as manager. He was keen on Athletics and made sure there were athletic outlets on the plantation. He was on numerous boards that promoted the welfare of Kauai people. He rode a horse in the fields for years and actively maintained the ranching activities. There was a lot of fallow land at Kekaha and remote areas on the plains that were used for pasturage for not just the plantation animals but also others. The area where the landfill is now was pasture. It was very sandy and considered "wasteland" in the early years of the Territory. He witnessed and participated actively in the early years of aviation when an "international airfield" was created at Mana. His wife packed sandwiches and thermos of coffee for the crew of the Southern Cross as they continued their hop across the Pacific in the first cross Pacific flight in 1928. The airfield eventually became an Army base then a Navy base. World War II was a challenge, and although he didn't serve in the military, he took his role as manager and head of civil defense for Kekaha and its surrounds seriously. He claimed the first troops that arrived in March of 1942 were family men called up by the National Guard, but those

that came after were totally different and it was a fine line to protect the community. He made sure his people were fed and the plantation's truck farm at Puu Opae was exceptional. Even his children worked with the rest of the school children in the gardens and farms. After the war, the plantation continued to excel and became one of the world's best producers of sugar per acre in the world. One field, until the end, had the world's record of tons of sugar per acre. Gradually over the years, more and more stock came into the hands of Amfac. In 1972, the remaining stockholder, including the Fayes who now had about 25% of the company, were forced to sell out and Kekaha was no longer an independent plantation.

The plantation shrunk from about 1200 employees to about 200 during my dad's tenure starting in 1980. Much of it was through attrition. In a way my great grandfather built the plantation, my grandfather nurtured it through its peak and the upheavals of post war labor unionization, while my father had the sad duty of keeping things going as long as possible with heavy cost cutting and facing the reality of closure at any time by its mainland ownership. He was proud that he managed to talk Amfac/JMB into taking care of the employees when they decided on selling off nonstrategic holdings. Remember they owned most of Lihue then and Kekaha was mostly leased land except for the camps and mill. The results were subdividing and selling all the plantation houses to employees and working with the county to create a retirement complex for all the retired single men.

14. Past land use? Past agricultural, fisheries or other uses of the area?

There were 3 large brackish water lakes seen on maps prior to 1920. The sugar acreage was quite small when it started. It was said when it flooded (not necessarily a yearly occurrence) the lakes would fill up and become one and with a flat bottomed boat you could pole your way to Waimea. There were lots of ducks in the lakes and people enjoyed shooting them for food and sport. We have a photo of one of the boats and shooters. The village of the mirage was near Limaloa Pond. Limaloa was Lohiau's brother.

Rice started early on in Waimea Valley and the "lakes", especially Limaloa, by Chinese after the Gold Rush. Pa On Leong, who made money in the gold fields, became a rice baron and employed many single men. His mill was in Waimea where the library is now. He had barracks for them at Kaunalewa and Mana. Some of these men were rented by my great grandfather to bring in his sugar crop. He and Pa On had a handshake agreement regarding the swampy land which was eventually overthrown by other investors in Kekaha Sugar around 1920. There were plantation villages or Hawaiian villages at Polihale, Saki Mana, Mana, Kaunalewa, Waiawa, Pokii, Kekaha near the foothills, and another I forgot the name too between Kekaha and Waimea, and Waimea. Up on the foothills there was Puu Opae and Hukipo. My great aunt said there was a carriage road on near the ocean (the highway is fairly modern) that in good weather the Hawaiian rode carriages to Church on Sundays. A government dirt road ran along the pali. There were no roads elsewhere because of the swamps.

There was a ship landing at Kekaha by what is now called "first ditch." There was a shed and pasture for holding livestock in transit. It isn't so much a ditch as a drainage canal first dug by hand by the Knudsen's to expand farming and ranching near Kekaha. It was named Keikielima (5 children) after Knudsen's five children. My great grandfather purchased salvage equipment and pumps from the Sacramento, California reclamation project to begin draining the swamps between Kekaha and Polihale and the one at Waimea. It took decades to drain. The pumps are what made a difference and there were several on the canals that could take out at the shoreline. One of them, I think Kiele had an engine that was used at Senator Miyake's power company in

Waimea. It was a diesel ship engine that is now by the Waimea Mill. The company still exists and the serial number identified it as one of the oldest of their engines still in existence.

Kekaha is a plantation town. It was the site chosen to put the sugar mill. The people of the area generally lived close to the foothills where springs were located. Along the shore were shelters, but water had to be taken there so it wasn't someplace to live then.

The plantation railroad was a bit different than others. It was operated from about 1898 to 1945 on nearly flat land. Like other plantations, flumes were used to transport cane from the top of the hills down to the flat where it could be taken to the mill for processing. It was one of the first plantations to convert to mechanical harvesting, only keeping its rail through the war for military use. The plantation has the claim to the only train robbery in 1920 where a masked man held up the railroad between Kaunalewa and Mana and ran off with about \$10,000 in cash including the payroll books for the Mana Division. The paymaster was instrumental in locating the suspected robber because he didn't want to recreate the payroll books. The railroad also had an interesting tradition of being the first party train. For its opening inaugural run, cane cars were cleaned and chairs put in for dignitaries in their finest to ride from Kekaha to Polihale (there are photos!). For special occasions, this occurred including the last run of the train in 1946.

#### Part III: Cultural and historic sites

15. Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., *heiau, hale, kū'ula, ilina*)?

As far as I know, the nearest house and heiau was at Waiawa/Hoea and Kekaha.

The Mana Drag Strip was the old Mana Airport in use as the principal public airport during and after the war until the present Lihue airport was built.

#### Part IV: Gathering/hunting/fishing/etc. practices

16. Are you, or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?

Most of the activities take place at or near first ditch and Kekaha. Currently there are agricultural companies around the landfill as well as military activities and housing.

17. If you are, how did you learn the activity/ies and how long have you engaged in \_\_\_\_\_?

By living in the area.

18. Can you tell me about any cultural practices from the past?

19. Knowledge of past or present cultural protocols observed

#### Part V: Legends, stories and place, and sense of place

20. Is there anything you would like to say about legends, or stories about the project area?

21. Are there any names, traditions, or practices associated with the area and features of the landscape? Origin stories...?

22. Trails ancient or contemporary in the area? Who used/uses them?

Trail from Mana to Puuopae, which used to be a village, to Kokee.

Canoe road from PuukaPele to Mana (the road still exists)

Trail made by the Knudsens to PuukaPele to travel every summer to Halemanu. (Described by Ruth Hanner Knudsen on the back of a photograph that is very hard to decipher due to her poor penmanship.

23. *Mauka-makai* relationships?

Koa farming at PuukaPele. Kokee was integral to plantation life – many of the families of Kekaha had summer camps at Kokee and the plantation had a cabin. The heat in Kekaha made the summer months miserable. My family spent easily 3 months a year at Kokee either with the Knudsens and later from 1904, at our own cabin Maluapoha.

**Part VI: What else?**

24. Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?

Besides the drastic change to the landscape by creating mountains near the ocean of what used to be flat land, it concerns me that a whole hillside is being mined of dirt as part of the project. I hope the same scrutiny of the cultural landscape is being made for that portion of the project. There were at least two villages between Pokii and Waimea with springs.

25. Do you have any recommendations regarding site management or protection, and development in the proposed project area?

We need to acknowledge that native water fowl are thriving in the settling pond at the landfill. Taking away reservoirs and ditches/canals reduces their habitat. The newly created ponds don't have the nutrients for the bugs and fish they eat to thrive – they are too clean.

The cane fields were a habitat for bats, pueo, and non native ground birds that people like to hunt. Maybe lands that are going fallow or returning to swamp need to be managed better for habitat purposes rather than making new habitat.

26. Did CSH miss anything? Is there anything else you would like to add?

27. Is there anyone else we should talk to about this cultural study?

28. If so, may I say that you referred CSH to him/her?

Sources:

Plantation Newspapers: Waimea Planter and KekaMana

1919 US Geological Survey map

1920 map of Government Lands of Kekaha and Waimea (Kekaha Sugar)

F.B. Wichman – both his Kauai Tales series and Placenames of Kauai books

Carol Wilcox Sugar Water (not the first edition – Kekaha Sugar information is totally incorrect.)  
Photographs from the Faye and Knudsen families both at Kauai Museum and Kikiaola Land Co.  
Isabel Faye and Ruth Knudsen Hanner's oral histories (Kauai Museum) Isabel's oral history transcript for a lost tape was edited by myself and reviewed by my father. The transcriber was fresh off the plain and didn't know the spellings of placenames or plantation terms or people involved.  
Conversations with Lindsay Faye and Tony Faye as well as many others over the years.

## Lyle Tabata

**Cultural Surveys Hawai'i, Inc.**  
Archaeological and Cultural Impact Studies  
Hallett H. Hammett, Ph.D., President



P.O. Box 1114      Kailua, Hawai'i 96734      Ph: (808) 262-9972      Fax: (808) 262-4950  
Job code: WAIMEA 49      [tbaculpo@culturalsurveys.com](mailto:tbaculpo@culturalsurveys.com)      [www.culturalsurveys.com](http://www.culturalsurveys.com)

### INTERVIEW QUESTIONS

**Cultural Impact Assessment for the  
Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project,  
Waimea Ahupua'a, Waimea District, Kaua'i Island,  
TMKs: [4]1-2-002-009 and 001 (por.)**

#### Part I: Contact information

1. Name  
Lyle Tabata
2. Where were you born?  
Lahaina, Maui
3. Where did you grow up?  
Many places in the state, Wailua Kauai 1959-66, Kekaha 1966-72, Waipahu 72-74, College in Illinois Bradley University, 1974-78, Moved back to Kauai 1978-now
4. When were you born?  
6/28/1956
5. Parents, Mother, Father.  
Mother Marilyn Tagomori, Father Teruo Tabata from Maui.
6. Occupation/Affiliation Presently  
Part owner of B&T Contractors. Sit on the ADC Board of Directors, Was the County Engineer of Public Works CoK from 2011 to 2020 8 yrs on Mayor Carvalho cabinet, 1 yr Mayor Kawakami.
7. Area of residence  
Lihue

8. How long have you lived here?

1978-present

9. Personal and/or family connection to *ahupua'a*

I grew up in Kekaha from 1966-72, was the Factory Manager of Amfac Sugar Kauai in charge of the Kekaha Sugar Mill and Lihue Planation Mill operations from 1993 to 1997, then the last Plantation Manager for Amfac Sugar Kauai and oversaw the operations of both Lihue Plantation and Kekaha Sugar Companies, 1997 to closing in 2000.

10. Referrals

**Part II: Historical information**

11. Is there anything you would like to say about the general history of the area, or past and present land use?

I spent 6 years as a youth growing up in Kekaha, spent many days traversing on my bicycle with my friends from Mana camp to Waimea, then as an adult spent time between Lihue Plantation and Kekaha Sugar, as we were sister companies spent time in both location of an on from 1978 to 2000.

12. Do you have any memories of what existed in that area or cultural events that were practiced?

Not particularly historic in the sense of the Hawaiian culture versus today. The renaissance of the push to reintroduce the Hawaiian culture of the day is in terms of years only recently re-established. I did, however, during my elementary school days at Kekaha School attend the summer schools while Bertha Kawakami was principal and taught the Kamchamcha School curriculum of what we know as Explorers today. We learned the language, the music, games and culture in more detail than was taught in the public schools.

13. How about personal and/or family history in the area?

Remember after summer school attending Kekaha summer fun, which Martha Kruse oversaw us and knowing we attended the Kamehameha summer school she added the history of the stories and tales if the area. I do remember her telling us of the burial caves along the cliff sides of the valleys.

14. Past land use? Past agricultural, fisheries or other uses of the area?

I remember Martha Kruse telling us in the old days you could paddle canoe from Waimea to Mana in the wetlands. Rice and taro were grown in the area.

**Part III: Cultural and historic sites**

15. Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., *heiau, hale, kū'ula, ilina*)?

See answer #13.

**Part IV: Gathering/hunting/fishing/etc. practices**

16. Are you, or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?

I lived a block in from Davidson Beach where I learned to surf, we would dive for fish, pole fish out all over from 1<sup>st</sup> ditch to Polihale. Catch o'opu nakea when the first fall rains would push them down from Kokee to the Waimea river out to sea, in Waimea valley with makeshift spears made for us by the plantation welders. Hunt up in Kokee for pigs, goats, and newly introduced deer, Hawaiian "moose" the plantation run away cattle, bird hunt for pheasant, quail, and franklins.

17. If you are, how did you learn the activity/ies and how long have you engaged in them?

6 years I lived in Kekaha before I left for Oahu?

18. Can you tell me about any cultural practices from the past?

See previous comments.

19. Knowledge of past or present cultural protocols observed.

see previous comments,

**Part V: Legends, stories and place, and sense of place**

20. Is there anything you would like to say about legends, or stories about the project area?

Yes several from my time with Martha Kruse, night marchers, Lol.

21. Are there any names, traditions, or practices associated with the area and features of the landscape?

Origin stories...?

22. Trails ancient or contemporary in the area? Who used/uses them?

23. *Mauka-makai* relationships?

One interesting one is the Mill ditch ravine in the ocean, the water used to come from Mauka and to day this location is where the black and white sand intersect and dive down in this ravine separating the two types of sand in Kekaha.

**Part VI: What else?**

24. Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?

As the County Engineer I had the County obtain permit to execute clearing of stone and soil from the sugar operations Rock and Mud removal from the mill cane cleaner which was disposed at Paua valley gulch to restore the location back to what it was.

25. Do you have any recommendations regarding site management or protection, and development in the proposed project area?

Not at this time.

26. Did CSH miss anything? Is there anything else you would like to add?

27. Is there anyone else we should talk to about this cultural study?

28. If so, may I say that you referred CSH to him/her?

# Appendix E - Public Meeting Notes

## Contents

Kekaha Community Meeting on Landfill - May 3, 2023 5:30pm – 8:00 pm

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**Kekaha Community Meeting on Landfill**  
**May 3, 2023 5:30pm – 8:00 pm**

Location: Kekaha Elementary School Cafeteria  
Attendance – approximately 100 people

Mayor Derek Kawakami addressed the meeting attendees to let them know the County appreciates the community hosting the Kekaha Landfill, and the County is there to listen to comments and answer any questions. The Mayor remained at the front of the crowd responding to questions the entire meeting. Others assisted with responses: Yvonne Hosaka, the facilitator of the Kekeha host community benefit (HCB) program, Therilynn Martin-Haumea of the Office of Economic Development, and Allison Fraley of the Solid Waste Division. While there was much discussion, the majority of the subject matter was the HCB program, the vertical expansion to Kekaha, waste diversion, and the potential future landfill site located mauka and west of the existing landfill.

Questions/ Comments:

- There were many questions on the host community benefit - history, annual and total fund amount, funded projects, and application process. Technical questions were answered by the Office of Economic Development and the HCB facilitator.
- What is ground water monitoring showing ? Response: High arsenic. Upgradient wells will be installed to see if the landfill is the source.
- County should post quarterly Ground Water Monitoring reports.
- Why doesn't Kaua'i ban packaging and non-recyclable items? Discussed extended producer responsibility programs and recent bills at the state legislature.
- Discussed potential for Waste to Energy system or alternative technology to landfill to manage waste. There may be limitations to technologies and high cost due to small waste stream. Recent study of technologies has been published on the County website, an RFP will be released soon.
- On the subject of waste diversion, discussed curbside recycling challenges of cost and minimal return. The County is currently studying the feasibility of construction of a materials recovery facility and operating a curbside recycling program.
- Provided information on the current disposal capacity at Kekaha landfill, proposed height of the vertical expansion, and the potential capacity with the vertical expansion.
- Discussed limitations of siting a new landfill in other locations throughout Kaua'i