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AUG - 8 2021

MICHAEL P. VICTORINO
Mayor

ROWENA M. DAGDAG-ANDAYA
Director

JORDAN MOLINA
Deputy Director

LANCE S. NAKAMURA, P.E.
Assistant Administrator
Development Services Administration

RODRIGO "CHICO" R. RABARA, P.E.
Engineering Division

JOHN R. SMITH, P.E.
Highways Division

Telephone: (808) 270-7745
Fax: (808) 270-6267

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
200 SOUTH HIGH STREET, ROOM NO. 410
WAILUKU, MAUI, HAWAII 96793

July 26, 2021

Mr. Keith Kawaoka, Acting Director
Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 S. Beretania Street, Suite 702
Honolulu, Hawai'i 96813

Dear Mr. Kawaoka:

SUBJECT: REQUEST FOR PUBLICATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT AND ANTICIPATED FINDING OF NO SIGNIFICANT IMPACT FOR THE 'IĀO STREAM LEVEE 27 REPAIR PROJECT WAILUKU DISTRICT, ISLAND OF MAUI, HAWAII TAX MAP KEY: (2) 3-4-032: 001; (2) 3-4-030: 888 PARCEL C; (2) 3-4-020: 075; AND IMI KALA STREET AND EHA STREET (NO TMK)

The County of Maui, Department of Public Works (DPW), hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the 'Īao Stream Levee 27 Repair Project situated in the Wailuku District, Island of Maui, Hawai'i for publication in the next available edition of the Environmental Notice. Persons interested in commenting must submit comments to the Department of Public Works within thirty days from the initial date that the notice was published in the Environmental Notice.

Comments may be sent to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room 410
Wailuku, HI 96793

With a copy to:

Mr. Brian Takeda, Consultant
R.M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, HI 96819

22-011

Simultaneous with this letter, we are providing your office with the required information and files concerning the DEA, along with a PDF-formatted electronic copy of the DEA-AFONSI, via the Office of Environmental Quality Control's online submission platform.

If there are any questions, please contact Mr. Brian Takeda of R.M. Towill Corporation at (808) 842-1133 or by email at briant@rmtowill.com, or Ms. Kristi Ono of the Department of Public Works at (808) 270-7745 or by email at kristi.ono@co.maui.hi.us.

Sincerely,

ROWENA M. DAGDAG-ANDAYA
Director of Public Works

Enclosures

RMDA/RR/KO (ED21-0684)
S:\ENG\PROJECTS\02 CIP\2018\18-36 ADDITIONAL WORK FOR IAO STREAM LEVEE NO 27\01 DESIGN\H ENVIRONMENTAL\ENVIRONMENTAL ASSESSMENT\2021-07-26 REQUEST TO PUBLISH DRAFT EA - IAO STREAM LEVEE 27 DOC

cc: R. M. Towill Corporation, Brian Takeda

From: webmaster@hawaii.gov
To: HI Office of Environmental Quality Control
Subject: New online submission for The Environmental Notice
Date: Tuesday, July 27, 2021 3:07:12 PM

Action Name

ʻĪao Stream Levee 27 Repair

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

Wailuku, Maui

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

(2) 3-4-032:001; (2) 3-4-030:888 Parcel C; (2) 3-4-020:075; and Imi Kala Street and Eha Street (no TMK)

Action type

Agency

Other required permits and approvals

See Section 7 of the Draft EA

Proposing/determining agency

County of Maui, Department of Public Works, Engineering Division

Agency contact name

Kristi Ono

Agency contact email (for info about the action)

Kristi.Ono@co.maui.hi.us

Email address or URL for receiving comments

Kristi.Ono@co.maui.hi.us

Agency contact phone

(808) 270-7745

Agency address

200 South High Street, Room 410
Wailuku, Hawaii 96793
United States
Map It

Was this submittal prepared by a consultant?

Yes

Consultant

R. M. Towill Corporation

Consultant contact name

Brian Takeda

Consultant contact email

BrianT@rmtowill.com

Consultant contact phone

(808) 842-1133

Consultant address

2024 North King Street, Suite 200
Honolulu, Hawaii 96819
United States
Map It

Action summary

The County of Maui, Department of Public Works, proposes to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank. The project will repair the right stream bank (looking downstream) located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. This action will prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku. The project includes removal of the existing concrete boulder fill slope and grading the slope; excavation to deepen the protection along the toe of the slope to be below the scour depth; and construction of a new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under-drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Reasons supporting determination

Refer to Section 9.4 of the Draft EA for Significance Criteria assessment

Attached documents (signed agency letter & EA/EIS)

- 2021-07-26-Request-to-Publish-Draft-EA-Iao-Stream-Levee-27.pdf
- Iao-Stream-Levee-27-Repair-Draft-EA_2021.pdf

Action location map

- Maui-Levee-Shapefile.zip

Authorized individual

Kelly Staples

Authorization

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

Draft Environmental Assessment

Prepared in Accordance with Hawaii Revised Statutes,
Chapter 343, and Hawaii Administrative Rules, Title 11, Chapter 200.1

ʻĪao Stream Levee 27 Repair

Wailuku, Island of Maui, Hawaiʻi

August 2021

Proposing/Determining Agency:
Department of Public Works
200 S. High Street
Kalana O Maui Bldg. 4th Fl
Wailuku, HI 96793

Draft Environmental Assessment

‘Īao Stream Levee 27 Repair

Wailuku, Island of Maui, Hawai‘i

August 2021

Prepared For:
Department of Public Works
200 S. High Street
Kalana O Maui Bldg. 4th Fl
Wailuku, HI 96793

Prepared By:
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai‘i 96819-3494

Project No. 1- 21494-04P

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Appendix B	Final Archaeological Literature Review and Field Inspection Report for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island. Prepared for R.M. Towill Corporation. Prepared by Cultural Surveys Hawai'i, Inc. April 2021. Chapter 6E-8 Historic Preservation Review – ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Pūʻali Komohana District, Island of Maui. Consultation between State Historic Preservation Division, Department of Land and Natural Resources, and County of Maui, Department of Public Works.
Appendix C	Draft Cultural Impact Assessment for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island. Prepared for R.M. Towill Corporation. Prepared by Cultural Surveys Hawai'i, Inc. March 2021.
Appendix D	Pre-Assessment Consultation Letters for Hawaiʻi Revised Statutes, Chapter 343.

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Acronyms and Abbreviations

%	Percent
1H:1V	1 Horizontal to 1 Vertical
AIS	Archaeological Inventory Survey
ALRFI	Archaeological Literature Review and Field Inspection
BMPs	Best Management Practices
CAB	Clean Air Branch
CBF	Concrete Boulder Fill
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
Cl-	Chloride
CO	Carbon Monoxide
CSH	Cultural Surveys Hawaiʻi, Inc.
CWA	Clean Water Act
CWB	Clean Water Branch
CWRM	Commission on Water Resource Management, DLNR
CZM	Coastal Zone Management
dB	Decibel
dBA	A-Weighted Decibel
DLNR	Department of Land and Natural Resources, State of Hawaiʻi
DNL	Day-Night Sound Level
DOE	Department of Education, State of Hawaiʻi
DOFAW	Division of Forestry and Wildlife, DLNR
DOH	Department of Health, State of Hawaiʻi
DPW	Department of Public Works, County of Maui
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
fps	Feet Per Second

Acronyms and Abbreviations

GHG	Greenhouse Gas
HAPC	Habitat Areas of Particular Concern
HAR	Hawaiʻi Administrative Rules
HECO	Hawaiian Electric Company
HRS	Hawaiʻi Revised Statutes
IIFS	Interim Instream Flow Standard
L	Liter
LCA	Land Commission Awards
LID	Low Impact Development
LUST	Leaking Underground Storage Tank
MPD	Maui Police Department
MPH	Miles Per Hour
MUS	Management Unit Species
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_3+NO_2	Nitrate+Nitrite-Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
OEQC	Office of Environmental Quality Control
OHWM	Ordinary High Water Mark
Pb	Lead
PM	Particulate Matter
SHPD	State Historic Preservation Division
SIHP	State Inventory of Historic Places
SLR	Sea Level Rise
SO_2	Sulfur Dioxide
TMK	Tax Map Keys
USACE	U. S. Army Corps of Engineers
USC	United States Code
USDA	U. S. Department of Agriculture

Acronyms and Abbreviations

USFWS	U. S. Fish and Wildlife Service
VOG	Volcano-Associated Gases
WOUS	Waters of the United States
WPRFMC	Western Pacific Regional Fishery Management Council
WQC	Water Quality Certification
WQS	Water Quality Standards

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Section 1
Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Hawaiʻi Revised Statutes (HRS), Chapter 343, and Hawaiʻi Administrative Rules (HAR), Title 11, Chapter 200.1.
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, proposes to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank. The project will repair the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. This action will prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The plan details include: • Removing an existing concrete boulder fill (CBF) slope and grading the slope. • Excavation to deepen the protection along the toe of the slope to be below the scour depth. • Constructing a new revetment system consisting of a reinforced soil slope, grouted riprap face slope, use of under-drain pipes, and placing dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG (Agriculture); M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	**FEDERAL:** Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations **STATE:** EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering **COUNTY OF MAUI:** Grubbing, Grading, and Stockpiling Permits; Work on County Highway Permit; Simple Encroachment Calculations; and Flood Development Permit

Section 2
Introduction and Project Description

2.1 Introduction and Purpose of Environmental Assessment

The County of Maui, DPW, proposes to repair an approximately 240 feet long section of the Wailuku River stream bank. The name of the project assigned by the DPW is the ʻĪao Steam Levee 27 Repair Project (this segment of the Wailuku River was formerly known as the ʻĪao Stream but was renamed to the Wailuku River on May 27, 2015, by the Hawaiʻi Board of Geographic Names). The project will repair the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27.

The proposed action will prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The plan details include: removing an existing concrete boulder fill (CBF) slope and grading the slope; excavation to deepen the protection along the toe of the slope to be below the scour depth; and, constructing a new revetment system consisting of a reinforced soil slope, grouted riprap face slope, use of under-drain pipes, and placing dumped riprap at the toe of the slope to protect against scour. The portion of the stream bank to be repaired is not a part of the ʻĪao Stream Levee System.

The County of Maui, DPW, has prepared this EA to disclose and evaluate the potential for adverse environmental impacts associated with the proposed project. This EA has been prepared in accordance with the requirements of HRS, Chapter 343, and HAR, Chapter 11-200.1. The specific action that requires the preparation of this EA includes the use of county lands and funds for the proposed action. This Draft EA provides sufficient information on the potential adverse and beneficial environmental effects to inform interested parties of the proposed action and seek public comment on relevant environmental issues that should be addressed during the preparation of the Final EA. The findings of the EA process will allow the County of Maui, DPW, to make an informed decision on its requirement to either prepare an Environmental Impact Statement (EIS) or issue a FONSI. If the EA process concludes that no significant impact is likely, then the County may issue a FONSI and proceed with the filing of building and construction permits for the proposed action.

2.2 Project Location

The ʻĪao Stream Levee 27 Repair project would repair an approximately 240 feet long section of the stream bank along the Wailuku River in Wailuku town. A portion of the project area on the western boundary is within a portion of Imi Kala Street from the intersection of Wili Pa Loop, Imi Kala Street, and Eha Street to the northern end of the Imi Kala Street bridge. A portion of the project area on the eastern boundary is adjacent to Eha Street, running approximately west to east. The project area surrounds the northern side of the Maui Disposal commercial property and crosses the Wailuku River to its northern bank. The proposed repairs to the embankment are located along the right bank (looking downstream) of Wailuku River downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The built environment that surrounds the project area includes primarily commercial properties.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area, including staging, storage, construction access, entry, and activities including grading, is approximately 1.39 acres. See **Figure 2-1, Project Location and Tax Map Key.**

Once constructed, the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

2.3 Project Background

Wailuku River is about 12,000 feet in length from an upstream sediment basin to its outlet into Kahului Bay and is located within the Nā Wai ʻEhā Watershed in Wailuku, Maui. The Wailuku River drainage basin is a 10 square mile area that begins at the boundary between the Lahaina and Wailuku Judicial districts and extends from the crests of the Kahoʻolewa and Kapilau Ridges to the Pacific Ocean (**Figure 2-2, Regional Project Location**). The basin is 8 miles long and averages 1.25 miles in width. Two major topographic features characterize it: a coastal plain that extends about 3 miles inland; and ʻĪao Valley, the largest valley in West Maui, which extends from the coastal plain to the summit of Puʻu Kukui at an elevation of 5,800 feet above sea level.

In 1981 the ʻĪao Stream Flood Control Project, authorized under Section 203, Flood Control Act of 1968, as amended, was implemented to reduce flood damage to the town of Wailuku. The completed project consists of a debris basin located 2.5 miles upstream from the stream mouth, channel improvements extending 3,500 feet downstream from the debris basin, a drop structure with a 22-feet vertical drop, levees along the right bank, levees, and floodplain management along the left bank for 6,950 feet of the natural stream; and stream realignment with channel improvements for a reach of 1,730 feet that extends to the downstream limit of the stream located near the shoreline.

A flood occurred during the construction phase in January 1980 that caused extensive erosion and undermined portions of the completed levees. As a result, the streamside slope of the levees was extended with a concrete riprap slope lining into the streambed, and the toe of the cutoff walls was embedded 5 feet in depth.

Figure 2-1. Project Location and Tax Map Key

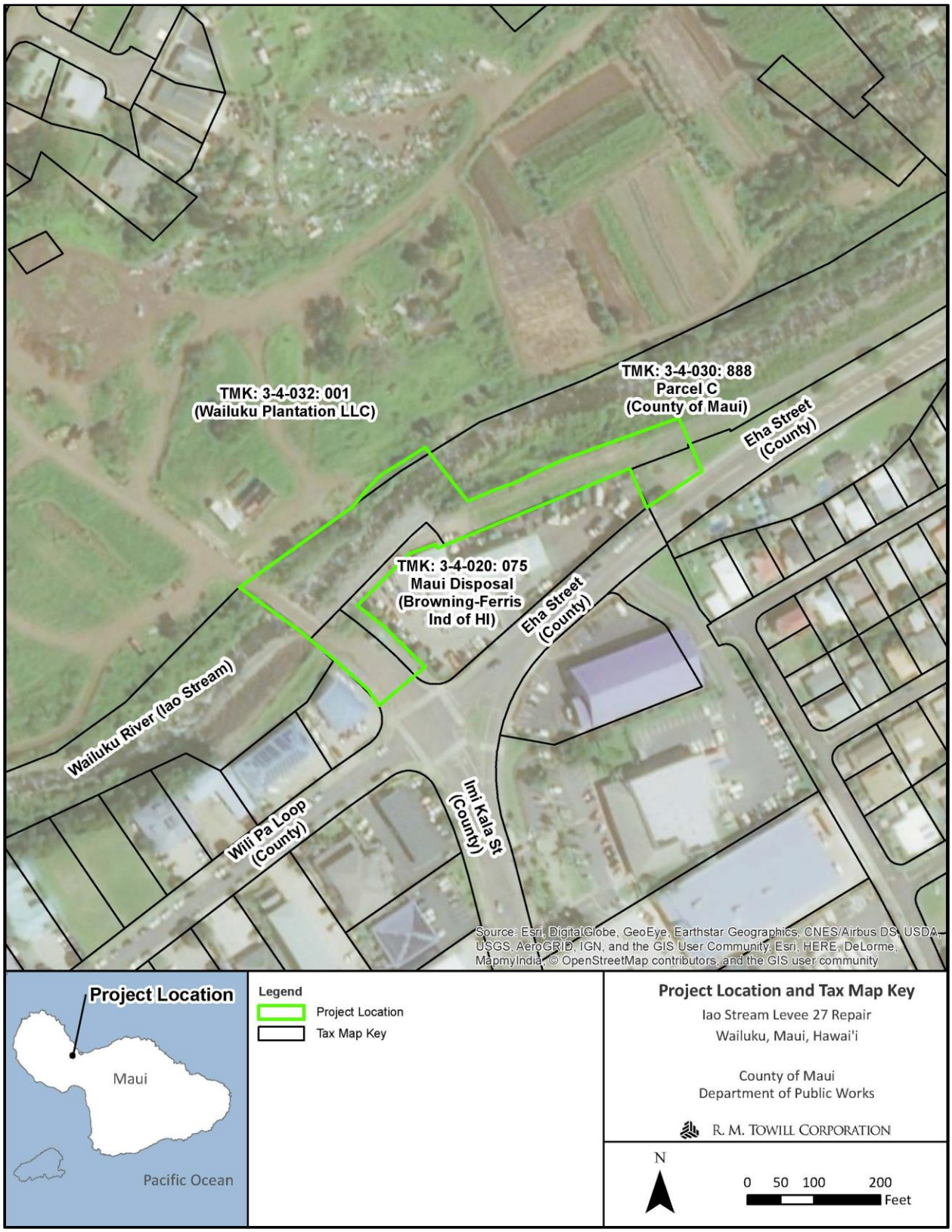
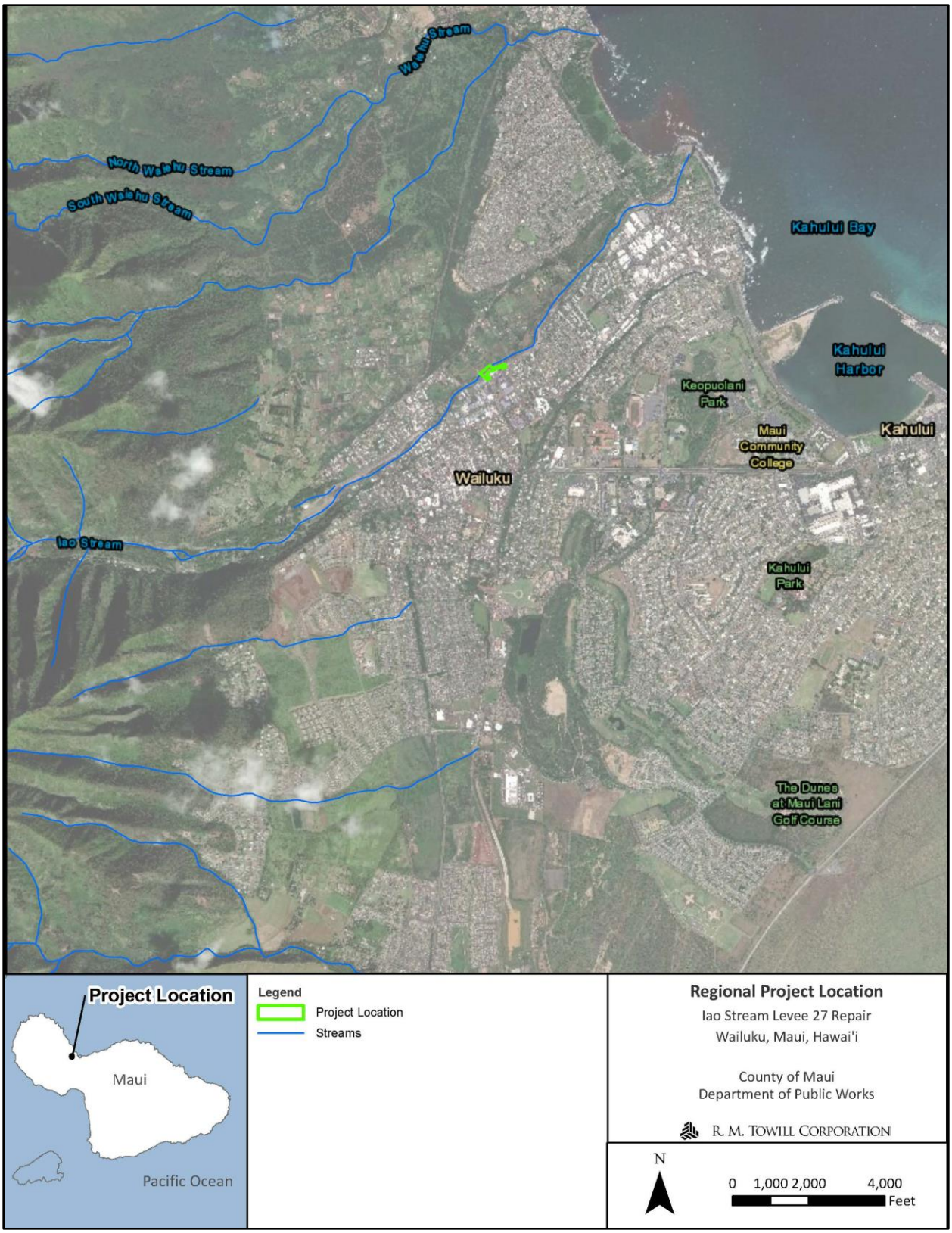


Figure 2-2. Regional Project Location



For more than a century, stream flow had been intermittent below the ʻĪao intake due to three diversion structures that redirected the water to agricultural areas. Downstream of these agricultural diversion structures, stream flow had been absent 80 to 90% of the time, punctuated by infrequent high flows following intense rainfall events when stream discharge volume was sufficient to overtop the agricultural diversion structures (USFWS, 2006). High water flows into the channelized portion of Wailuku River occurred only during periods of prolonged intense rainfall.

In April 2014, an interim instream flow standard (IIFS) was established following an Order and Agreement issued by the Commission on Water Resource Management (CWRM). Pursuant to the April 2014 Settlement Agreement, the Wailuku Water Company began releasing 10 million gallons of water per day into the Wailuku River on October 13, 2014. Due to the upstream diversion of water from the stream for past agricultural uses, in addition to the intermittent nature of the stream, the length of the stream within the project area had historically been absent of water approximately 90% of the year. However, following the implementation of the IIFS for Wailuku River, continuous flow through the section of the stream within the project area has been restored.

The existing Wailuku River is approximately 30 percent (%) lined with existing concrete channels. The remaining portions of the stream, including the length of the stream within the project extents, are an alluvial channel where stabilization problems occur. Levees with a surface of grouted riprap are interspersed along the right bank of the channel to protect the town of Wailuku.

Wailuku River flows in a natural bed through the project area. The left bank is also natural and incised deeply along an earthen cliff. The right bank is a fortified revetment system designed to protect commercial properties in the Wailuku business district. At the project site, the reinforced embankment extends from approximately 260 feet upstream of Imi Kala Street Bridge (beyond the project site) to some 240 feet downstream of the bridge (within the project site). The remaining right bank downstream of the project is a part of ʻĪao Stream Levee No. 27, where earth and gravel fill are built up over the natural bank.

Within the project extents, the stream's ordinary high water mark (OHWM) ranges from 39 to 82 feet wide and the channel bottom consists of boulders, cobbles, gravel, fine sand, and silt. The channel has an average slope of 2.6%. This steep stream channel results in critical and supercritical flows in the stream. The average channel velocity through the unlined portion of Wailuku River varies between 8 and 32 feet per second (fps) with an average velocity over 20 fps during annual floods (USACE, 2017). These high velocities have eroded the channel bed and caused severe undermining of the existing stream bank.

In September 2016, heavy rains caused erosion of the Wailuku River stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the

existing bank, toe erosion, and side slope failure on the right bank of the stream downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of CBF along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Wailuku River in the vicinity of the project site is in danger of reverting to a flood hazard zone due to erosion/deterioration/scour of the right bank and undermining of the bank toe resulting from changes in the streambed dynamic and upstream watershed use/development that have occurred over the past 40 years. In order to preserve the reliability of the stream bank within the project extents, protect the downstream ʻĪao Stream Levee 27, and reduce flood risks for the Wailuku community repairs are needed.

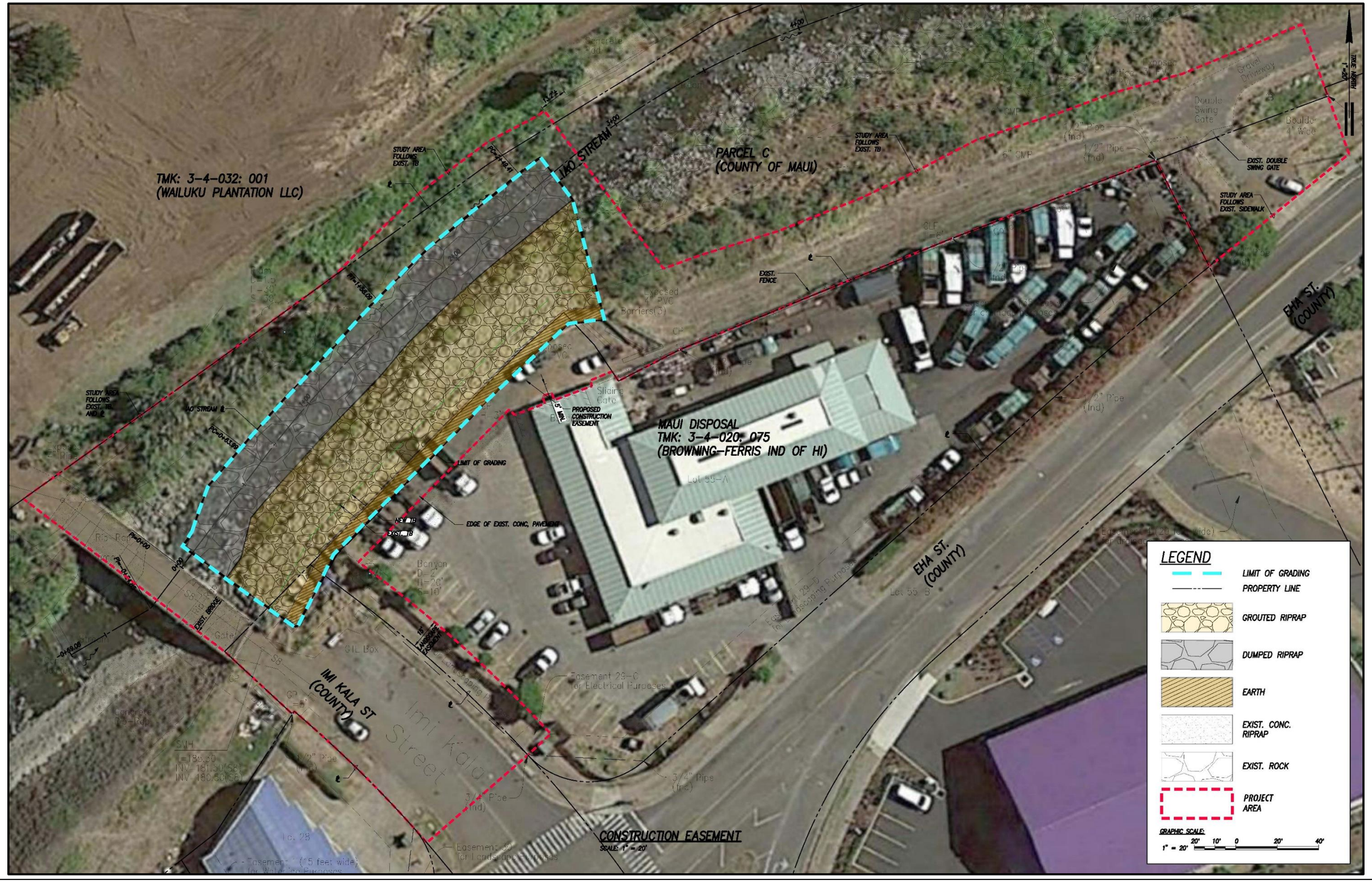
2.4 Overview of the Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See **Figure 2-3**.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Figure 2-3. Overview of the Proposed Action



2.5 Purpose and Need for the Proposed Action

Purpose

The purpose of the proposed action is to implement repairs to an approximately 240 feet long section of the Wailuku River right stream bank revetment system to prevent further erosion of the stream bank, protect the downstream ʻĪao Stream Levee 27, and provide reduced flood risk to the town of Wailuku caused by design deficiencies and long-term damage to the existing bank stabilization structure suffered during repeated floods since its original construction and subsequent repairs.

Need

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Certification that levees can withstand a 1-percent chance flood is required by the Federal Emergency Management Agency (FEMA); if not certified, flood protection infrastructure is not deemed viable to protect property or life from the 100-year recurrence interval storm event. This project is required for the certification of the ʻĪao Stream Levee 27.

The flood control system along Wailuku River has instilled a sense of security in the growing community of Wailuku; however, the section of Wailuku River within the project extents is in danger of reverting to a flood hazard zone due to erosion/deterioration/scour of the right bank and undermining of the bank toe resulting from changes in the streambed dynamic and upstream watershed use/development that have occurred during the past 40 years. A failure in the deteriorating embankment would cause flood waters to inundate the Wailuku River drainage basin and loss of life and extensive property damage would be possible if not likely. Implementation of the proposed action is needed to restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the Wailuku Community. Implementation of the proposed action would prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result.

Section 3
Description of the Proposed Action and Alternatives

3.1 Identification of Alternatives

The County of Maui, DPW, proposes to address existing erosion and flood hazards along the Wailuku River upstream of the ʻĪao Stream Levee 27 to provide reduced flood risk to the Wailuku community.

The following alternatives were considered:

1) No Action Alternative
2) Delayed Action Alternative
3) Preferred Alternative

As part of the project alternative screening process, alternatives were analyzed to identify the least environmentally damaging practicable alternative. The following sections include a description of each alternative considered and criteria used to determine whether the alternative meets the project purpose and need.

3.2 No Action Alternative

State legislation requires that a No Action Alternative be considered to serve as a baseline against which potential actions can be measured. The No Action Alternative is to not construct any repairs to the embankment upstream of the ʻĪao Stream Levee 27 along Wailuku River. Continuing severe erosion would result from implementation of the No Action Alternative, contributing to the deterioration and ultimate failure of the embankment and potential impacts to the ʻĪao Stream Levee 27, which would eventually lead to flooding of the Wailuku River drainage basin. Failure of the existing embankment could cause loss of life and extensive property damage.

Additionally, the repairs to the embankment are necessary for FEMA to certify the ʻĪao Stream Levee 27. Therefore, the No Action Alternative would not allow for the levee to be certified as viable to protect property or life from the 100-year recurrence interval storm event.

Because the No Action alternative would fail to meet the project purpose and need, it is removed from further consideration.

3.3 Delayed Action Alternative

The Delayed Action Alternative involves the construction of the project, but at a later date. Delaying the project would temporarily avoid the potential for adverse construction-related environmental effects and the need for the expenditure of funds for planning, design, development, and construction activities. However, because the potential for construction-related

environmental impacts and project costs would only be delayed, impacts and costs associated with the construction of the project would eventually be borne when the project is implemented.

Additionally, delaying the project would not address the continued erosion contributing to the deterioration of the embankment, which could eventually lead to failure of the stream bank and downstream levee and flooding of the Wailuku River drainage basin causing loss of life and extensive property damage. The Delayed Action Alternative would also not allow for the ʻĪao Stream Levee 27 to be certified by FEMA as viable to protect property or life from the 100-year recurrence interval storm event.

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

- Construction costs would be averted in the short-term but are expected to ultimately be higher due to inflation or cost escalation and other factors while resulting in environmental outcomes similar to the Preferred Alternative of proceeding with the proposed action.
- The Delayed Action Alternative would further delay the project's implementation schedule because of the need for repairs caused by a deficient design resulting in long-term damage to the existing stream bank. Delaying further action also does not address the continued undercutting of the right bank, would increase the time needed to perform any repairs, and would continue to allow floodwaters to inundate the Wailuku River drainage basin. Therefore, delayed action would contribute to both the potential for the loss of life and extensive property damage due to flooding.

Because the Delayed Action Alternative would fail to meet the project purpose and need, it is also rejected from further consideration.

3.4 Preferred Alternative – Proposed Action

Based on the existing condition of the stream bank within the project extents and the need to protect the downstream ʻĪao Stream Levee 27, the Preferred Alternative is to repair an approximately 240 feet long section of the Wailuku River right stream bank located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27. The Preferred Alternative would repair the embankment by removing the existing deteriorating CBF slope; grading the slope; excavating to deepen the protection along the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. Implementation of the Preferred Alternative would prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result.

Certification that levees can withstand a 1-percent chance flood is required by the FEMA; if not certified, flood protection infrastructure is not deemed viable to protect property or life from the 100-year recurrence interval storm event. The Preferred Alternative is necessary for the certification of the ʻĪao Stream Levee 27.

The Preferred Alternative is the only alternative that (1) addresses the existing and future anticipated erosion issues; (2) protects the downstream ʻĪao Stream Levee 27; (3) reduces flood risk to the town of Wailuku; and (4) allows for FEMA to certify the downstream ʻĪao Stream Levee 27. Because the Preferred Alternative addresses the purpose and need for the action, and is the least environmentally damaging practicable alternative, it is selected as the proposed action for the project.

A description of the proposed action and estimated construction cost and schedule are provided in the following sections.

3.4.1 Description of the Proposed Action

The proposed action involves stream bank remediation along an approximately 240 feet long section of the Wailuku River right stream bank located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27. The purpose of the repairs is to prevent further erosion, scour, and damage to the right stream bank and protect the downstream ʻĪao Stream Levee 27. The proposed repairs to the stream bank are not part of the ʻĪao Stream Levee System. The work will include soil excavation, removal of existing CBF, grading, and installation of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The new embankment is expected to have a slope gradient similar to the existing, approximately 1H:1V slope. When completed, the slope will have armor protection to reduce the potential for scour, prevent future continued erosion of the stream bank, and protect the downstream ʻĪao Stream Levee 27.

The stream bank repairs will include the complete removal of the existing and deteriorating CBF slope to accommodate the new repairs. Additionally, temporary relocation of 2- and 4-inch PVC pipes, barriers, and fencing will be required during construction. See **Figure 3-1**.

The upper right bank will be graded to provide 1H:1V maximum bank slope. The lower bank section at the base of the embankment where the proposed toe protection (i.e., grouted riprap) will be installed, will be graded to provide 1H:1V slope along the natural left bank and 1.5H:1V slope on the right bank. Due to the planned 1H:1V slope gradient, a geogrid-reinforced soil slope will be utilized for repairing the existing stream bank. In general, geogrid-reinforced soil slopes are steepened fill slopes with layers of geogrid reinforcement embedded in the backfill. The strength of the soil is improved with reinforcement by providing tensile resistance to driving forces. This allows for stable slope gradients which are steeper than unreinforced soil slope gradients. See **Figures 3-2** and **3-3**.

Subgrade Preparation - Based on the geological test borings completed for the project, cobbles and boulders are expected to be exposed at subgrade level. As a result, the subgrade will be proof rolled with heavy construction equipment such as a large bulldozer. If encountered, soft and loose soils indicated by pumping conditions will be removed and replaced with either approved onsite material or imported surge rock. See **Figure 3-3**.

Reinforced Soil Slope – An approximately 6 to 12-inch layer of 3-inch minus surge rock over the cobble and boulder subgrade will be used to provide a level working base for the construction of the reinforced soil slope. A geotextile filter fabric such as the Mirafi FW700 or equivalent will be installed between the subgrade and the working base. The reinforced soil slope fill material for the bottom portion of the embankment above groundwater elevation or the water level of the adjacent stream (i.e., Wailuku River) will consist of 3-inch minus aggregate with very little or no fine. The 3-inch minus aggregate will be densified with a track dozer or roller to an unyielding condition. Fill material for the remainder of the reinforced soil slope will consist of well-graded granular structural fill. The well-graded structural fill will be placed in horizontal lifts restricted to 8 inches in loose thickness and compacted to a minimum of 95 percent compaction as determined by ASTM D 1557. The fill will be keyed and benched into the existing slope to provide stability for the new fill against sliding. See **Figure 3-3**.

Based on the maximum embankment height of 20 feet, geogrids with nominal long-term design strength of at least 2,575 pounds per foot such as the Miragrid 5XT or equivalent will be installed. The geogrids will be vertically spaced at a maximum of 18-inch intervals. For the bottom 5 layers, the geogrids will be a minimum of 22 feet in length. The remainder of the geogrid layers will be a minimum of 15 feet in length. In order to ensure stability at the slope face, an overlapping length of 3 feet will be used to wrap the compacted soil layers around the face of the backfill and embed it into the backfill. See **Figure 3-3**.

Stabilized Face Slope - Grouted riprap consisting of loose rock, strengthened and bound together with mortar will be utilized as the facing system for the slope. Grouted rip-rap lining is effective in areas of high velocity and shear stress and conforms to irregularities in bank slopes. The lining would span the project length of approximately 240 feet. The grouted rip-rap lining would be approximately 3.5 feet thick. The upper portion of the grouted riprap slope face would have a slope of 1H:1V. The grouted riprap face slope would then extend into the stream bed to a depth of 10 feet at a slope of 1.5H:1V. The grouted riprap face slope would have a minimum 8.5-foot span near the top bank and be keyed into the soil at the bottom of the slope. To prevent soil loss, a filter layer comprised of gravel or geotextile fabric would be placed in between the reinforced soil slope and grouted riprap face slope. The filter layer would have a minimum 7-foot span near the top bank and be keyed into the soil at the bottom of the slope. See **Figures 3-2** and **3-3**.

Under drain pipes will be installed in the facing system to allow water to drain from behind the slope face. The under drains will have a maximum horizontal spacing of 6 feet and vertical spacing of 10 feet. The under drains will extend through the grouted surface to the interface with the gravel layer (filter layer) and the buried end of the under drains shall be covered with wire screening or a fabric filter that will prevent the passage of the gravel layer. See **Figure 3-3**.

Toe Scour Protection - A cover of non-grouted loose riprap will be placed on top of the grouted riprap lining to provide toe protection and further mitigate undermining due to scour. Dumped riprap will be placed in a V-shape with a maximum depth of approximately 9 feet to protect the toe of the grouted riprap in the event of additional scour. The size and depth of the boulders used for the dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event. Once installed, soil and water will fill any small remaining voids. See **Figures 3-2** and **3-3**.

Figure 3-1. Demolition Plan

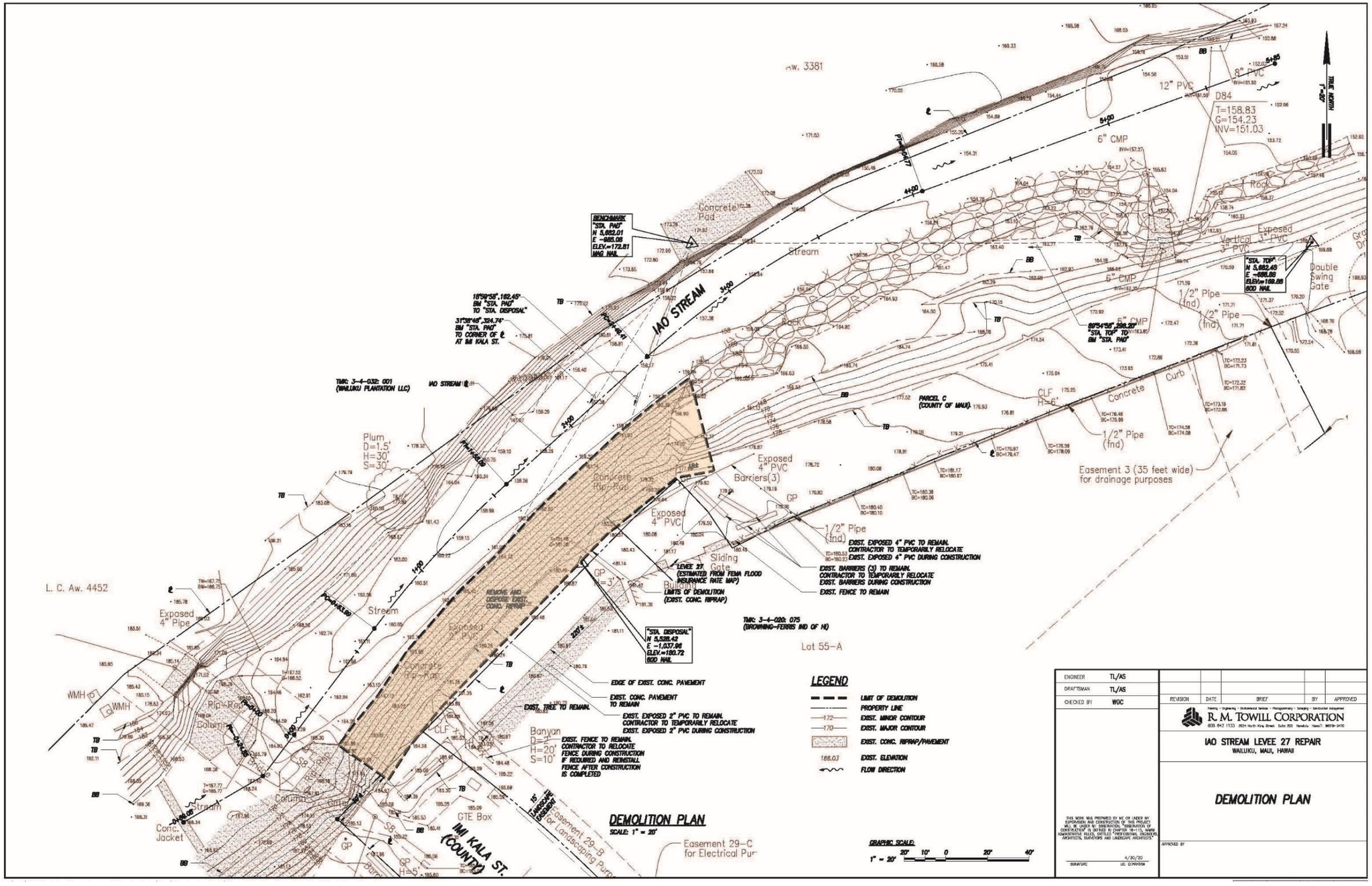


Figure 3-2. Site Plan

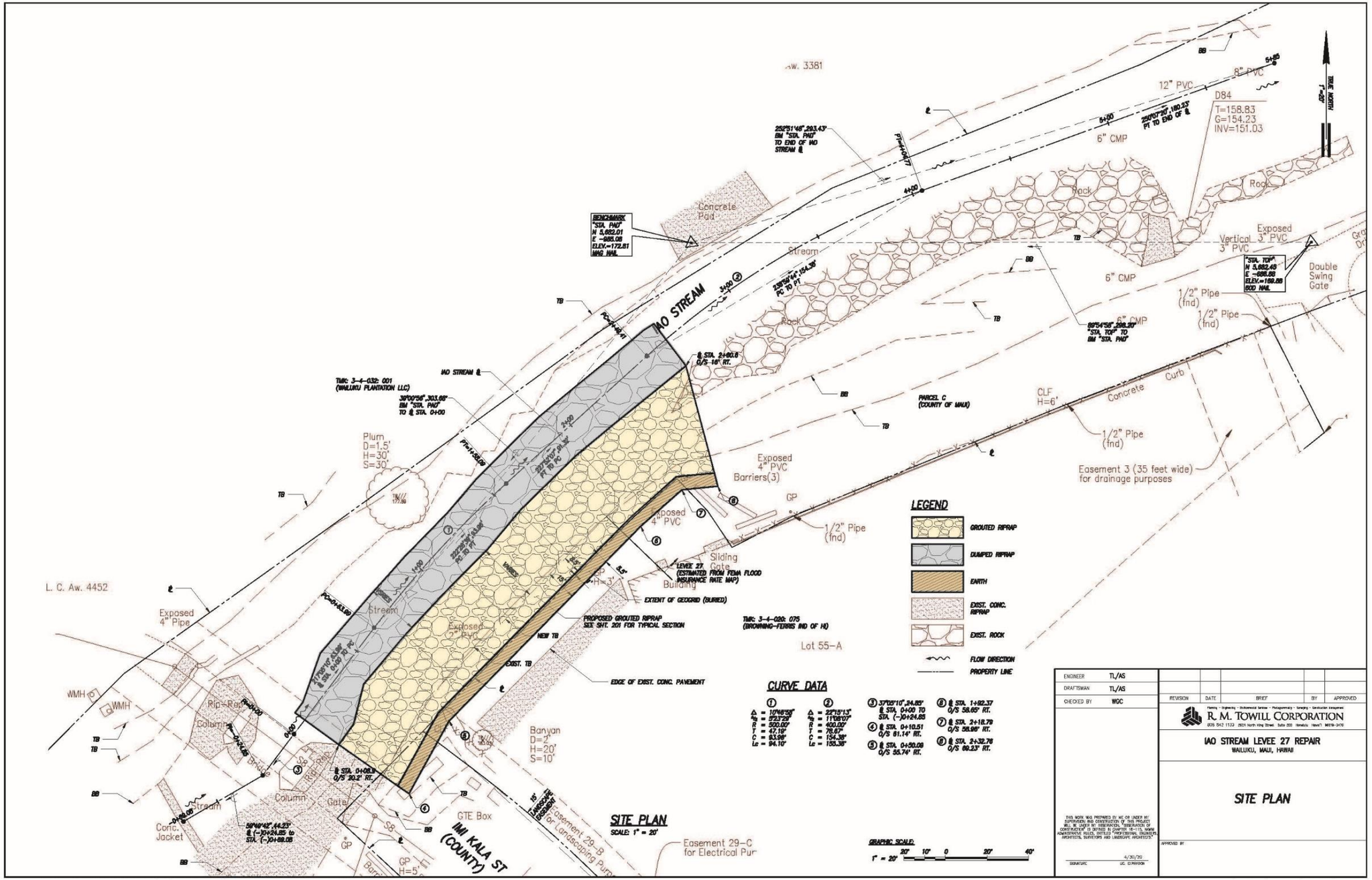
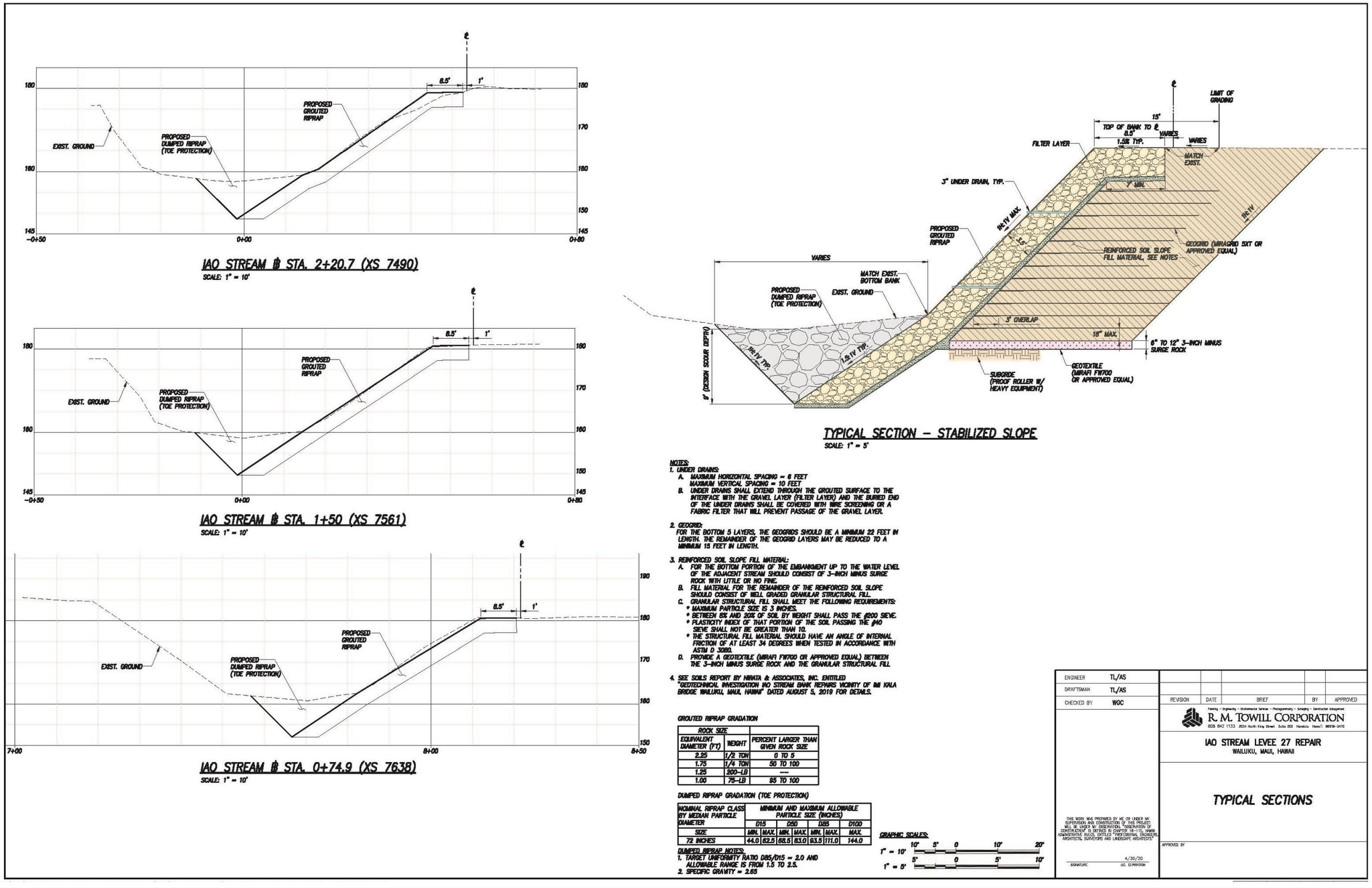


Figure 3-3. Typical Section



3.4.2 Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to: pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

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

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

3.4.3 Property Ownership

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area is approximately 1.39 acres.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection

in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

3.4.4 Estimated Construction Cost and Schedule

The estimated construction cost for the project is $1.8 million. Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be between 6 months to 8. Exact construction dates will be available when a contractor has been selected for the project. Dates are subject to change based on permitting and design and the scheduling of work in the dry season.

Section 4
Description of Existing Site Conditions, Potential Impacts, and Proposed Mitigation

This section summarizes the existing environmental setting, potential short and long-term, secondary, and cumulative effects of the proposed action, and mitigation measures. Short-term effects are from construction activities, while long-term effects continue or occur after the project is completed. Although the subject EA document does not require an assessment of impacts according to NEPA requirements, the definition of impacts, according to NEPA, provides guidance toward understanding potential environmental impacts and applicability to this project. Secondary impacts are generally defined as those induced or caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable (40 Code of Federal Regulations [CFR] §§ 1500-1508). Potential cumulative effects may result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions (40 CFR §1508.7).

4.1 Existing Site Conditions

4.1.1 Description

The project site is located downstream of Imi Kala Bridge, extending along the right bank of Wailuku River for approximately 240 feet in Wailuku, Island of Maui, Hawaiʻi. In September 2016, heavy rains caused erosion of the Wailuku River stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damages to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of CBF along approximately 230 feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1H:1V and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. A site reconnaissance was performed in March 2018 and discovered that the boulders placed at the toe of the stream bank had been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed. The existing slope gradient varies from about 1H:1V to l.3H:1V.

The project site and area of disturbance for the proposed repairs to the embankment are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, dewatering, construction entrance, access, and grading, is approximately 1.39 acres. See **Figure 2-1, Project Location and Tax Map Key.** The Maui Disposal facility borders the site on the south.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

4.1.2 Potential Impacts and Proposed Mitigation

The proposed action includes bank stabilization and reconstruction of the existing revetment to prevent further erosion of the stream bank. The proposed action would have the potential for adverse environmental impacts from short-term construction including grubbing, grading, and construction at the project site. The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing the new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event. Given the relatively developed nature of the site and surrounding commercial land uses, no adverse effects are expected.

Overall, the proposed action is expected to have beneficial environmental and social impacts as it will prevent further erosion of the bank, protect the downstream ʻĪao Stream Levee 27, and provide reduced flood risk to the town of Wailuku caused by design deficiencies and long-term damage to the existing bank stabilization structure suffered during repeated floods since its original construction and subsequent repairs.

DPW has an additional bank stabilization project with a similar scope of work as the proposed action further upstream along Wailuku River in the vicinity of the Wailuku Millyard light industrial subdivision. The purpose of the DPW project in the vicinity of the Wailuku Millyard light industrial subdivision is to restore the eroded embankment of the Wailuku River and provide slope protection improvements. The existing earthen embankment of the Wailuku River, located on County property, identified by TMK No. (2)3-4-030:888 (por.) (Parcel 888), has eroded beyond the bank to affect two (2) adjacent properties identified by TMK (2)3-4-020:045(por.) and 046(por.) (Parcels 45 and 46, respectively) and exposed the building foundation of a commercial building on Parcel 46. Continued degradation may result in flooding and further loss of property. As such, DPW proposes to reinforce a portion of the river bank slope covering approximately 5,000 square feet within Parcel 45, Parcel 46, and Parcel 888. The proposed action and the bank stabilization project further upstream along Millyard light industrial subdivision proposed by the DPW needed to be separated because the stream embankment section included in the proposed action protects the levee system downstream which must be accredited per the National Flood Insurance Program.

In addition, the USACE and County of Maui, DPW, prepared a Final EA in July 2017 for Modification to the ʻĪao Stream Flood Control Project. The project consists of features intended to reconnect the main channel with the floodplain to reduce damaging flows along the main channel and right bank levees of Wailuku River. The reconnection would be accomplished by lowering a portion of the left bank, grading the overflow area, and constructing a diversion wall to force flood flows to enter the existing floodplain on the left bank. A portion of the left bank would be raised downstream to contain the overflow within the floodplain. Further downstream, the left bank would be lowered to allow the return of the overflow into the main channel. Implementation of the project would occur within the approximately 0.4-mile stretch of the stream between slightly downstream of Waena Street and upstream of Imi Kala Street, approximately 1.4 miles upstream from the shoreline. The project is currently being reevaluated by the USACE.

Because the direct impacts from the proposed action would be only short-term and other past, present, and reasonably foreseeable future actions are expected to be consistent with the existing development and use of the area, the project would make no persistent contribution to secondary or cumulative impacts.

Additionally, it is expected that all construction projects would adhere to BMPs and utilize other protective measures to minimize any impacts to environmental resources. Therefore, cumulatively, all foreseeable projects would be expected to have less than significant impacts. Beneficial cumulative impacts are expected in the form of reduced stream bank erosion and flood risk to the town of Wailuku.

4.2 Climate

4.2.1 Description

Maui's climate is relatively consistent throughout the year. The island's climate varies as the terrain changes. Characteristic of Maui's climate, the proposed project site experiences mild and uniform temperatures year-round, moderate humidity, and consistent trade winds.

Average temperatures at the general project area (based on temperatures recorded at Kahului Airport) range from the low 60s to high 80s (Fahrenheit). August is historically the warmest month, while February is the coolest. Annual precipitation rainfall average is approximately 18 inches per year (County of Maui, Office of Economic Development, 2019).

The prevailing winds on Maui (known as trade winds) are from the east-northeast, with a mean wind speed of 10.6 miles per hour. The trade winds prevail approximately nine months of the year. During the winter months, winds tend to be less predictable; there are longer periods of light and variable winds and occurrences of strong southerly, or "Kona" winds, associated with weather fronts and storms.

4.2.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action is not expected to have an impact on the region's climate; therefore, no mitigation measures are warranted. **Section 4.7 Natural Hazards** address issues related to climate change.

4.3 Geology and Topography

4.3.1 Description

Geology. Geological resources typically consist of surface and subsurface materials and their inherent properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

The Hawaiian Archipelago is a chain of seamounts and islands in the North Pacific extending 1,616 miles west by northwest from the largest Island of Hawaiʻi. Igneous rocks are the dominant rock type and consist of basaltic flows, caldera and dike complexes, and pyroclastics. The Island of Maui, the second largest of the Hawaiian Islands, was formed by the intersection of two shield volcanoes, East Maui (Haleakalā) and West Maui (Mauna Kahalawai or the West Maui Mountains), linked by the narrow isthmus of overlapping lava flow events. The older, smaller, and more eroded volcanic center constitutes West Maui, while East Maui is the product of Haleakalā, a younger, much larger, and less dissected volcanic shield (Hazlett and Hyndman, 1996; Stearns, 1985). West Maui rises 5,788 ft above sea level and is 18 miles long and 15 miles wide. Thin flows of pāhoehoe lava formed the young shield of West Maui, completed around 1.3 million years ago. The lavas that erupted during this main stage of growth are known as the Wailuku basalts. Rift zones were developed that trend north and south of the caldera at the summit of West Maui.

A geotechnical survey of the project site was conducted in 2019 (Hirata & Associates, Inc.). The survey indicated that the surface soil consisted of brown sand and silty sand in a medium dense condition with occasional loose pockets. The sand and silty sand extended to depths ranging from about 2.5 to 10 feet. Underlying the sand and silty sand was a stratum of cobbles and boulders in a matrix of silt, sand, and gravel. The cobble and boulder stratum was in a dense condition. Underlying the cobble and boulder layer was mottled grayish brown silty gravel. The silty gravel was in a dense condition.

Topography. Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains), and their influence on human activities.

The elevation of the project area ranges from approximately 157 to 188 feet. The project area surrounding the Maui Disposal commercial property and Imi Kala Street is relatively flat. Where

the embankment repairs will occur along the right bank of Wailuku River the existing slope gradient varies from about 1H:1V to l.3H:1V.

4.3.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action is not expected to adversely impact the geology or topographic nature of the site. Minor topographic alterations at the project site would be necessary in order to construct the proposed embankment repairs. The proposed action includes soil excavation, removal of existing CBF, grading, and installation of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The new embankment is expected to have a slope gradient similar to the existing, approximately 1H:1V along the upper bank. Due to the planned lH:1V slope gradient, a geogrid-reinforced soil slope will be utilized for repairing the existing stream bank. The lower bank section at the base of the embankment where the proposed toe protection (i.e., grouted riprap) will be installed, will be graded to provide a 1H:1V slope along the natural left bank and 1.5H:1V slope on the right bank.

A Grading Permit from the County of Maui, Department of Public Works, Development Services Administration Division, and NPDES permits for construction storm water and construction dewatering from the State Department of Health (DOH) will be required. The Maui County Code Section 20.08.250 describes proper permitting and inspection procedures necessary for grading, soil erosion, and sediment control during earthwork activities. The exact excavation and fill quantities will be determined by geotechnical and civil engineers during the project design phase. All work, including excavation and fill work, shall be in accordance with current construction standards and all local, state, and federal regulations. Excavated soil would be tested and reused on-site where possible. Any excess soils would be tested and either be reused elsewhere on the island or would be trucked to an appropriate on-island landfill and properly disposed of. As part of project development, BMPs addressing soil and erosion control (e.g., silt fencing, tarping/covering, surface revegetation, etc.) would be implemented to minimize/eliminate soil migration from the proposed construction area. All grading operations will be conducted in accordance with dust, erosion control, and other requirements of the County of Maui's grading ordinance.

There are no anticipated significant long-term impacts to site geology or topography during the operation of the proposed action. The proposed revetment system would have armor protection to reduce the potential for scour, prevent future continued erosion of the stream bank, and protect the downstream ʻĪao Stream Levee 27.

Given the shallow depth of excavation for grading activities, lack of sensitive geological resources, and implementation of soil-control BMPs, no significant impacts to geology or topography are anticipated.

4.4 Soils and Potential for Hazardous Materials

4.4.1 Description

Soils. The term soil, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability of the ground to support man-made structures and facilities. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use.

According to the U. S. Department of Agriculture (USDA, 2001) Soil Survey Geographic database and soil survey data gathered by Foote et al. (1972), the project area is located within ʻĪao cobbly silty clay, 3 to 7 percent slopes (IbB). See **Figure 4-1, Soil Types**.

ʻĪao cobbly silty clay, 3 to 7 percent slopes (IbB) is described as follows:

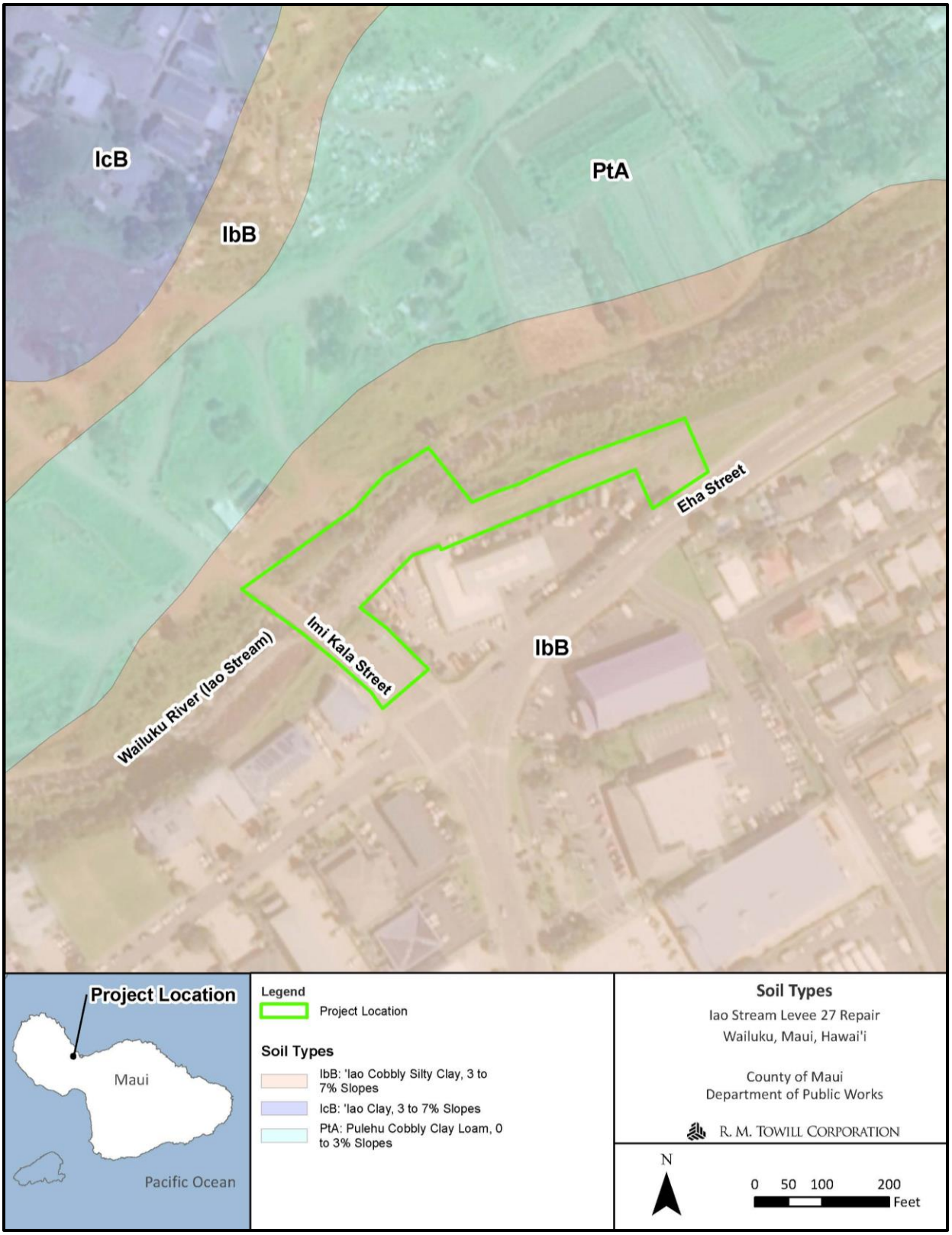
> This soil has a profile like that of ʻĪao clay, 3 to 7 percent slopes, except for the texture of the surface layer and the content of cobblestones.
>
> This soil is used for sugarcane and homesites. (Capability classification IIe if irrigated, IIIs if nonirrigated; sugarcane group 1; pasture group 3) (Foote et al. 1972:47)

Potential for Hazardous Materials. Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity, which may cause an increase in mortality, serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment. Examples of hazardous wastes include toxic or hazardous substances such as polychlorinated biphenyls, asbestos, pesticides, and radiation sources.

Issues associated with hazardous materials and wastes typically center on underground storage tanks, aboveground storage tanks, and the storage, transport, and use of pesticides and fuel. When such resources are improperly used, they can threaten the health and well-being of wildlife species, botanical habitats, soil systems, water resources, and people.

The project area surrounds the northern side of the Maui Disposal Co, Inc. (Browning-Ferris Industries) which is classified as a Resource Conservation and Recovery Act Conditionally Exempt Small Quantity Generator and is located at 280 Imi Kala Street. Conditionally Exempt Small Quantity Generators are defined as entities that generate less than 100 kilograms of hazardous waste, or less than 1 kilogram of acutely hazardous waste per month. No violations have been found at this site.

Figure 4-1. Soil Types



A State Hazardous Waste Site, Wailuku Sugar Company Pesticide Mixing Area, is located within a 0.25-mile radius of the project area at 250 Imi Kala Street. In 2011, a Removal Action Report identified two of four decision units that had minimal concentrations (563 and 767 milligrams per kilogram) of petroleum hydrocarbon as motor oil exceeding residential use environmental action levels of 500 milligrams per kilogram for gross contamination. However, there were no signs of soil staining or petroleum odor, and the case was closed with a No Further Action Letter stating Unrestricted Residential Use. In March 2013 another No Further Action Letter identified potential pesticide and metal contamination. It was concluded that "soils did not pose a threat to human health or the environment based on three factors: the low concentrations relative to our unrestricted action levels, the small area impacted, and the presence of clean soils above and below the impacted soils". The site is now classified as non-hazardous.

A pad mounted transformer (Maui Electric Company, now known as Hawaiian Electric Company [HECO] Release Transformer #16667) was found to be leaking within a 0.25-mile radius of the project area at 1856 Wili Pa Loop in 2018. The transformer pad was cleaned and the leaking transformer was replaced. The impacted sand was removed and soil testing confirmed levels were below environmental action levels.

A remediation site for petroleum contaminated soils at Gomes Construction was identified within a 0.25-mile radius of the project area at 1790 Mill Street in 2004. The site was cleaned and in 2005, the DOH determined that the site does not pose a human health or environmental threat and that no further cleanup action was required.

According to the State of Hawai'i, DOH, Leaking Underground Storage Tank (LUST) list, there are no identified LUST facilities within the project area or in the immediate surroundings.

Potential hazardous materials are not expected to be within the project area and the project is not expected to use hazardous materials.

4.4.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action would have less than significant short-term impacts on affected soils within the project area during the construction period. The proposed action includes soil excavation, removal of existing CBF, grading, and installation of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The new embankment is expected to have a slope gradient similar to the existing, approximately 1H:1V along the upper bank. Due to the planned lH:1V slope gradient, a geogrid-reinforced soil slope will be utilized for repairing the existing stream bank. The lower bank section at the base of the embankment where the proposed toe protection (i.e., grouted riprap) will be installed, will be graded to provide a 1H:1V slope along the natural left bank and 1.5H:1V slope on the right bank.

Impacts to the soils include the potential for soil erosion and the generation of dust during grading and construction. Clearing and grubbing activities will temporarily disturb the soil retention values of the existing vegetation and expose soils to erosional forces. Some wind erosion of soils could occur without a proper watering and re-grassing program. Heavy rainfall

could also cause erosion of soils within disturbed areas of land. BMPs to minimize impacts may include the following:

- Minimizing the time of construction.
- Retaining existing ground cover as long as possible.
- Constructing drainage control features early.
- Using temporary area sprinklers in non-active construction areas when ground cover is removed.
- Providing a water truck on-site during the construction period to provide for immediate sprinkling, as needed.
- Using temporary berms and cut-off ditches, where needed, for control of erosion.
- Watering graded areas when construction activity for each day has ceased.
- Grassing or planting all cut and fill slopes immediately after grading work has been completed.
- Installing silt fences, sediment traps, and diversion swales, where appropriate.
- Employee training on the proper use of BMPs.

Construction activities will comply with all applicable Federal, State, and County regulations and rules for erosion control. Grading activities for the project development will comply with the County of Maui's grading ordinance. A Grading Permit and NPDES permits for construction storm water and construction dewatering will be required prior to construction to address non-point source discharges. All construction activities will comply with the relevant provisions regulating Fugitive Dust set forth under Section 11-60.1-33, HAR.

The exact excavation and fill quantities will be determined by geotechnical and civil engineers during the project design phase. All work, including excavation and fill work, shall be in accordance with current construction standards and all local, state, and federal regulations. Excavated soil would be tested and reused on-site where possible. Any excess soils would be tested and either be reused elsewhere on the island or would be trucked to an appropriate on-island landfill and properly disposed of.

There are no anticipated significant long-term impacts to site soils during the operation of the proposed action. The proposed revetment system would have armor protection to reduce the potential for scour, prevent future continued erosion of the stream bank, and protect the downstream ʻĪao Stream Levee 27. Given the shallow depth of excavation for grading activities and implementation of soil-control BMPs, no significant impacts to soil are anticipated.

During construction of the proposed action, there may be the potential of petroleum spillage associated with construction vehicles and equipment. To minimize this hazard, all applicable County of Maui Spill and Prevention Control BMPs would be implemented to ensure that accidental releases are minimized and contained. For example, vehicles and equipment would be regularly inspected for leaks and performance and maintained accordingly. In the event that any potential hazardous contaminants or spills are encountered the contractor will adhere to the DOH, Hazard Evaluation and Emergency Response guidelines.

There are no anticipated significant long-term impacts related to hazardous materials during the operation of the proposed action. Implementation of the proposed section is expected to have no significant impact on hazardous materials.

4.5 Water Resources and Hydrology

4.5.1 Surface Water

4.5.1.1 Description

Wailuku River is a perennial tributary to the Pacific Ocean. See **Figure 4-2, Surface Waters.** Wailuku River begins in the upper elevations of the ʻĪao Valley and flows eastward towards the Pacific Ocean, discharging into Kahului Bay. The ʻĪao watershed is subject to intermittent, high intensity rainfall, causing runoff from drainage basins for North and South Waiehu Streams. Wailuku River is about 12,000 feet in length from the sediment basin to the outlet into Kahului Bay, and about 30% is lined with existing concrete channels. The remaining portions of the stream are an alluvial channel where the stabilization problems occur. Levees are situated on the right bank to protect the town of Wailuku.

Wailuku Stream waters were historically diverted to agricultural areas via three diversion structures located below the ʻĪao intake. Downstream of the diversions, stream flow in the past was absent 80 to 90% of the time, punctuated by infrequent high flows following intense rainfall events when stream discharge volume was sufficient to overtop the water diversion structures (USFWS, 2006). On October 13, 2014, Wailuku Water Company began releasing 10 million gallons per day of water into Wailuku River pursuant to the April 2014 Order and Agreement issued by the CWRM establishing an IIFS. Currently, there is continuous flow of water through the section of the proposed project area.

Prior to the enhanced base flow in 2014, water quality problems faced in the stream were related to insufficient flow to maintain a viable temperature regime for native biota. Dissolved oxygen (essential to all aquatic life) is reduced with an increase in water temperature. Many *ʻoʻopu* are temperature sensitive and high temperatures experienced in the stream may have exceeded the tolerances of the native aquatic organisms, whereas higher temperatures resulting from low base flow are tolerable by many introduced fishes and mollusks. The current water regime in the project area appears to be one of adequate flow producing water quality conditions that are supportive of native fauna.

AECOS Inc. conducted various environmental surveys of the project site. According to the March 2021 AECOS report (**Appendix A**), stream flow within the project area is robust, flowing in a series of runs, riffles, and occasional pools through the channel. During the AECOS survey, the water was clear and floating vegetative debris was uncommon. Measured temperature and dissolved oxygen are typical of a swiftly flowing stream in Hawaiʻi. Temperatures ranged from 21.2 to 21.4°C. Dissolved oxygen concentrations ranged from 7.78 to 8.32 milligram/Liter, corresponding to 89% to 93% of saturation. Values for stream pH ranged from 7.55 to 8.16 representing essentially neutral to slightly alkaline conditions at the upper range for typical Hawaiian streams.

Figure 4-2. Surface Waters

Conductivities were low (between 78 and 81 micromhos per centimeter) at all three stations. Particulates, measured as turbidity and total suspended solids, were generally low in these samples: turbidity ranging between 0.47 and 0.62 nephelometric turbidity units; total suspended solids ranged from 1.0 to 1.9 milligram/Liter. The presence of nitrate+nitrite at all stations in detected concentrations (31 µg N/l at 'Up', 9 µg N/l at 'Mid', and 8 µg N/l at 'Down') may indicate an influence from groundwater into the stream near the project site. Total nitrogen concentrations at all stations fell below the detection limit. Total phosphorus concentrations were low across all stations. Results of the water quality measurements are provided in **Table 4-1**.

Table 4-1. Physical and Chemical Water Quality Results for Wailuku River Samples Collected February 2, 2021

Station	Temp. (°C)	Conductivity (□mhos/cm)	Salinity (psu)	pH	DO (mg/l)	DO sat. (%)
Up	21.3	80	<0.10	8.16	7.78	89
Mid	21.2	78	<0.10	7.82	8.08	91
Down	21.2	78	<0.10	7.55	8.32	93

Station	Turbidity (ntu)	TSS (mg/l)	NO3+NO2 (□g N/l)	Total N (□g N/l)	Total P (□g P/l)
Up	0.50	1.0	31	<70	6
Mid	0.47	1.1	9	<70	11
Down	0.62	1.9	8	<70	3

Wailuku River flows in a natural bed through the project area. The left bank is also natural, and incised deeply along an earthen cliff. The right bank is a fortified revetment system, designed to protect commercial properties in the Wailuku business district. At the project site, the reinforced embankment extends from approximately 260 feet upstream of Imi Kala Street Bridge (beyond the project site) to some 240 feet downstream of the bridge (within the project site). The remaining right bank downstream of the project is a part of ʻĪao Stream Levee No. 27, where earth and gravel fill are built up over the natural bank. Two 8-feet diameter concrete storm-drains from the business district daylight into the stream along the Levee No. 27 wall, downstream of the project area.

Within the project area, the width of the stream OHWM ranges from 39 to 82 feet, and the wetted channel was estimated at about 90% of the width between delineated OHWM. The most commonly encountered physical indicators of OHWM in this stream segment are changes in vegetation; shelving; water-stains; and exposed roots. Attachment A of the March 2021 AECOS report (**Appendix A**) includes photographs taken of each bank and up- and downstream from near the center of the stream.

In the project area, the stream channel consists of a boulder, cobble, gravel, fine sand, and silt on the bed with a natural, earthen left bank and a right bank of reinforced CBF. A geotechnical investigation by Hirata & Associates, Inc. (2019) revealed the top of the right bank consisting of

brown sand, silt, and gravel in the upper 2.5 to 10 feet, then cobbles and boulders down 20 to 28 feet over groundwater.

During the February 2021 survey by AECOS, flow in Wailuku River was above average, at about 31 cubic feet per second and declining (U.S. Geological Society, 2021). Flow was above the annual average daily flow of 17 cubic feet per second. A freshet on Jan. 31, 2021 (two days prior to the AECOS survey) exceeded 300 cubic feet per second. Freshets are typical in the Hawaiian wet season, which runs from November to April. The condition of hydrology in Wailuku River at the project site is considered "typical" for that time of year.

The segment of Wailuku River where the proposed action is located is classified as "Class 2 inland waters" by the State of Hawaiʻi. The objective of Class 2 waters is "to protect their use for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation" (HAR §11-54-3(b)(2)). Kahului Bay is classified as "Class A marine waters" by the State of Hawaiʻi. It is the objective of Class A waters "that their use for recreational purposes and aesthetic enjoyment be protected" (HAR §11-54-3(c)(2)). Further, uses must be compatible with the protection and propagation of fish, shellfish, and wildlife; and strict water quality standards have been set for the protection of these uses in Class A marine waters.

The CWA of 1977 (PL 95-217) expanded provisions related to pollutant discharges and applies regulatory and non-regulatory tools to reduce point source and non-point source pollution, in addition to setting standards for water quality. Section 303(d) of the CWA requires states to maintain a list of water bodies that do not meet or are not expected to meet state water quality standards. States must obtain and review all readily available surface water quality data to compare against state standards, and then make a decision on the level of impairment for each water body. The listing applies to both point and non-point sources of pollution and must include a listing of pollutants for which applicable standards are exceeded.

Wailuku River is listed on the DOH list of impaired waters Category 3 and 5; the Total Daily Maximum Load Priority is listed as Medium (DOH, 2018a). Wailuku River is designated as "impaired" based on the visual observations indicating Hawaiʻi water quality standards for turbidity and trash were not met. Kahului Bay, the receiving water of Wailuku River, is listed on the DOH list of impaired waters Category 2, 3, and 5; the Total Daily Maximum Load Priority is listed as Low; and waters are impaired based on data collected from harbor waters that did not meet Hawaiʻi water quality standards for nitrate+nitrite-nitrogen (NO_3+NO_2).

General policies of the Hawaiʻi DOH Clean Water Branch (CWB) are outlined below. These policies are as follows:

- It is the State's position that all projects must reduce, reuse, and recycle water to protect, restore, and sustain water quality and beneficial uses of State waters.
- State policy encourages storm water infiltration through Low Impact Development (LID) practices and discourages the treatment of storm water as a waste product off impervious surfaces.

This EA recognizes storm water as a potential source of irrigation, as a source of groundwater recharge and stream base flow, and an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters.

Section 404(b)(1) of the CWA is "to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material." Consistent with Section 404(b)(1) guidelines, adverse impacts to wetlands, streams, and other special aquatic sites must be avoided or minimized to the full extent practicable. In addition, the State has a general policy of water quality anti-degradation (HAR, §11-54- 1.1), which states that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In the case that water quality exceeds levels necessary to protect aquatic habitats, water quality may not be degraded without the approval of the director.

The County of Maui, DPW, Rules for the Design of Strom Water Treatment Best Management Practices, specifies that regulated new development and redevelopment projects include LID site design strategies, source control BMPs, and post-construction treatment control BMPs to meet water quality criteria.

4.5.1.2 Potential Impacts and Proposed Mitigation

The proposed action includes bank stabilization and reconstruction of the existing revetment to prevent further erosion of the stream bank. The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing the new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour.

There would be less than significant impacts to surface water quality during the construction period due to ground disturbance required for construction. The proposed action would include soil excavation, stockpiling during grading activities, and placement of fill. With respect to the impact on water quality, erosion and sedimentation during construction may occur, with particular concern during in-stream work. BMPs would be followed to prevent sediment and contaminants from impacting surface waters during construction, particularly during any in-stream work. BMPs employed during construction (e.g., silt fencing, tarping/covering exposed and stockpiled soils, surface revegetation, etc.) would minimize/eliminate storm water flow from the proposed construction site and any associated degradation of water quality.

Implementation of the proposed action would result in less than significant short-term impacts to surface water hydrology during the construction period as the stream flow would be slightly altered during construction/grading activities. However, BMPs that adhere to County of Maui, State, and Federal regulations would be implemented to minimize sediment discharges and alterations of stream flow. The Maui DPW will assess the surface water conditions and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.

- Cofferdams or similar BMPs constructed of sand bags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks or other perimeter controls may be placed along the lower edge of stream banks in work areas to prevent the movement of eroded material into the water.

As provided by the County of Maui, Department of Water Supply, in a letter dated June 14, 2021, during early consultation for the project, the following measures designed to minimize infiltration and runoff will be implemented, to the extent practicable, during construction:

1. Prevent cement products, oil, fuel, and other toxic substances from falling or leaching into the ground.
2. Properly and promptly dispose of all loosened and excavated soil and debris material from drainage structure work.
3. Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site.
4. Properly install and maintain erosion control barriers such as silt fencing or straw bales.
5. Disturb the smallest area possible.
6. Retain ground cover until the last possible date. Stabilize denuded areas by sodding or planting as soon as possible. Use high seeding rates to ensure the rapid establishment of stands of plants. To minimize chemical run-off, apply biocides only during dry periods of low rainfall.
7. Keep run-off on site.

During construction, project activities will be conducted in compliance with HAR 11-54 Water Quality Standards and HAR 11-55 Water Pollution Control. Areas of disturbed ground would be stabilized after construction activities to minimize erosion hazards.

Indirect (non-point), secondary, and cumulative impacts will be avoided with proper management of waste and compliance with applicable storm water regulations.

Additionally, the proposed action would be completed in accordance with County of Maui, State, and Federal regulations, including Section 404 (b)(1) of the CWA, which would further minimize any impacts to water quality in Wailuku River and Kahului Bay. Since the proposed action may generate discharges to State waters during construction, a Section 404, CWA/Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit); and Section 401 WQC would be required. In accordance with CWA regulations, an applicable monitoring and assessment plan and NPDES permits for construction storm water and construction dewatering would also be required prior to construction to address non-point source discharges. As required a Site-Specific Construction Storm Water BMP will be prepared and followed by the project contractor to handle the treatment of storm water runoff, erosion, and sediment control.

Implementation of the above will ensure the protection of ground and surface water resources during construction. Additionally, should a large storm event occur, all equipment will be removed from the stream and the site secured to prevent adverse impacts from flood waters.

Following construction, the new embankment will have a slope gradient similar to the existing, approximately 1H:1V, and armor protection to reduce the potential for scour. Once the new revetment system is constructed it is expected to have beneficial impacts on water resources by reducing further erosion of the stream bank and associated sediment and nutrient loads to Wailuku River and downstream to Kahului Bay.

Because the build-up of water pressure from runoff behind the embankments armored protection could cause the grouted riprap slope face to fail, a subsurface drainage system in the form of under drain pipes is proposed along the embankment. The under drain pipes will be installed in the facing system to allow water to drain from behind the slope face thereby preventing the build-up of water pressure behind the grouted riprap. The under drains will have a maximum horizontal spacing of 6 feet and a maximum vertical spacing of 10 feet and extend through the grouted surface to the interface with the gravel layer (filter layer). The buried end of the under drains will be covered with wire screening or a fabric filter to prevent the passage of the gravel layer.

The proposed use of dumped riprap for toe protection would be installed to the existing ground elevation allowing for surface water flow within the stream to be unaffected and for continued natural groundwater recharge to occur through the voids between the rocks. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

In the long-term, the proposed action is expected to have beneficial environmental and social impacts as it will prevent further erosion of the stream bank and protect the downstream ʻĪao Stream Levee 27. This will provide beneficial long-term impacts related to reduced flood risk to the town of Wailuku, and improved hydrology (movement of water), aquatic habitat, transport of sediment, and flood hazards within Wailuku River. Beneficial impacts on the biological resources within the stream are expected as a result of reduced erosion, as less sediment will directly enter the stream and be transported to the nearshore marine environment. Reduced sedimentation and improved water clarity will have positive impacts on the stream environment.

Where applicable and feasible, the County of Maui, DPW, will follow State guidance on Stormwater Impact Assessments (State of Hawaiʻi Office of Planning, State Coastal Zone Management Program, 2013), Hawaiʻi Watershed Guidance (State Hawaiʻi Office of Planning, State Coastal Zone Management Program, 2010), and LID (State of Hawaiʻi Office of Planning, State Coastal Zone Management Program, 2006), including some of the measures discussed above to mitigate impacts to surface water resources.

The proposed action is not expected to result in significant adverse cumulative impacts to surface water resources. It is expected that all construction projects would adhere to BMPs and utilize other protective measures to minimize any impacts to surface water resources. Therefore, cumulatively, all foreseeable projects would be expected to have less than significant impacts.

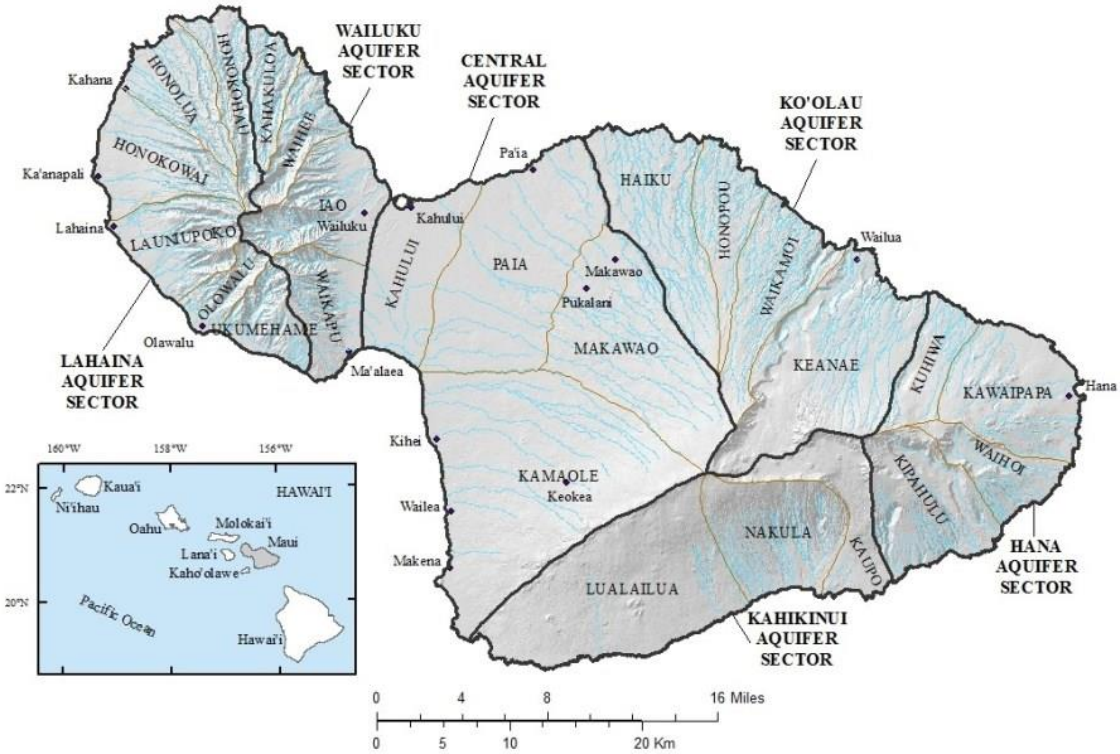
Beneficial cumulative impacts are expected in the form of reduced stream bank erosion and flood risk to the town of Wailuku.

4.5.2 Groundwater

4.5.2.1 Description

The proposed action is located in the ʻĪao aquifer system of the Wailuku aquifer sector (See **Figure 4-3, Groundwater**. An upper and lower aquifer underlie the proposed action. The upper aquifer is basal (i.e., fresh water in contact with seawater), is unconfined, has a sedimentary lithology, has potential use for development, is ecologically important, of has a low salinity (i.e., between 250-1,000 milligrams chloride (Cl-)/liter (L)), is irreplaceable, and has a high vulnerability to contamination. The lower aquifer is basal, is confined, and has a flank basalt lithology. Further, the lower aquifer has potential use for development, has a drinking water utility, is of a fresh salinity (i.e., less than (<) 250 milligrams Cl-/L), is irreplaceable, and has a low vulnerability to contamination (Mink and Lau, 1990).

Figure 4-3. Groundwater



Source: Image from Gingerich, S.B., 2008, Ground-water availability in the Wailuku area, Maui, Hawaiʻi: U.S. Geological Survey Scientific Investigations Report 2008-5236, 95 p.

4.5.2.2 Potential Impacts and Proposed Mitigation

No short- or long-term, secondary, or cumulative adverse impacts to groundwater resources are anticipated during construction or operation of the proposed action or during the implementation of other past, present, and reasonably foreseeable future actions.

Given the estimated depth to groundwater of approximately 160 feet below ground surface (USGS, 2021a), and the shallow depth of planned surface grading, groundwater is not anticipated to be encountered. The proposed use of dumped riprap for toe protection would be installed to the existing ground elevation allowing for surface water flow within the stream to be unaffected and for continued natural groundwater recharge to occur through the voids between the rocks. No impacts to groundwater resources are anticipated and Environmental Protection Agency (EPA) and DOH rules and guidelines for project development will be followed.

The protection of the state's underground water sources of drinking water and coastal waters will continue to be regulated through HAR, Title 11, establishing the administrative rules for the State DOH.

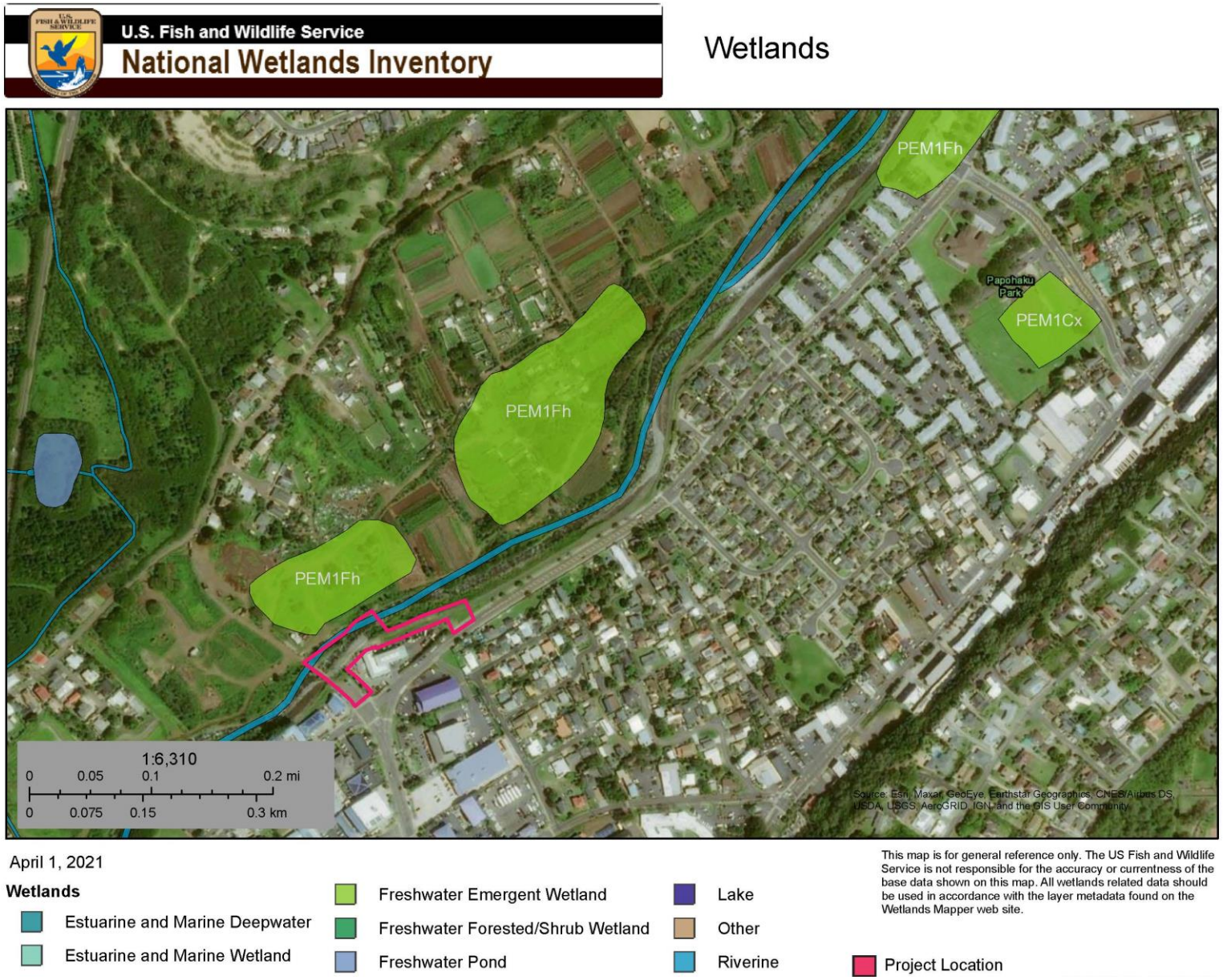
4.6 Wetlands

4.6.1 Description

Wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands play an integral role in the environment. They prevent erosion in the surrounding area through the presence of wetland associated plants with root systems that hold soil in place. The plants also serve as a physical barrier and absorb energy from waves. Wetlands also provide a natural filtration system for runoff. Nutrients swept into the wetland from runoff are absorbed by plant roots and microorganisms that live in the soil, or stick to the soil particles themselves. Through this process, most of the nutrients and pollution in the water are absorbed and retained and are prevented from entering the ocean (EPA, 2016). Executive Order 11990, Protection of Wetlands, directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands on their properties and mandates the review of the impact of proposed actions on wetlands through NEPA.

According to the U. S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (USFWS, 2021), the Wailuku River where the proposed action is located is designated as a riverine (see **Figure 4-4, Wetland Map**). The National Wetlands Inventory further identifies two freshwater emergent wetlands in agricultural lands north of the stream’s left bank, but no wetlands are identified in or adjacent to the project site on the right bank. The proposed action is not located near and would not affect the freshwater emergent wetlands.

Figure 4-4. Wetland Map



4.6.2 Potential Impacts and Proposed Mitigation

No wetlands are located within the project area on the right bank of Wailuku River or would be impacted by the project.

No impacts to the Wailuku River, classified as a riverine, or the freshwater emergent wetlands north and northeast of the project site are expected.

Water encountered and removed during construction would comply with federal NPDES requirements. During the construction, a BMPs plan and an Erosion Control Plan would be followed to prevent sediment and contaminants from impacting surface waters during construction, particularly during any in-stream work. BMPs would also be implemented to protect against inadvertent spills. **Section 4.5.1.2** addresses preventive measures to be taken by the construction contractor.

No direct, secondary, or cumulative adverse impacts to the area wetlands are anticipated and no further mitigation is anticipated to be required. All work proposed would adhere to regulatory requirements.

4.7 Natural Hazards

4.7.1 Description

The island of Maui is susceptible to potential natural hazards, such as hurricanes, tropical storms, high winds, flooding and tsunami inundation, climate change and sea level rise (SLR), earthquakes, wildfires, and volcanic activity. The island's unique geographical challenges, aging infrastructure, and fragile logistics system require collaborative efforts to manage complex natural hazard-related issues.

Hurricanes, Tropical Storms, and High Winds. Hurricanes are characterized by strong tropical winds with sustained wind speeds greater than 74 miles per hour and by widespread heavy rains in excess of six inches. Heavy rains may result in destructive flooding and strong winds can produce microbursts and mini-swirls (localized wind bursts that can reach speeds of greater than 200 mph [miles per hour]). Hurricanes are classified according to "Category": Category 1 hurricanes have wind speeds between 74 to 95 mph; Category 2 hurricanes have winds between 96 to 110 mph; Category 3 hurricanes have wind speeds of 111 to 129 mph; Category 4 hurricanes have wind speeds from 130 to 156 mph; and, Category 5 hurricanes have wind speeds exceeding 157 mph. The weather associated with hurricanes and tropical storms can lead to storm surges, which is an abnormal rise of water generated by a storm.

Hurricanes occasionally approach the Hawaiian Islands, but rarely reach the islands with hurricane-force wind speeds. The first officially recorded hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawaiʻi: Nina (1957), Dot (1959), ʻIwa (1982), Estelle (1986), ʻIniki (1992), and Lane (2018). It is difficult to predict when these natural occurrences may occur, but it is reasonable to expect that future events will take place and may increase in frequency due to global climate change.

Flooding and Tsunami Inundation. According to the Flood Insurance Rate Maps (FIRM), prepared by FEMA, the site is situated within the Flood Zone "AE" and "X", and does not fall with a special flood hazard area. Per the FEMA website (see **Figure 4-5, Flood Zones**):

> The Zone AE designation is the flood insurance rate zone that corresponds to the 1% (100-year flood) annual chance floodplains that are determined in the Flood Insurance Study by detailed methods of analysis. The zone designated as the 0.2% Annual Chance of Flooding corresponds to the areas of 500-year flooding.
>
> The Zone X designation is used for areas of minimal flood hazard areas outside of the 0.2% annual chance floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from a 100-year flood (1%-annual-chance or greater flood hazard by a levee system that has not been provisionally accredited).

The project area is located outside of the tsunami evacuation zone and extreme tsunami evacuation zone as designated by the Hawaiʻi State Civil Defense and County of Maui, Department of Planning. See **Figure 4-6, Tsunami Zones**.

Climate Change and Sea Level Rise. Rapid anthropogenic climate change is a well-established fact within the scientific community. As a result of climate change temperatures are rising, stream flows are declining, rain intensity is increasing while total rainfall is declining, oceans are warming and acidifying, ice sheets and glaciers are melting, and sea levels are rising. Rising sea levels and increased intensity of storms will leave developed areas near coastal areas vulnerable to coastal erosion and sea water inundation. Chronic coastal flooding is occurring now, and over the next 30 to 70 years the flooding is expected to increase with SLR, impacting homes and businesses located near the shoreline.

The Hawaiʻi Sea Level Rise Vulnerability and Adaptation Report (updated in 2018) by the Hawaiʻi Climate Change Mitigation and Adaptation Commission provides a basis for recommendations on reducing exposure and increasing adaptability to the impacts of SLR resulting from human-generated greenhouse gas (GHG) emissions. Research within the report notes that the intensity and frequency of natural disasters have increased and provides projections of areas along the coast that are vulnerable to SLR. The Report recommends planning benchmarks of one (1) foot SLR for current or near term exposure, 3.2 SLR by mid- or the later half of the century, and six (6) foot SLR by the end of the century. It is predicted by 2100 SLR will reach 3.2 feet, however, according to the Report, recent observations and projections indicate this magnitude of SLR may occur as soon as 2060.

The planned project is not located along coastal areas and is outside of the 3.2 feet SLR scenario projections, as indicated in the Hawaiʻi Sea Level Rise Viewer (Hawaiʻi Climate Change Mitigation and Adaptation Commission, 2017). See **Figure 4-7, Sea Level Rise Map**. Additionally, during early consultation for the project, in a letter dated June 18, 2021, the County of Maui, Department of Planning, confirmed that the work will occur outside of the exposure area for a six-foot SLR.

Figure 4-5. Flood Zones

Figure 4-6. Tsunami Zones

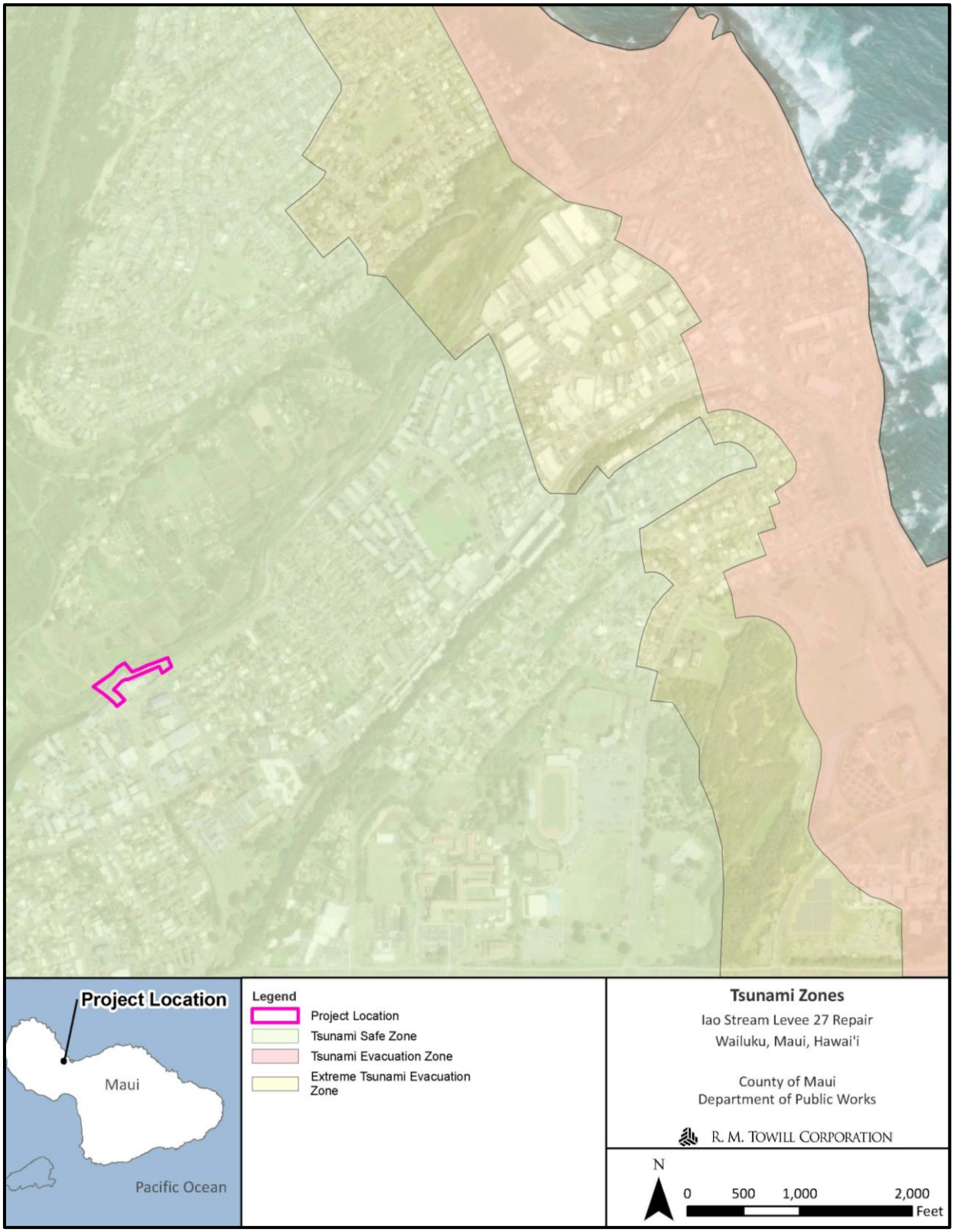


Figure 4-7. Sea Level Rise Map

Seismic Hazards. Earthquakes in the Hawaiian Islands fall into three main categories: volcanic, tectonic, and mantle. The majority of earthquakes in Hawaiʻi occur on and around the Island of Hawaiʻi, especially in the southern districts of the island where the most active volcanoes in the State – Kilauea, Mauna Loa, and Lōʻihi' – are located. On Maui, the USGS classifies the island as within seismic zone 2B, indicating that ground accelerations of 20% of the acceleration due to gravity are likely to occur at a probability of 10% in a 50-year exposure time (USGS, 2001).

The potential impacts of global climate change on earthquake probability are unknown. Secondary impacts of earthquakes could be magnified by climate change, as rising air temperatures facilitate soil breakdown and intense rainstorms cause greater erosion or greater susceptibility to infrastructure failure.

Wildfires. The Hawaiian Islands are vulnerable to wildland fires, especially during the summer months from prolonged drought and/or high winds. The greatest danger of fire is where developed, urbanized areas border densely vegetated areas. Overgrown vegetation close to homes, pockets of open space within subdivisions, and an increase of non-native high fire-intensity plants around developed areas pose increasing threats to commercial, community, environmental, and residential resources. A great majority of wildfires are human-caused (intentionally caused or by negligence) and often start along roadsides. Wildfires can and do also occur naturally.

Volcanology. The East Maui Volcano, also known as Haleakalā, is the only active volcano in Hawaiʻi outside of the Big Island; however, it is generally considered to be dormant. Haleakalā has erupted at least ten times in the past 1,000 years. The last eruption occurred sometime between 1480 and 1600 according to scientific records. The history of Haleakalā and its recent activity indicate that the volcano will erupt again in the future. Haleakalā is in the post-shield volcanic stage (USGS, 2021b).

4.7.2 Potential Impacts and Proposed Mitigation

The proposed action will not increase risks to human health or result in property damage due to natural hazards, as discussed below.

Hurricanes, Tropical Storms, and High Winds. The effects of past storm events have caused minimal to no damage to the project area. The future threat of hurricanes to the island cannot be calculated, although the frequency of hurricane threats may increase with climate change and warming ocean waters, and the resulting rise in sea level. While waves generated by these storm events can cause coastal erosion and flooding, the project area is not located adjacent to coastal areas. If a hurricane, tropical storm, or high winds occur during construction, activities would cease, and equipment will be secured in work areas. Construction of the project will be designed to meet all applicable building code requirements.

Flooding and Tsunami Inundation. Tsunami conditions impose no constraints on the planned project. The project area is located in Flood Zone AE and X. Flood Zone AE is defined as a flood insurance rate zone that corresponds to the 1% (100-year flood) annual chance floodplains that are determined in the Flood Insurance Study by detailed methods of analysis. Flood Zone X

includes areas of minimal hazard from the principal source of flood in the area, and the Flood Insurance Program does not have regulations for development within this district.

Because a portion of the project will occur within a FEMA-designated floodway (Zone AE), Simple Encroachment Calculations will be submitted for approval by the County of Maui, Department of Planning, showing no loss of conveyance (No-Rise). In addition, a Flood Development Permit will be submitted for approval by the County of Maui.

Maui County Code, Section 19.62.100, states "The director shall not issue or recommend issuance of any permit or approval involving modification, construction, lining, or alteration of any drainage facility, river, or stream unless such modification, construction, lining, or alteration does not reduce the capacity of the drainage facility, river, or stream, or adversely affect any downstream or adjacent property."

Given the requirement for the proposed action to be located within a flood zone, the proposed improvements will be designed to maintain or decrease existing flood elevation and mitigate impacts on existing flood conditions. The proposed repairs to the revetment system would not reduce the capacity of the Wailuku River or adversely affect any downstream or adjacent property.

Construction activities associated with the proposed action have the potential to be impacted by flooding events. A limited amount of ground surface is expected to be exposed temporarily during ground-disturbing activities, which may increase the potential for runoff during flooding events. Significant impacts during flooding events would be minimized by both temporary and permanent erosion and sedimentation control measures in and around the areas where the ground surface is exposed. If a natural hazard occurs during construction activities, all site work would cease until it can be resumed safely. The project will comply with the National Flood Insurance Program presented in Title 44 of the CFR.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, and armor protection to reduce the potential for scour. The proposed use of dumped riprap for toe protection would be installed to the existing ground elevation allowing for surface water flow within the stream to be unaffected. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Overall, the proposed action is expected to have beneficial environmental and social impacts as it will prevent further erosion of the bank, protect the downstream ʻĪao Stream Levee 27, and provide reduced flood risk to the town of Wailuku caused by design deficiencies and long-term damage to the existing bank stabilization structure suffered during repeated floods since its original construction and subsequent repairs. No further mitigation measures are planned or proposed.

Climate Change and Sea Level Rise. Climate change and SLR, and associated coastal impacts are a concern for the State of Hawaiʻi and the world, requiring a global response. Construction of the project would not result or constitute a source of impact to the climate of the region. The

project area is furthermore located outside of a modeled six feet SLR inundation zone as defined by the SLR Exposure Area. The project design will include the installation of BMPs where practical and feasible to improve surface and ground water quality and manage storm water quantity. The planned project will maximize pervious and landscaped areas to the extent practicable.

Seismic Hazards. Construction of the planned project is not expected to be adversely affected by seismic activity as the proposed revetment system would be constructed for a long-term design life in accordance with the Uniform and International Building Codes and other County, State, and Federal standards, which provide minimum design criteria to address the potential for damage due to seismic disturbances.

Wildfires. The proposed action will implement repairs to an approximately 240 feet long section of the Wailuku River right stream bank revetment system. The construction and long-term operation of the planned project are not expected to be adversely affected by wildfires. No adverse impacts are expected, and no mitigation measures are required.

Volcanology. Shield volcanoes, like Haleakalā, are usually not explosive when they erupt and therefore do not pose a large risk to people as long as they are not on the rift zones. Instead of exploding, they release a fountain-like flow of lava that forms cinder cones and spatter cones. Both cinder cones and spatter cones from past eruptions can be seen in Haleakalā Crater. These cones resemble mini volcanoes inside the crater. Erupting shield volcanoes are known for being rare spectacles. An eruption draws in tourists from all over the world. The eruptions are usually ground flows of lava so visitors can witness the event from many vantage points all over the volcano. The proposed action is located outside the lava flow hazard area of Haleakalā. No adverse impacts are expected, and no mitigation measures are required.

4.8 Flora and Fauna

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plants and animal species listed as threatened or endangered or proposed as such, by USFWS, the NMFS, the State of Hawaiʻi Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW), or Division of Aquatic Resources.

The biological communities of potential concern in the project area are floral and faunal organisms. AECOS Inc. conducted various environmental surveys of the project site which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui*. The report is included as **Appendix A** to the EA. A summary of the report findings is provided below.

4.8.1 Terrestrial Flora

4.8.1.1 Description

According to the March 2021 AECOS report (**Appendix A**), the vegetation in the project area is essentially dominated by riparian and ruderal species (plants adapted to disturbed areas),

characteristic of disturbed mesic lowlands in Hawaiʻi. Riparian vegetation is lacking on the CBF-reinforced embankment. Beyond the channel, the land beyond the right bank of the stream is urban and beyond the left bank of the stream, the land is agricultural. The vegetation reflects this land use.

A total of 38 species of ferns and flowering plants was recorded growing in the project area (**Table 4-2**). Included are species previously recorded (*AECOS*, 2017, 2019) from surveys conducted along Wailuku River in the project vicinity. Most plants within the project area are common, non-native species that have established on the highly disturbed banks or temporary sediment bars that form in the channel. Three plant species, primrose willow (*Ludwigia octovalvis*), *honohono* (*Commelina diffusa*), and kō or sugar cane (*Saccharum officinarum*) are early Polynesian-introduced herbs that typically grow close to water. One plant species, *ʻuhaloa* (*Waltheria indica*), is a common indigenous ruderal plant.

Table 4-2. List of Plants and Their Relative Abundances at the Project Site

FAMILY ***Species***	**Common name**	**Status**	**Abundanc**	**Notes**
	FERNS AND FERN ALLIES			
NEPHROLEPIDACEAE				
Nephrolepis brownii (Desv.) Hovenkamp & Miyam.	Asian sword fern	Nat	U	<1,3>
THELYPTERIDACEAE				
Cyclosorus parasiticus (L.) Farw.	maiden fern	Nat	-	<3>
	FLOWERING PLANTS DICOTYLEDONS			
ACANTHACEAE				
Asystasia gangetica (L.) T. Anderson	Chinese violet	Nat	R	<1,3>
AMARANTHACEAE				
Amaranthus spinosus L	spiny amaranth	Nat	-	<3>
APOCYNACEAE				
Nerium oleander L.	oleander	Nat	R	<1,2>
ASTERACEAE (COMPOSITAE)				
Bidens alba var. *radiata* (Sch.Bip.) Ballard ex Melchert	Spanish clover	Nat	U	<1,2>
Calyptocarpus vialis Less	node weed	Nat	R	<1,3>
Emilia sonchifolia var. sonchifolia (L.) DC.	---	Nat	R	<1,2>
Lactuca serriola (L.)	prickly lettuce	Nat	U	<1>
Pluchea carolinensis (Jacq.) G. Don	sourbush	Nat	O	<1,3>
Tridax procumbens L.	coat buttons	Nat	O	<1,2,3
CARICACEAE				
Carica papaya L.	papaya	Nat	R	<1,2>
EUPHORBIACEAE				
Euphorbia hypericifolia L.	graceful spurge	Nat	O	<1,3>
Macaranga tanarius (L.) Müll.Arg.	---	Nat	O	<1,2>

FABACEAE				
Desmanthus pernambucanus (L.) Thellung	virgate mimosa	Nat	O	<1,2>
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat	C	<1,2,3>
Macroptilium lathyroides (L.) Urb.	wild bean; cow pea	Nat	C	<1,2>
Neonotonia wightii (Wight & Arnott) Lackey	glycine vine	Nat	C	<1,2>
Pithecelobium dulce (Roxb.) Benth.	*ʻopiuma*; Manila tamarind	Nat	O	<1,3>
Ricinus communis L.	castor bean	Nat	O	<1,3>
MALVACEAE				
Malvastrum coromandelianum (L.) Garcke	false mallow	Nat	C	<1>
Waltheria indica L.	*ʻuhaloa*	**Ind**	R	<1>
MYRTACEAE				
Syzygium cumini (L.) Skeels	Java plum	Nat	U	<1,2>
NYCTAGINACEAE				
Boerhavia coccinea Mill.	false *alena*	Nat	U	<1,2>
ONAGRACEAE				
Ludwigia octovalvis (Jacq.) P.H.Raven	primrose willow	**Pol**?	U	<1,2>
RUBIACEAE				
Spermacoce assurgens Ruiz & Pav	buttonweed	Nat	R	<1,2>
SOLANACEAE				
Nicotiana glauca R.C. Graham	tree tobacco	Nat	U	<1>
ULMACEAE				
Trema orientalis (L.) Blume	gunpowder tree	Nat	O	<1,2>
VERBENACEAE				
Citharexylum caudatum L.	---	Nat	R	<1>
	MONOCOTYLEDONS			
ARECACEAE				
Livistona chinensis (Jacq.) R. Br. ex Mart.	Chinese fan palm	Nat	R	<1>
COMMELINACEAE				
Commelina diffusa Burm.f.	*honohono*; climbing dayflower	**Pol**	R	<1,2>
CYPERACAE				
Cyperus involucratus Rottb.	*ʻahuʻawa haole*; umbrella sedge	Nat	O	<1,3>
POACEAE				
Cenchrus ciliaris L.	buffelgrass	Nat	U	<1>
Cenchrus purpureus (Schumach.) Morrone	elephant grass	Nat	A	<1,2>
Chloris barbata (L.) Sw.	swollen fingergrass	Nat	C	<1>
Eleusine indica (L.) Gaertn.	wiregrass	Nat	U	<1,2>

*Eragrostis pectinacea (*Michx.) Nees	Carolina lovegrass	Nat	O	<1>
Megathyrsus maximus (Jacq.) B.K. Simon & W.L. Jacobs	Guinea grass	Nat	A	<1,2>
Melinis repens (Willd.) Zizka	Natal red top	Nat	C	<1,3>
Saccharum officinarum L.	*kō*; sugar cane	**Pol**	R	<1>

STATUS:

Ind - indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
Nat - naturalized, exotic, plant introduced to the Hawaiian Islands since arrival of Cook Expedition in 1778, and well-established outside of cultivation.
Pol - Polynesian introduction prior to 1778.

ABUNDANCE:

R – Rare - seen in only one or perhaps two locations. U – Uncommon - seen at most in several locations.
O – Occasional - seen with some regularity.
C – Common - observed numerous times during the survey.
A – Abundant - found in large numbers; may be locally dominant.

NOTES:

<1> Observed in this survey of the Project area.
<2> Previously reported in *AECOS* (2019) from Project vicinity.
<3> Previously reported in *AECOS* (2017) from Project vicinity.

The lower stream bank is dominated by elephant grass (*Cenchrus purpureus*), bent downward indicating recent high streamflow. Guinea grass (*Megathyrsus maximus*) is dominant further upslope, and the top of the bank is dominated by Natal red top (*Melinis repens*). Scattered *ʻopiuma* (*Pithecelobium dulce*) and Java plum (*Syzygium cumini*) trees line the left bank, while the right bank is CBF-reinforced and bare of trees. Clusters of *koa haole* (*Leucaena leucocephala*), castor bean (*Ricinus communis*), and parasol plant (*Macaranga tanarius*) saplings grow on both banks. Glycine vine (*Neonotonia wightii*) grows over both saplings and grasses along the stream banks.

Plants are sparse within streambed itself. Umbrella sedge (*Cyperus involucratus*) grows at the water edge, and only a single, small pocket of *honohono* was seen on the left bank at the downstream end of the area surveyed.

No plants of conservation concern or enjoying statutory protection (that is, listed as threatened or endangered; HDLNR, 1998; USFWS, 2020) were noted in the project area and, given the developed nature of the site, would not be expected to be growing there naturally.

On Maui, tree tobacco (*Nicotiana glauca*) is a non-native weed with special protection as a known host-plant of the endangered Blackburn's sphinx moth (*Manduca blackburni*). See the discussion on invertebrates in **Section 4.8.2, Terrestrial Fauna**, for more information. One tall tree tobacco (>3 feet) is present within the AECOS 2021 survey area (outside the project site) just above the right bank of the Wailuku River.

Soil and plant material may contain invasive fungal pathogens (e.g., Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g., Little Fire Ants), or invasive plant parts that could harm

our native species and ecosystems. To minimize the risk of spreading invasive species, DOFAW recommends:

- Minimizing the movement of plant or soil material, such as fill, between worksites
- All equipment, materials, and personnel should be cleaned of excess soil and debris.
- Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid ʻŌhiʻa Death and other harmful fungal pathogens.
- Consulting the Maui Invasive Species Committee at (808) 573-6472 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread.

4.8.1.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action would result in less than significant short-term impacts on terrestrial flora within the project area during the construction period. The staging area required for construction may result in temporary loss of vegetation and habitat for terrestrial species during the construction period. However, no threatened or endangered floral species, or critical habitat for any threatened or endangered species, occur within the project area, and terrestrial floral species that are known to occur in the project area are mostly widespread common species.

In addition, displaced terrestrial flora would be expected to return to the project area following completion of construction activities; therefore, the loss or disturbance of habitat within the project area during construction activities would be less than significant short-term impacts. Native and indigenous vegetation will be considered in the selection of plant materials for any landscaping, as required.

During construction, the movement of plant or soil material between worksites will be minimized, where possible, and all equipment, materials, and personnel cleaned of excess soil and debris to mitigate the spread of any high-risk invasive species in the area.

The proposed action will not result in significant adverse primary, secondary or cumulative impacts to existing flora resources within and in the vicinity of the project area.

4.8.2 Terrestrial Fauna

4.8.2.1 Description

According to the March 2021 AECOS report (**Appendix A**), the only mammals observed during the 2021 AECOS survey were feral domestic cat (*felis catus*). No Hawaiian hoary bat or *'Ōpe'ape'a* (*Lasiurus cinereus semotus*) were observed and no trees of suitable height for bat roosting (trees greater than 15 feet tall) grow at the project site.

All birds observed in the project area during the 2021 AECOS survey (**Appendix A**) were common, non-native species established on Maui, and typical of the agricultural and urban environments found in the project vicinity. No obligate waterbird species were observed during

the 30-mintue waterbird count from Imi Kala Street Bridge. The stream at the project site presents sub-optimal habitat for most protected Hawaiian waterbird species, and riparian vegetation is lacking on the CBF-reinforced embankment. Indigenous Black-crowned Night-Heron or *aukuʻu* (*Nycticorax nycticorax*) and non-native Mallard (*Anas platyrhynchos*) are two waterbird species most likely to utilize the flowing stream habitat present in the project area, and neither species are protected under state or federal endangered species statutes (HDLNR, 2015; USFWS, nd).

The only mammals observed during the 2021 AECOS survey were feral domestic cat (*felis catus*). No Hawaiian hoary bat or *'Ōpe'ape'a* (*Lasiurus cinereus semotus*) were observed and no trees of suitable height for bat roosting (trees greater than 15 feet tall) grow at the project site.

4.8.2.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action would result in less than significant short-term impacts on faunal resources within the project area during the construction period. The staging area required for construction as well as grading and construction activities required for the replacement of the revetment system may result in temporary disturbance of habitat for terrestrial fauna in the project vicinity. However, no threatened or endangered species, or critical habitat for any threatened or endangered species, occur within the project area. Terrestrial species that are known to occur in the project area are mostly widespread common species.

In addition, displaced terrestrial fauna would be expected to return to the project area following completion of construction activities; therefore, the loss or disturbance of habitat within the project area during construction activities would be less than significant short-term impacts.

The 2021 AECOS survey identified only one mammal, domestic cat, though it is probable that domestic dog (*Canis lupis familiaris*), small Indian mongoose (*Herpestes javanicus*), and one or more of the four alien Muridae (rats and mice) currently established on the Island utilize this area to some extent. The findings of the mammalian survey are consistent with the location of the project on the border of developed-urban and agricultural habitat. All of the aforementioned mammalian species are introduced mammals and deleterious to native ecosystems and native fauna.

While not observed during the 2021 AECOS survey conducted at the site, it is possible that the endemic Hawaiian hoary bat or *ʻōpeʻapeʻa* (*Lasiurus cinereus semotus*) utilizes resources in the project vicinity and may forage on insects along the Wailuku River. Hawaiian hoary bat is a solitary species and potentially widespread throughout the Main Hawaiian Islands. These bats establish multiple roosts within a home territory (Bonaccorso et al., 2015), so the disturbance associated with the removal of any particular roost tree would be minimal. However, bats are vulnerable during the pupping season, where a female bat carrying a pup may be unable to rapidly vacate a roost tree that is being felled, or an unattended pup may be unable to flee a tree that is being felled. Potential roost trees (trees taller than 15 feet) are present on the left bank, opposite the project. No trees taller than 15 feet were observed in the immediate project area, so project-related risks to bats are minimal. To minimize the potential for impacts to this species, woody plants greater than 15 feet tall will not be disturbed, removed, or trimmed during the bat

birthing and pup rearing season (June 1 through September 15) and the use of barbed wire to top fence lines that could entangle flying bats will be avoided.

In addition, although not observed within or in the vicinity of the proposed project area during the 2021 AECOS survey conducted at the site, the state-endangered Hawaiian short-eared owl or *Pueo* (*Asio flammeus sandwichensis*) has the potential to occur in the vicinity of the project area. *Pueo* are a crepuscular species, most active during dawn and dusk twilights. To avoid potential impacts to this species, twilight pre-construction surveys will be conducted prior to any vegetation clearance. If *Pueo* nests are present, a buffer zone will be established in which no clearing occurs until nesting ceases and the DLNR DOFAW will be notified.

In addition, although not observed within or in the vicinity of the proposed project area during the 2021 AECOS survey conducted at the site, protected waterbird species including the Hawaiian Duck or *koloa* (*Anas wyvilliana*), Hawaiian Common Gallinule or *ʻalae ʻula* (*Gallinula galeata sandvicensis*), Hawaiian Coot or *ʻalae keʻokeʻo* (*Fulica alai*), Hawaiian endemic subspecies of Black-necked Stilt or *aeʻo* (*Himantopus mexicanus knudseni*), and Hawaiian Goose or *nēnē* (*Branta sandvicensis*; USFWS, 2011b) are likely to occur in the vicinity of the proposed project area. Hawaiian Duck have populations on all major Hawaiian Islands but hybridize extensively with non-native Mallard (*Anas platyrhynchos*), particularly on Oʻahu and Maui (Engilis et al. 2002; Uyehara et al. 2007; Fowler et al. 2009; VanderWerf, 2012). Hybrid ducks are not protected.

The reach of the Wailuku River at the project has relatively fast-moving stream water, and riparian vegetation is very limited along the CBF-reinforced embankment at the project site. Most protected Hawaiian waterbirds favor slower-moving water and vegetated banks for nesting and forage habitat. However, any open-water body can attract waterbirds. Project activities will minimize or avoid negative impacts to protected waterbirds species. If a protected waterbird is present during ongoing activities, then all activities within 100 feet of the bird will cease, and the bird will not be approached. Work will continue after the bird has left the area of its own accord.

Nocturnally-flying seabirds may become disoriented by exterior lighting and collide with man-made structures or the ground. If not killed outright, dazed or injured birds are easy targets of opportunity for feral mammals (Podolsky et al., 1998; Ainley et al., 2001; Day et al., 2003). In Hawaiʻi, night-flying seabirds include Hawaiian Petrel (*Pterodroma sandwichensis*), Wedge-tailed Shearwater (*Ardenna pacifica*), Newell's Shearwater (*Puffinus newelli*), and Band-rumped Storm-petrel (*Oceanodroma castro*). Hawaiian Petrel, Newell's Shearwater, and Band-rumped Storm-petrel nest in upland habitat on Maui (USFWS, 2005) and are at risk of disorientation when birds (particularly fledglings) transit between the sea and inland locations during the night and early morning hours. The primary cause of mortality in both Hawaiian Petrel and Newell's Shearwater is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second most significant cause of mortality of these seabirds in Hawaiʻi.

While no suitable nesting habitat for seabird species occurs in the project area and construction activities are anticipated to occur during the daytime, if any nighttime lighting is used, DOFAW recommends the following to minimize impacts to seabirds if any nighttime lighting is used:

- For nighttime lighting that might be required, all lights should be fully shielded to minimize impacts.
- Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea.
- For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawaiʻi please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

In addition, although not observed within or in the vicinity of the proposed project area during the AECOS 2021 survey (**Appendix A**), special concerns or constraints related to invertebrate resources in the project area include the Blackburn's sphinx moth (*Manduca blackburni*), which is a federally listed insect found in Hawaiʻi (USFWS, 2000) with a population known from Maui Island. The caterpillar of this moth feeds exclusively on plants in the Family Solanaceae (USFWS, 2003; HDLNR, 2005) and particularly on the widely-distributed, non-native tree tobacco plant (*Nicotiana glauca*). Several tall tree tobacco were observed in the survey, including one tall tree tobacco (greater than 3 feet high) above the right bank of the stream, just downstream of the project. Several other tall tree tobacco were observed on the left bank of Wailuku River, but beyond the project site and would not be impacted by project activities. No eggs or caterpillar of *M. blackburni* were observed on the single plant on the right bank. To minimize impacts to Blackburn's sphinx moth, USFWS recommends:

- A biologist familiar with the species survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants within 4-6 weeks prior to work initiation. The survey should include searches for eggs, larvae, and signs of larval feeding, such as chewed stems, frass, or leaf damage.
- If evidence of Blackburn's sphinx moth presence is found by the pre-construction survey, additional guidance with USFWS is required to avoid a take.

Further, to avoid harm to Blackburn's sphinx moth, DOFAW recommends:

- Removing plants less than one meter in height or during the dry time of the year.
- If tree tobacco over one meter in height is removed or the ground around or within several meters of these plants is disturbed they must be checked thoroughly for the presence of eggs and larvae.

Finally, although also not observed within or in the vicinity of the proposed project area during the AECOS 2021 survey conducted at the site, five of seven species of Yellow-faced bees, which are listed as endangered in the Hawaiian Islands (USFWS, 2016), are known to occur on Maui island (*Hylaeus anthracinus, H. assimulans, H. facilis, H. hilaris, and H. longiceps*; USFWS-PIFWO, nd.) in montane and coastal habitat. Coastal habitat for yellow-faced bee is restricted to a narrow (30 to 100 feet) corridor on the coastline (USFWS-PIFWO, nd). No individual yellow-

faced bee species were observed during the AECOS 2021 survey and no potential habitat or food sources are present in the project area.

Implementation of the proposed action is expected to have no negative adverse impacts to native fauna species or their habitat, as the site does not currently provide desirable habitat to native, threatened, or endangered terrestrial faunal species. Federally delineated Critical Habitat is not present in the project area (USFWS 2019). Thus, the project as currently proposed will not impinge on federally designated Critical Habitat. No equivalent habitat designation exists under state law.

The proposed action will not result in significant adverse primary, secondary or cumulative impacts to existing terrestrial faunal resources within and in the vicinity of the project area.

4.8.3 Aquatic Flora and Fauna

4.8.3.1 Description

The March 2021 AECOS report (**Appendix A**) documented aquatic species identified in Wailuku. The report includes observations made on February 2, 2021, and earlier observations made in various reaches of the Wailuku River (AECOS, 2012, 2017, 2019). **Table 4-3** lists the aquatic species identified by AECOS during their 2012, 2017, 2019, and 2021 surveys. Estimates of relative abundance are provided only for those species observed in the present 2021 survey. According to the March 2021 AECOS survey, the aquatic fauna included six aquatic species, comprising one mollusk, one crustacean, three fishes, and one dragonfly. No water-obligate amphibians, reptiles, or waterbirds were observed in the Wailuku River during the AECOS 2021 survey.

Table 4-3. List of Aquatic Species Found in Wailuku River in the Project Vicinity

FAMILY ***Species***	**Common name**	**Status**	**Abundanc**	**Notes**
	ALGAE			
CYANOPHYTA	cyanobacteria			
RIVULARIACEAE				
Dichothrix sp.		---	---	<4>
OSCILLATORIACEAE				
Schizothrix sp.		---	---	<4>
Phormidium sp.		---	---	<2>
CHLOROPHYTA	green algae			
CHAETOPHORACEAE				
Cloniophora sp.				<4>
Cloniphora plumosa (Kützing) Bourrelly		**Ind**	C	<1,2>
Stigeoclonium sp.		**Ind**	---	<4>
CHARACEAE				
Chara sp.				<4>
ZYNEMATACEAE				

Spirogyra sp.		**Ind**	---	<4>
	INVERTEBRATES			
PLATYHELMINTHES, TRICLADIDA				
DUGESIIDAE				
Dugesia sp.	flatworm	Nat	---	<4>
ANNELIDA, HIRUDINEA				
Unidentified Hirudinea	free-living leech	Nat	---	<4>
ARTHROPODA, INSECTA DIPTERA				
CHIRONOMIDAE				
unidentified chironomid	larvae	---	---	<4>
ARTHROPODA,INSECTA ODONATA, ANISOPTERA				
AESHNIDAE				
Anax junius Drury	*pinao*; common green darner	**Ind**	U	<2>
LIBELLULIDAE				
Crocothemis servilia Drury	scarlet skimmer	Nat	---	<2,3,4>
Orthemis ferruginea Fabricius	roseate skimmer	Nat	---	<4>
COENAGRIONIDAE				
Megalagrion blackburni McLachlan	Blackburn's damselfly	**End**	---	<5>
Megalagrion hawaiiense McLachlan	Hawaiian upland damselfly	**End**	---	<5>
Megalagrion nigrohamatum nigrolineatum Blackburn	blackline Hawaiian damselfly	**End**	---	<5>
TRICHOPTERA				
HYDROPTILOIDAE				
unidentified hydroptiloid	---	Nat	---	<4>
BASOMMATOPHORA PHYSIDAE				
Physa sp.	pouch snail	Nat	---	<4>
PLANORBIDAE				
Planorbella duryi Wetherby	ramshorn snail	Nat	---	<4>
NEOTAENIOGLOSSA				
THIARIDAE				
Melanoides tuberculatus Muller	red-rim melania	Nat	---	<3,4>
NERITOPSINA				
NERITIDAE				
Neritina granosa Sowerby	*hīhīwai*	**End**	R	<1,4,5>
ARTHROPODA, MALACOSTRACA				
DECAPODA				
ATYIDAE				
Atyoida bisulcata Randall	*ʻōpae kalaʼole*	**End**	---	<5>
CAMBARIDAE				

Procambarus clarkii Girard	red swamp crayfish	Nat	---	<4>
PALAEMONIDAE				
Macrobrachium grandimanus Randall	*ʻōpae ʻoehaʻa*	**End**	---	<2>
Macrobrachium lar J.C. Fabricius	Pacific prawn	Nat	A	<1,2,3,4,5>
CHORDATA, ACTINOPTERYGII	FISHES			
PERCIFORMES				
GOBIIDAE				
Awaous stamineus Eydoux & Souleyt	*ʻoʻopu nākea*	**Ind**	A	<1,2,3,4,5>
Eleotris sandwicensis	*ʻoʻopu ʻakupa*	**Ind**	---	<5>
Lentipes concolor Gill	*ʻoʻopu ʻalamoʻo*	**End**	---	<4,5>
Sicyopterus stimpsoni Gill	*ʻoʻopu nopili*	**End**	U	<1,4,5>
Stenogobius hawaiiensis Watson	*ʻoʻopu naniha*	**End**	---	<2,5>
CYPRINODONTIFORMES				
POECILIIDAE				
Poecilia reticulata Peters	guppy, rainbowfish	Nat	U	<1,4>
Poecilia sp. hybrid complex (*salvatoris/mexicana* group)	liberty/Mexican molly	Nat	---	<2,3,4>
Xiphophorus helleri Heckel	green swordtail	Nat	R	<1,2,4>
CHORDATA, AMPHIBIA				
ANURA, BUFONIDAE				
Rhinella marina Linnaeus	cane toad	Nat	---	<4>
ANURA, RANIDAE				
Glandirana rugosa Temminck and Schlegel	wrinkled frog	Nat	---	<2>
Lithobates catesbeianus Shaw	American bullfrog, eggs	Nat	---	<4>

STATUS:

Nat - naturalized. An introduced or exotic species.
Ind - indigenous. A native species also found elsewhere in the Pacific.
End - endemic - A native species found only in the Hawaiian Islands.

ABUNDANCE:

P - present; abundance not noted.
R - rare; only one to three individuals seen.
O - occasional; three to twelve individuals seen. C - common; many individuals seen.
A - abundant; numerous.

NOTES:

<1> – Observed in the present survey.
<2> – Reported in *AECOS* (2019).
<3> – Reported in *AECOS* (2017).
<4> – Reported in *AECOS* (2012), and USFWS 2011a.
<5> – DAR data, summarized in *Hawaii Watershed Atlas* (Parham et. al, 2008).

Native aquatic biota is well-represented in the project reach. Indigenous *ʻoʻopu nākea* (*Awaous stamineus*) is abundant, with observed sizes of individuals ranging between 3 to 8 inches. Endemic *ʻoʻopu nōpili (Sicyopterus stimpsoni)* is present but uncommon, typically seen in the swift-moving sections of the stream. Sizes of this species ranged from 3 to 5 inches. Males in breeding form and coloration of both *ʻoʻopu* species were observed, and at least one gravid female *ʻoʻopu nōpili* was noted. *ʻOʻopu naniha* (*Stenogobious stimpsoni*) and *ʻoʻopu ʻalamoʻo* (*Lentipes concolor*) have been recorded in Wailuku River previously (*AECOS*, 2012), but these species would be typically found in greatest abundance in the stream estuary and upper reaches, respectively.

Only one endemic mollusk, *hīhīwai* (*Neritina granosa*), was found under a boulder in the center of the stream. *Hīhīwai* attach themselves to the bottom of rocks in areas of high-water flow, and typically inhabit lower and middle reaches of streams and rivers but migrate slowly upstream. Before 2014, the diversions in the Wailuku River made it nearly impossible for juvenile *hīhīwai* to migrate upstream beyond the flood control channel. Prior to the return of flow to Wailuku River, Division of Aquatic Resources implemented a program to collect *hīhīwai* from the estuary and release them in a continuously flowing segment of the river at ʻĪao Valley State Monument (Hau, 2007).

Non-native guppy (*Poecilia reticulata*) and green swordtail (*Xiphophorus helleri*) were observed in low numbers. Non-native (alien) Pacific prawn (*Macrobrachium lar*) are present and abundant, and commonly found in crevices or debris on the stream bottom.

Of note, non-native tilapia and suckermouth catfish were absent from Wailuku River during the 2021 survey and prior surveys by AECOS. These alien species are common in many other Hawaiian streams, where they spread diseases and fish parasites, and may prey-on and/or compete with native species for limited resources. Red-rimmed melania (*Melonides turberculata*), an introduced and usually abundant thiarid snail found in previous surveys, was not observed in the survey area in 2019 or 2021.

Essential Fish Habitat (EFH) is defined as "those waters and substrate necessary to fish[es] for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). The project is not an area of EFH but is within 1.4 miles of the Wailuku River coastal outlet. Waters off the mouth of the stream are designated as EFH (including water column and all bottom areas) for coral reef ecosystem, bottomfish, pelagic, and crustacean Management Unit Species (MUS).

According to the EFH designations in the Hawaiʻi Fishery Ecosystem Plan, the project vicinity is absent EFH for precious corals, deep-water shrimp, and seamount ground fish. No juveniles or adults for either Bottomfish and Seamount Groundfish MUS or Crustaceans MUS have been recorded from the area (*AECOS*, 2019).

The Hawaiʻi and Pelagic FEPs further identify ecologically valuable subsections of EFH for the above MUS as “habitat areas of particular concern” (HAPC). These HAPCs are based on the importance of the ecological functions provided, the sensitivity to human or development-induced environmental degradation or stress, and rarity. There are no HAPCs within, adjacent to, or near the project area that may be affected by the project repairs.

4.8.3.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action would result in less than significant short-term impacts on aquatic resources within the project area during the construction period. A temporary increase in stream sedimentation may occur as a result of construction activities. BMPs including silt fencing, wetting bare soil, covering soil, and post construction stabilization would be utilized to limit significant impacts on the stream habitat.

The proposed action would also comply with Section 404 (b)(1) of the CWA, which regulates dredge and fill material deposited into U.S. waters. Since the proposed action may generate discharges to State waters during construction, a Section 404, CWA/Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit); and Section 401 WQC would be required. In accordance with CWA regulations, an applicable monitoring and assessment plan and NPDES permits for construction storm water and construction dewatering would also be required prior to construction to address non-point source discharges. As required a Site-Specific Construction Storm Water BMP will be prepared and followed by the project contractor to handle the treatment of storm water runoff, erosion, and sediment control. As a result, short-term impacts on biological resources due to stream sedimentation would be considered less than significant.

During construction, project activities will be conducted in compliance with HAR 11-54 Water Quality Standards and HAR 11-55 Water Pollution Control. Any area of disturbed ground would be stabilized immediately after construction activities halt to minimize erosion.

Indirect (non-point), secondary, and cumulative impacts will be avoided with proper management of waste and wastewater and compliance with applicable storm water regulations.

No aquatic species protected by the State of Hawaiʻi HAR (HDLNR, 1989, 2014, 2015), nor federally threatened or endangered species (USFWS, 2016) were observed during the AECOS 2021 survey in Wailuku River within the project reach. Two of the five native *ʻoʻopu* species (*ʻoʻopu nākea* and *ʻoʻopu nōpili*) were observed during the AECOS 2021 survey, and the three remaining species (*ʻoʻopu alamoʻo*, *ʻoʻopu naniha*, *ʻoʻopu* ʻ*akupa*) were reported from other locations in Wailuku River. DLNR regulates fisheries in the state, including the taking of *ʻoʻopu* under HAR §13-100-2 (HDLNR, 1989). *ʻŌpae ʻoehaʻa* (*Macrobrachium grandimanus*) and *ʻōpae kalaʻole* (*Atyoida bisulcata*) are native crustaceans that have also been reported from the Wailuku River system (*AECOS*, 2012; Parham et al., 2008), but were not observed during the AECOS 2021 survey of the project area.

Prior to stream flow being restored to the middle reach of Wailuku River in 2014, DLNR-Division of Aquatic Resources, transported *hīhīwai* and *ʻoʻopu* from the stream estuary to suitable habitats upstream of the flood control project above flow-interrupted segments of the stream (Hau, 2007; pers. comm.). The return of stream flow has allowed these animals to migrate freely throughout the length of the stream. A marked increase in *ʻoʻopu nākea* and *ʻoʻopu nopili* abundance in recent years (*AECOS*, 2019) relative to previous surveys at Wailuku River (*AECOS* 2012, 2017) suggest that the current baseflow is adequate to sustain abundant populations of *ʻoʻopu* in the middle reach. The finding of *hīhīwai* at the project site indicates this native mollusk

is also capable of migrating through the middle reach. Overall, the density of native species within this reach is good and should be protected.

Many Hawaiian native freshwater macrofauna are diadromous: eggs are laid in the stream and the larvae that hatch from these eggs move downstream and out into the ocean where they develop for a time before migrating back into freshwater to grow to maturity (Ford and Kinzie, 1982; Kinzie, 1988). The Maui DPW will protect the existing water quality, while also not impeding the amphidromous cycle of native aquatic species through the implementation of appropriate BMP. Additionally, DPW will ensure new structures do not include drains or grates that may entrain drifting larvae, nor overhanging culverts that may obstruct the upstream movement of recruiting juveniles.

Although not observed within or in the vicinity of the proposed project area during the AECOS 2021 survey conducted at the site, six species of damselflies are endangered in Hawaiʻi (USFWS-PIFWO, nd.). The three species that occur on Maui are flying earwig damselfly (*Megalagrion nesiotes*), Pacific damselfly (*M. pacificum*), and orange-black damselfly (*M. xanthomelas*). Of these, *M. pacificum* and *M. xanthomelas* may occur at elevations such as that of the project area. The damselfly naiad develops in aquatic environments and is especially susceptible to predation by non-native fishes and poor water quality. Impacts to damselflies will be minimized by incorporating BMPs for work in aquatic environments to minimize the degradation of water quality and impacts to aquatic biota.

The extent of impacts associated with the project having the potential to affect EFH is limited to the transport (by entrainment in stream flow) of sediment and/or pollutants to coastal waters. Short-term water quality impacts to EFH due to project construction would most likely be limited to changes in turbidity levels and suspended solids in the immediate construction areas. Some change in dissolved oxygen may also occur, concomitant with sediment resuspension. However, any increase in turbidity is expected to be localized and of short duration. Project BMPs are intended to reduce the extent to which sediment disturbed as a result of construction would be transferred to coastal waters and, with effective implementation, these BMPs will contribute to minimal adverse impacts to EFH.

The fishes that occur in the project area are expected to actively avoid direct impacts from project activities. Some impairment of the ability of EFH managed species to find prey items could occur, but this effect would be temporary and spatially limited to the immediate vicinity of construction activities. Most of the MUS that use the coastal EFH routinely experience a turbid environment. The proposed action is expected to result in minimal adverse effects to EFH.

The Maui DPW will assess the biological and water quality conditions of Wailuku River in the project area and utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.

- Cofferdams or similar BMPs constructed of sand bags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks or other perimeter controls may be placed along the lower edge of stream banks in work areas to prevent the movement of eroded material into the water.

In the long term, the proposed action is expected to have beneficial impacts on the biological resources within the stream. The repair of the revetment system will result in reduced erosion of the stream bank within the channel and protect the downstream levee, allowing for less sediment to enter the stream and be transported to the nearshore marine environment. Reduced sedimentation and improved water clarity will have positive impacts on the stream environment and aquatic species.

The proposed action would result in less than significant short-term impacts on aquatic resources during the construction period and would not result in significant direct, indirect, or cumulative impacts to the existing aquatic resources within and in the vicinity of the project area. Since the proposed action has been designed to avoid any significant impacts to the existing biological resources within the stream, mitigation measures are not required as part of the proposed action.

4.9 Noise Conditions

4.9.1 Description

Noise is generally defined as an unwanted sound. Noise can be any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human responses to noise vary depending on the type and characteristics of the noise, distance between the noise source and receptor, receptor sensitivity, and time of day.

Determination of noise levels are based on: 1) sound pressure level generated (decibel [dB] scale); 2) distance of the listener from the source of the noise; 3) attenuating and propagating effects of the medium between the source and the listener; and 4) period of exposure.

An A-weighted sound level, measured in dBA, is one measurement of noise. The human ear can perceive sound over a range of frequencies, which varies for individuals. In using the A-weighted scale for measurement, only the frequencies heard by most listeners are considered. This gives a more accurate representation of the perception of noise. The noise measure in a residential area, similar to conditions within the project area, is estimated at approximately 70 dBA. Normal conversational speech at a distance of five to ten feet is approximately 70 dBA. The decibel scale is logarithmic, so, for example, sound at 90 dBA would be perceived to be twice as loud as sound at 80 dBA.

Passenger vehicles, motorcycles, and trucks use the roads in the vicinity of the project area. Noise levels generated by vehicles vary based on several factors including vehicle type, speed, and level of maintenance. The intensity of noise is attenuated with distance. Some estimates of noise levels from vehicles are listed in **Table 4-4, Typical Noise Sources**.

Table 4-4. Typical Noise Sources

Source	Distance (ft)	Noise Level (dBA)
Automobile, 40 mph	50	72
Automobile Horn	10	95
Light Automobile Traffic	100	50
Truck, 40 mph	50	84
Heavy Truck or Motorcycle	25	90

mph = miles per hour
Source: Cavanaugh and Tocci, 1998

State of Hawaiʻi HAR Title 11, Chapter 46 Community Noise Control sets permissible noise levels to provide for the prevention, control, and abatement of noise pollution in the State. The regulation creates noise districts based on land use that dictate acceptable noise levels. The project area is located within areas identified as agricultural, heavy industrial, and roadways within the vicinity of residential use - the closest residences are 50 feet from the project site. Therefore, the project area is in a Class C zoning district, as defined by HAR 11-46 as "all areas equivalent to lands zoned agriculture, country, industrial, or similar type." The maximum permissible sound level in a Class C district is 70 dBA from 7:00am- 10:00pm and 70 dBA from 10:00pm-7:00am (DOH, 1969).

The EPA has identified a range of yearly day-night sound level (DNL) standards that are sufficient to protect public health and welfare from the effects of environmental noise (EPA, 1977). The EPA has established a goal to reduce exterior environmental noise to a DNL not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to a DNL not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

The project area is located in agricultural, heavy industrial, and roadways in the suburban town of Wailuku. The noise environment in Wailuku town is characteristic of a suburban environment; the setting is dominated by vehicular, birds, water, wind, and residential noise. The project area is not affected by airfield noise. The closest airfield to the project area is Kahului Airport, which is 5 miles east of the center of Wailuku.

4.9.2 Potential Impacts and Proposed Mitigation

Under the proposed action, short-term noise impacts associated with construction activities would occur. The sensitive receptors closest in proximity to the project area are residences located within 50 feet of the construction site. Construction-related noise, estimated to last for most of the duration of the construction period (approximately 6 to 8 months), would be generated from equipment and vehicles. However, noise exposure from construction activities would not be continuous and BMPs would be implemented to reduce or eliminate noise.

Construction would be between the hours of 7:00 am and 6:00 pm Monday through Friday, and 9:00 am to 6:00 pm on Saturdays. Sound barriers, mufflers, and other structures may be erected

to reduce noise levels if they exceed Federal and State standards. Heavy truck and equipment staging areas will be located as far from noise-sensitive properties as possible. As a result, short-term impacts from construction activities would be less than significant to the surrounding environment. Upon completion, the proposed action would not be a source of any significant long-term noise generation.

Pursuant to HAR, Chapter 11-46, construction activities will comply with all community noise controls. The DOH Community Noise Rule specifies that industrial areas may not exceed the "maximum permissible" noise level of 70 A-weighted decibels during both day and night. In cases where the construction sound level exceeds or is expected to exceed the DOH's "maximum permissible" noise levels at the property line, the contractor will obtain a noise permit from the DOH to operate vehicles, construction equipment, and power tools that emit noise levels in excess of "maximum permissible" levels.

4.10 Air Quality

4.10.1 Description

Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, as well as the dispersion rates of these pollutants. The primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography. Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles).

Air quality at a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the EPA for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than or equal to ($\leq$) ten microns in diameter (PM_{10}) and $\leq$2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). NAAQS represents maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

The State of Hawaiʻi DOH, Clean Air Branch (CAB), is responsible for air pollution control in the state. The primary services of the CAB include: 1) engineering, which includes engineering analysis and permitting; 2) monitoring, which performs monitoring and investigations; and 3) enforcement, in which federal and state air pollution control laws and regulations are enforced.

The following four potential sources of air pollution have been identified in the vicinity of the proposed action: (1) industrial sources, (2) mobile sources, such as motor vehicles, (3) agricultural sources, and (4) natural sources, such as wind-generated dust and volcanic activity.

Air quality at and surrounding the project site is generally excellent year-round. The prevailing northeasterly trade winds tend to push any human-made or natural pollutants out to sea. During intermittent periods winds can carry "vog" (volcano-associated gasses) leading to an increase in volcanic air pollutants and a decrease in visibility. In addition, when trade winds are absent for prolonged periods, vog travels up the island chain and can affect air health by increasing levels

of airborne SO_2 and $PM_{2.5}$. Although both of these pollutants are regulated by the EPA, Hawaiʻi's advisories for volcanic SO_2 and $PM_{2.5}$ have been customized for local conditions.

There are three (3) air quality monitoring stations on Maui in Kahului, Kihei, and Pāʻia. Agricultural activities are the primary source of air pollution measured by these air quality stations. As such, the stations only monitor the particulate matter. In 2018, there were no exceedances of the NAAQS for particulate matter recorded by the DOH (DOH, 2018b). In the vicinity of the proposed action industrial and vehicular activities contribute to emissions. These sources are intermittent and the prevailing tradewinds disperse suspended particulates.

4.10.2 Potential Impacts and Proposed Mitigation

The proposed action would result in less than significant short-term impacts to air quality arising from construction activities. Ground disturbance could generate fugitive dust (e.g., PM) and the use of construction equipment (e.g., backhoes, dump trucks, vehicles) and personal vehicles to access the project area could lead to temporary increases in vehicular airborne pollutant concentrations (e.g., CO concentrations). An effective dust control plan will be implemented as necessary. All construction activities will comply with the provisions of HAR, Section 11-60.1-33, related to Fugitive Dust.

Measures to control dust during various phases of construction may include:

- Providing an adequate water source at the site prior to start-up construction activities;
- Irrigating the construction site during periods of drought or high winds;
- Covering and/or watering stockpiled soil;
- Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Disturbing only the areas of construction that are in the immediate zone of construction to limit the amount of time that the areas will be subject to erosion;
- Providing adequate dust control measures during weekends, after hours, and before daily start-up of construction activities;
- Installing dust screening in the areas of disturbance; and
- Controlling airborne, visible fugitive dust from debris being hauled away from the project site.

To reduce vehicle and equipment emissions, carpooling and ensuring that equipment is functioning properly should be included in regular construction work practices.

No long-term impacts to air quality from the operation of the proposed action are expected.

4.11 Visual Resources

4.11.1 Description

Visual resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area. These features form the overall impressions that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

The project area is located within the Wailuku-Kahului district. The Wailuku-Kahului district is considered the industrial and financial center of Maui County with an urban core contained within an agricultural and open space landscape. According to the 2002 Wailuku-Kahului Community Plan, the visual appearance of the district is a major concern due to its role as the civic center and gateway to the island of Maui. Directives to improve visual aesthetics in the district include more aggressive litter control and enforcement; better maintenance of public park facilities, particularly those along the shoreline; enhancement of the streetscape along major public roads with tree planting; and in general, greater emphasis on the maintenance and upkeep of public areas (Maui County Council, 2002).

The project area is located along the Wailuku River approximately 1.4 miles from the shoreline downstream of Imi Kala Street bridge. Riparian or terrestrial vegetation in and around the project area can be characterized as coastal dry forest. Vegetation surrounding the project area consists largely of non-native, weedy species that have established themselves in the highly disturbed banks.

A mix of residential housing and commercial units surrounds the project area to the east and south. Agricultural and undeveloped lands surround the project area to the west and north. Residential properties along the east bank of Wailuku River makai of Imi Kala Street are separated from the stream by Eha Street. Commercial properties located along the east bank of Wailuku River mauka of Imi Kala Street are adjacent to the bank of the stream. Agricultural and undeveloped parcels located along the west bank of the Wailuku River are adjacent to the bank of the stream. The project area is visible from surrounding parcels and the portion of Imi Kala Street near the bridge crossing of Wailuku River.

4.11.2 Potential Impacts and Proposed Mitigation

Under the proposed action, short-term, less than significant impacts to visual and aesthetic resources within the project area during construction activities are expected to occur. These impacts would be due to the presence of construction equipment within and around the project area. The Wailuku-Kahului district is considered the industrial and financial center of Maui County with an urban core contained within an agricultural and open space landscape. The project area itself is surrounded by a mix of residential housing and commercial land uses on the east bank of the channelized stream. Agricultural and undeveloped land uses are located on the west bank of the channelized stream.

The presence of construction equipment would be limited to the proposed construction area and staging areas located adjacent to the commercial and residential parcels on the east bank and undeveloped land on the west bank of the stream. Construction activities associated with the proposed action would not cause a significant disturbance to the surrounding visual environment and would be temporary. Additionally, construction equipment would not be placed in a special use area such as a park, beach, or scenic vista. As a result, short-term impacts to visual and aesthetic resources within the project area are considered to be less than significant.

The proposed action is expected to have less than significant long-term impacts on visual and aesthetic resources. Once construction is completed, the presence of the revetment system would replace the existing deteriorating revetment along Wailuku River with little visual change in the area. The proposed features under the proposed action would be completed at grade. As a result, the proposed features would blend with the existing surrounding environment consisting of public water management features and would not contrast with the mix of residential, urban, and agricultural aesthetics of the project area. In addition, the proposed action would be compatible with the Wailuku-Kahului Community Plan which calls for the balancing of urban development with agricultural/open space uses.

Construction activities for the replacement of the revetment system along the Wailuku River would take place on land currently developed as a hardened stream bank. The Wailuku-Kahului Community Plan classifies the Wailuku River as open space and the project area to the east as business/industrial and the area to the west as agricultural. The proposed action along the Wailuku River would maintain the current agricultural/open space aesthetic. Therefore, the balance of urban development and agricultural/open space uses would be maintained within the surrounding project area. In addition, the revetment system would be constructed largely of rock and concrete and would not be a new source of light or glare for nearby properties. As a result, no significant long-term impacts to visual and aesthetic resources due to the operation of the proposed action are expected.

4.12 Socio-Economic Environment and Demographics

4.12.1 Description

Population and Demographics. There is currently no residential population or dedicated employees on the project area. The project area is located in the Wailuku Census Designated Place on the Island of Maui. In 2019, the population of Maui County was 167,417 residents, an increase of 8.1% since 2010, when the resident population stood at 154,834 (County of Maui, Office of Economic Development, 2019). In 2019, the population of the Wailuku Census Designated Place was 17,708 residents, an increase of 15.6% since 2010, when the resident population stood at 15,313. **Table 4-5** shows 2018-2019 population and demographic information for the State, Island of Maui, and Wailuku Census Designated Place within which the project is physically located.

Hawaiʻi is unique among other states in the U.S. as no single race comprises the majority of the population. According to the 2019 Census Data, “Asian” comprised the largest population in the State at 37.6% of the population, which represented 29.1% of the population of the County of

Maui, and 30.9% of the population of the Wailuku Census Designated Place. In the Wailuku Census Designated Place, "Two or More Races" was the second largest ethnic group represented at 28.2%, with "White" was the third largest ethnic group at 25.5%. The median age in the Wailuku Census Designated Place area and the project area census tracts was 39.1 years old. This is slightly lower than the Statewide median age of 39.6 years old and the County of Maui median age of 39.6.

Table 4-5. Population and Demographics

2018-2019 Census	State of Hawaiʻi	County of Maui	Wailuku Census Designated Place
Population	1,415,872	167,417	17,708
Ethnicity			
White	25.6%	34.9%	25.5%
African American	2.2%	0.8%	0.7%
American Indian/Alaskan Native	0.4%	0.6%	0.1%
Asian	37.6%	29.1%	30.9%
Native Hawaiian/Other Pacific Island	10.2%	10.7%	13.9%
Hispanic or Latino	10.7%	11.5%	13.0%
White alone, not Hispanic or Latino	21.8%	30.1%	18.7%
Two or More Races	24.0%	23.9%	28.2%
Age			
Under 5 Years	6.2%	5.9%	7.7%
Under 18 Years	21.4%	21.7%	24.6%
65 or More Years	18.4%	18.3%	16.1%
Median Age (Years)	39.6	39.6	39.1

Source: Maui County Data Book 2019

According to the Maui County General Plan 2030/Maui Island Plan, between 2010 and 2030, the Island of Maui's resident population is expected to grow from 144,444 to 194,630, an increase of 35%. The 2030 Socio-Economic Forecast suggests the Wailuku-Kahului Community Plan Area where the project is located will grow faster than other parts of Maui, as former sugar lands are developed into residential subdivisions. According to the Department of Business, Economic Development and Tourism's Population and Economic Projections for the State of Hawaiʻi to 2045, the resident population of Maui County is projected to grow at an annual rate of 0.9 percent during the 2016 to 2045 period to approximately 211,500 by 2045 (State Department of Business, Economic Development, and Tourism, 2018).

Income and Employment. Statewide in 2019, approximately 8.8% of individuals earned an income below the poverty level. In the County of Maui in 2019 individuals earning below the poverty level was 8.6%, and in the Wailuku Census Designated Place, individuals earning below the poverty level was 10.9%, respectively. The median statewide household income was approximately $78,084 (2019). The median income in the County of Maui where the project area is located was $77,117 (2019) and the median income in the Wailuku Census Designated Place where the project area is located was $73,576 (2019) (County of Maui, Office of Economic Development, 2019).

Hawaiʻi's economy through 2019 was strong, with record-setting visitor arrivals and low unemployment. However, the COVID-19 pandemic will have far reaching impacts on the economy of Maui, in Hawai'i, and across the nation and world. Stay-at-home regulations and travel quarantines aimed to curb the spread of the COVID-19 virus in Hawai'i have caused many businesses to shut down or drastically reduce operations. Unemployment claims have soared. The unemployment rate in June 2020 on Maui island was 23.4%, the highest in the State. The statewide unemployment in June 2020 was 14.4% (Department of Labor and Industrial Relations, 2020).

Housing. In 2019, approximately 61.2% of the housing units in the Wailuku Census Designated Place were owner-occupied. This is slightly higher than the statewide average of owner-occupied units which is roughly 58.3% (2018) and the County of Maui average of owner-occupied units which is roughly 60.2% (2018), respectively. According to the 2030 Socio-Economic Forecast Wailuku-Kahului is expected to maintain its status as home to more than a third of Maui's households as the population grows.

4.12.2 Potential Impacts and Proposed Mitigation

The planned project will not directly result in significant adverse impacts to socio-economic characteristics within the project vicinity, including population, income, and housing. The demographics of the project area do not comprise disproportionately high concentrations of minority or low-income populations. Construction activities are expected to be contained within the project area and would not disproportionately affect any specific racial, ethnic, or socioeconomic group living within the vicinity of the project area. In addition, because of their temporary nature, construction activities associated with the proposed action are not expected to result in any significant impacts to the local housing or demographics in the long term.

The proposed action is expected to have a short-term beneficial impact on the local economy by creating temporary employment opportunities and materials spending during the construction phase of the project.

Once completed, the proposed action is expected to result in long-term beneficial socioeconomic impacts as the project will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the growing Wailuku Community. Implementation of the proposed action will prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result.

4.13 Public Facilities and Services

4.13.1 Roads and Transportation

4.13.1.1 Description

Potential impacts to roads and transportation are assessed for anticipated disruption or improvement of current transportation patterns and systems, deterioration or improvement of

existing levels of service, and changes in existing levels of transportation safety. Beneficial or adverse impacts may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, the introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by installation workforce and population changes.

Based on the limited scope and scale of the proposed action no significant adverse traffic impacts to the local and regional roadway system are expected. The portion of Wailuku River within the project area runs approximately parallel with Eha Street in Wailuku town. A portion of the project area on the western boundary is within a portion of Imi Kala Street from the intersection of Wili Pa Loop, Imi Kala Street, and Eha Street to the northern end of the Imi Kala Street bridge. A portion of the project area on the eastern boundary to be used as the primary construction access is adjacent to Eha Street running approximately west to east. Imi Kala Street and Eha Street are both County of Maui roads.

4.13.1.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action would result in less than significant, short-term impacts on traffic and circulation during the construction period. Primary construction access to the section of Wailuku River where the repairs to the revetment system are proposed is planned to be from Eha Street, northeast of Imi Kala Street and the Maui Disposal Co, Inc. site. Access from Eha Street is not expected to impact traffic. Additionally, Imi Kala Street, from its intersection with Wili Pa Loop and Eha Street to the Imi Kala Street bridge will be used for staging and storage of construction materials and possible access to the construction site. The section of Imi Kala Street that will be used, ends at the Imi Kala Street bridge which is barricaded off and does not allow for through traffic over the bridge. The use of Imi Kala Street between the bridge crossing of Wailuku River to the intersection of Imi Kala Street with Eha Street and Wili Pa Loop will be coordinated with the County of Maui, Department of Transportation, and a work on county highway permit obtained as necessary (see **Figure 2-1**). The remainder of Eha Street and Imi Kala Street, including their intersection with Wili Pa Loop, is not expected to be affected by the proposed project. Therefore, no impact to traffic traveling through the area is expected.

All construction activities would occur along the stream bank and in the streambed. Furthermore, negligible direct impacts to local roads resulting from additional vehicle trips to and from the project site by construction workers and contractors as well as by haul trucks required to dispose of excavated material or import material to the project site would occur during the construction phase. Therefore, no disruption to traffic patterns requiring traffic management planning associated with the proposed action is anticipated. If temporary closure of roadways to alternating traffic is required during construction, DPW will utilize flag personnel or a County of Maui approved equivalent, to conduct traffic controls and post proper signage along the routes. DPW will ensure the project meets the standards set forth by county codes and state laws.

Upon completion, the proposed action is not expected to generate any additional traffic and would have no long-term impacts on roads or transportation. Traffic and circulation inhibitors, caused by potential flooding, may even be decreased with the implementation of the project, as

the proposed action is designed to decrease flood hazards. The overall long-term effect on traffic and circulation in the area would be considered less than significant.

The proposed action is not expected to result in significant adverse cumulative transportation impacts. It is expected that all construction projects would adhere to BMPs and utilize other protective measures to minimize any impacts to roads and transportation resources. Therefore, cumulatively, all foreseeable projects would be expected to have less than significant impacts.

4.13.2 Utilities

4.13.2.1 Description

Electrical Supply. The HECO provides electricity for approximately 95% of Hawaiʻi's residents. Under the proposed action, construction activities would take place on land currently developed as stream bank protection. There are no known electrical utilities present within the proposed construction area. During early consultation for the project, in a letter dated June 9, 2021, HECO stated that it had no comments or objections to the subject project and did not anticipate any impacts or conflicts with HECO facilities.

Telephone and Communication Facilities. Hawaiian Telcom provides telephone service to the project area. No Hawaiian Telcom facilities are located within the proposed construction area.

Water Supply. Water resource and distribution systems for the project area are managed by the Maui County Department of Water Supply. The Department of Water Supply provides water to approximately 35,700 services on Maui and Molokai. According to the 2002 Wailuku-Kahului Community Plan, the growth of Maui's population has increased demands on water in the region, threatening the sustainability of the region's water (Maui County Council, 2002).

During early consultation for the project, in a letter dated June 14, 2021, the County of Maui Department of Water Supply stated that its Central Maui System services the Wailuku area, within which the project is located. The Department of Water Supply also noted that the proposed project site is near Department of Water Supply infrastructure, including a 36-inch water pipe that crosses the stream approximately 42 feet mauka of the project boundary and a 12-inch water pipe that runs along Eha Street, approximately 35 feet southeast of the project boundary. There are no known water lines present within the proposed construction area.

Irrigation System. Under the proposed action, construction activities would take place on land currently developed as stream bank protection and are not expected to affect existing irrigation systems.

Wastewater. Sewer services for Maui County are directed and overseen by the Maui County Department of Environmental Management Wastewater Reclamation division. The Wastewater Reclamation division is composed of the Administration and Operation elements. The Operations element is responsible for the management, operation, installation, maintenance, and repair of all Maui County wastewater and pumping facilities. A concrete-jacketed sewer line crosses the river just upstream from the Imi Kala Street bridge. The site of the proposed site

where the repairs to the revetment system would occur does not contain any sanitary sewer system.

4.13.2.2 Potential Impacts and Proposed Mitigation

Under the proposed action, no short-term impacts on public services or utility systems are expected during construction activities. The proposed construction area includes land currently developed as stream bank protection. During site reconnaissance, an above-ground plastic pipe running along the top bank parallel to Wailuku River within the project extents was discovered (see **Figure 4-8**). The use, ownership, and duration of the above-ground pipe are unknown.

Figure 4-8. Above Ground Pipe Along Top Bank Wailuku River Within Project Extents

There are no other known utilities present at the proposed construction area. Contractors will be required to verify existing infrastructure locations prior to the start of construction. In general, the relocation or modifications of any existing infrastructure is not expected. During construction, contractors will also be required to protect existing infrastructure and ensure against interruption of services within the project area. As a result, there would be no short-term impacts on public services or utility systems due to construction activities. Once completed, the revetment system would not require the use of any public services or utilities.

4.13.3 Solid Waste

4.13.3.1 Description

Single-family residential solid waste collection service is provided by the County of Maui on a weekly basis. Residential solid waste collected by County crews is disposed of at the County's Central Maui Landfill facility, located 4.0 miles southeast of the Kahului Airport. In addition to County collected refuse, the Central Maui Landfill also accepts waste from private collection companies that service certain residential areas and businesses. The Central Maui Landfill also accepts green waste and construction waste from demolition and construction activities.

4.13.3.2 Potential Impacts and Proposed Mitigation

Under the proposed action, short-term impacts are anticipated in the form of construction debris that will be generated during the demolition of the existing deteriorating revetment system and requiring disposal. The construction contractor shall be responsible for the disposal of construction debris at a County of Maui-approved disposal site. The proposed action is not anticipated to generate a significant quantity of solid waste during planned construction activities. Solid waste that is generated will be disposed of in accordance with HAR, Chapter 11-58.1, Solid Waste Management Control. The construction of the proposed action is not expected to have long-term impacts to solid waste facilities based on the limited scope and scale of work. No secondary or cumulative impacts to solid waste facilities would occur from the implementation of the proposed action.

4.13.4 Police Protection

4.13.4.1 Description

The Maui Police Department (MPD) serves as the primary law enforcement agency for Maui County, which includes the islands of Maui, Molokai, and Lanai. Maui County is divided into six police districts. Police protection for the Wailuku-Kahului region where the project is located is provided by the MPD located at the Wailuku Station headquartered on Mahalani Street, approximately 1.2 miles southeast of the project site. The Maui Police Department provides investigative services, uniform patrol services, technical support, and traffic services as stated in its mission to protect the residents of Maui County.

4.13.4.2 Potential Impacts and Proposed Mitigation

The project will not increase the on-site population and will not create long-term demand for additional police protection services. During the short term, MPD may receive increased calls regarding construction-related traffic, however, this would be temporary and cease with the conclusion of project construction. In addition, MPD may be required to assist with project-related construction and traffic flow.

During construction, primary construction access to the section of Wailuku River where the repairs to the revetment system are proposed is planned to be from Eha Street, northeast of Imi Kala Street and the Maui Disposal Co, Inc. site. Access from Eha Street is not expected to impact

traffic. Additionally, Imi Kala Street, from its intersection with Wili Pa Loop and Eha Street to the Imi Kala Street bridge will be used for staging and storage of construction materials and possible access to the construction site. The section of Imi Kala Street that will be used, ends at the Imi Kala Street bridge which is barricaded off and does not allow for through traffic over the bridge. Imi Kala Street and Eha Street are both under the jurisdiction of the County of Maui. The project will be coordinated with the County of Maui, Department of Transportation, and a work on county highway permit obtained as necessary for the use of the section of Imi Kala Street from the bridge crossing of Wailuku River to the intersection of Imi Kala Street with Eha Street and Wili Pa Loop (see **Figure 2-1**). All other staging, storage, and access areas are proposed along the stream bank and would not affect existing roadways. All construction activity would occur along the stream bank and in the streambed. Therefore, no disruption to traffic patterns requiring traffic management planning associated with the proposed action is anticipated. Potential traffic impacts will be mitigated through the implementation of construction staging plans (see EA **Section 4.13.1**). With the proposed mitigation measures, significant project-related impacts on police services are not anticipated.

No direct, secondary, or cumulative impacts to police protection are anticipated or expected, and no mitigation measures are necessary or recommended.

4.13.5 Fire Protection

4.13.5.1 Description

The Department of Fire and Public Safety provides emergency and non-emergency services for the islands of Maui, Molokai, Lanai, and Kahoolawe, and the surrounding waters. The Department has 14 fire stations throughout the County of Maui, including ten on the island of Maui, three on the island of Molokai, and one station on the island of Lanai. Fire prevention, protection, and suppression services for the project area are provided from the Wailuku Fire Station on Kinipopo Street in Wailuku.

4.13.5.2 Potential Impacts and Proposed Mitigation

Under the proposed action, no short-term impacts on fire protection services are expected during construction activities. The proposed construction area includes land currently developed as stream bank protection. Once completed, the revetment system would not increase the population and therefore would not increase demand for fire protection services. No direct, secondary, or cumulative impacts on fire protection are anticipated or expected, and no mitigation measures are necessary or recommended.

4.13.6 Health Care and Emergency Services

4.13.6.1 Description

The region is serviced by a variety of health care facilities. Maui Memorial Medical Center, managed by Kaiser Permanente, is the only major medical facility on the island. Acute, general, and emergency care services are provided by the 219-bed Maui Memorial Medical Center facility located on Mahalani Street, Wailuku, where the subject project is located. Clinics and

medical/dental offices are also located within Kahului and Wailuku towns to serve the proposed project area's local population.

4.13.6.2 Potential Impacts and Proposed Mitigation

Under the proposed action, no short-term impacts on health care or emergency services are expected during construction activities. The proposed construction area includes land currently developed as stream bank protection. Once completed, the revetment system would not increase the population in the vicinity or demand for emergency medical services. Therefore, existing medical services and facilities are anticipated to be adequate to accommodate the project. No significant adverse impacts are anticipated.

The proposed action is designed to eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result. As a result, the long-term impacts of the proposed action on demand for emergency medical services are considered beneficial. No secondary or cumulative impacts on emergency services are anticipated or expected, and no mitigation measures are necessary or recommended.

4.13.7 Schools and Libraries

4.13.7.1 Description

The State of Hawaiʻi Department of Education (DOE) has a total of eight school districts and 320 public schools statewide. Children living in the vicinity of the project area attend schools in the Baldwin-Kekaulike-Maui Complex, including Wailuku Elementary School, ʻĪao Intermediate School, and Baldwin High School. Saint Anthony School is also located in the vicinity of the project area. The University of Hawaiʻi-Maui College in Kahului is the primary higher education institution serving the island of Maui. The nearest public library is the Wailuku Public Library.

4.13.7.2 Potential Impacts and Proposed Mitigation

Under the proposed action, short-term construction-related impacts to roadway operations and travel to and from schools or libraries is not expected. During construction, primary construction access to the section of Wailuku River where the repairs to the revetment system are proposed is planned to be from Eha Street, northeast of Imi Kala Street and the Maui Disposal Co, Inc. site. Access from Eha Street is not expected to impact traffic. Additionally, Imi Kala Street, from its intersection with Wili Pa Loop and Eha Street to the Imi Kala Street bridge will be used for staging and storage of construction materials and possible access to the construction site. The section of Imi Kala Street that will be used, ends at the Imi Kala Street bridge which is barricaded off and does not allow for through traffic over the bridge. Imi Kala Street and Eha Street are both under the jurisdiction of the County of Maui. The project will be coordinated with the County of Maui, Department of Transportation, and a work on county highway permit obtained as necessary for the use of the section of Imi Kala Street from the bridge crossing of Wailuku River to the intersection of Imi Kala Street with Eha Street and Wili Pa Loop (see **Figure 2-1**). All other staging, storage, and access areas are proposed along the stream bank and would not affect existing roadways. All construction activity would occur along the stream bank and in the streambed. Therefore, no disruption to traffic patterns requiring traffic management

planning associated with the proposed action is anticipated. Potential traffic impacts will be mitigated through the implementation of construction staging plans (see EA **Section 4.13.1**). With the proposed mitigation measures, the project is not anticipated to obstruct or hinder access to nearby educational facilities.

Upon completion, the proposed action is not expected to generate any additional traffic. No long-term adverse impacts to school or library facilities are anticipated to occur as a result of the project.

The proposed action would not increase nor decrease the provision of educational services to the community, and would not directly, secondarily, or cumulatively result in an increase in the area population, which would otherwise generate the need for school services.

4.13.8 Recreational Resources

4.13.8.1 Description

The Maui County Department of Parks and Recreation operates and maintains the County's numerous parks, recreation areas, and recreational service programs for the residents of Maui County. The Department also coordinates with other County departments on enforcement of rules and regulations for parks and recreation facilities and their use and countywide beautification. The parks located within the project area are managed by the Recreation and Support Division.

Proposed Project Site. Under the proposed action, the proposed construction area includes land currently developed as stream bank protection. Public access to the bank is limited due to the location of the Maui Disposal Co, Inc. site adjacent to Wailuku River where the revetment system repairs along the right stream bank are proposed. Additionally, upstream of the project construction site, the right stream bank is hardened, and downstream is the location ʻĪao Stream Levee 27. As a result, it is unlikely that recreational use currently takes place at the proposed construction area. These land uses would be maintained under the proposed action.

Surrounding Area. The 2002 Wailuku-Kahului Community Plan details the goals and objectives concerning recreational and community facilities within the region. According to the Community Plan, the growth of Maui's population over time has increased the demands on existing recreational and community facilities in the region. The Community Plan calls for the development and maintenance of an efficient and responsive system of public services that promotes a safe, healthy and enjoyable lifestyle, accommodates the needs of the young, elderly, disabled, and disadvantaged persons, and offers opportunities for self-improvement and community well-being (Maui County Council, 2002).

There is multiple Department of Parks and Recreation facilities located in the project vicinity. Papohaku Park is located on Waena Street, approximately 0.5 miles east of the project area. Papohaku Park provides a softball field, a basketball court, parking, and restrooms. Honolii Park is located approximately 0.7 miles southwest of the project area. Honolii Park provides parking and a picnic area with tables and benches. Wells Park is located on Wells Street, approximately

0.6 miles east of the project area. Wells Park provides a softball field, tennis courts, a basketball court, parking, and restrooms.

Keopuolani Park is located on Kanaloa Avenue, approximately 1.5 miles southeast of the project area. Keopuolani Park is the largest park in the Maui County parks system. The park is adjacent to the Maui Arts and Cultural Center and the War Memorial Complex. Keopuolani Park provides a track and field venue, amphitheater, gymnasium, aquatics arena, three baseball fields, two soccer fields, a skate park, locker room facilities, picnic areas, parking, and public restrooms.

The annual Maui County Fair is located at the War Memorial Complex situated on Kanaloa Avenue adjacent to Keopuolani Park. The fair features multi-cultural food, entertainment, horticulture, bonsai, livestock, homemaking, photo and art exhibits, and competitions. The Maui County Fair was started in 1916 and has a mission of giving back to the community while upholding the traditions of Maui. The 2020 Maui County Fair was postponed due to the current COVID-19 pandemic (Maui Fair, 2021).

The Streamside Trail at the ʻĪao Valley State Park is located 3.8 miles west of the project area. The trail crosses the upper reaches of the Wailuku River and winds through a tropical forest, small waterfalls, and natural pools.

The mouth of Wailuku River empties into Kahului Bay, approximately 1.4 miles east of the project area. Kanaha Beach Park is located within Kahului Bay, approximately 4.7 miles east of the project area. The park is a popular area for picnics due to its large grassy area and a long strip of white sand beach. The steady trade winds that frequent the area make the park a popular windsurfing beach. In addition to windsurfing, Kanaha Beach and Kahului Bay provide a large number of recreational activities including kiteboarding, surfing, fishing, diving, swimming, paddling, kayaking, and camping.

4.13.8.2 Potential Impacts and Proposed Mitigation

Under the proposed action, no impacts to short-term recreational use in the project area are expected. The proposed construction area includes land currently developed as stream bank protection. Construction activities would be restricted to the proposed construction area, access from Eha Street, and staging areas located adjacent to the Maui Disposal commercial property on the right bank of the stream and Imi Kala Street. Additionally, upstream of the project construction site, the right stream bank is hardened, and downstream is the location ʻĪao Stream Levee 27. As a result, no recreational activities are believed to take place within the proposed construction area. These land uses would be maintained under the proposed action.

The terrestrial- or water-based recreational activities located closest to the project area are Papohaku Park, Honolii Park, Wells Park, ʻĪao Valley State Park Streamside Trail, and Kanaha Beach Park. None of these recreational activities are located adjacent to the project area and no impacts to recreational use of these sites are expected as a result of construction activities. As a result, short-term recreational use in the project area is not considered to be impacted by construction activities.

The proposed action is not expected to have any direct long-term impacts on recreational uses within the project area since lands located within the proposed construction area are not utilized for recreational use. Additionally, the planned project will not increase the population in the vicinity and will not create additional long-term use of recreational facilities. No beneficial use of recreational areas would be curtailed. As a result, the proposed action is not considered to have direct long-term impacts on recreational use within the project area.

4.14 Archeological and Historic Resources

4.14.1 Description

An archaeological literature review and field inspection (ALRFI) report, dated April 2021, was prepared by Cultural Surveys Hawaiʻi, Inc. (CSH) for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island, TMKs: [2] 3-4-020:048, 075, 888 (por.) & [2] 3-4-032:001 (por.). The complete ALRFI report is included as **Appendix B**, and a summary is provided below.

The ALRFI was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the project, and based on findings, consider cultural resource management recommendations. The ALRFI document is intended to facilitate the project's planning and support the project's historic preservation and environmental review compliance.

Imi Kala Bridge is a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. SIHP # -5564 was previously documented during an archaeological inventory survey (AIS) for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). Tome and Dega (2004:43) assessed SIHP # -5564 as significant pursuant to HAR §13-13-284-6, Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history). No further historic preservation work was recommended.

CSH completed the fieldwork component of the ALRFI under archaeological permit # 20-07, issued by the State Historic Preservation Division (SHPD) pursuant to HAR §13-13-282. Fieldwork was conducted on 24 November 2020 by CSH archaeologists Jonas Madeus, B.A., and Jay Rapoza B.A., under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 2 person-days to complete. In general, fieldwork included 100 percent coverage pedestrian inspection of the project area, GPS data collection, and written and photographic recordation. The project area included in the ALRFI report is 1.39 acres.

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawaiʻi, the Hawaiʻi State Archives, the Mission Houses Museum Library, the Hawaiʻi Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawaiʻi State Archives and the Archives of the Bishop Museum; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ʻAina (2000) database.

Pre-Contact

The lands of Wailuku are traditionally known as the "locality of flying clouds" (Fornander 1916-1917:286). The *ahupuaʻa* of Wailuku, Waikapū, Waiehu, and Waiheʻe were collectively referred to as "Nā wai ʻehā" or "The Four Waters" (Handy et al. 1991:496). Nā wai ʻehā consisted of four deep valley streams that watered four distinct areas of *kalo* (taro) land, which spread out fanwise to the shoreline (Handy et al. 1991:272). According to Kameʻeleihiwa (1992:241), the combined area of these four *ahupuaʻa* was once known as "Puʻali Komohana," which means "western sun-setting isthmus (Andrews 1865:73). Much of the historical and traditional information for the Kahului region derives from portions of Wailuku *Ahupuaʻa* with populations located in the uplands, along the streams and valleys of Mauna Kahalawai.

The relative scarcity of recorded place names for Kahului may be an indication of a population that was widely spread out between settlements with denser populations at Wailuku and settlements further east beginning at Hāmākua Loa. The upland portion of Wailuku Ahupuaʻa was resplendent with vast taro fields fed by the ʻĪao Stream. The fertile valleys of four major perennial streams of windward West Maui Mountains formed the largest continuous area of wet-taro cultivation in the Hawaiian Islands (Handy 1940:496). The high degree of cultivation within Wailuku Ahupuaʻa, along the flood plain of ʻĪao Stream, gives evidence that a substantial population would have been established in the region during the pre-Contact period.

Traditional habitation and cultural activities centered on ʻĪao Valley and present-day Wailuku Town vicinity. However, most Wailuku Ahupuaʻa lands lay in the large eastern extension, which includes Kahului Harbor and continues east beyond Sprecklesville. This approximately 24,000-acre eastern portion of Wailuku Ahupuaʻa, known as *Ke Kula o Kamaʻomaʻo,* or the Plains of Kamaʻomaʻo, and also referred to as Wailuku Commons, differs pronouncedly from the western portion of the *ahupuaʻa* in the virtual absence of permanent habitations until the very late nineteenth century.

A description of Wailuku Ahupuaʻa configuration was given by W.D. Alexander in *A Brief History of Land Titles in the Hawaiian Kingdom*: "On Maui the lands of Waikapu and Wailuku appropriated almost the whole of the isthmus so as to cut off half of the lands in the district of Kula from access to the sea" (Alexander 1890:106). A possible explanation for this may include an effort by the politically powerful Wailuku to secure valued resources in the eastern portion of greater Kahului Bay. In addition to common marine resources, drift resources, such as drift logs from the Pacific Northwest, ivory from drifting whale carcasses, and iron embedded in drifting ships or flotsom, may have also been collected in Kahului Bay due to its exposure to trade winds.

Another potential explanation is that the northeastern portion of the isthmus was held by Wailuku for political purposes. Ross Cordy (1981:198-200) suggested a "buffer zone" extended across the central portion of Maui Island, which presumably served as a relatively unoccupied border or "no man's land" between the two powerful competing societies of Maui (West Maui and East Maui) until the unification of Maui under the ruling chief Piʻilani circa 1600. Cordy's theory suggests that Wailuku held the northeastern portion of the isthmus in order to minimize conflict with the forces of East Maui. Evidence suggests that the Hawaiians of Wailuku were not

particularly interested in living in the eastern portion of the *ahupuaʻa,* strongly favoring the vicinity of ʻĪao Stream instead. Economic reasons certainly would have existed for excluding Kula people, particularly by reserving access to marine resources. By limiting coastal access, the population of Kula was kept low, and tensions with East Maui were minimized.

The sandy plains of Ke Kula o Kamaʻomaʻo also were known by Hawaiians in traditional times as a wandering place of the souls (Beckwith 1970), a place where dead spirits waited for a friendly escort, perhaps a family *ʻaumakua* (guardian spirit embodying an animal form), to show them the way to eternity.

According to Helen P. Hoyt (1976), Kamaʻomaʻo is a region where the "Marchers of the Night," or *Ka huakaʻi o ka Po*, are sometimes heard and seen. Such beliefs and residential patterns were likely mutually reinforcing. Because people did not live in any numbers in areas such as Kamaʻomaʻo, these locales became associated with *poʻe auana wale* (spirits of the dead). The cultural association with these spirits discouraged subsequent residence in such places. Conceptions of abodes of the dead were not so much ideas of discrete specific spots but were rather perceptions of vast desolate areas which might extend over tens of thousands of acres.

The current project area is located on alluvial soils deposited by the Wailuku River near the sandy plains of Kamaʻomaʻo. The Sand Hills stretch across Kamaʻomaʻo and are traditionally, historically, and archaeologically known for the presence of numerous Hawaiian burials.

In addition to the traditional land boundaries for taro *loʻi* arranged along the flow of ʻĪao Stream, two *heiau*, Halekiʻi and Pihana, were constructed atop a low ridge immediately west of the ʻĪao Stream in Paukūkalo, overlooking the fertile coastal plains of Wailuku, Waiheʻe, and Waiehu (Kirch 1997:67). Both Halekiʻi and Pihana were *luakini heiau* with important traditional linkages to famous chiefs (Kirch 1997). Pihana is noted as the birthplace of Keōpuōlani in 1778, a woman descended from a lineage of *tabu* chiefs of divine rank, and raised in Wailuku, Olowalu, and Hāmākua on Maui (Kamakau 1992:259). She gave birth to two royal male heirs of Kamehameha I, Liholiho (Kamehameha II [Reign: 1819-1824]) and Kauikeaouli (Kamehameha III [Reign: 1825-1854]), and a daughter.

The presence of ceremonial structures, such as *heiau*, provides evidence that Wailuku was a place of political stability. The agricultural region of Wailuku was the most politically important division of all *Na Wai ʻEha*. The royal compound Wailuku chiefs once lay at the foot of ʻĪao Valley. From this region, the chiefs of Wailuku ruled Maui for 15 centuries. According to Kamakau (1991), the earliest of the chiefs of ʻĪao was perhaps Kahaʻi. In the 1450s, Chief Piʻilani ruled over all Maui and the islands of Lānaʻi and Molokaʻi. He was succeeded by his son, Kihapiʻilani, followed by his son, Kamalālāwalu; a chief so highly regarded that ever since his time, the island has been spoken of with esteem as "Maui o Kama" or "Royal Maui". Chief Kekaulike remained in power until the chiefdom was passed to his son Kamehameha-nui in 1690 (Fornander 1880a:314). By the second half of the eighteenth century, Maui *aliʻi* (royalty), including the ruling chief Kahekili, reportedly had been residing at Wailuku enjoying the surf of Kehu and Kaʻakau (Kamakau 1992).

Between 1775 to 1779 there was continual fighting between Kalaniʻopuʻu of Hawaiʻi and Kahekili of Maui (Kamakau 1992:84). In 1776, Kalaniʻopuʻu's warriors landed at Keoneoʻoʻio, with war canoes extending all the way to Mākena, and proceeded to ravage the countryside. The forces of Kahekili descended on and destroyed the soldiers of Kalaniopuʻu, slaying the elite soldiers of Kalaniopuʻu on the sand hills at the southeast of Kalua. The battle that took place received the name "The furious destruction at Kakanilua," named after the sand hills below Wailuku.

Early Historic Period

Captain James Cook first sighted Maui island on 26 November 1778 with his ship Resolution positioned three miles off Kahului. Cook records that the Hawaiians who came out in canoes to trade for supplies appeared "to be of the same nation with the inhabitants of the islands more to leeward [i.e., Oʻahu and Kauaʻi] which we had already visited [ten months earlier in January 1778]; and… they knew of our having been there" (in Speakman 1978:23-24).

In 1790, ʻĪao Valley was the site of the last great conflict on Maui. Kamehameha I of the Island of Hawaiʻi landed at Kahului to battle the army commanded by Kahekili's son Kalanikūpule. Kamehameha's warriors used small cannons, muskets, and ammunition obtained from an American trading ship to rout the Maui defenders. Kamehameha's modern weapons struck terror into the hearts of the Maui warriors. The Maui army attempted to escape into the ʻĪao Valley. The carnage that followed was so great that ʻĪao Stream was said to have been choked with the corpses of the vanquished defenders, giving the campaign the name "Battle of Kepaniwai," (the damming of the waters). The high chiefs and royalty of Maui fled to other islands (Alexander 1899:129). Kamehameha, meanwhile returned to the Big Island to deal with Keōua Kuahuʻula, the last independent chief on Hawaiʻi Island, who had been raiding Kamehameha's territory while he was away (Kamakau 1992:151).

When Kaʻeokulani, ruling chief of Kauaʻi, heard how narrowly Kalanikūpule and the other chiefs of Maui had escaped death in the war on Maui, and how the waters of Īao had been choked with the bodies of the slain, he was so upset that he set sail to war against Kamehameha. He met Kahekili on Oʻahu, who was now ruling chief over Oʻahu, Molokaʻi, Lānaʻi, and Maui, and persuaded him to join in the war against Kamehameha. Upon arrival on Maui, the war party camped at Wailuku and Waiehu (Kamakau 1992:159).

Kahekili made his home at Pihana and Paukūkalo, and he proceeded to give Waiehu to the Kauaʻi chief Kiʻikiki, causing discontent among the chiefs of Maui who had to give up some of their lands. This led to a revolt against the Kauaʻi chiefs. A battle was fought at Paukūkalo, adjoining Waiehu. The son of Kahekili, Koalaukani, arose victorious. Though he had been surrounded by Kauaʻi warriors, Koalaukani dodged all of the spears thrown by them and emerged the hero of Paukūkalo (Kamakau 1992:160).

In 1791, Kahekili led his forces to the Island of Hawaiʻi to meet Kamehameha in battle. The fighting ended with the indecisive battle of Kepuwahaʻula, and Kahekili returned to Maui where he died in 1793 (Kamakau 1992:160-162). He was succeeded by Koalaukani, better remembered as Kahekili II, the last independent King of Maui. Kahekili II died a year later (Kamakau

1992:168), and in 1795, Kamehameha defeated the combined forces of Oʻahu and Maui. In 1810, Kaumualiʻi, the last independent king of Kauaʻi and Niʻihau, submitted to Kamehameha giving him control of a unified Kingdom of Hawaiʻi (Kamakau 1992:196). With the peace endangered during Kamehameha's reign, no further accounts of events and life at Wailuku are recorded in the remainder of the eighteenth century.

Early Nineteenth Century

With the death of Kamehameha I in 1819, warfare between the ranking Hawaiian chiefs was set aside by powerful changes within traditional Hawaiian society. Four decades of interaction with American, Russian, British, and French traders had opened the way for Christianity. The establishment of a system of schools throughout the islands was vigorously pursued by the governing chiefs of Hawaiʻi, aided by the newly-arrived American Protestant missionaries beginning in 1820 (Kuykendall 1938).

The Māhele and the Kuleana Act

The most significant change in land-use patterns and allocation came with The Māhele and the privatization of land in Hawaiʻi. The establishment in 1839 by Kamehameha III (Kauikeaouli) of a Bill of Rights for the people of Hawaiʻi, followed by a formal constitution in 1840, hastened the shift of the Hawaiian economy from that of a subsistence-based economy to that of a market based economy. The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society.

Land Commission Awards (LCAs) are *kuleana* land awards or claims that were approved by the Land Commission and granted by ministers representing the Kingdom of Hawaii's Department of the Interior. These awards were granted to tenants of the land, Native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners who could prove occupancy on the parcels prior to 1845. The project area is surrounded by a dense clustering of LCAs that extend throughout this portion of Wailuku Ahupuaʻa (**Figure 4-9**).

Mid to Late 1800s

During the American Civil War in the 1860s, Hawaiian sugar prices rose significantly, leading to the formation of 12 large sugar plantations on the island of Maui; the most of any Hawaiian Island. The Wailuku Sugar Company was organized in 1863.

Maui's earliest plantations were limited regionally to available natural water sources. The innovations of irrigation and equipment such as deep wells, allowed plantations to expand and increase production. By 1867, the Wailuku Sugar Company encompassed 500 acres and was producing approximately 800 tons of sugar. The company incorporated in 1875 and began to buy out land near the vicinity of the mill and by 1880 the sugar company was producing more than 1,550 tons of sugar (**Figure 4-10**). The economic progress of sugar demanded the importation of people from the Philippine Islands, Japan, Puerto Rico, and Portugal.

Figure 4-9. Land Commission Awards in the Vicinity of the Project Area

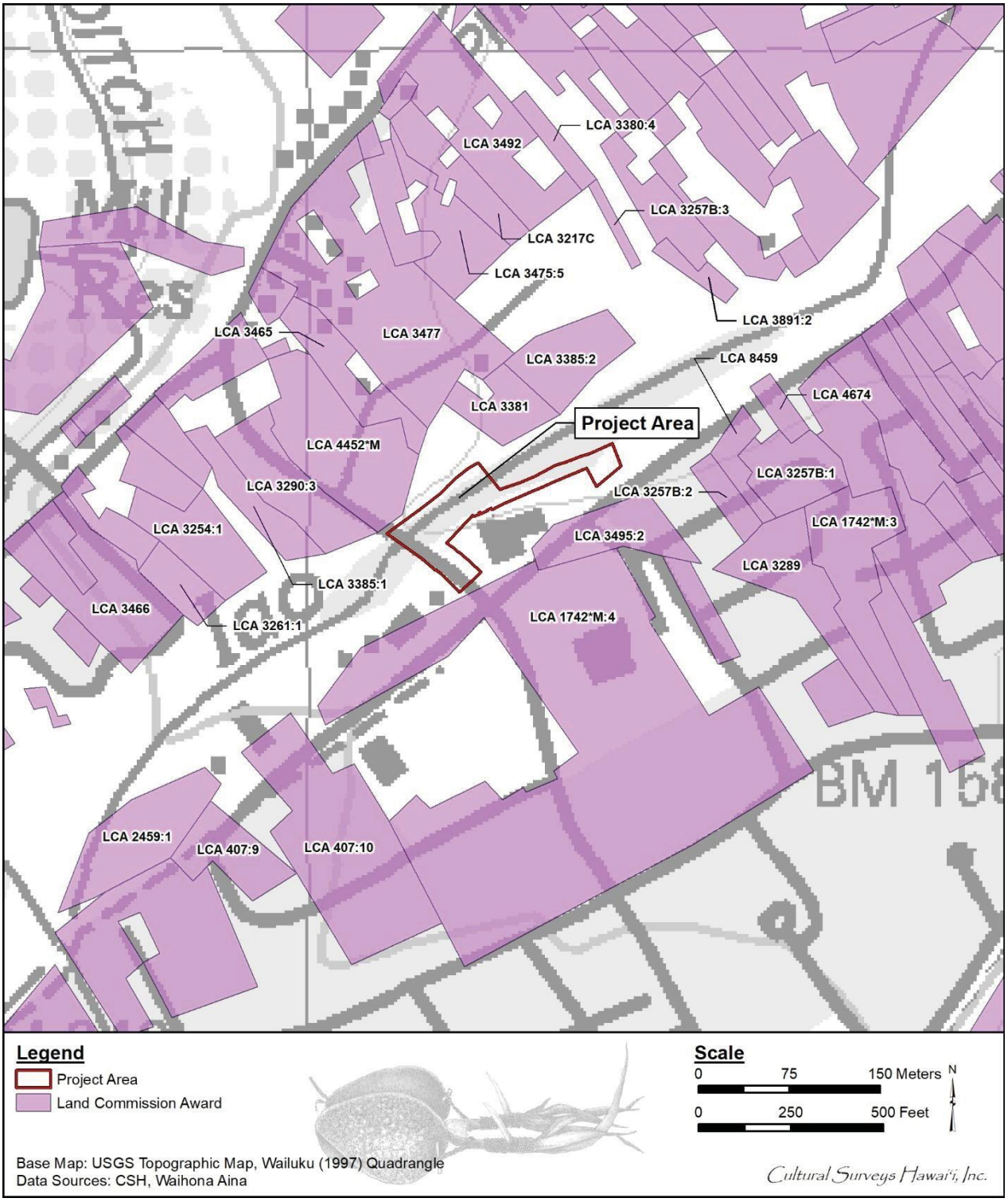
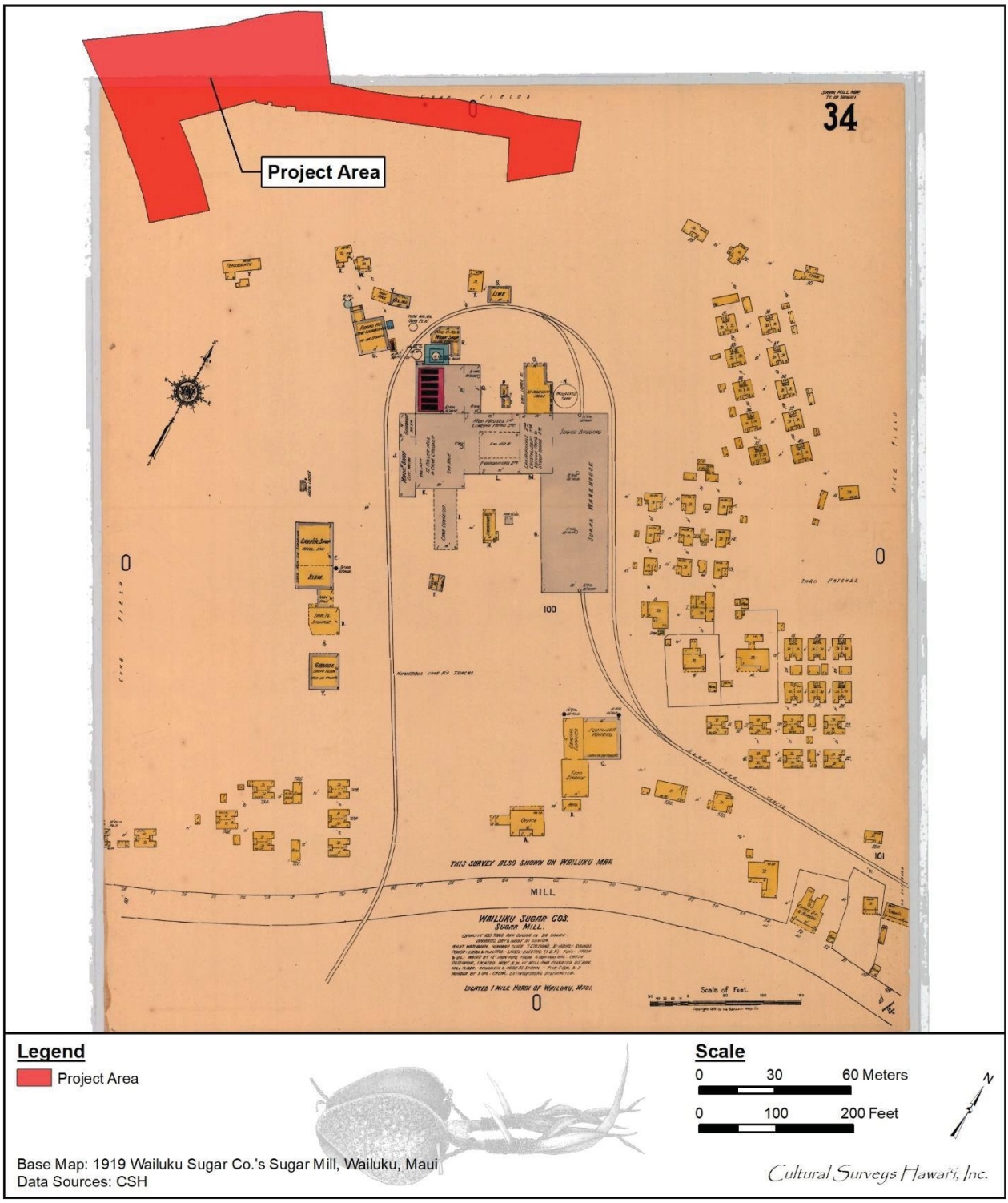


Figure 4-10. 1919 Wailuku Sugar Co.'s Sugar Mill in Reference to the Project Area



Large numbers of sugar laborers arrived on Maui during the late 1800s and early 1900s; many of them Catholics, swelled the settlement of plantation camps around the existing Catholic churches. In this manner, Wailuku and the region around Puʻuohala Village became the centers of plantation camp housing for the Wailuku Sugar Company. In all, there were 11 camps for the Wailuku Sugar Plantation. The sugar mill of the enterprise was located along the ʻĪao Stream in the northern portion of Wailuku.

By the 1970's, over 30,000 tons of sugar was being produced a year, but as urban development and other agricultural operations (pineapple and macadamia nut) became more prominent, C. Brewer & Company began to sell off land. Sugar production began to decrease by 1986 with only 19,885 tons of sugar produced. The milling process was contracted out to Hawaiian Commercial & Sugar Company and by 1988 the Wailuku Sugar Company ended sugar operations.

During this period, the major enterprise out of Kahului was the Kahului Railroad Company. In 1879, the Kahului Railroad Company was formed by Thomas H. Hobron, William O. Smith, and William H. Bailey. The first rails were laid at a small wharf at Kahului on 30 June 1879. Three miles of track to the village of Wailuku were completed by 10 September 1879. By 1881, the Kahului Railroad was carrying raw sugar to the port of Kahului from both the Wailuku Sugar Company and from the Alexander & Baldwin mills in Pāʻia and Hāmākua. In 1884, Kahului Railroad became a freight forwarder and subsidiary of Wilder Steamship Company.

According to the SHPD, their GIS records indicate one historic property is located near the vicinity of the project area (SIHP 50-50-04-1181). This identified historic property was recorded as the "Wailuku grindstone" and measures approximately 1.6 x 1.5 x 0.9 meters. The grindstone was originally identified in the Wailuku River and was later moved to the courtyard of the Wailuku Sugar Company (SHPD correspondence January 28, 2020). CSH was unable to locate further recordation regarding previous archaeological recordation, the provenience of SIHP # -1181, or the current location and condition of the historic property.

Modern Land Use

In 1905, the Honolulu Iron Works constructed a new sugar mill for the Wailuku Sugar Company on a site located just north of the St. Anthony's Church and School, adjacent to the County of Maui Papohaku Park. Many homes and buildings in Wailuku town date from the 1920s; the heyday of prosperity of the Wailuku Sugar Company. Many private and public buildings in Wailuku have plantation inspired architectural and historical significance. Beginning in the early years of the twentieth century, the Wailuku Sugar Company, took control of the Spreckels Ditch, which runs transverse to and collects water from the Waiheʻe, Waiehu, and Wailuku Streams, and engaged in a 20-year dispute with HCS of Kahului over control of the water collected. In 1924 the two companies agreed to a division of the water based on the number of hours each received the flow of water per day and night. The Wailuku Sugar Company was making a profit at the time of statehood in the late 1950s but cut its last cane crop in 1988. After that it tried diversifying under the name Wailuku Agribusiness, planting macadamia groves and building the Maui Tropical Plantation in Waikapū.

Following the closing of the Wailuku Sugar Company mill in 1989, much of the former agricultural land along the eastern banks of the ʻĪao Stream was developed as the ʻĪao Parkside Condominium; a development consisting of 47 buildings constructed in phases between 1992 and 2002 with large-scale light industrial development utilizing much of the remainder of the former sugar lands of Wailuku along the western bank of the ʻĪao Stream.

On Tuesday, 13 September 2016, Maui experienced one of the largest flood events in the county's history. In one day, the storm dropped nearly 10 inches of rain in Puʻu Kukui and resulted in the signing of an emergency proclamation by Maui County Mayor Alan Arakawa (Davis 2016). According to an article by Chris Sugidono (2017) of The Maui News: "Some have referred to it as a 100-year flood, though data collected from the U.S. Geological Survey estimate it as possibly a 500-year recurrence." Data from the USGS Pacific Islands Water Science Center reported that "the river moved 10,900 cubic feet per second down the valley or roughly 81,500 gallons per second. It was 200 times as large as the 35-year average for Sept 13." The gauge station recording the data was destroyed when the river channel near it burst open and expanded "from about 40 feet wide up to three times the size."

Previous Archaeological Research

The earliest archaeological studies on the island of Maui were a part of island-wide surveys conducted in the early 1900s (Stokes 1917; Walker 1931). These studies tended to focus on the generation of descriptive lists of large-scale architecture or traditional ceremonial heiau sites. Walker (1931) described ten *heiau* (Walker Sites 45-54) in the vicinity of the project area including: Keahuku Heiau (SIHP # 50-50-04-0045); Olokua Heiau (SIHP # -0046); Olopio Heiau (SIHP # -0047); Malena Heiau (SIHP # -0048); Pohakuokahi Heiau (SIHP # -0049); Lelemako Heiau (SIHP # -0050); Kawelowelo Heiau (SIHP # -0051); Kaulupala Heiau (SIHP # 0052); Palamaihiki Heiau (SIHP # -0053); and Oloolokalani Heiau (SIHP # -0054).

Between 1931 and 1976, only sporadic archaeological studies were undertaken in the area. Following the passage of the National Historic Preservation Act in 1966 and HRS Chapter 6E, which established the Historic Preservation Program in 1976, archaeological studies occurred as a condition of development on a more frequent basis. The lands surrounding the project area have been subject to a variety of studies including archaeological reconnaissance investigations, field inspections, AIS investigations and assessments, archaeological monitoring, and burial treatment programs. Previous archaeological studies in the vicinity of the project area are detailed below (**Figure 4-11** and **Table 4-6**). The location of historic properties identified by previous archaeological studies in the vicinity of the project area is depicted in **Figure 4-12** and described in **Table 4-6**.

Historic structures listed on the National Register of Historic Places and located within 500 meters of the project area include the Kaʻahumanu Church (SIHP # -1500), the Wailuku Civic Center (SIHP # 50-50-04-1616), Henry Perrine Baldwin High School/Wailuku Elementary School (SIHP # -1630), the Waiʻale Drive Bridge (SIHP # -1633), and the Bailey House (SIHP # -3000).

Table 4-6. Previous Archaeological Studies in the Vicinity of the Project Area

Reference	Type of Study	Location	Results (SIHP # 50-50-04-####)
Kennedy (1989)	Reconnaissance survey	Wailuku Project District #3 and Pihana District #2 (TMKs: [2] 3-3-multiple plats, and [2] 3-4-multiple plats)	Recorded three historic properties: SIHP # -2985 (ACH-PH-1), a small rock mound; SIHP # -2986 (ACH-PH-2), a Chinese grave marker; and SIHP # -2987 (ACH-PH-3), a terrace complex; also noted ACH-PH-4, Mahalani Cemetery (no SIHP # assigned)
Estioko-Griffin (1990)	Field Inspection	Waiehu Development Increment C (TMK : 2-3-3-01 :10 por.)	Identified at least one exposed in situ human burial site, human cranial fragments scattered faunal skeletal remains, and a concrete tombstone with Chinese characters
Fredericksen and Fredericksen (1992)	Archaeological survey (surface only)	Lower Main St. at the intersection with Mill St. (76 Station) (TMK: [2] 3-4-039:082)	No historic properties identified
Fredericksen et al. (1995)	Archaeological inventory survey	Easement along Lower Main St and the intersection with Mill St (TMKs: [2] 3-4-039:081–83)	Documented surface remnants of SIHP # -3112, Kahului Railroad bed and identified SIHP # -4127, a buried habitation site with a potential burial pit outline
Dunn and Spear (1995)	Archaeological monitoring	Waiale Rd from Waiinu Rd to Main St overpass (TMKs: [2] 3-4-002:036; [2] 3-4-003:019; and [2] 3-4-010:002)	Identified three historic properties: SIHP # -4005, a previously disturbed burial; SIHP # -4067, an isolated hearth; and SIHP # -4068, a cultural layer with 16 pre-Contact burials and 21 habitation features
Hammatt and Chiogioji (1996)	Archaeological field inspection	Waiale Rd and Lower Main St (TMKs: [2] 3-4-multiple plats)	No historic properties identified
E.M. Fredericksen and Fredericksen (1996)	Archaeological data recovery	Lower Main St. at the intersection with Mill St. (76 Station) (TMKs: [2] 3-4-039:081, and 082)	Investigated SIHP # -4127, a buried habitation site, encountered an immature monk seal (Monachus schaunislandi) burial and 33 additional component features

D.L. Fredericksen and E.M. Fredericksen (1997)	Archaeological inventory survey	Mahalani Street Extension (TMKs: 3-8-46: por. 1,2,3,4,17,18,30, and 32; 3-8-07 por. 121)	No historic properties were identified
D. L. Fredericksen and E. M. Fredericksen (1998a)	Archaeological inventory survey	Intersection of Lower Main St and Mill St (TMK: [2] 3-4-039:082)	Documented a continuation of SIHP # -4127, buried habitation layer; identified SIHP # -4414, burial of two individuals within a test pit
E. M. Fredericksen and D. L. Fredericksen (1998a)	Archaeological inventory survey	150 Lunalilo St (TMK: [2] 3-8-007:047)	Identified SIHP # -4418, a buried habitation layer containing pits, hearths, refuse pit, a possible posthole, and traditional materials including worked human bone
Chaffee et al. (1998)	Archaeological inventory survey	Wailuku Parkside Property (TMKs: [2] 3-4-030:019, 020 por., and 023 por.)	No historic properties identified
Fredericksen (2000)	Inadvertent discovery	Easement on Lower Main St and Mill St	Reported an inadvertent burial, designated a component of SIHP # -4127, that was discovered during archaeological monitoring (no associated monitoring report available)
E. M. Fredericksen and D. L. Fredericksen (2003)	Archaeological monitoring	MECO Substation, Lower Main St (TMK: [2] 3-4-039:051	Documented a continuation of SIHP # -4127, a buried habitation layer
D. L. Fredericksen and E. M. Fredericksen (2003)	Archaeological inventory survey	Lokenani Hale, Wailuku Elderly Apartments (TMKs: [2] 3-4- 012:045, 047, 048, 083, and 086)	Identified SIHP # -5484, former Nishiwa Bakery foundation
Tome and Dega (2004)	Archaeological inventory survey	TMKs: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por.	No historic properties identified, Imi Kala road extension crosses a historic bridge (SIHP #-5564), Spreckels Ditch (SIHP #-1508), and a previously unrecorded irrigation ditch (SIHP #-5566).
Pestana and Dega (2005)	Archaeological inventory survey	709 Uluhea Way (TMK [2] 3-4-022:005)	No historic properties identified

E.M. Fredericksen (2006)	Archaeological monitoring	Lokenani Hale, Wailuku Elderly Apartments (TMKs: [2] 3-4- 012:045, 047, 048, 083, and 086)	Identified SIHP # -5763, buried road bed/cobble road base underlying Loke and Nani streets within off-site sewer and water line excavations
Morawski et al. (2006)	Archaeological monitoring	Kehalani Mauka Subdivision	Identified SIHP # -5680, one complete in situ human burial site, -5965 and -5966, isolated and disturbed human remains, -5963, a historic roadbed, and -5964, a portion of a historic sugarcane flume
Cordle and Dega (2007)	Archaeological monitoring	Henry Perrine Baldwin High School, proposed eight classroom building (TMK: [2] 3-8-007:004)	Henry Perrine Baldwin High School is designated as SIHP # -1630 (NRHP #00000667); no additional historic properties identified
Lyman and Dega (2013)	Archaeological inventory survey	Mill St and Central Ave (retaining wall) (TMKs: [2] 3-4-007:051, 067, and 147)	Identified SIHP # -7721, an early twentieth century dry-stacked stone retaining wall

Figure 4-11. Previous Archaeological Studies in the Vicinity of the Project Area

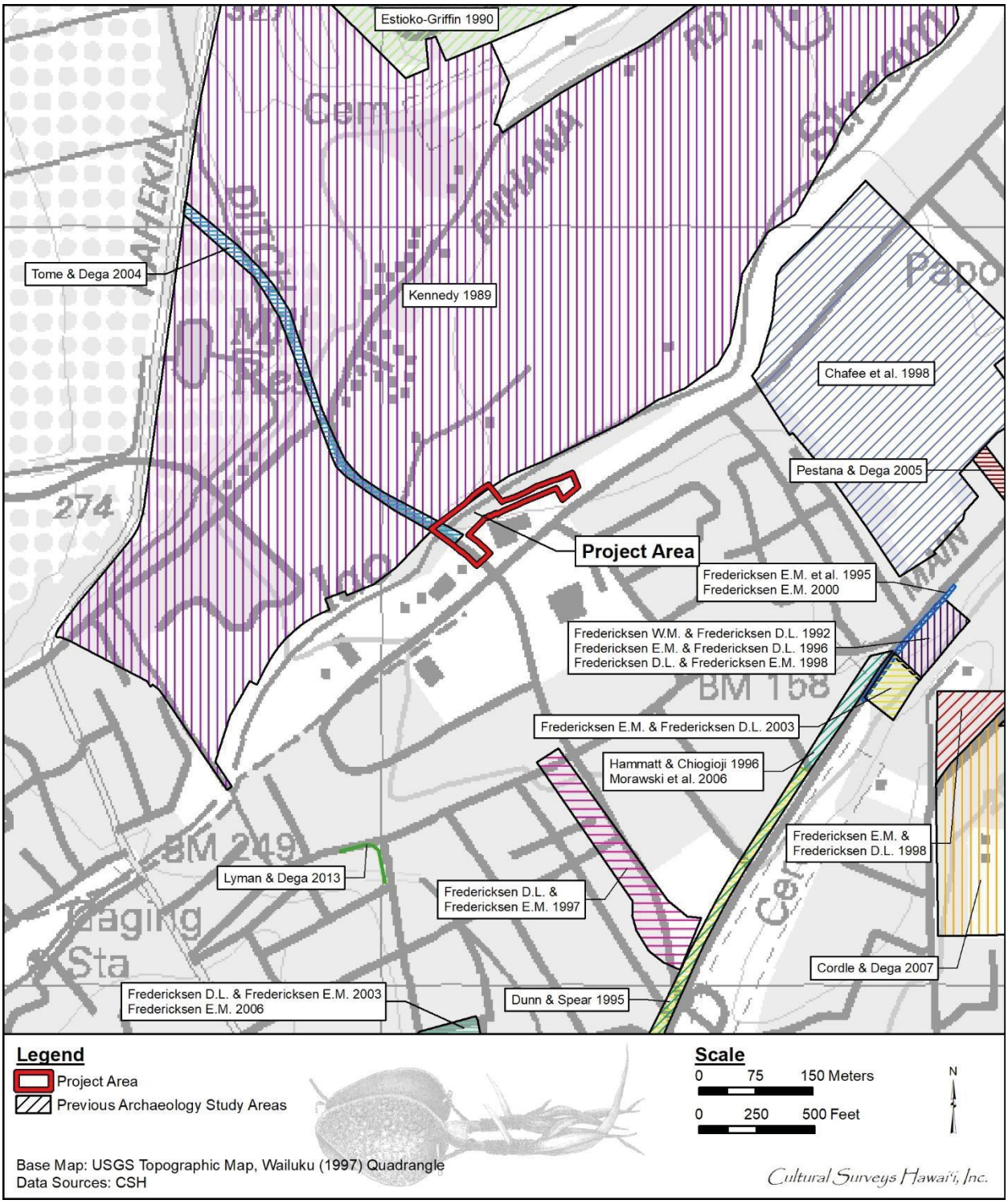
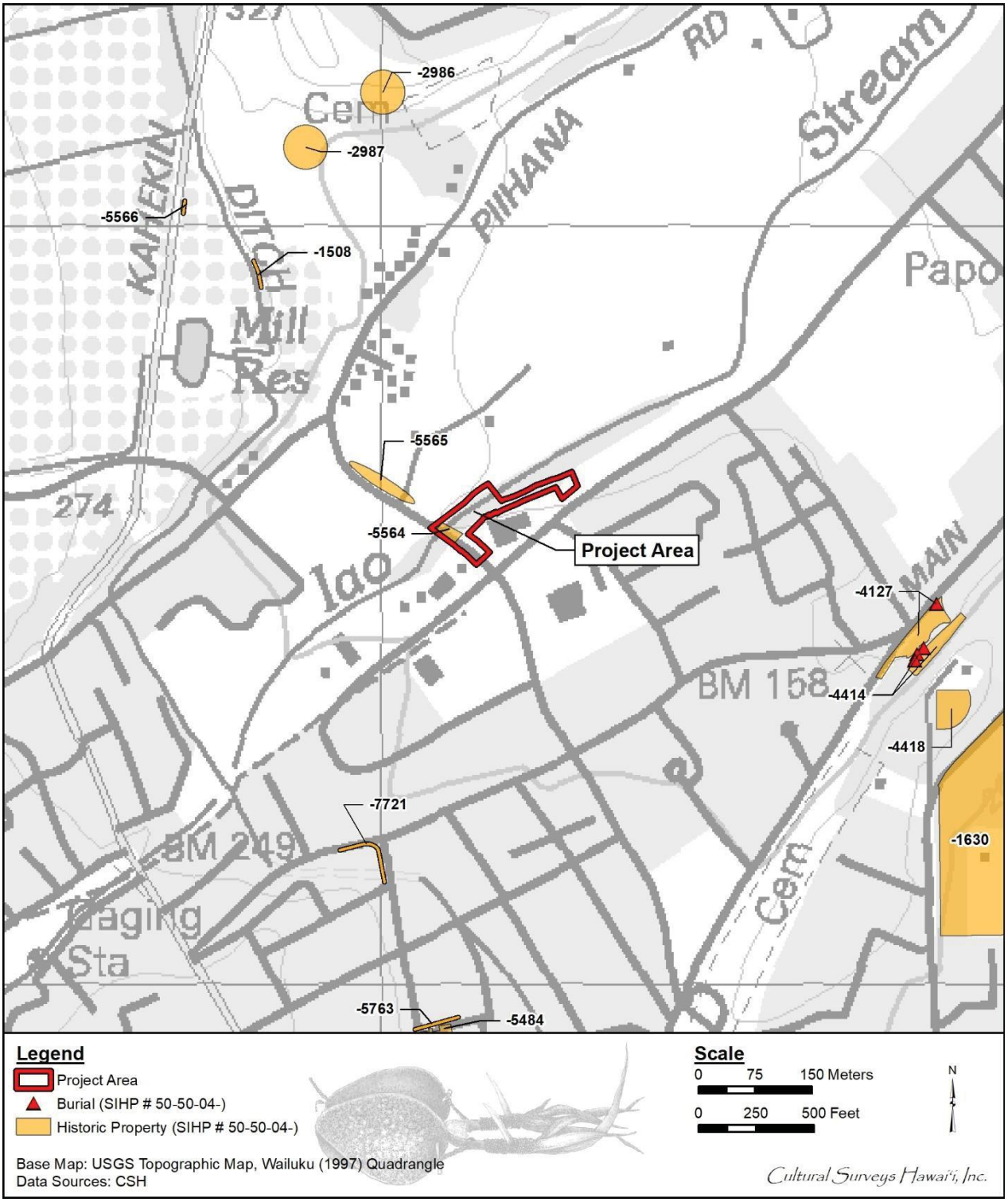


Figure 4-12. Previously Documented Historic Properties in the Vicinity of the Project Area



Results of Fieldwork

The 2021 CSH field inspection of the project included documentation of the current condition of SIHP # 50-50-04-5564, the Imi Kala Street Bridge, located along the western boundary of the project area (**Figure 4-13**). Imi Kala Bridge was previously documented during an AIS for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). Tome and Dega assessed SIHP # -5564 as significant pursuant to HAR §13-13-284-6, Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history). No further historic preservation work was recommended. A description of SIHP # 50-50-04-5564 is provided below.

The field inspection also identified two corrugated metal culverts and two poured concrete walls that were installed to mitigate flooding and stream bank erosion along the southern bank of Wailuku River (**Figure 4-14 through Figure 4-18**). These features are located adjacent or just outside of the project area and are interpreted as modern (less than 50 years old) improvements that were installed to prevent flooding and stream bank erosion. The project area also includes streambank improvements that were installed following the 13 September 2016 Wailuku River flood event (see **Figure 4-13**).

Figure 4-13. Previous Archaeological Studies in the Vicinity of the Project Area

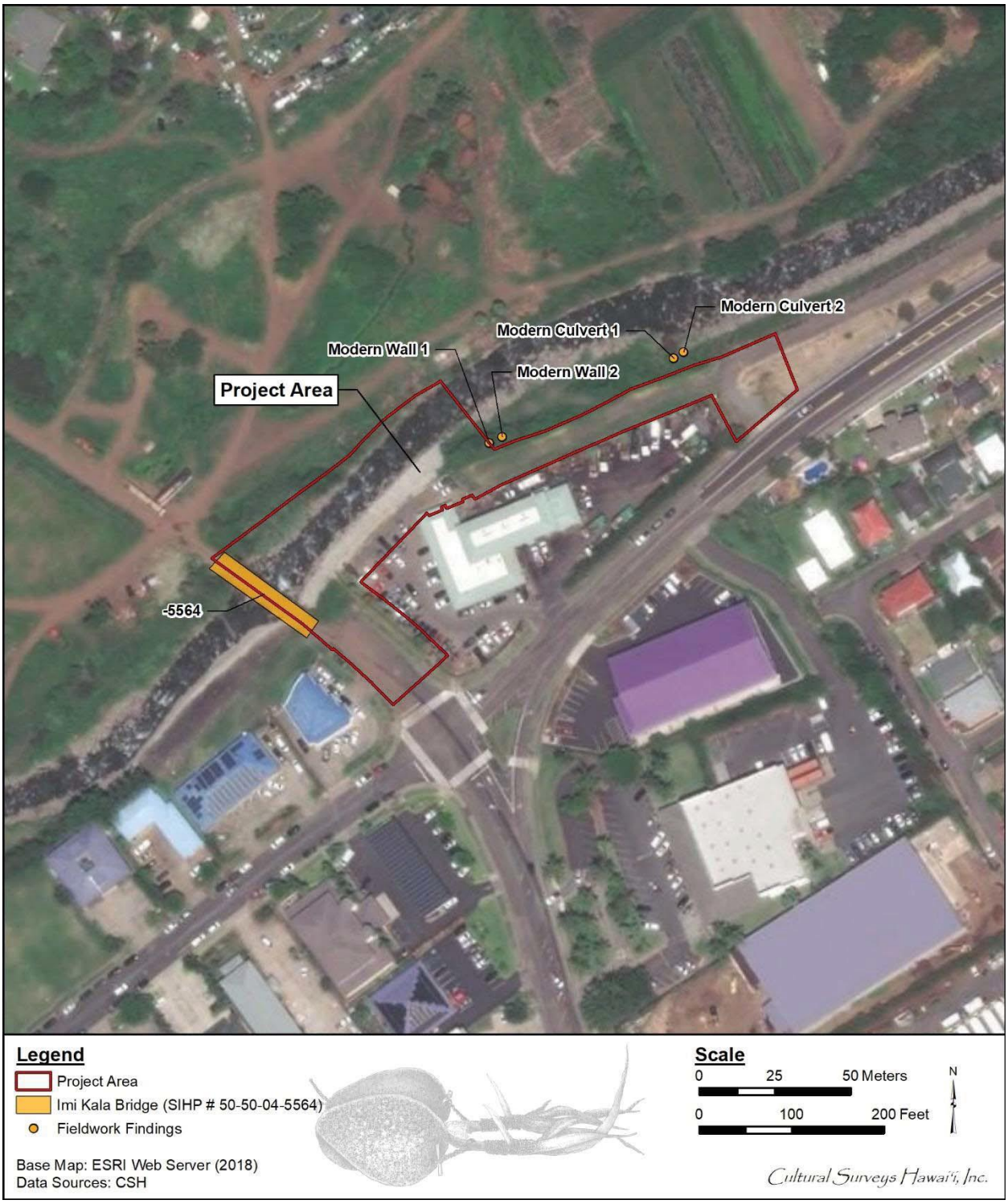


Figure 4-14. General View of the Project Area Showing Modern Streambank Improvements (Foreground) and Imi Kala Street Bridge (SIHP-5564) Spanning Wailuku River, View To Southwest

Figure 4-15. Modern Culvert 1, View to the Northeast

Figure 4-16. Modern Culvert 2, View to the East

Figure 4-17. Modern Wall 1, View to the Southwest

Figure 4-18. Modern Wall 2, View to South

SIHP # 50-50-04-5564 – Imi Kala Street Bridge

FORMAL TYPE:	Bridge (Imi Kala Street Bridge)
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic (Plantation)
TAX MAP KEY:	N/A
LAND JURISDICTION:	State/County
PREVIOUS DOCUMENTATION:	Tome and Dega (2004)

SIHP # 50-50-04-5564 is the Imi Kala Street Bridge that spans the Wailuku River. The Imi Kala Street Bridge was previously documented by Tome and Dega (2004) as follows:

> Site -5564 encompassed an approximate area of 186 square meters and consisted of a single, historic bridge. The site was located approximately 30 meters northwest of the Imi Kala Street *cul-de-sac* and it crossed ʻĪao Stream. Situated in a southeast-northwest (120°/305°) direction, the bridge was constructed utilizing concrete to form the bridge's two middle and stream bank supports while wooden planks, iron/steel I- beams, and additional concrete was used to construct the traveling surface. Located directly under the traveling surface of the bridge were utility lines (*i.e.*, water, sewer), which served the

> residents of the area. During its heyday, the bridge not only served the area's now defunct Wailuku Sugar Mill but the area's local residents as well. Documentation of Site -5564 was limited to paper and photographic description. (Tome and Dega 2004:18)

Tome and Dega (2004) also provide a plan view map of the historic property (**Figure 4-19**). As part of the field inspection, CSH revisited the historic property and recorded some additional observations. The Imi Kala Street Bridge measures approximately 33 meters long by 6 meters wide, and 5 meters high (**Figure 4-20 through Figure 4-22**). The two bridge supports within Wailuku River are constructed of cut mortared basalt stone. A yellow metal gate has been installed on the south side of the bridge. The surface of the bridge is concrete and is surrounded by metal railings.

Figure 4-19. SIHP # 50-50-04-5564 Plan View Map from Tome and Dega (2004:19)

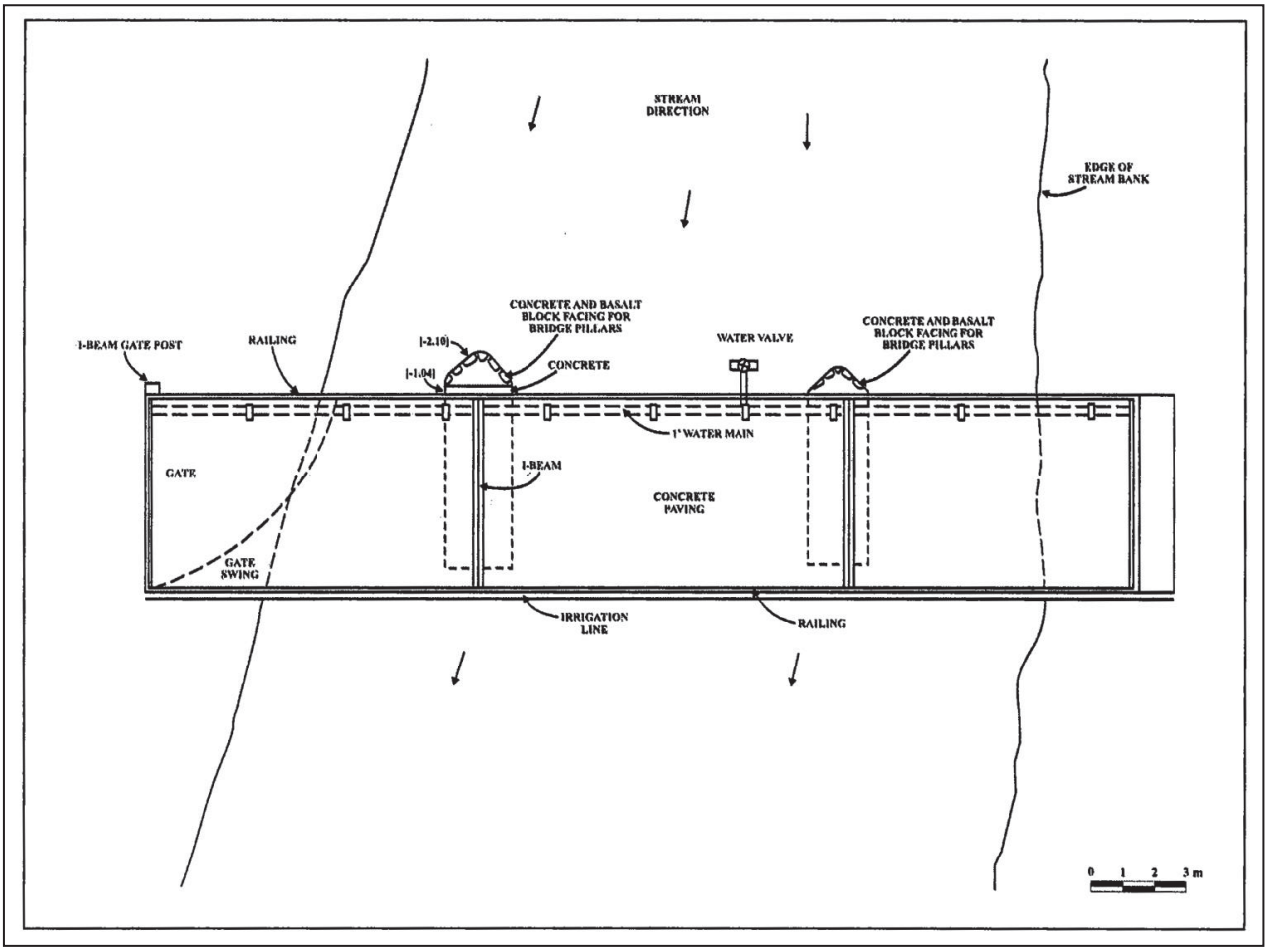


Figure 4-20. Imi Kala Street Bridge (SIHP-5564) Showing Surface, Railings, and Basalt Supports, View to Northwest

Figure 4-21. Surface of Imi Kala Street Bridge (SIHP-5564) Showing Railings, View to North

Figure 4-22. Surface of Imi Kala Street Bridge (SIHP-5564), View to Northwest

Summary of Findings

The proposed action involves the repair to a portion of the southeast bank of Wailuku River (ʻĪao Steam), downstream of Imi Kala Street Bridge and the project area will include construction site access, mobilization, and construction activity areas. The repair will include the removal and replacement of grouted riprap on the existing slope, with dumped riprap placed at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

On 24 November 2020, CSH completed a 100 percent coverage pedestrian inspection of the project area, GPS data collection, and written and photographic recordation. The field inspection of the project included documentation of the current condition of SIHP # 50-50-04-5564, the Imi Kala Street Bridge, which was previously documented by Tome and Dega (2004). The bridge was assessed significant under Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history), and no further work was recommended. The field inspection also identified two corrugated metal culverts and two poured concrete walls that were installed to mitigate flooding and stream bank erosion. These features are interpreted as modern (less than 50 years older) improvements that were installed to prevent flooding and stream bank erosion.

While the project area includes the Imi Kala Street Bridge (SIHP # 50-50-04- 5564), the project does not involve impacts to this historic property. No other historic properties were identified during the CSH 2021 field inspection that would require additional inventory or mitigation. While the project area is surrounded by a dense cluster of Land Commission Awards and within an area of rich traditional and historic land use, project-related ground disturbance is not anticipated to encounter historic properties. This assessment is primarily based on photographic evidence of the project area following the 13 September 2016 Wailuku River flood event. This event included significant erosion of the former stream bank and replacement with boulder fill and concrete. Project-related ground disturbance is anticipated to occur within this circa-2016 fill material, therefore no further archaeological work is recommended.

In a letter dated September 21, 2004 (Log No. 2004.2798, Doc. No. 0409MK08), SHPD concurred with the significance assessment for the Imi Kala Street Bridge. Additionally, SHPD indicated the bridge was adequately documented.

In a letter dated March 24, 2021 (Submission No. 2021PR00247.002), DPW indicated the proposed action would not impact the Imi Kala Street Bridge (SIHP Site 50-50-04-5564). The DPW made an HRS 6E-8 project effect determination of "No historic properties affected" for the ʻĪao Stream Levee 27 Repair Project (**Appendix B**).

In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the current County of Maui project (**Appendix B**). Pursuant to HAR §13-284-7(e), when the SHPD agrees that the action will not affect any significant historic properties this is the SHPD's notification that the HRS 6E historic preservation review process is complete.

Additionally, SHPD requested interim protection measures be implemented prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities.

4.14.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action is not anticipated to have short- or long-term impacts on historic properties. One previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified during the CSH 2021 field inspection that would require additional inventory or mitigation. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**).

In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties.

In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, native sand deposits, or sink holes are identified during the demolition and/or construction work, work in the immediate vicinity of the find will cease, the find will be protected from additional disturbance, and the SHPD will be contacted at (808) 652-1510.

Section 5
Cultural Impact Assessment

The project requires compliance with the State of Hawaiʻi environmental review process (HRS §343), which requires consideration of a planned project's effect on traditional cultural beliefs, practices, and resources.

5.1 Description

A Cultural Impact Assessment (CIA), dated March 2021, was prepared by CSH for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island, TMKs: [2] 3-4-020:048, 075, 888 (pors.) & [2] 3-4-032:001 (por.). The CIA seeks to assess traditional cultural practices as well as resources pertaining to the project area. Through document research and cultural consultation efforts, the CIA provides information pertinent to the assessment of the planned project's impacts on cultural practices (per the Office of Environmental Quality Control's [OEQC] Guidelines for Assessing Cultural Impacts). The CIA report is included in full in **Appendix C**. A summary is presented below.

Background

Background research for the 2021 CSH CIA yielded the following results, presented in approximate chronological order:

1. The project area is situated in the *ahupuaʻa* of Wailuku which is located in the larger *moku* of Wailuku on the central isthmus of the island of Maui.
2. Wailuku Ahupuaʻa was included in the traditional *ʻokana* of Nā Wai Eha, or "The Four Streams." This area is home to the four largest streams found on the windward coast of Maui: Waikapū, Waiehu, Wailuku, and Waiheʻe. The streams of Wailuku include the perennial Wailuku River, also known as ʻĪao Stream. Tributaries that flow into Wailuku River include Nākalaloa, Poʻonāhoahoa, Kinihāpai, and Ae streams.
3. Pihanakalani Heiau, Halekiʻi Heiau, and Kaluli Heiau are just a few of the *heiau* within the Wailuku Ahupuaʻa.
4. Wailuku was the site of Kalanihale, the royal palace of the ruling chief of Maui, Kahekili.
5. An article first published in the Hawaiian newspaper *Ke Au Hou* then cited in Sterling's *Sites of Maui* explains the Kapela Burial Cave in ʻĪao Valley. Sources say it was Maui's noted burial place for *aliʻi*. The following *aliʻi* were said to have been put to rest at Kapela cave: Heleipawa, Aikanaka, Kahaianuia, Hema, Luanuu, Kamea, Hua, Pau, Paumakua, Haho, Palena, Hanalaaiku, Kakaalaneo, Kekaulike, Kamehameha-nui, Laka, and Kalanikuihonoikamoku (Sterling 1998:80).
6. The high degree of cultivation within Wailuku Ahupuaʻ and its near neighbors gives evidence that a substantial population would have been established there during the pre-Contact period. According to Cordy, the settlement of Wailuku represented one of two (or perhaps three) population concentrations on Maui (Cordy 1981:198–199).

7. The 1790 invasion of Maui by Kamehameha of Hawaiʻi Island is memorialized in many place names within Wailuku. The Battle of ʻĪao is also known as the Battle of Kepaniwai. This battle is said to have been one of the most bitter battles fought by Kamehameha I in his bid to control the Hawaiian Islands.
8. Although almost 300 individual parcels were awarded by the Land Commission for Kuleana Lands within the *ahupuaʻa* of Wailuku, these claims represented lands which were located in the upland portion of the *ahupuaʻa*. Nine of these claims lie within the vicinity of the project area.
9. In 1872, the Wailuku Sugar Company was established. By 1925, Wailuku Sugar Company had taken control of other smaller sugar mills throughout Maui. During the sugar plantation era, water diversion ditches were established to transport water from streams and rivers to the sugar plantation fields.
10. Water diversion and water rights have been a serious issue between cultural practitioners and *kamaʻāina* of Wailuku and the Wailuku Water Company, which controls the water flow/access.

Results of Community Consultation

CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants in order to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 57 individuals or groups; 11 responded and three of these *kamaʻāina* and/or *kūpuna* met with CSH for a more in-depth interview. Consultation was received from the following community members:

1. Dr. Scott Fisher, *kamaʻāina*, Chief Conservation Officer, Hawaiian Islands Land Trust
2. Skippy Hau, *kamaʻāina*, Aquatic Biologist, Department of Land and Natural Resources.
3. Foster Ampong, *kamaʻāina*

Identification of Cultural Practices

Community consultation conducted as part of the 2021 CSH CIA identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Wailuku Ahupuaʻa:

1. Gathering of various stream life such as *hīhīwai*, *ʻoʻopu*, and *ʻōpae*
2. Use of water from Wailuku River for sustainable practices, such as individual/family *loʻi* and other types of agricultural farming

Identification of Impacts to Cultural Practices

No impacts to ongoing cultural practices were identified within the project area during the CSH 2021 CIA community consultation for this project.

Impacts and Recommendations

Based on the results of the community consultation conducted by CSH for the 2021 CIA for the proposed action, the following actions are recommended to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups:

1. Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the 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 construction, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.
3. Mr. Ampong stressed the importance that workers on the project should be cognitive of the history of Wailuku. Wailuku consisted of a *puʻu one* system and it was a customary practice for Native Hawaiians to bury their loved ones in these areas. Even though the land area is predominately developed, there is still a potential of disturbing *iwi kūpuna*.

5.2 Potential Impacts and Proposed Mitigation

Implementation of the proposed action is not anticipated to have short- or long-term impacts on traditional or cultural practices at the project site. No impacts to ongoing cultural practices were identified within the project area during the CSH 2021 CIA community consultation for this project. Based on written history and oral information from Hawaiian *kūpuna*, no immediate/direct changes are foreseen to known traditional cultural properties. The proposed action would not exacerbate stream channelization or destruction of native stream habitat, and it would prevent further erosion. Public access to the project area would remain unchanged.

As provided above in **Section 4.14.**, one historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified in the project area. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). To ensure no impact to the Imi Kala Street Bridge (SIHP Site 50-50-04-5564), DPW will install interim protection measures prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities.

Despite the decades of destructive modern activities and relatively few findings in the vicinity of the project area, there is always the possibility that intact artifacts or cultural deposits, including *iwi kūpuna* (ancestral human remains), may be encountered during ground disturbance. As a precautionary measure, personnel involved in construction or development activities will be informed of the possibility of inadvertent cultural or skeletal finds. As provided above in **Section 4.14.2**, in the event that historic resources are inadvertently discovered the SHPD and Police Department will be notified and construction in the area will cease until such time that work activities may be resumed as allowed by the SHPD.

Currently, no contemporary or continuing cultural or traditional practices occur within the proposed project area. The project is not located near the coast and therefore, would not affect access to marine resources. Therefore, no impacts are expected, and no mitigation measures are planned.

Section 6
Relationship to Land Use Policies, Plans, and Controls

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

6.1 Federal

6.1.1 Section 404, Clean Water Act, and Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit)

A Department of the Army Permit application will be required for the project and includes areas of jurisdictional coverage under CWA, Section 404, and RHA, Section 10. Coordination will be undertaken with the USACE to address the potential for adverse effects to Waters of the United States (WOUS) resulting from the implementation of the proposed action. This permit application will be submitted to USACE after the completion of the EA process.

The CWA, Section 404, requires that a permit be obtained before dredged or fill material may be discharged into WOUS, including wetlands. Section 10 of the RHA (33 United States Code [USC] 401 et seq.) requires authorization from the USACE for the construction of any structure in or over any navigable water of the U. S., the excavation/dredging or deposition of material in these waters or any obstruction or alteration in a navigable water. Structures or work outside the limits defined for navigable WOUS require a Section 10 Department of the Army permit if the structure or work affects the course, location, condition, or capacity of the water body.

In the State of Hawai'i, Section 404 and Section 10 are administered by the USACE, Honolulu District. As part of the review, the USACE will assume the role of lead Federal agency and consult with other Federal agencies, as required. The major regulatory review requirements include:

- ESA of 1973, Section 7;
- NHPA, Section 106 Consultation; and
- Magnuson-Stevens Fishery Conservation and Management Act (16 USC §1801 et seq.), reauthorized as the Sustainable Fisheries Act.

The preparation of CWA-related permit applications, regulatory review, and filing will include the provision of appropriate mitigation measures and controls for the protection of the environment.

Endangered Species Act of 1973, Section 7, Consultation

The purpose of the ESA, Section 7, is to protect and conserve ecosystems upon which endangered and threatened species are dependent, and to provide for the conservation of endangered and threatened species. The ESA is administered by the U. S. Department of the Interior through the USFWS, and the U. S. Department of Commerce through the National Oceanic and Atmospheric Administration (NOAA).

Other applicable Federal laws include:

- Marine Mammal Protection Act of 1972, as amended (16 USC §§1361-1421(H) et seq.):
  - Reauthorized in 1994, the Marine Mammal Protection Act establishes a moratorium, with certain exceptions, on the taking of marine mammals in U. S. waters and by U. S. citizens on the high seas and on importing of marine mammals and marine mammal products into the U. S.
- Fish and Wildlife Coordination Act of 1934, as amended (16 USC §§661-666[C] et seq.):
  - The Fish and Wildlife Coordination Act provides for consultation with the USFWS and other relevant Federal and State agencies when a Federal action proposes to modify or control WOUS for any purpose.
- Migratory Bird Treaty Act of 1918, as amended (16 USC §§703 712 et seq.):
  - The Migratory Bird Treaty Act is a bilateral migratory bird treaty with Canada, Mexico, Japan, and Russia. Sections 703 to 712 of the Act prohibit the taking of migratory birds in the absence of a permit.

Discussion: Pursuant to Section 7 of the ESA, consultation with the USFWS and NOAA will be conducted by the USACE during the processing of the Department of the Army, Section 404/10 permit application for the project. This will occur following the completion of the EA process. Any mitigation measures developed through the consultation process will be implemented during the construction of this project.

The proposed action is not expected to impact sensitive plants or animals, marine mammals, aquatic biota, or migratory birds and is anticipated to be considered consistent with the above-listed policies. There are no known state or federally listed endangered or threatened biota and their respective critical habitats within the project area, and based on the analysis of potential impacts of the proposed action on biological resources within the project area and in the vicinity of the project area (**Section 4.8**), no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated. The proposed action is not anticipated to adversely affect aquatic resources and would avoid direct impacts to sensitive biota through the use of BMPs, including adherence to environmental protection specifications and endangered species protection.

National Historic Preservation Act, Section 106, Consultation

The NHPA requires that Federal agencies consider the effect of their actions on any district, site, building, structure, or object that is included or eligible for inclusion in the NRHP. Such resources are called "historic properties." Under Section 106, a Federal action (or undertaking) may involve Federally funded projects, activities, or programs, including those carried out with Federal financial assistance. Federal actions also include projects requiring a Federal permit, license, or approval, including those where Federal authority has been delegated to a State or local agency.

Section 106 review refers to the Federal review process designed to ensure that historic properties are considered during Federal project planning and implementation. The goal of the process is to identify historic properties potentially affected by the proposed action, assess the impacts, and seek ways to minimize or mitigate adverse effects. Section 106 of the NHPA seeks to accommodate historic preservation concerns with the needs of Federal endeavors through consultation among the agency official, SHPD, and other parties with an interest in the effects of the project on cultural, archaeological, and historic resources and properties. The U. S. Department of Interior, National Park Service, and the Advisory Council on Historic Preservation administer the NHPA. At the State level, the State Historic Preservation Officer implements the NHPA.

Discussion: Pursuant to Section 106 of the NHPA, consultation with the SHPD and other parties with an interest will be conducted by the USACE during the processing of the Department of the Army, Section 404/10 permit application for the project. This will occur following the completion of the EA process. Any mitigation measures developed through the consultation process will be implemented during the construction of this project.

A CIA was prepared to support the proposed action's historic preservation review under Section 106[1], NHPA; HRS Chapter 6E-42; and HAR Chapter 13-284. The CIA also supports project-related historic preservation consultation among stake-holding State agencies, interested Native Hawaiian Organizations, groups and individuals, and community groups. **Appendix C** contains a full copy of the March 2021 report entitled, *Cultural Impact Assessment for the Iao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui, TMKs: portions of [2] 3-4-020:048, 075, 888, and 3-4-032:001*. A community consultation effort was undertaken as a component of the CIA investigation (**Appendix C**). Results from both the NHPA consultation process and the CIA will be used to determine the appropriate mitigation strategies to implement for the subject project.

As provided above in **Section 5**, no contemporary or continuing cultural or traditional practices occur within the proposed project area. The project is not located near the coast and therefore, would not affect access to marine resources. Therefore, no impacts are expected and no mitigation measures are planned.

[1] Consultation will be conducted by the USACE during the processing of the Department of the Army Permit application for the proposed project.

An ALRFI report was also prepared to facilitate project planning and support the historic preservation review process. **Appendix B** contains a full copy of the April 2021 report entitled, *Archaeological Literature Review and Field Inspection Report for the Iao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island TMKs: [2] 3-4-020:048, 075, 888 por. & [2] 3-4-032:001 por.*

Implementation of the proposed action is not anticipated to have short- or long-term impacts on historic properties. As provided above in **Section 4.14**, one historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. To ensure no impact to the Imi Kala Street Bridge (SIHP Site 50-50-04-5564), DPW will install interim protection measures prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. No other historic properties were identified in the project area. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**).

Despite the decades of destructive modern activities and relatively few findings in the vicinity of the project area, there is always the possibility that intact artifacts or cultural deposits, including *iwi kūpuna* (ancestral human remains), may be encountered during ground disturbance. As a precautionary measure, personnel involved in construction or development activities will be informed of the possibility of inadvertent cultural or skeletal finds. As provided above in **Section 4.14.2**, in the event that historic resources are inadvertently discovered the SHPD will be notified and construction in the area will cease until such time that work activities may be resumed as allowed by the SHPD.

Magnuson-Stevens Fishery Conservation and Management Act (16 USC §1801 et seq.)

The Magnuson-Stevens Fishery Conservation and Management Act (16 USC §1801 et seq.), as amended by the Sustainable Fisheries Act, PL 104-297, calls for action to stop or reverse the loss of marine fish habitat. The Magnuson-Stevens Fishery Conservation and Management Act mandates that federal agencies conduct an EFH consultation with NOAA Fisheries regarding any of their actions authorized, funded, or undertaken that may adversely affect EFH.

Additionally, the waters out to 200 miles around the Hawaiian Islands are under the jurisdiction of the Western Pacific Regional Fishery Management Council (WPRFMC). The WPRFMC has also identified HAPC. As defined in the 1996 amendments to the Act, these habitats are a subset of EFH that are *"rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area."*

Discussion: Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, consultation with the USFWS and NOAA will be conducted by the USACE regarding the proposed projects' potential to impact EFH or areas of particular concern. This will occur during the processing of the Department of the Army, Section 404/10 permit application for the project

following the completion of the EA process. Any mitigation measures developed through the consultation process will be implemented during the construction of this project.

As provided above in **Section 4.8.3**, the project is not an area of EFH but is within 1.4 miles of the Wailuku River coastal outlet. Waters off the mouth of the stream are designated as EFH (including water column and all bottom areas) for coral reef ecosystem, bottom fish, pelagic, and crustacean MUS. According to the EFH designations in the Hawaiʻi Fishery Ecosystem Plan, the project vicinity is absent EFH for precious corals, deep-water shrimp, and seamount ground fish. No juveniles or adults for either Bottom fish and Seamount Groundfish MUS or Crustaceans MUS have been recorded from the area (*AECOS*, 2019).

There are no HAPCs within, adjacent to, or near the project area that may be affected by the project repairs.

6.2 State of Hawaiʻi

6.2.1 Hawaiʻi State Plan

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

- Part I, describes the overall theme including Hawaiʻi's desired future and quality of life as expressed in goals, objectives, and policies.
- Part II, Planning Coordination and Implementation, describing a statewide planning system designed to coordinate and guide all major state and county activities and to implement the goals, objectives, policies, and priority guidelines of the Hawaiʻi State Plan.
- Part III, Priority Guidelines, which express the pursuit of desirable courses of action in major areas of statewide concern.

The proposed project is consistent with the objectives and policies of the Hawaiʻi State Plan. The directly relevant State Plan goals, objectives, policies, and priority guidelines, along with a discussion of how the project conforms to them are provided in **Table 6-1** and discussed below.

Table 6-1. Hawaiʻi State Plan Applicability to the Proposed Project

Hawaiʻi State Plan Objectives, Policies, and Priority Guidelines	Applicability to the Proposed Project
Objectives and Policies	
§226-5 Objective and policies for population	**Applicable**
§226-6 Objectives and policies for the economy--in general	Not Applicable
§226-7 Objectives and policies for the economy-- agriculture	Not Applicable
§226-8 Objective and policies for the economy--visitor industry	Not Applicable
§226-9 Objective and policies for the economy--federal expenditures.	Not Applicable
§226-10 Objective and policies for the economy--potential growth activities	Not Applicable
§226-10.5 Objectives and policies for the economy--information industry	Not Applicable

Hawaiʻi State Plan Objectives, Policies, and Priority Guidelines	Applicability to the Proposed Project
§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.	**Applicable**
§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.	**Applicable**
§226-13 Objectives and policies for the physical environment--land, air, and water quality	**Applicable**
§226-14 Objective and policies for facility systems--in general	Not Applicable
§226-15 Objectives and policies for facility systems--solid and liquid wastes	Not Applicable
§226-16 Objective and policies for facility systems--water	Not Applicable
§226-17 Objectives and policies for facility systems--transportation	Not Applicable
§226-18 Objectives and policies for facility systems--energy	Not Applicable
§226-18.5 Objectives and policies for facility systems--telecommunications	Not Applicable
§226-19 Objectives and policies for socio-cultural advancement--housing	Not Applicable
§226-20 Objectives and policies for socio-cultural advancement--health	Not Applicable
§226-21 Objective and policies for socio-cultural advancement--education	Not Applicable
§226-22 Objective and policies for socio-cultural advancement--social services	Not Applicable
§226-23 Objective and policies for socio-cultural advancement--leisure	Not Applicable
§226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being	Not Applicable
§226-25 Objective and policies for socio-cultural advancement--culture	Not Applicable
§226-26 Objectives and policies for socio-cultural advancement--public safety	Not Applicable
§226-27 Objectives and policies for socio-cultural advancement--government	Not Applicable
Priority Guidelines	
§226-102 Overall Direction	**Applicable**
§226-103 Economic priority guidelines	Not Applicable
§226-104 Population growth and land resources priority guidelines	**Applicable**
§226-105 Crime and criminal justice	Not Applicable
§226-106 Affordable housing	Not Applicable
§226-107 Quality education	Not Applicable
§226-108 Sustainability	**Applicable**
§226-109 Climate change adaptation priority guidelines	**Applicable**

HRS §226-5 Objective and policies for population

Objective: (a) 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.

Policy: (b)(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.

Discussion: Implementation of the proposed action will not have a direct effect on population growth statewide as it relates to physical, economic, and social objectives; however, the project will result in long-term beneficial socioeconomic impacts as the project will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the growing Wailuku Community. Implementation of the

proposed action will prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result.

HRS §226-11 Objectives and policies for the physical environment – land-based, shoreline, and marine resources

Objective: (a) Effective protection of Hawaii's unique and fragile environmental resources.
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.
(2) Effective protection of Hawaii's unique and fragile environmental resources.

Policy:(b)(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.
(b)(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.
(b)(4) Manage natural resources and environs to encourage their beneficial and multiple use without generate costly or irreparable environmental damage.
(b)(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.
(b)(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaiʻi.
(b)(8) Pursue compatible relationships among activities, facilities, and natural resources.

Discussion: The proposed action will ensure compatibility between land-based and water-based activities and natural resources and ecological systems. The project involves the repair of an approximately 240 feet long section of the Wailuku River right stream bank revetment system. The proposed repairs will prevent erosion of the stream bank, protect the downstream ʻĪao Stream Levee 27, and provide reduced flood risk to the town of Wailuku.

As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui* (**Appendix A**). There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated.

Implementation of the proposed action would result in less than significant short-term impacts on aquatic resources within the project area during the construction period. A temporary increase in stream sedimentation may occur as a result of construction activities. BMPs including silt fencing, wetting bare soil, covering soil, and post construction stabilization would be utilized to limit significant impacts on the stream habitat.

The proposed project is not anticipated to adversely affect aquatic resources and would avoid direct impacts to sensitive biota through the use of BMPs, including adherence to applicable Federal, State, and County environmental protection specifications. Native aquatic species habitat function within the stream would not be adversely impacted since the proposed action does not involve substantial modification to the existing stream alignment nor does it involve any concrete lining of the stream channel. The Maui DPW will assess the biological and water quality conditions of Wailuku River in the project area and utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to continue to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sand bags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks or other perimeter controls may be placed along the lower edge of stream banks in work areas to prevent the movement of eroded material into the water.

Appendix A, *Environmental Surveys for the ʻĪao Stream Bank Repairs at the Vicinity of Imi Kala Street Bridge in Wailuku, Maui*, AECOS Inc., March 2021, should also be consulted for additional discussion and recommendations.

In the long-term, the proposed action is expected to have beneficial impacts on the biological resources within the stream. The repair of the revetment system will result in reduced erosion of the stream bank within the channel and protect the downstream levee, allowing for less sediment to be directly transported to the stream mouth and into the nearshore marine environment. Improved water clarity and reduced sedimentation would have positive impacts on aquatic species.

Given the estimated depth to groundwater of approximately 160 feet below ground surface and the shallow depth of planned surface grading, groundwater is not anticipated to be encountered. The proposed use of dumped riprap for toe protection would be installed to the existing ground elevation allowing for surface water flow within the stream to be unaffected and for continued natural groundwater recharge to occur through the voids between the rocks. No impacts to groundwater resources are anticipated and EPA and DOH rules and guidelines for project development will be followed.

HRS §226-12 Objectives and policies for the physical environment--scenic, natural beauty, and historic resources

Objective: (a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.

Policy: (b)(1) Promote the preservation and restoration of significant natural and historic resources.
(b)(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.

Discussion: An ALRFI report was prepared and is included in this EA document (**Appendix B**). One previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified in the project area. Consultation with the SHPD pursuant to HRS, Section 6E has been undertaken by DPW. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the current County of Maui project (**Appendix B**). In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties. This action supports the Hawaiʻi State Plan's policy relating to preserving and protecting significant and historic resources and structures.

Additionally, repair of the revetment system will aid in the improvement of the natural environment by reducing erosion within the project extents. This is expected to have beneficial impacts on the biological resources within the stream through the reduction in the quantity of sediment being deposited into the Wailuku River from the degraded embankment and improved water clarity.

HRS §226-13 Objective and policies for the physical environment--land, air, and water

Objective: (a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.

Policy: (b)(2) Promote the proper management of Hawaii's land and water resources.
(b)(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.
(b)(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural man-induced hazards and disasters.

Discussion: The proposed action will promote the management of land and water resources by replacing an approximately 240 feet long section of the revetment system along a segment of the Wailuku River embankment. This will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and reduce the threat to life and property from erosion and flooding to the growing Wailuku Community. Additionally, the reduced erosion resulting from the proposed action will reduce sedimentation, increase water quality, and allow for less sediment to be transported to the stream mouth and into the nearshore marine environment.

Improved water quality from the reduction of sediment entering the river when the revetment is repaired will have positive impacts on aquatic species.

HRS §226-102 Overall Direction

Priority Guideline:

> *The State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education.*

Discussion: Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank in the project area with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events. A failure in the deteriorating embankment would cause flood waters to inundate the Wailuku River drainage basin and loss of life and extensive property damage would be inevitable. Implementation of the proposed action is needed to restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the present and future population of the Wailuku Community.

HRS §226-104 Population growth and land resources

Priority Guideline:

> *(a)Priority guidelines to effect desired statewide growth and distribution:*
>
> > *(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.*
>
> *(b) Priority guidelines for regional growth distribution and land resource utilization:*
>
> > *(7) Pursue rehabilitation of appropriate urban areas.*
> > *(10) Identify critical environmental areas in Hawaiʻi to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.*
> > *(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.*

Discussion: The proposed project is in an appropriately designated land use district (SLUD: Agriculture and Urban). The project will support critical environmental areas in Hawaiʻi that

pertain to watershed areas, wildlife habitat, natural streams, open space and natural areas, and historic and cultural sites.

As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui* (**Appendix A**). There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated. The proposed project is not anticipated to have adverse impacts to Maui's watersheds, streams, and riparian areas.

A CIA and ALRFI report were prepared and are included in this EA document (**Appendix B** and **C**). As detailed in **Section 4.14** of the EA, one previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties.

The proposed project will repair the degraded revetment system within the specified section of the Wailuku River. This will reduce erosion along the embankment and subsequent transportation of sediment downstream. The repaired revetment system will decrease the risk of potential flood hazards while improving the water quality downstream of the project site. The project will ensure limited land resources are utilized to accommodate projected growth and distribution in Wailuku while ensuring the protection of the natural environment.

HRS §226-108 Priority Guideline, Sustainability

Priority Guideline:

(a) Priority guidelines and principles to promote sustainability shall include:

(1) Encouraging balanced economic, social, community, and environmental priorities.

(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations.

Discussion: The proposed project promotes the needs of both present and future generations. Once completed, the proposed action is expected to result in long-term beneficial socioeconomic impacts as the project will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the growing Wailuku Community. Implementation of the proposed action will prevent further streambed erosion,

thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result.

Additionally, the proposed action is expected to promote sustainability of the stream environment and biological resources within the stream. The repair of the revetment system will reduce erosion and allow for less sediment to be directly transported within the stream and to the nearshore marine environment. Improved water clarity and reduced sedimentation would have positive impacts on the aquatic environment.

HRS §226-109 Priority Guideline, Climate change adaptation

Priority Guidelines:

> *Priority guidelines 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 shall:*
>
> > *(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change.*
> > *(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate impacts to natural and built environments.*
> > *(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 consequence, and evaluation of adaptation options.*

Discussion: The project supports the priority guidelines for climate change. The proposed project will not contribute to adverse impacts relating to existing climate change and sea level rise. The project area is not located in the tsunami evacuation zone or extreme tsunami evacuation and is not expected to be affected by increases in sea levels.

6.2.2 Hawaiʻi State Functional Plans

The Hawaiʻi State Plan is primarily guided by the State Functional Plans (Chapter 226, HRS) and implemented by the Department of Budget and Finance and State Land Use Commission. State Functional Plans are prepared by various state agencies to serve as the primary implementing vehicle for the goals, objectives, and policies of the Hawaiʻi State Plan. While the State Plan establishes long-term objectives for Hawai'i, the State Functional Plans focus on policies and priority actions that can be implemented in the short term. The issues, objectives, policies, and implementing actions of the Health and Historic Preservation State Functional Plans that are applicable to the project are discussed below.

Health State Functional Plan (1989)

Issue Area 5: Environmental Health and Protection

5 Objective: Environmental programs to protect and enhance the environment.
Continued development of new environmental protection and health services programs to protect, monitor, and enhance the quality of life in Hawaiʻi.

5A Policy: Air, land and water quality programs.
The DOH will develop and implement new programs to prevent degradation and enhance the quality of Hawaiiʻs air, land and water.

5A4 Implementing Action: Develop and implement a non-point source pollution program to protect recreational and other surface waters.

Discussion: The proposed project intends to repair the Wailuku River embankment and minimize further degradation of the embankment from erosion. The proposed action will result in decreased sediment runoff into the Wailuku River and nearshore marine environment, which will lead to improved water quality. The project will employ BMPs to prevent adverse impacts from construction activity within the bounds of and downstream of the project site.

The proposed action would be completed in accordance with County of Maui, State, and Federal regulations. Since the proposed action may generate discharges to State waters during construction, a Section 404, CWA/Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit); and Section 401 WQC would be required. In accordance with CWA regulations, an applicable monitoring and assessment plan and NPDES permits for construction storm water and construction dewatering would also be required prior to construction to address non-point source discharges. As required a Site-Specific Construction Storm Water BMP will be prepared and followed by the project contractor for the treatment of storm water runoff, erosion, and sediment control.

Historic Preservation State Functional Plan (1991)

Issue Area I: Preservation of Historic Sites

Objective A: Identification of Historic Properties

Policy A.1: Expand statewide historic sites inventory program.

Implementing Action A.1.d: Encourage the systematic survey of historic properties which would develop comprehensive inventories of: 1) Hawaiian burial sites; 2) intact cultural landscapes; and 3) sites and areas with significant cultural and historical associations.

Discussion: An ALRFI report was prepared and is included in this EA document (**Appendix B**). As detailed in **Section 4.14** of the EA, one previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street

Bridge will not be impacted by the proposed action. No other historic properties were identified. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties.

6.2.3 Hawaiʻi State Land Use Law

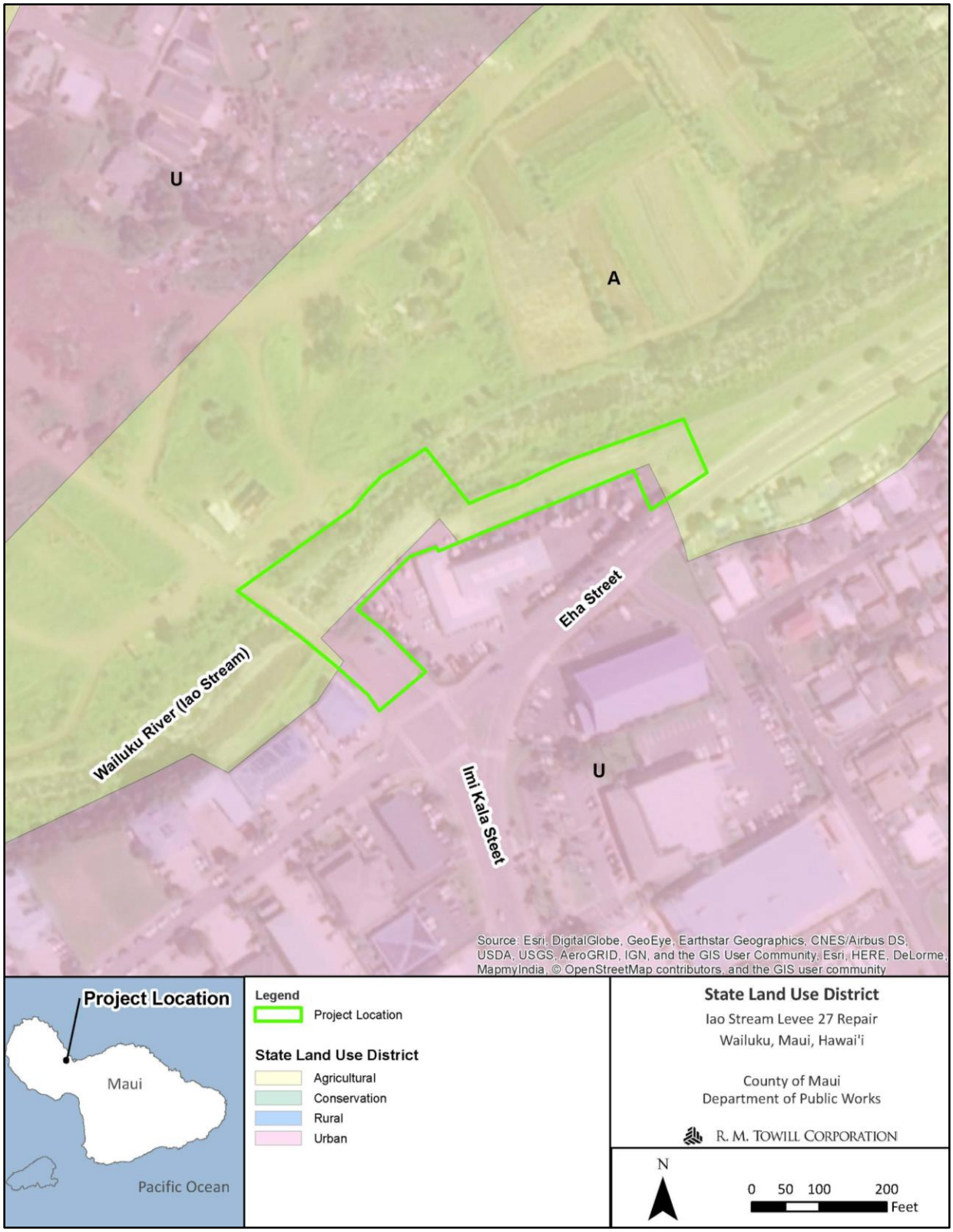
The State Land Use Commission classifies all lands in the State of Hawaiʻi into one of four land use designations: Urban, Rural, Agricultural, and Conservation. According to HRS, Chapter 205, State Land Use Law:

> *"Chapter 205, HRS, Districting and classification of lands:"*
> *"(a) There shall be four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural and conservation. The land use commission shall group contiguous land areas suitable for inclusion in one of these four major districts. The commission shall set standards for determining the boundaries of each district provided that:"*
> *"(1) In the establishment of boundaries of urban districts those lands that are now in urban use and a sufficient reserve area for foreseeable urban growth shall be included;"*
> *"(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;"*
> *"In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county."*

Discussion: The proposed action involves the use of land within the Agricultural and Urban State Land Use Districts. See **Figure 6-1, State Land Use Districts**.

The proposed action is consistent with the current land use in the area and would not have significant impacts on the balance between urban development and agricultural uses. In addition, the proposed action would not be in conflict with the goals, objectives, policies, and implementing actions identified in the Maui Island Plan or General Plan since it would not result in significant changes to the existing social, economic, or environmental conditions within the area and would provide beneficial impacts to the community of Wailuku by providing reduced flood risks. No changes to State Land Use Districts within the project boundaries are required.

Figure 6-1. State Land Use Districts



6.2.4 Hawaiʻi State Environmental Policy

The State Environmental Policy (HRS, Chapter 344), establishes a set of guidelines to conserve the State's natural resources and to enhance the quality of life through all State programs, authorities, and resources. The goals set forth for conservation focus on an effort to maintain and enhance the use of natural resources to create productive harmony between nature and the requirements of the people of Hawaiʻi. The State Environmental Policy also sets goals to enhance the quality of life through diverse opportunities for social and economic growth in the community. These opportunities are pursued through sustainable practices and the use of renewable resources to create stable improvements in community identity, resource efficiency, and harmony with the natural environment.

The policies and guidelines of the State Environmental Policy which pertain to this project are discussed below.

HRS§344-3 Environmental Policy

> *It shall be the policy of the State, through its programs, authorities, and resources to: (1) Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaiʻi.*

HRS§344-4 Guidelines

> *In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines.*
>
> *Guidelines:*
> - *(2) Land, water, mineral, visual, air, and other natural resources.*
    - *(A) Encourage management practices which conserve and fully utilize all natural resources.*
    - *(D) Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas.*
- *(3) Flora and fauna.*
    - *(A) Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard.*
- *(4) Parks, recreation, and open space.*
    - *(A) Establish, preserve, and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses.*

Discussion: The proposed action is supportive of the State's environmental policies and guidelines. The proposed project directly meets the Hawaiʻi State Environmental Policy by encouraging management practices that will conserve and protect Wailuku River's natural resources and enhance the quality of life for the surrounding community.

As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui* (**Appendix A**). There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and no significant impacts to threatened or endangered species as a result of implementation of the proposed action are anticipated.

As detailed in **Section 4.5.1** and **4.8.3** of the EA, there would be less than significant impacts to surface water quality during the construction period due to ground disturbance required for construction. The proposed action would include soil excavation, stockpiling during grading activities, and placement of fill. With respect to the impact on water quality, erosion and sedimentation during construction may occur, with particular concern during in-stream work. BMPs would be followed to prevent sediment and contaminants from impacting surface waters during construction, particularly during any in-stream work.

Implementation of the proposed action would result in less than significant short-term impacts to surface water hydrology during the construction period as the stream flow would be slightly altered during construction/grading activities. However, BMPs that adhere to County of Maui, State, and Federal regulations would be implemented to minimize sediment discharges and alterations of stream flow. The Maui DPW will assess the surface water conditions and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sand bags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks or other perimeter controls may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Appendix A, *Environmental Surveys for the ʻĪao Stream Bank Repairs at the Vicinity of Imi Kala Street Bridge in Wailuku, Maui*, AECOS Inc., March 2021, should also be consulted for additional discussion and recommendations.

During construction, project activities will be conducted in compliance with HAR 11-54 Water Quality Standards and HAR 11-55 Water Pollution Control.

In the long-term, the proposed action is expected to have beneficial environmental and social impacts as it will prevent further erosion of the stream bank and protect the downstream ʻĪao Stream Levee 27. This will provide beneficial long-term impacts related to reduced flood risk to

the town of Wailuku, and improved hydrology (movement of water), aquatic habitat, transport of sediment, and flood hazards within Wailuku River. Beneficial impacts on the biological resources within the stream are expected as a result of reduced erosion, as less sediment will directly enter the stream and be transported to the nearshore marine environment. Reduced sedimentation and improved water clarity will have positive impacts on the stream environment and aquatic species.

An ALRFI and CIA were prepared and are included in **Appendix B** and **C** of the EA. As detailed in **Section 4.14** of the EA, one previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties.

6.2.5 Section 401 and 402, Clean Water Act

The CWA is the key legislation governing surface water quality protection in the United States. Sections 401 and 402 of the Act require permits for actions that involve wastewater discharges or discharge of dredged or fill material into WOUS. The EPA is responsible for administering the CWA. In Hawaiʻi, the EPA has delegated responsibility for implementing the Act to the State DOH CWB under HAR, Chapter 11-55, Water Pollution Control. States can use their Water Quality Standards (WQS) in the Section 401 WQC to review and approve, condition, or deny all Federal permits or licenses that may result in discharges to State waters, including wetlands. States and tribes make decisions to deny, certify, or condition permits or licenses primarily to ensure that the activity will comply with State WQS. In addition, States and tribes look at whether the activity will violate effluent limitations, new source performance standards, toxic pollutants, and other water resource requirements of State/tribal law or regulation. Section 402 of the CWA makes it unlawful to discharge any pollutant from a point source into navigable waters unless a NPDES permit is obtained for ground-disturbing activities equal to or greater than one acre.

Discussion: The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank. The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. Under the Federal CWA and HRS Chapter 342D, along with their supporting rules in HAR 11-54, a WQC is required for activities when proposed construction or operation may result in discharges to State waters.

The USACE Regulatory Branch and the DOH, CWB will be consulted to identify permitting requirements pertaining to their jurisdiction under the CWA, Section 401. In addition, a NPDES permit pursuant to the CWA, Section 402, will be filed for discharges of storm water runoff associated with construction activities. If required, the WQC application will be submitted to the DOH, CWB after completion of the EA process.

6.2.6 Hawaiʻi Coastal Zone Management Program

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

The objectives of the State's Hawaiʻi CZM Program, Section 205(A)-2, HRS, are to protect valuable and vulnerable coastal resources such as coastal ecosystems, special scenic, and cultural values, and recreational opportunities. The objectives of the program are also to reduce coastal hazards and to improve the review process for activities planned within the coastal zone. Each county is responsible for designating a Special Management Area that extends inland from the shoreline. Development within this Special Management Area is subject to County approval to ensure the proposal is consistent with the policies and objectives of the Hawaiʻi CZM Program.

The project is not located within the County of Maui's Special Management Area. However, HRS Chapter 205A requires all state and county agencies to enforce CZM objectives and policies as set forth in HRS §205A-2. Projects needing Federal permits are required by the CZM Act to be consistent with Hawaiʻi's CZM Program objectives and policies. The State of Hawaiʻi Office of Planning will be consulted to identify permitting requirements pertaining to their jurisdiction under the CWA, Section 401. If required, the CZM federal consistency application will be submitted to the State of Hawaiʻi Office of Planning after completion of the EA process. The program outlines management objectives centered around ten areas: 1) Recreational Resources; 2) Historic Resources; 3) Scenic and Open Space Resources; 4) Coastal Ecosystems; 5) Economic Uses; 6) Coastal Hazards; 7) Managing Development; 8) Public Participation in Coastal Management; 9) Beach Protection, and 10) Marine Resources. The following discussions address the applicability of the project to the ten CZM objectives and policies.

Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.
(A) Improve coordination and funding of coastal recreational planning and management; and
(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources

will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;
(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.

Discussion: The objective of the proposed action is to repair approximately 240 feet of the revetment system along the right stream bank of Wailuku River and provide the community with flood protection; therefore, providing coastal recreational opportunities accessible to the public would be out of the scope of the proposed project. Nevertheless, the intent of the project to prevent erosion of the stream bank would result in beneficial impacts to water quality in the coastal zone (by reducing the deposition of sediments into the stream and reaching the coastal zone). As such, erosion-related turbidity and water quality deterioration during flood events would decrease in the coastal zone as a result of this project and would benefit associated recreational resources and opportunities.

The proposed action would involve construction activities within the approximately 240 feet long stretch of Wailuku River located approximately 1.4 miles upstream from the coastline and does not involve work within the coastal area; thus, would not have any significant impacts on or hinder public access to shoreline parks or other recreational facilities located along the coastline or recreational use of coastal waters such as fishing or surfing.

BMPs would be implemented during construction (e.g., silt fencing, tarping/covering exposed and stockpiled soils, surface revegetation, etc.) of the proposed action to minimize/eliminate stormwater flow from the proposed construction site and any associated degradation of water quality of surface waters or coastal waters within the vicinity of the proposed project area.

Historic Resources

Objective: Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
(A) Identify and analyze significant archaeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and
(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion: A ALRFI and CIA were prepared and are included in **Appendix B** and **C** of the EA. As detailed in **Section 4.14** of the EA, one previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties.

In accordance with HRS, Chapter 6E, and the requirements of the SHPD, DLNR, should any historic resources, including human skeletal and significant cultural remains, be identified during project activities: (1) work will cease in the immediate vicinity of the find; (2) the find will be protected from any additional disturbance; and (3) the SHPD, will be contacted immediately at (808) 692-8015 (Main Office, Oʻahu) for further instructions including the conditions under which project activities may resume. With the implementation of the abovementioned mitigation measures, the project is not anticipated to have a significant, long-term adverse impact on traditional or contemporary cultural/historical resources.

Scenic and Open Space Resources

Objective: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
(A) Identify valued scenic resources in the coastal zone management area;
(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline;
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
(D) Encourage those developments that are not coastal dependent to locate in inland areas.

Discussion: The proposed action is expected to have less than significant long-term impacts to visual and aesthetic resources. Once construction is completed, the presence of the revetment system would replace the existing deteriorating revetment along Wailuku River with little visual change in the area. The proposed features under the proposed action would be completed at grade. As a result, the proposed features would blend with the existing surrounding environment consisting of public water management features and would not contrast with the mix of

residential, urban, and agricultural aesthetic of the project area. The project is located inland and would not adversely affect coastal scenic and open space resources.

Coastal Ecosystems

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

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Improve the technical basis for natural resource management;
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion: The proposed project is located inland, away from coastal ecosystems and is, therefore, not anticipated to have adverse impacts on coastal/shoreline resources, including reefs, beaches, dunes, and marine resources. The proposed action would however have an indirect beneficial impact to the coastal ecosystem of Kahului Bay located downstream of the proposed project area. The proposed revetment system repairs would reduce erosion of the stream bank within the project extents, allowing for less sediment to be directly transported to the stream mouth and into the nearshore marine environment. Improved water clarity and reduced sedimentation would have positive impacts on the coral species, marine invertebrate species supported by the coral reef, and other benthic habitat.

The proposed action would include soil excavation and stockpiling during temporary grading activities and work in stream that could result in potential discharge of fill and/or dredge material into an aquatic ecosystem. Appropriate BMPs will be utilized to ensures that construction runoff is appropriately detained, minimizing any impact on coastal waters.

The proposed action would be completed in accordance with County, State, and Federal regulations, including Section 404 (b)(1) of the CWA, which would establish and implement mechanisms to minimize any significant impacts to water quality in the Wailuku River channel and Kahului Bay. In addition, a CWA Section 401 WQC and a NPDES permit would be obtained prior to construction activities to establish and implement mechanisms intended to prevent potential discharge of pollutants to state waters. With the implementation of BMPs and by adhering to applicable County, State, and Federal regulations, there would be no significant impacts to the water quality of coastal waters within the vicinity of the proposed project area during construction.

Economic Uses

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.
(A) Concentrate coastal dependent development in appropriate areas;
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
(i) Use of presently designated locations is not feasible;
(ii) Adverse environmental effects are minimized; and
(iii) The development is important to the State's economy.

Discussion: The project is not considered a coastal dependent development and is not anticipated to have an adverse impact on the State's economy. The objective of the proposed action is to provide enhanced erosion and flood protection for the community of Wailuku. Implementation of the proposed action would protect the existing stream bank and the downstream ʻĪao Stream Levee 27 decreasing the flood risk and pre-emptively address such catastrophic economic loss.

The parcels within and surrounding the project area are designated as Urban or Agricultural according to the State Land Use Commission district classifications. The proposed action would occur within currently developed land and would not result in permanent change of the current land use within and adjacent to the proposed project area. No structures or coastal dependent developments are being proposed.

Coastal Hazards

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
(D) Prevent coastal flooding from inland projects.

Discussion: The proposed action is intended to restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the growing Wailuku Community. Implementation of the proposed action will prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and

downstream levee and the associated loss of life and property damage that could result from a flood event.

The project is not located within the tsunami evacuation zone or extreme tsunami evacuation zone; therefore, tsunami conditions impose no constraints on the project. The project area is located in Flood Zone AE and X. Flood Zone AE is defined as a flood insurance rate zone that corresponds to the 1% (100-year flood) annual chance floodplains that are determined in the Flood Insurance Study by detailed methods of analysis. Flood Zone X includes areas of minimal hazard from the principal source of flood in the area, and the Flood Insurance Program does not have regulations for development within this district. Given the requirement for the proposed action to be located within a flood zone, the proposed improvements will be designed to maintain or decrease existing flood elevation and mitigate impacts on existing flood conditions.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event. Given the relatively developed nature of the site and surrounding commercial land uses, no adverse effects are expected. Additionally, the repairs to the embankment are necessary for FEMA to certify the downstream ʻĪao Stream Levee 27. Thus, this project contributes to beneficial secondary impacts for the ʻĪao Stream Levee System to be certified as viable to protect property or life from the 100-year recurrence interval storm event.

The proposed action is not located directly adjacent to the shoreline; therefore, it would not be related impacts occurring from storm waves.

Managing Development

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

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Discussion: The project supports the development review process, communication, and public participation. This EA is prepared pursuant to HRS Chapter 343, to conduct an environmental review of the ʻĪao Stream Levee 27 Repair Project and provides an evaluation of the potential short and long-term impacts on environmental, social, and cultural resources. The OEQC publishes notice of the EA availability for public review and participation, providing a 30-day comment period. **Section 8** of the EA provides a record of the pre-assessment consultation completed for the project and a list of agencies, organizations, and individuals consulted.

A Department of the Army Permit application will be required for the project and includes areas of jurisdictional coverage under CWA, Section 404, and RHA, Section 10. Coordination will be undertaken with the USACE to address the potential for adverse effects to WOUS resulting from the implementation of the proposed action. This permit application will be submitted to USACE after the completion of the EA process.

The USACE Regulatory Branch and the DOH, CWB will be consulted to identify permitting requirements pertaining to their jurisdiction under the CWA, Section 401. In addition, a NPDES permit pursuant to the CWA, Section 402, will be filed for discharges of storm water runoff associated with construction activities. If required, the WQC application will be submitted to the DOH, CWB after completion of the EA process. Permit applications will be submitted to the appropriate approving agencies during the design phase of the proposed project and approved prior to the start of construction of the proposed action.

Public Participation

Objective: Stimulate public awareness, education, and participation in coastal management.
(A) Promote public involvement in coastal zone management processes;
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
(C) Organize workshops, policy dialogues, and site-specific mitigation to respond to coastal issues and conflicts.

Discussion: Public involvement of the proposed project will consist of a public notice of the EA in the OEQC bulletin and consultation with agencies, organizations, and individuals. See **Section 8** for a complete list of all agencies, organizations, and individuals to be consulted for the proposed project and a record of the pre-assessment consultation that has been completed.

Beach Protection

Objective: Protect beaches for public use and recreation.
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities;
(C) Minimize the construction of public erosion-protection structures seaward of the shoreline;
(D) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and
(E) Prohibit private property from creating a public nuisance by allowing the private property owner's unmarinated vegetation to interfere or encroach upon a beach transit corridor.

Discussion: The proposed action neither involves the development of new structures within the shoreline setback nor the construction of private or public erosion-protection structures seaward

of the shoreline. The proposed project is located inland and away from any beaches. Protection of beaches for public use and recreation related to coastal zone management issues are not applicable. However, the project will follow County, State, and Federal regulations pertaining to water quality standards and employ BMPs to prevent adverse impacts from construction at the shoreline downstream from the project site.

Marine Resources

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

Policies:
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The proposed project is located inland away from marine and coastal resources. However, the project will follow County, State, and Federal regulations pertaining to water quality standards and employ BMPs to prevent adverse impacts to marine and coastal resources from construction activities.

6.2.7 Stream Channel Alteration Permit

Pursuant to Chapter 174C Hawaii Revised Statutes, and Chapter 13-169 HAR, the DLNR Commission on Water Resource Management's Stream Protection and Management Branch requires a permit for any temporary or permanent activity within the stream bed or banks that may: 1) obstruct, diminish, destroy, modify, or relocate a stream channel; 2) change the direction of the flow of water in a stream channel; or 3) remove any material or structure from a stream channel.

Discussion: Since the proposed action requires work to be conducted within the stream channel, a Stream Channel Alteration Permit may be required; however, such in-stream activity would be temporary in nature. Once construction activities are completed, no other in-stream disturbance is anticipated. Further, long-term stream dynamics would be maintained, and the embankment would be cable of withstanding stream velocities during a 100-year recurrence interval storm event. The Commission on Water Resource Management will be consulted to identify permitting requirements pertaining to their jurisdiction. If required, the Stream Channel Alteration Permit

application will be submitted to the Commission on Water Resource Management after completion of the EA process.

6.3 County of Maui

6.3.1 General Plan of the County of Maui

As indicated by the Maui County Charter, the purpose of the general plan shall be to:

> *Indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.*

Chapter 2.80B of the Maui County Code, relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan and a Maui Island Plan.

Discussion: A discussion of the proposed actions relationship to the Countywide Policy Plan and a Maui Island Plan is provided below in **Sections 6.3.2 and 6.3.3**.

6.3.2 Countywide Policy Plan

The Countywide Policy Plan was adopted in March 2010 and is a comprehensive policy document for the islands of Maui County to the year 2030. The plan replaces the *General Plan of the County of Maui 1990 Update* and provides the policy framework for the development of the Maui Island Plan as well as for updating the nine (9) detailed Community Plans.

The Countywide Policy Plan provides broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future. Goals are intended to describe a desirable condition of the County by the year 2030 and are intentionally general in nature. Objectives tend to be more specific and may be regarded as milestones to achieve the larger goals. Policies are not intended as regulations, but instead provide guidelines for County decision makers, departments, and collaborating organizations toward the attainment of goals and objectives. Implementing actions are specific tasks, procedures, programs, or techniques that carry out policy.

The following goals, objectives, policies, and implementing actions are applicable to the ʻĪao Stream Levee 27 Repair Project:

A. Protect the Natural Environment

Goal: Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.

Objective 1: *Improve the opportunity to experience the natural beauty and native biodiversity for the islands for present and future generations.*

Policies:

(a) Perpetuate native Hawaiian biodiversity by preventing the introduction of invasive species, containing or eliminating existing noxious pests, and protecting critical habitat areas.
(b) Preserve and reestablish indigenous and endemic species' habitats and their connectivity.
(c) Restore and protect forests, wetlands, watersheds, and stream flows, and guard against wildfires, flooding, and erosion.
(d) Protect baseline stream flows for perennial streams, and support policies that ensure adequate stream flow to support Native Hawaiian aquatic species, traditional kalo cultivation, and self-sustaining ahupuaʻa.
(e) Protect undeveloped beaches, dunes, and coastal ecosystems, and restore natural shoreline processes.
(f) Protect the natural state and integrity of unique terrain, valued natural environments, and geological features.
(g) Preserve and provide ongoing care for important scenic vistas, view planes, landscapes, and open-space resources.

Implementing Actions:

(a) Develop island-wide networks of greenways, watercourses, and habitat corridors.

Discussion: The proposed project directly improves the opportunity to experience Maui's natural beauty and native biodiversity for the islands for present and future generations. As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys (**Appendix A**) to ensure that species' habitat and the biodiversity of the natural environment is not adversely affected by the project action. The survey identified that there were no rare or endangered plant and animal species in the immediate vicinity of the proposed action. However, the survey did find that there were endemic aquatic species within the project area which are classified as "abundant" and "rare".

The proposed action would result in less than significant short-term impacts on aquatic resources during the construction period and would not result in significant direct, indirect, or cumulative impacts to the existing aquatic resources within and in the vicinity of the project area. Since the proposed action has been designed to avoid any significant impacts to the existing biological resources within the stream, mitigation measures are not required as part of the proposed action.

The Maui DPW will protect the existing water quality, while also not impeding the amphidromous cycle of native aquatic species through the implementation of appropriate BMPs. Additionally, DPW will ensure new structures do not include drains or grates that may entrain drifting larvae, nor overhanging culverts that may obstruct the upstream movement of recruiting juveniles.

In the long term, the proposed action is expected to have beneficial impacts on the biological resources within the stream. The repair of the revetment system will result in reduced erosion of the stream bank within the channel and protect the downstream levee, allowing for less sediment to enter the stream and be transported to the nearshore marine environment. Reduced sedimentation and improved water clarity will have positive impacts on the stream environment and aquatic species.

The proposed use of dumped riprap for toe protection would be installed to the existing ground elevation allowing for surface water flow within the stream to be unaffected and for continued natural groundwater recharge to occur through the voids between the rocks. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

The proposed project is not anticipated to have adverse impacts to Maui's watersheds or riparian areas.

Objective 2: Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island.

Policies:

- *(a) Protect and restore nearshore reef environments and water quality.*
- *(b) Protect marine resources and valued wildlife.*
- *(c) Improve the connection between urban environments and the natural landscape, and incorporate natural features of the land into urban design.*
- *(e) Mitigate the negative effects of upland uses on coastal wetlands, marine life, and coral reefs.*

Discussion: The proposed project directly meets the objective of improving the quality of environmentally sensitive, locally valued natural resources and native ecology on the island of Maui. The project action to repair the degraded section of the Wailuku River embankment will result in mitigating erosion of the streambank within the channel; thus, reducing the amount of sediment directly transported to the stream mouth and into the nearshore marine environment. Improved water clarity and reduced sedimentation would have positive impacts on water resources and valued wildlife. BMPs would be implemented during construction (e.g., silt fencing, tarping/covering exposed and stockpiled soils, surface revegetation, etc.) of the proposed action to minimize/eliminate stormwater flow from the proposed construction site and any associated degradation of water quality of surface waters or coastal waters within the vicinity of the proposed project area.

Objective 3: Improve the stewardship of the natural environment.

Policies:

(a) Preserve and protect natural resources with significant scenic, economic, cultural, and environmental, or recreational value.
(f) Reduce air, noise, light, land, and water pollution, and reduce Maui County's contribution to global climate change.
(i) Educate the construction and landscape industries and property owners about the use of best management practices to prevent erosion and nonpoint source pollution.

Implementing Actions:

(a) Document, record, and monitor existing conditions, populations, and locations of flora and fauna communities.

Discussion: The proposed project directly meets the objective of improving the stewardship of the natural environment. The project will employ BMPs to prevent impacts from construction, including erosion control, stormwater management, and dust control. In addition, the EA thoroughly evaluated the proposed action's potential impacts on the environment, and where applicable, advance mitigative measures aimed at reducing impacts (see **Section 4**).

As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui* (**Appendix A**). There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated.

As detailed in **Sections 4.5.1** and **4.8.3** of the EA, there would be less than significant impacts to surface water quality during the construction period due to ground disturbance required for construction. The proposed action would include soil excavation, stockpiling during grading activities, and placement of fill. With respect to the impact on water quality, erosion and sedimentation during construction may occur, with particular concern during in-stream work. BMPs would be followed to prevent sediment and contaminants from impacting surface waters during construction, particularly during any in-stream work. Construction activities will comply with all applicable Federal, State, and County regulations and rules for erosion control.

I. Improve Physical Infrastructure

Goal: Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.

Discussion: The proposed project directly supports goal of maintaining Maui County's physical infrastructure. The proposed action intends to repair a degraded section of the Wailuku River embankment that, if left in its current state of disrepair, will continue to erode, and discharge excess sediment into the river. This could result in adversely impacting the

infrastructure of the ʻĪao Stream Levee 27 downstream of the project site and the overall availability of clean and sustainable water downstream.

6.3.3 Maui Island Plan

The current edition of the Maui Island Plan, intended to implement the concepts promulgated by the Countywide Policy Plan, was adopted in 2012. The Maui Island Plan is a comprehensive statement of goals, objectives, policies, and actions for future growth, the economy, and social and environmental decision on the Island of Maui through 2030. The Maui Island Plan is the second component of the decennial General Plan update and is intended to:

- Assess existing conditions, trends, and issues specific to the Island of Maui;
- Provide policy direction for the use and development of land, extension and improvement of transportation services and infrastructure, development of community facilities, expansion of the island's economic base, provision of housing, and protection of natural and cultural resources;
- Establish policies to manage change and to direct decisions about future land use and development; and
- Provide the foundation to set capital improvement priorities, revise zoning ordinance, and develop other implementation tools.

The Maui Island Plan addresses a number of planning categories with detailed policy analysis and recommendations which are framed in terms of goals, objectives, policies, and implementing actions. These planning categories address the following areas:

- Population
- Heritage Resources
- Natural Hazards
- Economic Development
- Housing
- Infrastructure and Public Facilities
- Land Use

The ʻĪao Stream Levee 27 Repair Project is consistent with the following goals, objectives, and policies of the Maui Island Plan:

Cultural, Historical, and Archaeological Resources Issues

Goal 2.1: Our Community respects and protects archaeological and cultural resources while perpetuating diverse cultural identities and traditions.

Objective 2.3: Enhance the island's historic, archaeological, and cultural resources.

Policies:

2.1.3.a Identify and pursue a listing of the properties and sites on the State and National Register of Historic Places.

Discussion: The objectives and policies relating to ensuring an effective and efficient planning and review process incorporating best available cultural resources inventory, protection techniques, and preservation strategies and enhancement of the island's historic, archaeological, and cultural resources are directly and indirectly applicable to the proposed project.

An ALRFI and CIA were prepared and are included in this EA document (**Appendix B** and **C**). As detailed in **Section 4.14** of the EA, one previously documented historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). In accordance with SHPD's request, DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. The ʻĪao Stream Levee 27 Repair Project will have no effect on historic properties.

Watersheds, Streams, and Wetland Issues

Goal 2.2: Healthy watersheds, streams, and riparian environments.

Objective 2.3.1: Greater protection and enhancement of watersheds, streams, and riparian environments.

Policies:

2.3.1.h Maui will protect all watersheds and streams in a manner that guarantees a healthy, sustainable riparian area.

Objective 2.3.6: Enhance the vitality and functioning of streams, while balancing the multiple needs of the community.

Policies:

2.3.6.a Protect and enhance natural streambeds and discourage stream alteration.
2.3.6.d Ensure that stream flows implement laws and policies found in the State Constitution and Water Code.

Discussion: The proposed project is directly applicable to the goal of maintaining healthy watersheds, streams, and riparian environments. The ʻĪao Stream Levee 27 Repairs intend to protect the Wailuku River embankment from further erosion within the project area without altering the existing stream flow and existing channel characteristics. The proposed action will

allow the Wailuku River to maintain flow rates while increasing the quality of water as a result of decreased sedimentation from erosion.

As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui* (**Appendix A**). There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated.

In the long-term, the proposed action is expected to have beneficial environmental and social impacts as it will prevent further erosion of the stream bank and protect the downstream ʻĪao Stream Levee 27. This will provide beneficial long-term impacts related to reduced flood risk to the town of Wailuku, and improved hydrology (movement of water), aquatic habitat, transport of sediment, and flood hazards within Wailuku River. Beneficial impacts on the biological resources within the stream are expected as a result of reduced erosion, as less sediment will directly enter the stream and be transported to the nearshore marine environment. Reduced sedimentation and improved water clarity will have positive impacts on the stream environment and aquatic species.

Wildlife and Natural Areas

Goal 2.4: Maui's natural areas and indigenous flora and fauna will be protected.

Objective 2.4.1: A comprehensive management strategy that includes further identification, protection, and restoration of indigenous wildlife habitats.

Policies:

> *2.3.1.a Identity and inventory the following:*
> *(4) Natural, recreational, and open space resources;*
> *(5) Flora and fauna with medium, high, and very high concentrations of threatened or endangered species; and*

Discussion: As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui* (**Appendix A**). There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated.

Natural Hazards

Goal 3.1: Maui will be disaster resilient.

Objective 3.1.2: Greater protection of life and property.

Policies:

> *3.1.2.c Encourage the use of construction techniques that reduce the potential for damage from natural hazards.*

Discussion: The proposed action will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the Wailuku Community. Implementation of the proposed action would prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result.

Urban Areas

Goal 6.3: Maui will have livable human-scale urban communities, an efficient and sustainable land use pattern, and sufficient housing and services for Maui residents.

Objective 7.3.3: Strengthen the island's sense of place.

Policy:

> *7.3.3.d Strongly encourage the preservation of building, structures, and sites of historic significance.*

.

Discussion: The project site is located in an area designated for urban growth and business/industrial by the Maui Island Plan and Wailuku-Kahului Community Plan land use map, respectively. Upstream of the project site is the Imi Kala Bridge, designated as SIHP # 50-50-04-5564. The bridge spans the Wailuku River upstream of the proposed project action and will not be affected. This action supports the Maui Island Plan relating to preserving and protecting significant historic sites and structures.

6.3.4 County of Maui Zoning

Title 19 of the Maui County code provides comprehensive zoning for the county. The purpose and intent of this comprehensive zoning is to regulate the utilization of land in a manner that encourages orderly development that protects the health, safety and welfare of the people of the County.

The project site is zoned AG Agriculture; M-1 Heavy Industrial; and Road by the County of Maui. See **Figure 6-2, County of Maui Zoning**. The completed Zoning and Flood Confirmation Forms from the County of Maui, Department of Planning, are provided as **Figures 6-3, 6-4, 6-5, 6-6**.

Discussion: The ʻĪao Stream Levee 27 Repair Project intends to repair the degraded Wailuku River embankment that resulted from heavy rains within the project site. Therefore, the project is compatible and in line with the Maui County Zoning guidelines for each of the three zoning districts that comprise the project site.

Figure 6-2. County of Maui Zoning

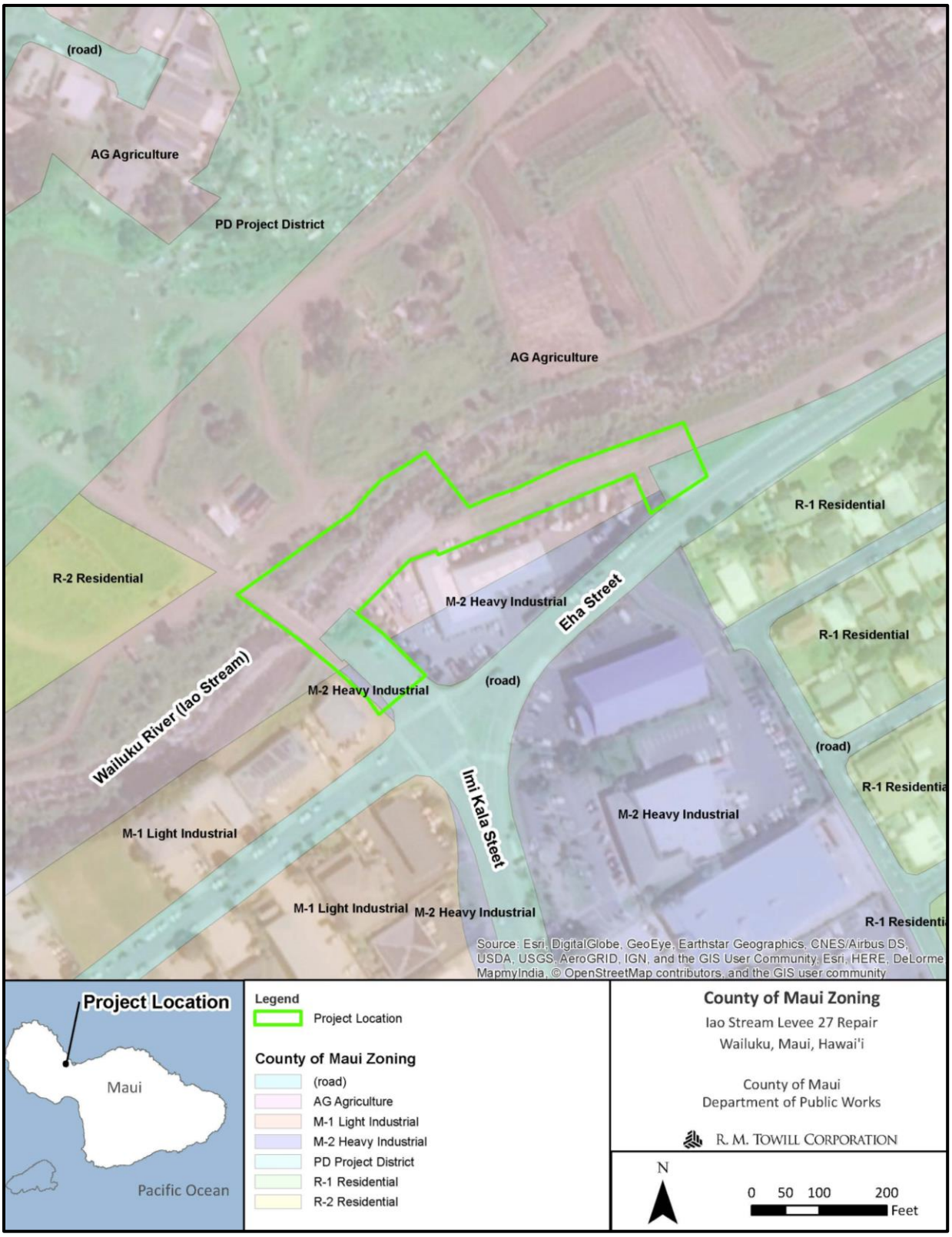


Figure 6-3. County of Maui Zoning and Flood Confirmation Form TMK (2) 3-4-032: 001 (Portion)

21/2873 DG

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

RECEIVED 29 2021 COUNTY OF MAUI DEPARTMENT OF PLANNING

Zoning Administration and Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME County of Maui, Department of Public Works TELEPHONE 808-270-7745
PROJECT NAME ʻĪao Stream Levee 27 Repair E-MAIL Kristi.ono@co.maui.hi.us
PROPERTY ADDRESS Wailuku River (formerly ʻĪao Stream) stream bank TAX MAP KEY (2) 3-4-032: 001 (portion)

☐ Yes ■ No Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:
A) ☐ Yes ☐ No Will it be processed under a consistency exemption from Section 18.04.030(B), MCC?
IF YES, which exemption? (No. 1, 2, 3, 4 or 5) _____
B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:
1) Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.
2) If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.
3) If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]
STATE DISTRICT: ☐ Urban ☐ Rural ☒ Agriculture ☐ Conservation
MAUI ISLAND PLAN Growth Boundary: [2] ☒ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries
Protected Area: [2] ☒ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ☐ Outside Protected Areas
COMMUNITY PLAN: [2] Agriculture
COUNTY ZONING: Agricultural District
OTHER/COMMENTS: map of project site attached
☐ (SMA) Special Management Area
☐ (PD) Planned Development
☐ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION: A Flood Development Permit is required if any portion of a parcel is designated V, VE, A, AO, AE, AH, D, or Floodway, and the project is on that portion.
FLOOD HAZARD AREA ZONES [3] & BASE FLOOD ELEVATIONS: Zone: AEF (147'-185')
☒ FEMA DESIGNATED FLOODWAY For Flood Zone AO, FLOOD DEPTH:

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).
_____ (Signature) ☐ Not Applicable, (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning, (The parcel or portion of the parcel that is zoned interim shall not be subdivided).
☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:
1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change In Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway. Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits, base flood elevations; drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.D, Maui County Code].

REVIEWED & CONFIRMED BY:
Dennna Gomes 7/15/21
(Signature) (Date)
For: John S Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

S:\ALL\FORMS\ZAED\ZoneFldConfZonFldConf_Rev12-16.doc Page 1

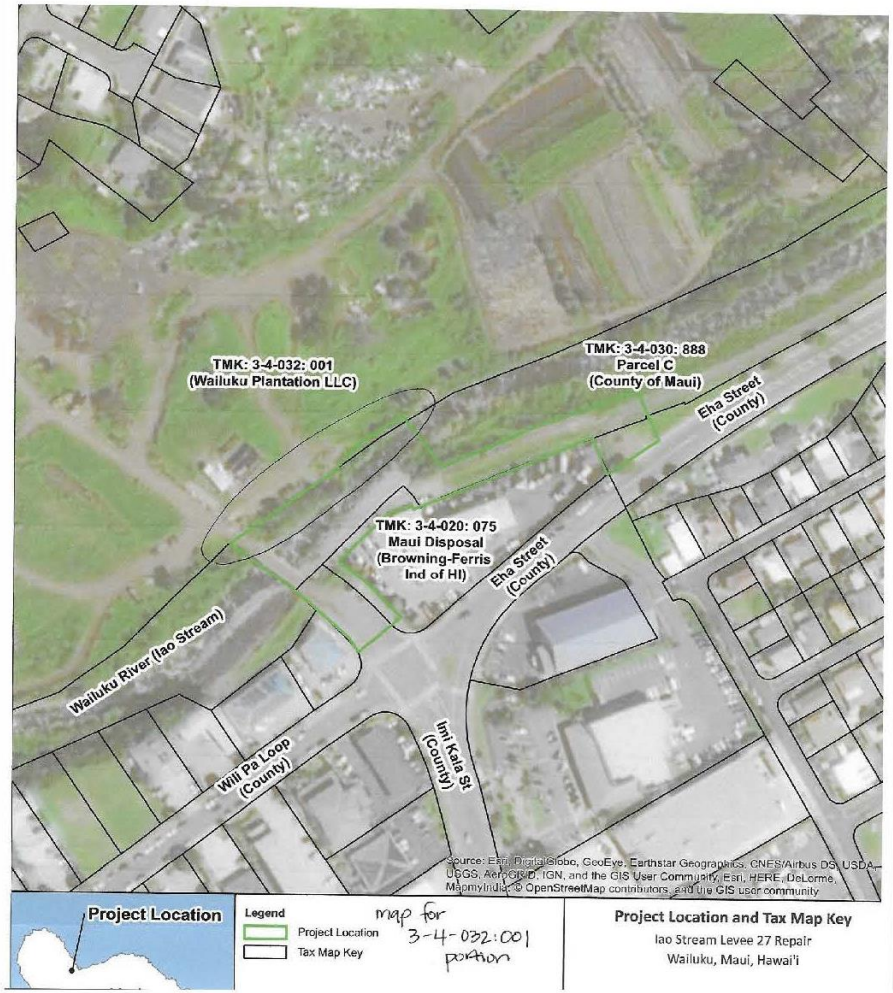


Figure 6-4. County of Maui Zoning and Flood Confirmation Form TMK (2) 3-4-020: 075 (Portion)

21/2875 DG

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

Zoning Administration and Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

RECEIVED 29 2021 COUNTY OF MAUI DEPT. OF PLANNING

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME County of Maui, Department of Public Works **TELEPHONE** 808-270-7745

PROJECT NAME ʻĪao Stream Levee 27 Repair **E-MAIL** Kristi.ono@co.maui.hi.us

PROPERTY ADDRESS Wailuku River (formerly ʻĪao Stream) stream bank **TAX MAP KEY** (2) 3-4-020: 075

☐ Yes ■ No **Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?** (perm)
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:

A) ☐ Yes ☐ No **Will it be processed under a consistency exemption from** Section 18.04.030(B), MCC?
IF YES, which exemption? (No. 1, 2, 3, 4 or 5)

B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:
1) **Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.**
2) **If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.**
3) **If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.**

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]

☐ (SMA) Special Management Area

STATE DISTRICT: ☒ Urban ☐ Rural ☐ Agriculture ☐ Conservation

MAUI ISLAND PLAN Growth Boundary:[2] ☒ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries

Protected Area:[2] ☐ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ☒ Outside Protected Areas

COMMUNITY PLAN:[2] B/I- Business Industrial / Open Space

COUNTY ZONING: Agricultural / M2- Heavy Industrial District

OTHER/COMMENTS: map of project site attached

☐ (PD) Planned Development
☐ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION: [1] A Flood Development Permit is required if any portion of a parcel is designated V, VE, A, AO, AE, AH, D, or Floodway, and the project is on that portion.

FLOOD HAZARD AREA ZONES [3] & BASE FLOOD ELEVATIONS: Zone: X, X protected by levee

☐ FEMA DESIGNATED FLOODWAY For Flood Zone AO, FLOOD DEPTH:

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).
(Signature) ☐ Not Applicable, (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning, (The parcel or portion of the parcel that is zoned interim shall not be subdivided).
☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:
1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change in Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway; Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits; base flood elevations; drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.D, Maui County Code].

REVIEWED & CONFIRMED BY:
Deanna Gomes 7/2/21
(Signature) (Date)
For: John S Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

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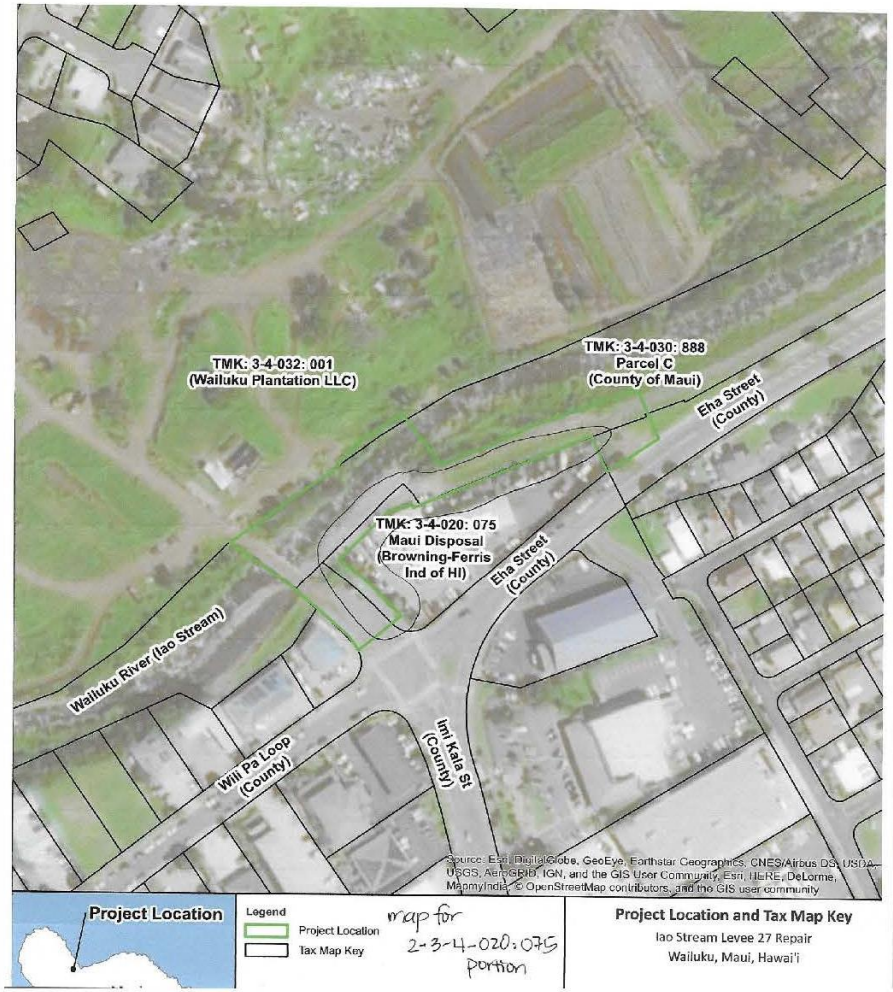

Figure 6-5. County of Maui Zoning and Flood Confirmation Form TMK (2) 3-4-030: 888 Parcel C (Portion)

21/2874 DG

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

Zoning Administration and Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

RECEIVED 29 2021

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME County of Maui, Department of Public Works TELEPHONE 808-270-7745

PROJECT NAME ʻIao Stream Levee 27 Repair E-MAIL Kristi.ono@co.maui.hi.us

PROPERTY ADDRESS Wailuku River (formerly ʻIao Stream) stream bank TAX MAP KEY (2) 3-4-030: 888 Parcel C

☐ Yes ■ No **Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?** (portion)
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:

A) ☐ Yes ☐ No **Will it be processed under a consistency exemption from** Section 18.04.030(B), MCC?
IF YES, which exemption? (No. 1, 2, 3, 4 or 5)

B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:
1) **Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.**
2) **If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.**
3) **If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.**

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]

☐ (SMA) Special Management Area

STATE DISTRICT: ☐ Urban ☐ Rural ☒ Agriculture ☐ Conservation

MAUI ISLAND PLAN — Growth Boundary:[2] ☒ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries
Protected Area:[2] ☒ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ☐ Outside Protected Areas

COMMUNITY PLAN:[2] Open Space

COUNTY ZONING: Agricultural District

OTHER/COMMENTS: map of project site attached

☐ (PD) Planned Development
☐ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION: A Flood Development Permit is required if any portion of a parcel is designated V, VE, A, AO, AE, AH, D, or Floodway, and the project is on that portion.

FLOOD HAZARD AREA ZONES [3] & BASE FLOOD ELEVATIONS: Zone: X, X protected by levee, AEF (158'-186')

☒ FEMA DESIGNATED FLOODWAY | For Flood Zone AO, FLOOD DEPTH:

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).
(Signature) ☐ Not Applicable. (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning. (The parcel or portion of the parcel that is zoned interim shall not be subdivided).
☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:
1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change in Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway; Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100 year flood inundation limits, base flood elevations, drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.J, Maui County Code]

REVIEWED & CONFIRMED BY:

Deanna Gomes (Signature) 7/15/21 (Date)

For: John S Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

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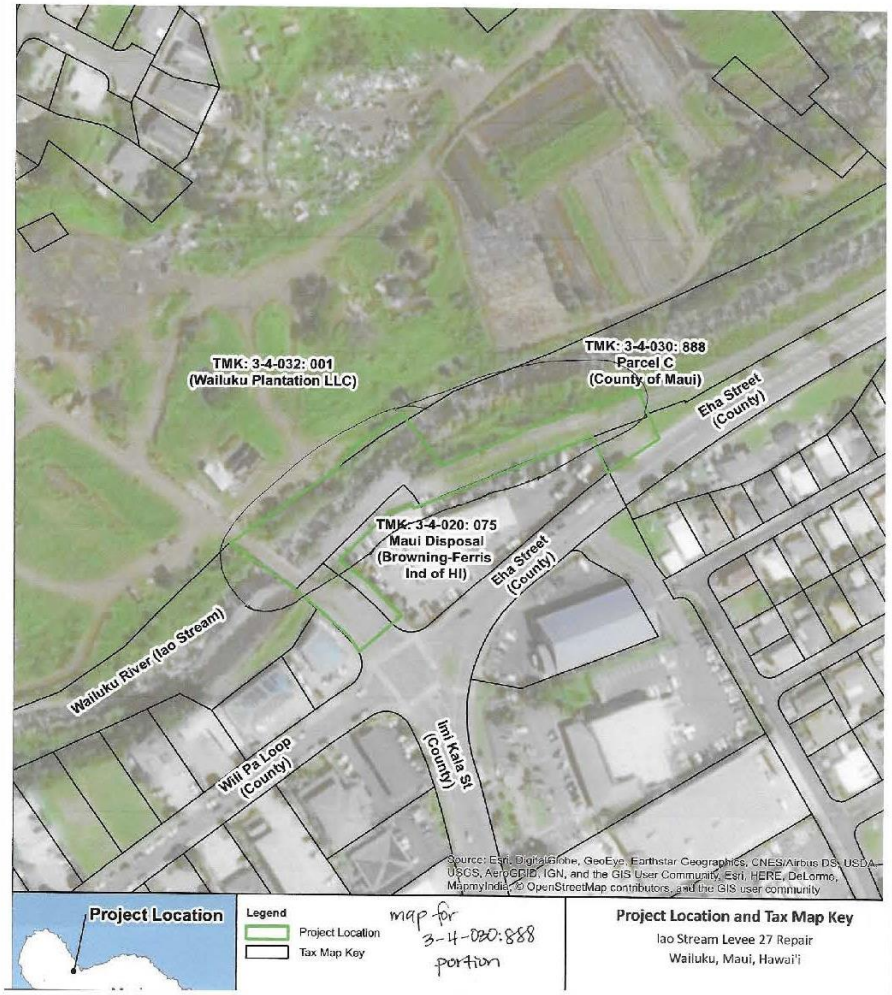

Figure 6-6. County of Maui Zoning and Flood Confirmation Form Imi Kala Street and Eha Street (no TMK)

21/2376 DG

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

RECEIVED 29 2021 COUNTY OF MAUI DEPARTMENT OF PLANNING

Zoning Administration and Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME County of Maui, Department of Public Works TELEPHONE 808-270-7745

PROJECT NAME 'Īao Stream Levee 27 Repair E-MAIL Kristi.ono@co.maui.hi.us

PROPERTY ADDRESS Wailuku River (formerly 'Īao Stream) stream bank TAX MAP KEY Imi Kala St. & Eha St. (no TMK) intersection point

☐ Yes ■ No **Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?**
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:

A) ☐ Yes ☐ No **Will it be processed under a consistency exemption from** Section 18.04.030(B), MCC?
IF YES, which exemption? (No. 1, 2, 3, 4 or 5) _____

B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:
1) **Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.**
2) **If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.**
3) **If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.**

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]

☐ (SMA) Special Management Area

STATE DISTRICT: ☒ Urban ☐ Rural ☐ Agriculture ☐ Conservation

MAUI ISLAND PLAN — Growth Boundary:[2] ☒ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries
Protected Area:[2] ☐ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ☒ Outside Protected Areas

COMMUNITY PLAN:[2] B/I- Business Industrial

COUNTY ZONING: Road

OTHER/COMMENTS: map of project site attached

☐ (PD) Planned Development
☐ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION: A Flood Development Permit is required if any portion of a parcel is designated V, VE, A, AO, AE, AH, D, or Floodway, and the project is on that portion.

FLOOD HAZARD AREA ZONES[3] & BASE FLOOD ELEVATIONS: Zone: X

☐ FEMA DESIGNATED FLOODWAY | For Flood Zone AO, FLOOD DEPTH:

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).
_____ (Signature) ☐ Not Applicable, (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning, (The parcel or portion of the parcel that is zoned interim shall not be subdivided).
☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:
1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change in Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway; Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits; base flood elevations, drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.D, Maui County Code].

REVIEWED & CONFIRMED BY:

Deanna Gomes (Signature) 7/15/21 (Date)

For: John S Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

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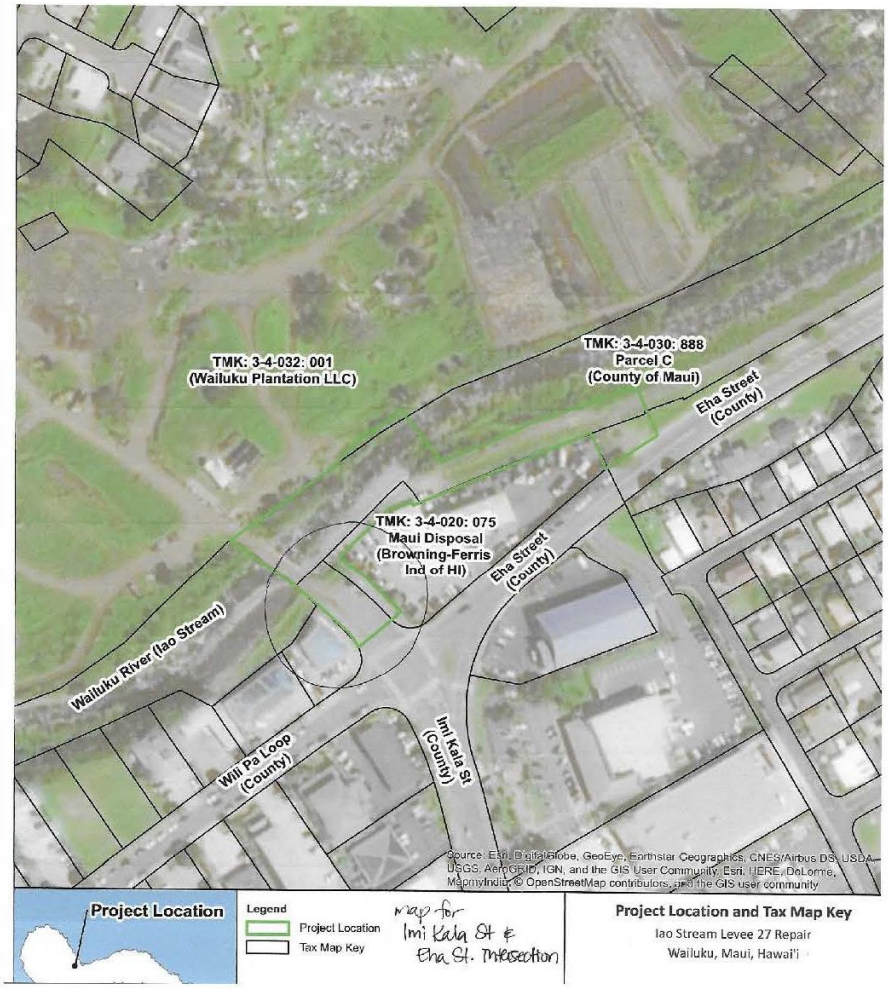

6.3.5 Wailuku-Kahului Community Plan

The ʻĪao Stream Levee 27 Repair Project is located within the Wailuku-Kahului Community Plan region, one (1) of nine (9) community plan regions established in the County of Maui. Each region's growth and development is guided by a Community Plan. The County's Community Plan reflects current and anticipated conditions in the Wailuku-Kahului region and advances planning goals, objectives, policies, and implementation considerations to guide decision-making in the region. The primary purpose of the Community Plan is to outline a detailed agenda for carrying out these policies and objectives. The Wailuku-Kahului Community Plan was adopted by the County of Maui through Ordinance Number 3061 and became effective on June 5, 2002. The Community Plan land use map designates the project site outside of the Wailuku River as "BI, Business/Industrial".

The proposed project is consistent with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan as outlined below.

Environment

Goal: A clean and attractive physical and natural environment in which man-made developments or alterations to the natural environment relate to sound environmental and ecological practices, and important scenic and open space resources are maintained for public use and enjoyment.

Objectives and Policies:

3. *Protect shoreline wetland resources and flood plain areas as valuable natural systems and open space resources. These natural systems are important for flood control, as habitat area for wildlife, and for various forms of recreation. Future development actions should emphasize flood prevention and protection of the natural landscape.*

Discussion: The proposed project supports the Wailuku-Kahului Community Plan environmental goal by repairing the proposed segment of the degraded Wailuku River embankment. The proposed action will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the Wailuku Community. Implementation of the proposed action would prevent further streambed erosion, thereby eliminating the risk of failure of the embankment and downstream levee and the associated loss of life and property damage that could result. As a result, the improvements made to the Wailuku River embankment will prevent flooding and loss of the natural landscape by erosion.

Cultural Resources

Goal: Identification, protection, preservation, enhancement, and where appropriate, use of cultural practices and sites, historic sites, and structures, and cultural landscapes and view planes that:

1. *Provide a sense of history and define a sense of place for the Wailuku-Kahului region; and*
2. *Preserve and protect native Hawaiian rights and practices customarily and traditionally exercised for subsistence, cultural and religious purposes in accordance with Article XII, Section 7, of the Hawaii State Constitution, and the Hawaii Supreme Court's PASH opinion, 79 HAW. 425 (1995).*

Objectives and Policies:

1. *Preserve the character and integrity of historic sites in the Wailuku-Kahului region.*
2. *Recognize the importance of historically and archaeologically sensitive sites and encourage their preservation through development project review.*
4. *Ensure that the proposed projects are compatible with neighboring historic, cultural, and archaeological sites or districts. Such projects should be reviewed by the Cultural Resources Commission, where appropriate.*

Discussion: As provided above in **Section 4.14**, an ALRFI report was prepared by for the ʻĪao Stream Levee 27 Repair Project (**Appendix B).** One historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed action. No other historic properties were identified in the project area. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**). To ensure no impact to the Imi Kala Street Bridge (SIHP Site 50-50-04-5564), DPW will install interim protection measures prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities.

As provided above in **Section 5**, a CIA was prepared for the ʻĪao Stream Levee 27 Repair Project (**Appendix C**). The CIA identifies cultural resources in the project area and provides recommendations to mitigate potential adverse impacts to resources due to the project. Implementation of the proposed action is not anticipated to have short- or long-term impacts on traditional or cultural practices at the project site. No impacts to ongoing cultural practices were identified within the project area during the CIA community consultation for this project.

6.3.6 Special Management Area

The Special Management Area was established to preserve, protect, and where possible, restore the natural resources of the coastal zone of Hawaiʻi. Special controls on development within this area are necessary to avoid permanent loss of valuable resources and foreclosure of management options. The review guidelines of Chapter 202 of the Maui Planning Commission are used by the County of Maui for the review of developments planned in the Special Management Area. These guidelines are derived from Section 205A-26 HRS.

Discussion: The project site is not within the Special Management Area defined by the Maui Planning Commission.

Section 7
Permits and Approvals That May Be Required

7.1 Federal

Section 404, Clean Water Act, and Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit) (U. S. Army Corps of Engineers)

- National Historic Preservation Act Consultation (U. S. Army Corps of Engineers)
- Endangered Species Act Consultation (U. S. Army Corps of Engineers)
- Magnuson-Stevens Fishery Conservation and Management Act Consultation (U. S. Army Corps of Engineers)
- Migratory Bird Treaty Act Consultation (U. S. Army Corps of Engineers)
- Fish and Wildlife Coordination Act Consultation (U. S. Army Corps of Engineers)

7.2 State of Hawaiʻi

Environmental Assessment and Finding of No Significant Impact under Hawaiʻi Revised Statutes, Chapter 343 (County of Maui, Department of Public Works)

Section 401 Clean Water Act, Water Quality Certification (Department of Health, Clean Water Branch)

Section 402, Clean Water Act, National Pollutant Discharge Elimination System for Construction Storm Water and Construction Dewatering (Department of Health, Clean Water Branch)

Hawaiʻi Revised Statutes, Chapter 6E Review (Department of Land and Natural Resources, State Historic Preservation Division)

Coastal Zone Management Federal Consistency Review (Office of Planning)

Stream Channel Alteration Permit (Department of Land and Natural Resources, Commission on Water Resource Management)

7.3 County of Maui

Grubbing, Grading and Stockpiling Permits (Department of Public Works, Development Services Administration)

Work on County Highway Permit (Department of Public Works, Development Services Administration)

Flood Development Permit (Department of Planning)

Simple Encroachment Calculations-(Department of Planning)

Section 8
Agencies, Organizations, and Individuals to be Consulted for the Environmental Assessment

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

8.1 Federal

U.S. Army Corps of Engineers Regulatory Branch
U.S. Fish and Wildlife Service

8.2 State of Hawaiʻi

Department of Land and Natural Resources:
- State Historic Preservation Division
- Land Division and Engineering Division
- Division of State Parks
- Division of Forestry and Wildlife
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Division of Aquatic Resources

Office of Hawaiian Affairs
Department of Health:
- Environmental Planning Office

Clean Water Branch
Office of Planning
- Department of Business, Economic Development and Tourism,
- Coastal Zone Management

Department of Accounting and General Services:
- Public Works Division
- Hawaiʻi Community Development Authority

Department of Transportation
Department of Hawaiian Home Lands

8.3 County of Maui

Maui County Planning Department
Maui County Planning and Permitting Department, Planning Division
Department of Public Works
Department of Water Supply
Department of Environmental Management
Department of Parks and Recreation
Department of Transportation
Office of the Mayor
Maui County Engineering Division
Maui Police Department
Fire and Public Safety

8.4 Elected Officials, Organizations and Individuals

U.S. Senator Brian Schatz
U.S. Senator Mazie Hirono
U.S. Representative Ed Case
U.S. Representative Kaialiʻi Kahele
Hawaiian Electric Company, Inc.
Wailuku Main Street Association, Inc.
Historic Hawaiʻi Foundation
Maui Disposal Co, Inc.
Wailuku Plantation LLC
Plan B-KG LLC
Wailuku Aha Moku Council
Hi O Na Wai Eha
Ms. Clare Apana

8.5 Pre-Assessment Consultation for the Environmental Assessment

Pre-assessment consultation letters, dated May 27, 2021, were sent to the public and private agencies, organizations, and individuals to notify and initiate consultation for the preparation of the Chapter 343, HRS, EA for the project. The purpose of the pre-assessment consultations was to accomplish the following:

- Solicit input to help identify environmental and permitting issues to be considered and addressed in the upcoming EA; and
- Inform agencies, organizations, and individuals regarding planned activities in the area and the upcoming EA process.

A list of the comments received during the pre-assessment consultation and sections referenced within the Draft EA to address the comments is provided in **Table 8-1**. All written comments received during the pre-assessment consultation were responded to and addressed in the content of the Draft EA. The full record of the pre-assessment consultation comments received and the written responses addressing the comments is provided in **Appendix D**.

An opportunity for public comments will also follow the publication of this Draft EA with the OEQC. All relevant written public comments received during the 30-day public comment period will receive a written response for inclusion and use in the preparation of the project's forthcoming Final EA.

Table 8-1. Comments Received During the Pre-Assessment Consultation for the EA

No	Commentor	Date of Letter	Comments	Response	Draft EA Reference Sections
1	Karla H. Peters, Director County of Maui Department of Parks and Recreation	6/3/2021	Thank you for the opportunity to review and comment on the subject project. The Department of Parks and Recreation has no comment at this time.	We acknowledge that the Department of Parks and Recreation does not have any comments at this time.	N/A
2	Dean M. Rickard, Acting Chief of Police County of Maui Police Department	6/7/2021	In review of the submitted documents, we would like to recommend the project meets the minimal standards set forth by county codes and state laws. If the roads will be temporarily closed to alternating traffic, we ask the project manager utilize flag men to conduct traffic control and proper signage posted along the routes during construction.	DPW acknowledges this comment and will ensure the project meets the minimal standards set forth by county codes and state laws. If temporary closure of roadways to alternating traffic is required during construction, DPW will utilize flag personnel or approved equivalent to conduct traffic controls and post proper signage along the routes. This is identified in the Draft EA, Section 4.13.1.	Section 4.13.1
3	Samuel J. Lemmo, Administrator State of Hawaiʻi Department of Land and Natural Resources Office of Conservation and Coastal Lands	6/7/2021	This letter is in response to your request that the Office of Conservation and Coastal Lands (OCCL) respond to this project with any comments, concerns, or regulatory requirements. The OCCL notes that the above referenced TMKs, and therefore the project, do not appear to be located in the Conservation District; therefore, project activities do not appear to be within the OCCL's jurisdiction.	We appreciate your statement acknowledging that the proposed project is not located in the Conservation District, and therefore, outside the OCCL's jurisdiction. The proposed action involves the use of land within the Agricultural and Urban State Land Use Districts. This is identified in the Draft EA, Section 6.2.3.	Section 6.2.3
4	Christine L. Kinimaka, Public Works Administrator State of Hawaiʻi Department of Accounting and General Services	6/8/2021	Thank you for the opportunity to comment on the subject project. We have no comments to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.	We appreciate your statement acknowledging that the proposed project will not impact any of the Department of Accounting and General Services' projects or existing facilities and that you have no additional comments to offer.	N/A
5	Ray Okazaki, Engineer II Engineering Department, Hawaiian Electric Company – Maui County	6/9/2021	In reviewing our records and the information received, Hawaiian Electric Company has no comments or objections to the subject project. We do not anticipate any impacts or conflicts with our facilities.	We appreciate your statement acknowledging that the proposed project will not impact any Hawaiian Electric Company facilities and that you have no additional comments or objections.	Section 4.13.2

6	Marc Takamori, Director County of Maui Department of Transportation	6/14/2021	Thank you for the opportunity to review and comment on this project. It was stated that access to the site will be off of Imi Kala Street. We have 2 Maui Buses traveling through Imi Kala Street and Wili Pa Loop on an hourly basis. If there are any plans to close any of those two streets, please notify our department ahead of the schedule so we're able to plan for a re-route. Other than mentioned, we have no additional comments.	DPW acknowledges this comment. During construction, primary construction access to the section of Wailuku River where the repairs to the revetment system are proposed is planned to be from Eha Street, northeast of Imi Kala Street and the Maui Disposal Co, Inc. site. Access from Eha Street is not expected to impact traffic. Additionally, Imi Kala Street, from its intersection with Wili Pa Loop and Eha Street to the Imi Kala Street bridge will be used for staging and storage of construction materials and for possible access to the construction site. The section of Imi Kala Street that will be used, ends at the Imi Kala Street bridge which is barricaded off and does not allow for through traffic over the bridge. Imi Kala Street and Eha Street are both under the jurisdiction of the County of Maui. The project will continue to be coordinated with the County of Maui, Department of Transportation, and a work on county highway permit obtained as necessary for the use of the section of Imi Kala Street from the bridge crossing of Wailuku River to the intersection of Imi Kala Street with Eha Street and Wili Pa Loop. The remainder of Eha Street and Imi Kala Street, including their intersection with Wili Pa Loop, is not expected to be affected by the proposed project. Therefore, no impact to traffic traveling through the area is expected. Accordingly, no impacts to buses traveling through Imi Kala Street and Wili Pa Loop are expected. This is identified in the Draft EA, Section 4.13.1.	Section 4.13.1
7	Jeffrey T. Pearson, P.E. Director County of Maui Department of Water Supply	6/14/2021	Thank you for the opportunity for the County of Maui Department of Water Supply's (MOWS) Water Resources and Planning Division to comment on the Preassessment for 'Iao Stream Levee 27 Repair Project. The MOWS Central Maui System services the Wailuku area, within which the project is located.	DPW acknowledges the County of Maui Department of Water Supply's Central Maui System services the Wailuku area. This is identified in the Draft EA, Section 4.13.2.	Section 4.13.2
			MOWS Infrastructure The proposed project site is near MOWS infrastructure. The MOWS has a 36-inch water pipe that crosses the stream approximately 42 feet mauka of the project boundary. A 12-inch water pipe runs	DPW acknowledges this comment and thanks the Department of Water Supply for information regarding the location of two nearby water pipes. DPW will ensure the contractor verifies existing infrastructure	Section 4.13.2

			along Eha Street, approximately 35 feet southeast of the project boundary. Please contact Tammy Yeh at DWS Engineering (270-7835) to verify accuracy of the waterline location before construction.	locations prior to the start of construction. This is identified in the Draft EA, Section 4.13.2.	
			Construction BMPs for Pollution Prevention In order to protect ground and surface water resources, we recommend that in addition to any required Best Management Practices (BMPs), the following measures designed to minimize infiltration and runoff be implemented during construction: 8. Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground. 9. Properly and promptly dispose of all loosened and excavated soil and debris material from drainage structure work. 10. Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site. 11. Properly install and maintain erosion control barriers such as silt fencing or straw bales. 12. Disturb the smallest area possible. 13. Retain ground cover until the last possible date. Stabilize denuded areas by sodding or planting as soon as possible. Use high seeding rates to ensure rapid establishment of stands of plants. In order to minimize chemical run-off, apply biocides only during dry periods of low rainfall. 14. Keep run-off on site.	DPW acknowledges this comment and will implement the measures above, to the extent practicable, to minimize infiltration and runoff during construction to ensure the protection of ground and surface water resources. This is identified in the Draft EA, Section 4.5.1.	Section 4.5.1
8	Mary Alice Evans, Director State of Hawaiʻi Office of Planning	6/16/2021	The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer: 1. <u>Hawaiʻi Coastal Zone Management (CZM) Program</u> The CZM area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" (HRS § 205A-1).	DPW acknowledges this comment. An analysis of the project's consistency with the objectives and supporting policies of the Hawaiʻi Coastal Zone Management Program, HRS § 205A-2, as amended, is provided in the Draft EA, Section 6.2.6.	Section 6.2.6

			In implementing the objectives and supporting policies of the Hawaiʻi CZM program, agencies are required to consider ecological, cultural, historic, esthetic, recreational, scenic, open space values, coastal hazards, and economic development. As this project is being proposed by a County of Maui agency, the Draft EA would benefit from an analysis on the project's consistency with the objectives and supporting policies of the Hawaiʻi CZM Program, HRS § 205A-2, as amended. Compliance with HRS § 205A-2 is an important component for satisfying the requirements of HRS Chapter 343.		
			2. <u>Coastal Zone Management Act (CZMA) - Federal Consistency</u> We acknowledge that the pre-consultation review material, under the Project Summary Table, identifies a CZM federal consistency review as a potential approval needed for the project. OP is the lead state agency with the authority to conduct CZMA federal consistency reviews. We recommend that DPW contact our office regarding the policies and procedures on conducting a federal consistency review.	DPW acknowledges this comment. The State of Hawaiʻi Office of Planning will be consulted to identify permitting requirements pertaining to its jurisdiction. If required, a Coastal Zone Management federal consistency application will be submitted to the State of Hawaiʻi Office of Planning after completion of the EA process. This is identified in the Draft EA, Section 6.2.6. Additionally, the Draft EA, Section 7, identifies Coastal Zone Management federal consistency review by the Office of Planning as a permit/approval that may be required.	Section 6.2.6 and 7
			3. <u>Stormwater Runoff, Erosion, and Water Resources</u> The review material also lists a National Pollutant Discharge Elimination System for Construction Storm Water and Construction Dewatering as a potential needed permit. Pursuant to Hawaiʻi Administrative Rules (HAR) § 11-200.1-18(d)(7) – identification and analysis of impacts and alternatives considered; to ensure that nearshore marine resources of the Island of Maui remain protected, the negative effects of stormwater inundation and sediment loading surrounding the proposed project site should be evaluated. The impact of stormwater runoff, sediment loading, and water quality should not	DPW acknowledges this comment and will comply with the requirements of Hawaiʻi Administrative Rules (HAR) § 11-200.1-18(d)(7). The project will be designed to protect surface water quality and nearshore marine resources from stormwater runoff and sediment loading during and following construction. In compliance with HAR § 11-200.1-18(d)(8), mitigation measures will be developed for the protection of surface water resources and the coastal ecosystem. Since the proposed action may generate discharges to State waters during construction, a Section 404, Clean Water Act (CWA)/Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit); and Section 401 WQC would be required. In accordance	Section 4.5

			be limited to just the construction phase but discuss long term mitigation strategies as well. Issues that may be examined include, but are not limited to, project site characteristics in relation to flood and erosion prone areas, potential vulnerability of water resources, the shoreline, and examining any increase of permeable surfaces in the area. Developing mitigation measures for the protection for surface water resources and the coastal ecosystem should take this into account, pursuant to HAR § 11-200.1-18(d)(8).	with CWA regulations, an applicable monitoring and assessment plan and National Pollutant Discharge Elimination System permits for construction storm water and construction dewatering would also be required prior to construction. As required a Site-Specific Construction Storm Water Best Management Practices will be prepared and followed by the project contractor to handle the treatment of storm water runoff, erosion, and sediment control. This is identified in the Draft EA, Section 4.5.	
9	Michele McClean, AICP, Planning Director County of Maui Department of Planning	6/18/2021	The Department of Planning (Department) is in receipt of the above-referenced request for early consultation comments in preparation of a Draft Environmental Assessment (EA) for the proposed repairs on approximately 230 feet of the Wailuku River Stream bank, upstream of Īʻao Stream Levee 27 to protect further erosion of the bank, protect the downstream levee and provide reduced flood risk. The letter requesting comments did not include completed Zoning and Flood Confirmation Forms; but, we assume that they will be included in the Draft Environmental Assessment.	DPW acknowledges this comment. The Zoning and Flood Confirmation Forms from the Zoning Administration and Enforcement Division are included in the Draft EA Section 6.3.4 as Figures 6-3, 6-4, 6-5, 6-6.	Section 6.3.4
			The Department notes that the parcels are outside of the Special Management Area. In addition, the work will occur outside of the exposure area for a six foot sea level rise, and outside of the tsunami evacuation areas.	DPW appreciates your statement acknowledging that the proposed project is outside of the Special Management Area, exposure area for a six-foot sea level rise, and tsunami evacuation area. This is identified in the Draft EA, Section 4.7 and 6.3.6.	Section 4.7 and 6.3.6
			In addition, the Department has the following comments: The scope of work will occur within a Federal Emergency Management Area (FEMA)-designated floodway (Zone AE) on (2) 3-4-032:001. Therefore, in accordance with Maui County Code, Section 19.62.050(0), a Conditional Letter of Map Revision (CLOMR) should be submitted for approval by FEMA. See Exhibit 1. In addition, the consultant should apply for a Flood Development Permit (FDP). FDP-approval will be held by the County pending FEMA approval of the CLOMR. For any questions with regard to special	DPW acknowledges that the project will occur within a Federal Emergency Management Area (FEMA)-designated floodway (Zone AE) on (2) 3-4-032:001. During consultation with the County of Maui, Floodplain Administrator, Diego Sanchez-Gomez, it was determined that a Conditional Letter of Map Revision (CLOMR) would not be required if Simple Encroachment Calculations were submitted for the project showing no loss of conveyance (No-Rise). Because no loss of conveyance (No-Rise) is expected as a result of the proposed project, Simple Encroachment Calculations will be submitted for approval by County of Maui,	Section 4.7 and 7

			flood hazard areas, please contact the Department's Floodplain Administrator Diego Sanchez-Gomez by email at Diego.Sanchez-Gomez@co.maui.hi.us or by phone at (808) 270-7139.	Department of Planning. Only in the event that the project's Simple Encroachment Calculations show a loss of conveyance would a CLOMR be submitted for approval by FEMA. In addition, a Flood Development Permit will be submitted for approval by the County of Maui. This is identified in the Draft EA, Section 4.7 and 7.	
			Accordingly, Maui County Code, Section 19.62.l00, MCC further states "The director shall not issue or recommend issuance of any permit or approval involving modification, construction, lining, or alteration of any drainage facility, river, or stream unless such modification, construction, lining, or alteration does not reduce the capacity of the drainage facility, river, or stream, or adversely affect any downstream or adjacent property." Please ensure that this information is included in the Draft EA.	DPW acknowledges this comment and will ensure the project complies with Maui County Code, Section 19.62.l00. The proposed repairs to the revetment system would not reduce the capacity of Wailuku River or adversely affect any downstream or adjacent property. This is identified in the Draft EA, Section 4.7.	Section 4.7
10	David G. Smith, Administrator State of Hawaiʻi Department of Land and Natural Resources Division of Forestry and Wildlife	6/22/2021	The State listed Hawaiian Hoary Bat or ʻŌpeʻapeʻa (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.	DPW acknowledges this comment. A discussion on the project's conservation measures to avoid and minimize impacts to Hawaiian hoary bats is provided in the project's Draft EA, Section 4.8.2.	Section 4.8.2
			The State listed Blackburn's Sphinx Moth (BSM; *Manduca blackburni*) has a historic range that encompasses the project area. Larvae of BSM feed on many nonnative hostplants that include tree tobacco (*Nicotiana glauca*) which grows in disturbed soil. We recommend contacting our Maui DOFAW office at (808) 984-8100 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. To avoid harm to BSM, DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If you remove tree tobacco over one meter in height or disturb the ground around or within several meters of	DPW acknowledges this comment. The results of a biological survey undertaken in 2021, and a discussion on the project's conservation measures to avoid and minimize impacts to Blackburn's Sphinx Moth is provided in the project's Draft EA, Section 4.8.2.	Section 4.8.2

			these plants they must be checked thoroughly for the presence of eggs and larvae.		
			We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. This disorientation can result in collision with manmade artifacts or grounding of birds. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawaiʻi please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.	DPW acknowledges this comment. As noted above, the results of a biological survey undertaken in 2021, and a discussion on the project's conservation measures to avoid and minimize impacts to seabirds is provided in the project's Draft EA, Section 4.8.2.	Section 4.8.2
			DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid ʻŌhiʻa Death), vertebrate and invertebrate pests (e.g. Little Fire Ants), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the Maui Invasive Species Committee at (808) 573-6472 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid ʻŌhiʻa Death and other harmful fungal pathogens.	DPW acknowledges this comment. During construction, the movement of plant or soil material between worksites will be minimized, where possible, and all equipment, materials, and personnel cleaned of excess soil and debris to mitigate the spread of any high-risk invasive species in the area. This is identified in the project's Draft EA, Section 4.8.1.	Section 4.8.1

11	Alan S. Downer, Administrator State Historic Preservation Division, Hawaiʻi State Department of Land and Natural Resources	6/28/2021	The State of Hawaii Historic Preservation Division is in the process of moving to an online submission system. The Hawaii Cultural Resource Information System (HICRIS) will be the only way for SHPD to accept and process submittals. We are not accepting submissions currently, while we migrate the data from our existing systems to HICRIS. The transition period is from November 28 to December 16, 2020. Additional information on HICRIS and the launch date can be found on our website. http://dlnr.hawaii.gov/shpd/	DPW acknowledges this comment. Submittals to the State of Hawaiʻi Historic Preservation Division (SHPD) for the ʻĪao Stream Levee 27 Repair Project were coordinated through the Hawaiʻi Cultural Resource Information System (HICRIS). Enclosed is a copy of the SHPD's Chapter 6E-8 Historic Preservation Review of the proposed project, dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10). In summary, Imi Kala Street Bridge (State Inventory of Historic Places [SIHP] Site 50-50-04-5564), is located within the project area; however, it will not be impacted by the proposed action and SHPD concurred with the DPW's project effect determination of "No historic properties affected". DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. No other historic properties were identified that would require additional inventory or mitigation. This is identified in the project's Draft EA, Section 4.14.1.	Section 4.14

8.6 Draft Environmental Assessment Comments and Responses

This section is reserved for written comments and responses for the Draft EA.

Section 9
Summary of Effects

In accordance with the content requirements of HRS, Chapter 343, and the significance criteria in HAR, Section 11-200.1-13, an applicant or agency must determine whether an action may have significant impacts on the environment, including all phases of the project, its expected consequences both primary and secondary, cumulative impact with other projects, and short- and long-term effects.

HAR, Section 11-200.1-24 requires a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. Short-term and long-term do not necessarily refer to fixed time periods but are viewed relative to environmentally significant consequences of the proposed action. **Sections 9.1** and **9.2** below discuss the extent to which the proposed action involves trade-offs among short-term and long-term gains and losses, as well as the extent to which the proposed action forecloses future options and/or narrows the range of beneficial uses of the environment.

In making the determination of whether an action may have significant impacts on the environment, HAR §11-200.1-13 established "Significance Criteria" to be applied as a basis for identifying whether significant environmental impacts will occur. According to the HAR §11-200.1, an action shall be determined to have a significant impact on the environment if it meets any one of the criteria. The relationships of the proposed action to the criteria are discussed below in **Section 9.3**. See **Table 9-1** at the end of this section for a summary of impacts and proposed mitigation.

9.1 Short Term Effects

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

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

Protection of water quality will be through the use of mitigative measures including silt fencing/curtains, berms, and other applicable erosion controls to prevent construction storm water related soils and silt from leaving active areas of work. BMPs would be followed to prevent sediment and contaminants from impacting surface waters during construction, particularly during any in-stream work. Specifications for the use of these measures will be

through the construction plan approval process and NPDES and Department of the Army permit applications that will be filed by the design consultant during the design phase.

The temporary use of the section of Imi Kala Street between the northwest side of the Imi Kala Street bridge crossing of Wailuku River to the intersection of Imi Kala Street with Eha Street and Wili Pa Loop will be coordinated with the County of Maui, Department of Transportation, and a work on county highway permit obtained as necessary to minimize impacts to traffic in the project vicinity.

Upon completion of work all construction equipment, machinery, and personnel will be demobilized from the job site with no further disturbance to the area. All debris and waste materials will be disposed of at an approved refuse facility. Active work areas will be replanted with native and indigenous vegetation where possible.

9.2 Long Term, Secondary, and Cumulative Effects

Potential long-term direct, secondary, and cumulative impacts have been evaluated and are documented for the following resources or issues: land use; land ownership; public health and safety; roadways and traffic; utilities; public facilities and services; topography, geology, and soils; hydrology; natural hazards; climate; air quality; noise; visual resources; marine environment; terrestrial flora and fauna; historic and cultural resources; and socioeconomics Long-term effects continue or occur after the project is completed. Secondary impacts are generally defined as those induced or caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR §§ 1500-1508). Potential cumulative effects are effects that may result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions (40 CFR §1508.7).

Below is a discussion of the other past, present, and reasonably foreseeable future actions in the project vicinity and a discussion of the potential long-term, secondary, and cumulative impacts identified for the proposed action.

Past Events

In April 2014, an IIFS was established following an Order and Agreement issued by the CWRM. Pursuant to that April 2014 Settlement Agreement, the Wailuku Water Company began the release of 10 million gallons of water per day into the Wailuku River on October 13, 2014. Due to the upstream diversion of water from the stream for agricultural uses in the past, in addition to the intermittent nature of the stream itself, the length of the stream located within the project area had historically been absent of water approximately 90% of the year. However, following the implementation of the IIFS for Wailuku River, continuous flow through the section of the stream within the project area has been restored.

In September 2016, heavy rains caused erosion of the Wailuku River stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the USACE and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the

existing bank, toe erosion, and side slope failure on the right bank of the stream downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of CBF along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1H:1V and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Reasonably Foreseeable Future Actions
DPW has an additional bank stabilization project with a similar scope of work as the proposed action further upstream along Wailuku River in the vicinity of the Wailuku Millyard light industrial subdivision. The purpose of the DPW project in the vicinity of the Wailuku Millyard light industrial subdivision is to restore the eroded embankment of the Wailuku River and provide slope protection improvements. The existing earthen embankment of the Wailuku River, located on County property, identified by TMK No. (2)3-4-030:888 (por.) (Parcel 888), has eroded beyond the bank to affect two (2) adjacent properties identified by TMK (2)3-4-020:045(por.) and 046(por.) (Parcels 45 and 46, respectively) and exposed the building foundation of a commercial building on Parcel 46. Continued degradation may result in flooding and further loss of property. As such, DPW proposes to reinforce a portion of the river bank slope covering approximately 5,000 square feet within Parcel 45, Parcel 46, and Parcel 888. The proposed action and the bank stabilization project further upstream along Millyard light industrial subdivision proposed by the DPW needed to be separated because the stream embankment section included in the proposed action protects the levee system downstream which must be accredited per the National Flood Insurance Program.

In addition, the USACE and County of Maui, DPW, prepared a Final EA in July 2017 for Modification to the ʻĪao Stream Flood Control Project. The project consists of features intended to reconnect the main channel with the floodplain to reduce damaging flows along the main channel and right bank levees of Wailuku River. The reconnection would be accomplished by lowering a portion of the left bank, grading the overflow area, and constructing a diversion wall to force flood flows to enter the existing floodplain on the left bank. A portion of the left bank would be raised downstream to contain the overflow within the floodplain. Further downstream, the left bank would be lowered to allow the return of the overflow into the main channel. Implementation of the project would occur within the approximately 0.4-mile stretch of the stream between slightly downstream of Waena Street and upstream of Imi Kala Street, approximately 1.4 miles upstream from the shoreline. The project is currently being reevaluated by the USACE.

A discussion of the anticipated long-term, secondary, and cumulative impacts resulting from implementation of the proposed action is provided below:

Socio-Economic Environment
The proposed action has no population or housing component and would have no impact on those items. It would however have limited beneficial impacts on the economy through the provision of construction jobs, the procurement of local goods and services, and increased tax revenue. Each of the planned construction jobs would have similar beneficial impacts. Thus, the proposed action would contribute to those beneficial impacts on the local economy.

Once completed, the proposed action is expected to result in long-term beneficial socioeconomic impacts as the project will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the growing Wailuku Community. Each of the planned construction jobs would have similar beneficial impacts. Thus, beneficial cumulative impacts are expected in the form of reduced stream bank erosion and flood risk to the town of Wailuku.

Additionally, the repairs to the embankment are necessary for FEMA to certify the ʻĪao Stream Levee 27. Thus, this project contributes to beneficial secondary impacts for the ʻĪao Stream Levee System.

Water Resources and Hydrology
The proposed action would have less than significant impacts on water resources, with beneficial long-term impacts related to hydrology (movement of water), aquatic habitat, transport of sediment, and flood hazards. Impacts on water resources relate largely to the potential for increased sedimentation, particularly during the construction and demolition phase of the project when ground disturbing activities would expose soils. Standard construction site BMPs and other engineering controls, as needed, would be implemented to keep impacts from reaching a level of significance.

Because the direct impacts from the proposed action would be only short-term and other past, present, and reasonably foreseeable future actions are expected to be consistent with the existing development and use of the area, the project would make no persistent contribution to secondary impacts.

Additionally, it is expected that all other construction projects would also adhere to BMPs and utilize other protective measures to minimize any impacts to water resources. Therefore, cumulatively, all foreseeable projects would be expected to have less than significant impacts. Viewed collectively with the other projects, the proposed action would contribute to these less than significant cumulative impacts. Beneficial cumulative impacts are expected in the form of reduced stream bank erosion and improved water quality.

Biological Resources
The proposed action would have temporary impacts on biological resources due to the expected disruptions to habitat and activities during the construction and demolition phase. The project site is not located in or near to any critical habitat and no “takes” or other impacts to threatened, endangered or other species of concern are expected.

In the long-term, the proposed action is expected to have beneficial impacts on the biological resources within the stream. The repair of the revetment system will result in reduced erosion of the stream bank within the channel and protect the downstream levee, allowing for less sediment to be directly transported to the stream mouth and into the nearshore marine environment. Improved water clarity and reduced sedimentation would have positive impacts on aquatic species. No negative long-term impacts are anticipated to result from the proposed action.

Other planned projects are expected to be carried out in compliance with all applicable laws and regulations to protect these species. Therefore, the proposed action would have no cumulative impacts on biological resources. Beneficial cumulative impacts are expected in the form of reduced stream bank erosion.

9.3 Irreversible and Irretrievable Commitment of Resources

The proposed action would result in the irretrievable commitment of resources expended for construction and demolition activities. Financial resources and fuels used to power construction equipment and vehicles would be an irreversible and irretrievable commitment of resources. Labor required for planning, design, and construction would be irretrievable, once used.

Less than significant impacts to short-term resource use in the project area is expected due to construction activities. The proposed action would require the commitment of natural resources such as aggregate for concrete, rock for riprap, and petroleum products to fuel construction equipment. However, the amount of resources needed to complete the proposed repairs to the revetment system would not represent a significant commitment of resources in the project area. Therefore, short-term impacts on resource use in the project area due to construction activities would be considered less than significant. No long-term, secondary, or cumulative impacts on resource use are expected.

9.4 Significance Criteria

In accordance with the provisions set forth in HRS, Chapter 343, and the significance criteria in HAR, Chapter 11-200.1-13, this EA has evaluated the potential direct, indirect, short-term, long-term, and cumulative impacts associated with the proposed action. Based on this evaluation, it has been preliminarily determined that the project will have no significant adverse impact to air and water quality, existing utilities, noise, archaeological or cultural sites, or wildlife habitat. All anticipated impacts will be temporary and will not adversely impact the environmental quality of the area.

A review of the “Significance Criteria” used as a basis for the above determination is presented below. An action is determined to have a significant impact on the environment if it meets any one of the following thirteen (13) criteria:

1. Irrevocably commit a natural, cultural, or historic resource:

Discussion: The proposed action is not anticipated to involve construction activities that would lead to the loss or destruction of any natural, cultural, or historic resources. Impacts are addressed in-depth in **Sections 4, 5, and 6**.

As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys of the project site which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui*. The report is included in **Appendix A** to the EA.

The proposed project is not expected to impact sensitive plants or animals, marine mammals, aquatic biota, or migratory birds and is anticipated to be considered consistent with the above-listed policies. There are no known state or federally listed endangered or threatened biota and their respective critical habitats within the project area, and based on the analysis of potential impacts of the proposed action on biological resources within the project area and in the vicinity of the project area (**Section 4.8**), no significant impacts to threatened or endangered species as a result of the implementation of the proposed action are anticipated. The proposed project is not anticipated to adversely affect aquatic resources and would avoid direct impacts to sensitive biota through the use of BMPs, including adherence to environmental protection specifications and endangered species protection.

As detailed in **Sections 4.14 and 5** of the EA, the project area has been subject to an ALRFI and CIA. The CIA was prepared to support the proposed project's historic preservation review under Section 106[2], NHPA; HRS Chapter 6E-42; and HAR Chapter 13-284. The CIA also supports project-related historic preservation consultation among stake-holding State agencies, interested Native Hawaiian Organizations, groups and individuals, and community groups. **Appendix C** contains a full copy of the March 2021 report entitled, *Cultural Impact Assessment for the Iao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui, TMKs: portions of [2] 3-4-020:048, 075, 888, and 3-4-032:001*. A community consultation effort was undertaken as a component of the CIA investigation (**Appendix C**).

As provided above in **Section 5**, no contemporary or continuing cultural or traditional practices occur within the proposed project area. The project is not located near the coast and therefore, would not affect access to marine resources. Therefore, no impacts are expected and no mitigation measures are planned.

The ALRFI report was prepared to facilitate project planning and support the historic preservation review process. **Appendix B** contains a full copy of the April 2021 report entitled, *Archaeological Literature Review and Field Inspection Report for the Iao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island TMKs: [2] 3-4-020:048, 075, 888 por. & [2] 3-4-032:001 por.*

[2] Consultation will be conducted by the USACE during the processing of the Department of the Army Permit application for the proposed project.

Implementation of the proposed action is not anticipated to have short- or long-term impacts on historic properties. As provided above in **Section 4.14**, one historic property, Imi Kala Street Bridge (SIHP Site 50-50-04-5564), is located within the project area. Imi Kala Street Bridge will not be impacted by the proposed project. To ensure no impact to the Imi Kala Street Bridge (SIHP Site 50-50-04-5564), DPW will install interim protection measures prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near construction activities. No other historic properties were identified in the project area. In a letter dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10), SHPD concurred with the DPW's project effect determination of "No historic properties affected" for the proposed action (**Appendix B**).

Despite the decades of destructive modern activities and relatively few findings in the vicinity of the project area, there is always the possibility that intact artifacts or cultural deposits, including *iwi kūpuna* (ancestral human remains), may be encountered during ground disturbance. As a precautionary measure, personnel involved in construction or development activities will be informed of the possibility of inadvertent cultural or skeletal finds. As provided above in **Section 4.14.2**, in the event that historic resources are inadvertently discovered the SHPD will be notified and construction in the area will cease until such time that work activities may be resumed as allowed by the SHPD.

2. Curtail the range of beneficial uses of the environment:

Discussion: Implementation of the proposed action would not curtail the range of beneficial uses of the environment as no permanent changes to the current use of land parcels located within and surrounding the project site are anticipated. Construction activities for the replacement of the revetment system along Wailuku River would take place on land currently developed as a hardened stream bank that is currently not in use; therefore, no curtailment of beneficial use would take place during construction activities.

The proposed action involves the use of land within the Urban State Land Use District and County of Maui zones AG (Agriculture); M-1 (Light Industrial); M-2 (Heavy Industrial); and Road and is consistent with these designations. The proposed action will prevent further erosion of the stream bank, protect the downstream ʻĪao Stream Levee 27, and provide reduced flood risk to the town of Wailuku caused by design deficiencies and long-term damage to the existing bank stabilization structure suffered during repeated floods since its original construction and subsequent repairs.

3. Conflict with the State's environmental policies or long-term environmental goals established by law:

Discussion: The proposed action is consistent with the environmental policies, goals, and guidelines as delineated in HRS, Chapter 344, State Environmental Policy, and as documented in this EA. Construction activities proposed under the proposed action are not expected to have any significant impacts to the surrounding natural resources and would be planned to minimize any temporary impacts.

4. Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State:

Discussion: Implementation of the proposed action will not result in an adverse impact to economic welfare, social welfare, or cultural practices. The proposed action would generate short-term economic vitality for the community by providing temporary construction opportunities for the duration of the construction phase of the project. No significant long-term impacts on the economic welfare, social welfare, or cultural practices of the community or the State are anticipated under the proposed action.

The proposed action will not have a direct effect on population growth statewide, however, it is expected to result in long-term beneficial socioeconomic impacts as it will restore the reliability of the existing embankment, protect the downstream ʻĪao Stream Levee 27, and protect the health and well-being of the growing Wailuku Community by eliminating the risk of embankment and levee failure and the associated loss of life and property damage that could result.

5. Have a substantial adverse effect on public health:

Discussion: The proposed action will be developed in accordance with Federal, State, and County of Hawaiʻi, rules and regulations governing public safety and health. During the construction period, the proposed action would result in temporary impacts to air quality, noise levels, and the generation of storm water runoff; however, these potential impacts are not anticipated to substantially affect public health and will be addressed through the application of appropriate mitigation measures as described in this EA. No significant long-term impacts to public health are anticipated as a result of implementing the proposed action.

6. Involve adverse secondary impacts, such as population changes or effects on public facilities:

Discussion: The proposed action is expected to have beneficial impacts to the community of Wailuku by restoring the reliability of the existing embankment, protecting the downstream ʻĪao Stream Levee 27. Overall, the proposed action will protect the health and well-being of the growing Wailuku Community by eliminating the risk of embankment and levee failure and the associated loss of life and property damage that could result. No population changes or effects on public facilities are anticipated.

7. Involve a substantial degradation of environmental quality:

Discussion: The proposed action is not anticipated to involve a substantial degradation of environmental quality. During construction activities, BMPs adhering to all applicable regulations will be implemented in order to prevent excess runoff and other potential degradation of the surrounding natural environment. The proposed action will be implemented in accordance with the environmental policies of HRS, Chapter 343. The analysis provided in this EA indicates that no substantial environmental degradation is anticipated or expected.

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

Discussion: The proposed action is not anticipated to result in significant cumulative effects and would not require a commitment to larger actions.

DPW has an additional bank stabilization project with a similar scope of work as the proposed action further upstream along Wailuku River in the vicinity of the Wailuku Millyard light industrial subdivision. The purpose of the DPW project in the vicinity of the Wailuku Millyard light industrial subdivision is to restore the eroded embankment of the Wailuku River and provide slope protection improvements. The existing earthen embankment of the Wailuku River, located on County property, identified by TMK No. (2)3-4-030:888 (por.) (Parcel 888), has eroded beyond the bank to affect two (2) adjacent properties identified by TMK (2)3-4-020:045(por.) and 046(por.) (Parcels 45 and 46, respectively) and exposed the building foundation of a commercial building on Parcel 46. Continued degradation may result in flooding and further loss of property. As such, DPW proposes to reinforce a portion of the river bank slope covering approximately 5,000 square feet within Parcel 45, Parcel 46, and Parcel 888. The proposed action and the bank stabilization project further upstream along Millyard light industrial subdivision proposed by the DPW needed to be separated because the stream embankment section included in the proposed action protects the levee system downstream which must be accredited per the National Flood Insurance Program.

In addition, the USACE and County of Maui, DPW, prepared a Final EA in July 2017 for Modification to the ʻĪao Stream Flood Control Project. The project consists of features intended to reconnect the main channel with the floodplain to reduce damaging flows along the main channel and right bank levees of Wailuku River. The reconnection would be accomplished by lowering a portion of the left bank, grading the overflow area, and constructing a diversion wall to force flood flows to enter the existing floodplain on the left bank. A portion of the left bank would be raised downstream to contain the overflow within the floodplain. Further downstream, the left bank would be lowered to allow the return of the overflow into the main channel. Implementation of the project would occur within the approximately 0.4-mile stretch of the stream between slightly downstream of Waena Street and upstream of Imi Kala Street, approximately 1.4 miles upstream from the shoreline. The project is currently being reevaluated by the USACE.

Because the direct impacts from the proposed action would be only short-term and other past, present, and reasonably foreseeable future actions are expected to be consistent with the existing development and use of the area, the project would make no persistent contribution to secondary or cumulative impacts.

Additionally, it is expected that all construction projects would adhere to BMPs and utilize other protective measures to minimize any impacts to environmental resources. Therefore, cumulatively, all foreseeable projects would be expected to have less than significant impacts. Beneficial cumulative impacts are expected in the form of reduced stream bank erosion and flood risk to the town of Wailuku.

Other projects in the area will be closely coordinated to minimize the potential for cumulative impacts.

9. Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat:

Discussion: The proposed action is not anticipated to involve construction activities that would have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat. As detailed in **Section 4.8** of the EA, the project area has been subject to various environmental surveys of the project site which were documented in a March 2021 report entitled *Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui*. The report is included as **Appendix A** to the EA.

The proposed project is not expected to impact sensitive plants or animals, marine mammals, aquatic biota, or migratory birds. There is no known state or federally listed endangered or threatened biota or critical habitats within the project area and (**Section 4.8**) no significant impacts to threatened or endangered species as a result of implementation of the proposed action are anticipated.

The proposed project is not anticipated to adversely affect aquatic resources and would avoid direct impacts to sensitive biota through the use of BMPs, including adherence to environmental protection specifications and endangered species protection. Native aquatic species habitat function within the stream would not be impacted since the proposed action does not involve substantial modification to the existing stream alignment nor does it involve any concrete lining of the stream channel.

10. Have a substantial adverse effect on air or water quality or ambient noise levels:

Discussion: Construction activities for the proposed action could potentially impact air, water quality, and ambient noise levels at the project site; however, these impacts would be temporary and are not anticipated to be significant. All construction activities would comply with applicable regulations and appropriate mitigation measures/BMPs as necessary. Following completion of construction activities, the proposed action would not have any significant impacts on air, water quality, or ambient noise levels at the project site.

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:

Discussion: The proposed action is intended to repair an approximately 240 feet long section of the Wailuku River right stream bank revetment system to prevent further erosion of the stream bank, protect the downstream ʻĪao Stream Levee 27, and provide reduced flood risk to the town of Wailuku caused by design deficiencies and long-term damage to the existing bank stabilization structure suffered during repeated floods since its original construction and subsequent repairs. The proposed action would restore the function of the existing embankment to withstand the stream velocity during the 100-year recurrence interval storm event and would

not significantly affect the existing floodplain. As provided above in **Section 4.7**, the proposed action is not anticipated to have significant impacts on any other environmentally sensitive areas.

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

Discussion: The proposed action would not significantly affect the visual aesthetics of the areas identified in the county or state plans and studies. Temporary construction-related visual impacts (i.e., the presence of construction equipment in and around the project area) are expected; however, once construction is completed, the proposed features would represent a small permanent visual change in the area and would be compatible with the existing visual setting of the project area. To avoid attracting endangered, night-flying seabirds, lighting used during construction would be shielded and downward facing, which will also serve to minimize any visual obtrusiveness of the site to surrounding properties. **Section 4.11** describes the potential for visual impacts and mitigation measures.

13. Require substantial energy consumption or emit substantial greenhouse gases:

Discussion: The construction of the proposed action would not require substantial energy consumption. Construction activities that require the use of heavy machinery would present an increase in greenhouse gases, however, this would only be short-term and cease with construction. The energy that is used will be in the form of fossil-fueled internal combustion equipment, machinery, and vehicles, and electricity supplied to the site by either an existing power connection or by the use of portable generator(s). The use of the proposed forms of energy is not expected to be greater or significantly greater than that used for the development of similar projects.

Table 9-1. ʻĪao Stream Levee 27 Repair Project Impacts Summary

Resource Area	Potential Short-term Impacts	Long-term Impacts	Cumulative Impacts	Mitigation and BMPs	EA Section
Climate	Construction activities that require the use of heavy machinery would present a short-term increase in greenhouse gases.	No Adverse Impact.	Minimal Cumulative Impact - because the direct impact to climate would be only short-term, and would not increase the use of machinery, the project would make no persistent contribution to cumulative impacts.	No Mitigation required.	4.1 Climate 4.7 Natural Hazards
Geology, Topography, and Soil Resources	Ground disturbing activities (i.e., during construction).	No Adverse Impact.	No Cumulative Impact.	• Erosion control measures will be employed during construction. • Site restoration to original condition at conclusion of the project. • Disposal will be at an approved facility or location in accordance with Federal, State, and County regulations.	4.3 Geology and Topography 4.4 Soils and Potential for Hazardous Materials
Groundwater and Surface Water	Potential storm water runoff during construction. Localized and potential increase in turbidity.	No Adverse Impact.	No Cumulative Impact.	• Construction will be regulated through NPDES and Department of the Army permit conditions in accordance with CWA regulations. • During construction, work activities will be in compliance with HAR 11-54 WQS and HAR 11-55 Water Pollution Control. • Discharge pollution prevention measures will be employed in all phases of the project. • Following construction, all areas of ground disturbance will be stabilized with appropriate materials including the use of vegetative ground cover.	4.5 Water Resources and Hydrology
Wetlands	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	No Mitigation required.	4.6 Wetlands
Natural Hazards	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	No Mitigation required.	4.7 Natural Hazards
Terrestrial Flora	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	• Minimize the movement of plant or soil material between worksites, where possible, and clean excess soil and debris from all equipment, materials, and personnel to mitigate the spread of any high-risk invasive species in the area.	4.8.1 Terrestrial Flora

Terrestrial Faunal and Avifaunal Resources	Increased lighting during the construction of the proposed project.	No Adverse Impact.	No Cumulative Impact.	• Site clearing should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW. The use of barbed wire to top fence lines that could entangle flying bats should be avoided. • If any State listed waterbird species are present during construction activities, then all activities within 100 feet should cease, and the bird should not be approached. Work may continue after the bird leaves the area of its own accord. If a nest is discovered at any point, the DOFAW Office should be contacted. • Prior to the start of grubbing/grading, a qualified biologist should complete a survey of the area to be disturbed to be sure that no nesting pueo are present. In the event that a nest is located, a buffer zone should be established in which no clearing occurs until nesting ceases, and DOFAW should be notified. • To minimize impacts to Blackburn's sphinx moth, USFWS recommends that a biologist familiar with the species survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants within 4-6 weeks prior to work initiation. If evidence of Blackburn's sphinx moth presence is found by the pre-construction survey, the USFWS should be contacted. DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If tree tobacco over one meter in height is removed or the ground around or within several meters of these plants disturb they must be checked thoroughly for the presence of eggs and larvae. • Light fixtures utilized for this project will be designed and installed to reduce glare and shield light from migrating and/or nocturnally flying seabirds. As possible, night-time work during the peak of seabird fallout between September 15 and December 15 should be avoided to minimize adverse impacts to listed seabird species that might overfly the project vicinity.	4.8.2 Terrestrial Fauna

Resource Area	Potential Short-term Impacts	Long-term Impacts	Cumulative Impacts	Mitigation and BMPs	EA Section
				• In accordance with HRS, Chapter 205A-30.5(b) and 205A-71(b) artificial lighting provided for operations, security, and public safety will be properly positioned and shielded to minimize adverse impacts. • Design features for lighting will be based on guidance in "The Newell's Shearwater Light Attraction Problem, A guide for Architects, Planners, and Resort Managers."	
Noise	Temporary source of noise above ambient levels from construction noise.	No Adverse Impact.	Minimal Cumulative Impact – other past, present, and reasonably foreseeable future actions are expected to be consistent with existing development and the direct impact to noise would only be short-term, the project would make no persistent contribution to cumulative impacts.	• Construction vehicles and machinery, and all noise attenuation equipment maintained in good operating condition. • During construction, work activities will be in compliance with HAR, Chapter 11-59, and 11-60.	4.9 Noise Conditions
Air Quality	Temporary and localized emissions from increased fugitive dust and odors arising from construction-related equipment, and vehicles.	No Adverse Impact.	Minimal Cumulative Impact – because the direct impact to air quality would be only short-term, the project would make no persistent contribution to cumulative impacts.	• Construction equipment and vehicles shall be maintained in proper working order to reduce air emissions. • During construction, work activities will be in compliance with HAR, Chapter 11-59, and 11-60. • Fugitive dust will be controlled with regular wetting of the soil by the contractor and/or by the use of dust screens, as required.	4.10 Air Quality
Visual Resources	Temporary visual impacts from the presence of construction equipment and construction activities.	No Adverse Impact.	Minimal Cumulative Impact – other past, present, and reasonably foreseeable future actions are expected to be consistent visually with existing and planned development. Landscaping consisting of screening trees would be planted to mitigate visual impacts from Old Fort Weaver Road and Fort Weaver Road.	• Equipment will be confined to work areas. • All construction-related equipment will be removed following the completion of work.	4.11 Visual Resources
Socio-Economic Environment and Demographics	No Adverse Impact.	No Adverse Impact.	Minimal Cumulative Impact – other past, present, and reasonably foreseeable future actions are expected to support the local economy and anticipated increased area population. Because population growth on Oʻahu is anticipated to occur with or without the implementation of the proposed project no significant adverse cumulative impacts are expected.	No Mitigation required.	4.12 Socio-Economic Environment and Demographics

Resource Area	Potential Short-term Impacts	Long-term Impacts	Cumulative Impacts	Mitigation and BMPs	EA Section
Transportation Facilities	Potential for limited, non-substantial short-term effects on transportation due to construction activities near the job site.	No Adverse Impact.	Minimal Cumulative Impact – other past, present, and reasonably foreseeable future actions are expected to be consistent with the transportation use of the existing development.	No Mitigation required.	4.13.1 Roads and Transportation
Electrical, Water, and Wastewater	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	No Mitigation required.	4.13.2 Utilities
Solid and Hazardous Waste	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	• Disposal of solid waste will be handled in accordance with applicable Federal, State, and CCH rules and regulations.	4.13.3 Solid Waste
Police, Fire, Health Care and Emergency Services	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	No Mitigation required.	4.13.4 Police Protection 4.13.5 Fire Protection 4.13.6 Health Care and Emergency Services
Schools and Libraries	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	No Mitigation required.	4.13.7 Schools and Libraries
Recreational Facilities	No Adverse Impact.	No Adverse Impact.	No Cumulative Impact.	No Mitigation required.	4.13.8 Recreational Facilities
Archaeological and Cultural Resources	Potential for inadvertent discovery of cultural deposits and iwi kūpuna.	No Adverse Impact.	No Cumulative Impact.	• In accordance with HRS, Chapter 6E, in the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work in the immediate vicinity of the find will cease, the find will be protected from additional disturbance, and SHPD will be contacted.	4.14 Archaeological and Cultural Resources
Traditional Cultural Practice	Potential for inadvertent discovery of cultural deposits and iwi kūpuna.	No Adverse Impact.	No Cumulative Impact.	• In accordance with HRS, Chapter 6E, in the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work in the immediate vicinity of the find will cease, the find will be protected from additional disturbance, and SHPD will be contacted.	5.0 Cultural Impact Assessment

Section 10
Summary of Findings and Significance Determination

In accordance with the provisions set forth in HRS, Chapter 343, and the significance criteria in HAR, Chapter 11-200.1-13, this EA has evaluated and assessed the potential for environmental impacts associated with the proposed project and it is preliminarily determined that a HRS, Chapter 343, Environmental Impact Statement will not be required.

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

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Appendices

Appendix A	Environmental Surveys for the ʻĪao Stream Bank Repairs at the Vicinity of Imi Kala Street Bridge in Wailuku, Maui. Prepared for R.M. Towill Corporation. Prepared by AECOS Inc. March 2021..
Appendix B	Final Archaeological Literature Review and Field Inspection Report for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island. Prepared for R.M. Towill Corporation. Prepared by Cultural Surveys Hawai'i, Inc. April 2021.
	Chapter 6E-8 Historic Preservation Review – ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Pūʻali Komohana District, Island of Maui. Consultation between State Historic Preservation Division, Department of Land and Natural Resources, and County of Maui, Department of Public Works.
Appendix C	Draft Cultural Impact Assessment for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island. Prepared for R.M. Towill Corporation. Prepared by Cultural Surveys Hawai'i, Inc. March 2021.
Appendix D	Pre-Assessment Consultation Letters for Hawaiʻi Revised Statutes, Chapter 343.

Appendix A

Environmental Surveys for the ‘Īao Stream Bank Repairs at the Vicinity of Imi Kala Street Bridge in Wailuku, Maui. Prepared for R.M. Towill Corporation. Prepared by AECOS Inc. March 2021.

AECOS No. 1658

Environmental surveys for the ʻĪao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui

AECOS Inc.
45-939 Kamehameha Highway
Suite 104
Kāneʻohe, Hawai'i 96744

May 11, 2021

Environmental surveys for the ‘Īao Stream bank repairs at the vicinity of Imi Kala St. Bridge in Wailuku, Maui

May 11, 2021 **DRAFT** *AECOS* No. 1658

Bryson Luke, Stacey Kilarski, and Cascade Mayer
AECOS Inc.
45-939 Kamehameha Highway Suite 104
Kāne‘ohe, Hawai’i 96744
Phone: (808) 234-7770 Fax: (808) 234-7775 Email: bryson@aecos.com

Introduction

The County of Maui, Department of Public Works (DPW) proposes to remediate a section of revetment system on ‘Īao Stream in the vicinity of the Imi Kala St. Bridge in Wailuku, Maui. The work will restore an approximate 70-m (240-ft) segment of concrete boulder fill (CBF) reinforced embankment (hereafter, “Project”) installed as part of a 2017 emergency repair of the revetment system, but has since washed-out. The Project is located along the right bank of ‘Īao Stream (also referred to as Wailuku Stream or Wailuku River) on county property (TMK: 3-4-020:888) downstream of Imi Kala Street Bridge and upstream of ‘Īao Stream Levee 27 (see Figure 1). No work is proposed for the left bank of ‘Īao Stream.

AECOS, Inc. was contracted[1] to conduct baseline water quality sampling and botanical and aquatic biota surveys, to include assessment of Essential Fish Habitat (EFH) for the Project and delineate the limit of federal jurisdictional waters at the Project site. This report details the findings of field efforts conducted on February 2, 2021.

In 2017, Maui County conducted emergency flood repairs to the revetment system at the Project site by reinforcing the right bank with CBF. Ensuing high flows within the stream washed boulders from the base of the revetment system, exposing the foundation. Project repairs are needed to prevent further erosion

[1] Report prepared for R.M. Towill, Corp. for use in the permitting process for the described project. This report will become part of the public record.

of the bank, protect the downstream levee, and reduce flood-risk. Continued erosion of the embankment foundation threatens further bank erosion and potential for the downstream levee to fail, which could result in loss of property and flooding within the Wailuku business district.

Figure 1. Project site (red outline) and survey area (yellow-dashed outline) along ʻĪao Stream.

General Site Description

The Project is located in Wailuku at the mouth of ʻĪao Valley. The climate is subtropical mesic. The *Rainfall Atlas of Hawaiʻi* approximates the average annual rainfall as the Project area at 686 mm (27.0 in). Rainfall is typically greatest in January and least in June (Figure 2; Giambelluca et al., 2013). The National Oceanographic and Atmospheric Administration–National Centers for Environmental Information (NOAA-NCEI) provide climate normals from a three-decade average (1981-2010) of climatological variables. The nearest climate station, "Kahului Airport, HI US" (at a lower elevation than at the Project) shows an average annual rainfall of 453 mm (17.83 in; NOAA-NCEI, 2021).

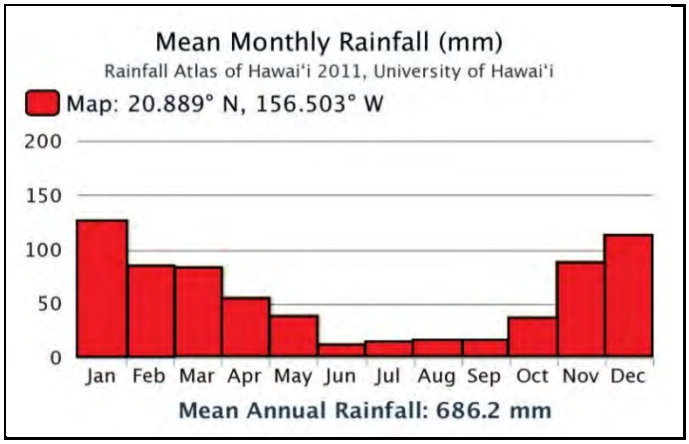

Figure 2. Mean monthly rainfall (mm) at the Project site.

The Project is situated in the lower reach of ʻĪao Watershed (HDLNR-DAR watershed code no. 6-2-009), at approximately 48 m (160 ft) elevation above sea level (ASL). Total area of the ʻĪao Watershed is estimated at 30.8 km^2 (11.9 mi^2; Parham et al, 2008). ʻĪao Stream, a third order stream, extends approximately 42 km (26 mi) from near the top of West Maui Mountain down to the Pacific Ocean. ʻĪao Stream comprises many tributaries, of which Poʻonāhoahoa, Nākalaloa, Ae, Kinihāpai, Puʻulio, and Māniania streams are the principal named tributaries. The headwaters and upper reaches (tributaries above 200-m elevation) of ʻĪao Stream, including all six named tributaries, account for almost 80% of the total length of the stream channel (Parham et al, 2008).

ʻĪao Tunnel and Maniania Ditch divert some of the water flow from upper reaches of ʻĪao Stream and its tributaries. At Kepaniwai Park, just downstream from ʻĪao Valley State Monument, the floodplain is terraced and *auwai* divert water through *loʻi kalo* (taro pondfields). Downstream from the Park, the channel has been straightened, but the river bed remains natural. A large debris basin and concrete debris fence have been constructed in the river channel near Mokuhau Park. This basin is maintained by dredging on a regular basis. Downstream from Mokuhau Park, for much of the remaining river length, ʻĪao Stream is confined to a concrete-lined channel and disconnected from the floodplain by walls and levees. The stream discharges into the Pacific Ocean at Nehe Point just northwest of Kahului Bay.

ʻĪao Stream is included in the Hawaiʻi Stream Assessment, which purports to list all perennial[2] streams in Hawaiʻi (HCPSU, 1990). Prior to the return of flow in 2014, ʻĪao Stream was an interrupted stream—flow was discontinuous in the middle and lower reaches largely due to diversions in the middle and upper reaches. At present, flow is continuous throughout the length of the stream.

Various best management practices (BMPs) have been incorporated within the ʻĪao Stream Flood Control Project and further upstream in an attempt to support biological resources in the river. At the ʻĪao Tunnel and Maniania Ditch diversion, a simple passage channel has been constructed which allows native aquatic organisms to migrate past the diversion structures. A concrete-lined, low-flow channel, which concentrates flow that would otherwise dissipate over a flat concrete bottom of the channel, is present for almost the entire length of the hardened channel bottom from Mokuhau Park to Waiehu Beach Road. Gaps in the low-flow channel reduce its effectiveness as a pathway for migrating aquatic animals, but especially so prior to the return of flow to the river when even the low-flow channel may not have always contained flowing water. Some parts of the flood control channel have boulders embedded in the bottom of the concrete channel to add rugosity to the feature and other parts of the channel remain unlined, although it appears the bed and banks are regularly maintained with heavy equipment; for example, boulders removed from channel are seen stacked on banks.

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) is a nationwide geospatial dataset of wetlands and other hydrology features. The NWI shows ʻĪao Stream within the Project area and further identifies two freshwater emergent wetlands in agricultural lands above the left bank, but no wetlands are identified in or adjacent to the Project site on the right bank (Figure 3).

In the Project area (Fig. 1), the stream channel consists of a boulder, cobble, gravel, fine sand, and silt on the bed with a natural, earthen left bank and a right bank of reinforced CBF (Figure 4). A geotechnical investigation by Hirata & Associates, Inc. (2019) revealed the top of the right bank consisting of brown sand, silt, and gravel in the upper 0.75 to 3.0 m (2.5 to 10 ft), then cobbles and boulders down 6.0 to 8.5 m (20 to 28 ft) over groundwater.

[2] A perennial stream has year-round, continuous flow in at least part of its bed; flow need not be continuous from upper reaches to the sea. If sometimes absent in a partcular reach, the stream is termed an interrupted stream.

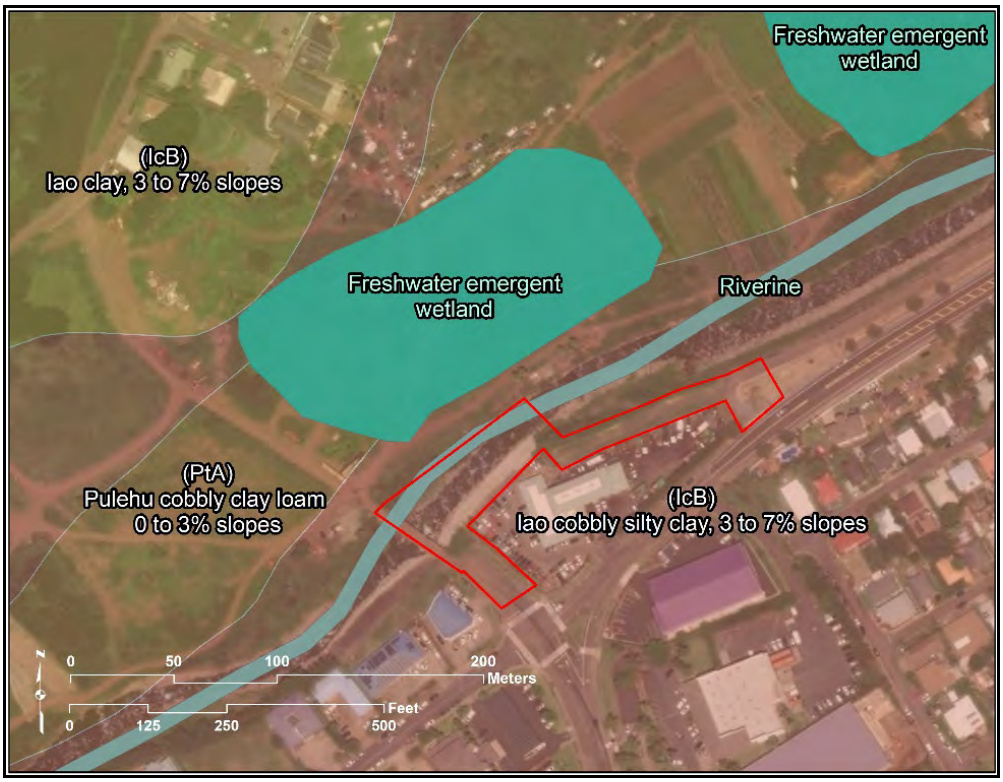

Figure 3. Project area with NWI and NRCS soils geospatial data overlays (USDA-NRCS, 2020).

Figure 4. Natural bed, earthen left bank, and CBF-reinforced right bank at the Project site.

Jurisdictional Waters

Waters of the U.S., referred to as "jurisdictional waters", are federally regulated under the Clean Water Act (CWA). The U.S. Environmental Protection Agency (EPA) delegates regulatory authority of the CWA to the U.S. Dept. of Army (DA), U.S. Army Corps of Engineers (USACE). On June 22, 2020, the EPA and DA published the Navigable Waters Protection Rule (NWPR) to redefine Waters of the U.S. (USACE and USEPA, 2020), replacing the 2015 Clean Water Rule. Under the NWPR, Waters of the U.S. encompass: territorial seas and traditional navigable waters; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments; and wetlands adjacent to other jurisdictional waters (USACE and USEPA, 2020).

The limit of federal jurisdiction in non-tidal tributaries extends to the ordinary high water mark (OHWM). OHWM is defined in the NWPR (USACE and USEPA, 2020) as:

> The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Methods

Jurisdictional Waters Delineation

A delineation of federal jurisdictional waters at the Project area was conducted on February 2, 2021 by marking the OHWM of ʻĪao Stream at paired locations along the stream channel (one on each bank) with yellow flagging tape and by recording the geospatial position of each flag using a Trimble GeoXH capable of sub-meter accuracy. Photographs from the channel at each paired point were taken to document the OHWM characteristics and to illustrate the environment.

Water Quality Survey

On February 2, 2021 *AECOS* biologists measured selected stream parameters and collected water samples at three locations along ʻĪao Stream in the Project area to characterize existing water quality. Station 'Up' was located approx. 9 m (30 ft) upstream of Imi Kala St. Bridge. Station 'Mid' was located near the

downstream-end of proposed in-water work. Station 'Down' was located approximately 90 m (300 ft) downstream of 'Mid' (see Figure 6).

Field measurements were made *in situ* for temperature, conductivity, salinity, pH, and dissolved oxygen. Samples were collected from just below the water surface and placed on ice, then taken to the *AECOS* Laboratory in Kāneʻohe (Oʻahu) for analyses (*AECOS* Log No. 41837). of turbidity, total suspended solids, and nutrients Table 1 lists the instruments and analytical methods used in the field and laboratory to analyze these water samples.

Table 1. Analytical methods used for water quality analysis of ʻĪao Stream.

Analysis	Method	Reference	Instrument
Temperature	thermister calibrated to NBS. Cert. thermometer/ SM 2550 B	SM (1998)	YSI Pro Plus meter
Conductivity	SM 2510-B	SM (1998)	YSI Pro Plus meter
pH	SM 4500 H+	SM (1998)	Hanna pHep 5
Dissolved Oxygen	SM 4500-O G	SM (1998)	YSI Pro Plus meter
Turbidity	EPA 180.1 Rev 2.0	USEPA (1993)	HACH 2100N turbidimeter
Total Suspended Solids	SM 2540 D	SM (1998)	Mettler Toledo XS 204 balance
Nitrate + Nitrite	EPA 353.2	USEPA (1993)	Lachat Quikchem 8500 Flow Injection Analyzer
Total Nitrogen	EPA 353.4	USEPA (1993)	Lachat Quikchem 8500 Flow Injection Analyzer
Total Phosphorus	EPA 365.5	USEPA (1993)	Lachat Quikchem 8500 Flow Injection Analyzer

Botanical Survey

On February 2, 2021, *AECOS* biologists conducted a botanical survey by walking the length of the Project area and noting each plant species as it was encountered. Any plant not immediately recognized during the survey was photographed and/or a representative feature (e.g., a flower, fruit, or leaf) collected for later identification at the laboratory. As the survey progressed, the relative abundance of each plant species in the survey area was noted.

Plant names used herein follow *Manual of the Flowering Plants of Hawai'i* (Wagner, Herbst, & Sohmer, 1990; Wagner & Herbst, 1999) for native and naturalized flowering plants, and *Hawai'i's Ferns and Fern Allies* (Palmer, 2003) for ferns. More recent name changes for plant species follow Imada (2019).

Fauna Survey

Aquatic Fauna

On February 2, 2021, *AECOS* biologists conducted a biological reconnaissance survey of aquatic organisms in 'Īao Stream. As the survey progressed, the biologists made notes on the relative abundance of each species (e.g. rare, common, or abundant). Nomenclature and identifications follow *Hawai'i's Native and Exotic Freshwater Animals* (Yamamoto and Tagawa, 2000) and *Stream macroalgae of Hawai'i: An identification guide to the common genera* (Sherwood, 2004).

Waterbirds

A single 30-minute waterbird count was conducted from Imi Kala St. Bridge on February 2, 2021. In addition, *AECOS* biologists continually surveyed for the presence of protected Hawaiian waterbirds while on site and noted any potential waterbird nesting or forage habitat.

Mammals

We compiled a list of mammals encountered during the survey. Indicators of mammalian presence, such as tracks, scat, and other sign were noted. Mammalian phylogenetic order and nomenclature follow *Mammal Species of the World* (Wilson and Reeder, 2005).

We did not conduct a survey for Hawaiian hoary bat or *'ōpe'ape'a* (*Lasiurus cinereus semotus*), the only native land mammal in the Islands. Bats are solitary and potentially widespread throughout Hawai'i, and detection requires night surveys and deployment of special detection equipment to record observations over a long period of time. Rather, habitat and trees that could serve as roost-sites for the species were noted, where present.

Results

Jurisdictional Waters Delineation

The nearest NOAA rain gage at Wailuku (WUKH1) recorded a total of 202 mm (7.96 in) of rainfall in the three months preceding our stream survey in early February (NOAA-NWS, 2021). Total rainfall recorded in that three-month period (November 2020 to January 2021) was 51% of the average rainfall for those months, with the majority of rainfall occurring in January (186 mm or 7.31 in).

At the time of our survey, flow in ʻĪao Stream was above average, at about 0.87 cms (31 cfs) and declining (USGS, 2021; Figure 5). Flow was above the annual average daily flow of 17 cfs. A freshet on Jan. 31, 2021 (two days prior to our survey) exceeded 300 cfs. Freshets are typical in the Hawaiian wet season, which runs from November to April. The condition of hydrology in ʻĪao Stream at the Project site can be considered "typical" for the time of year.

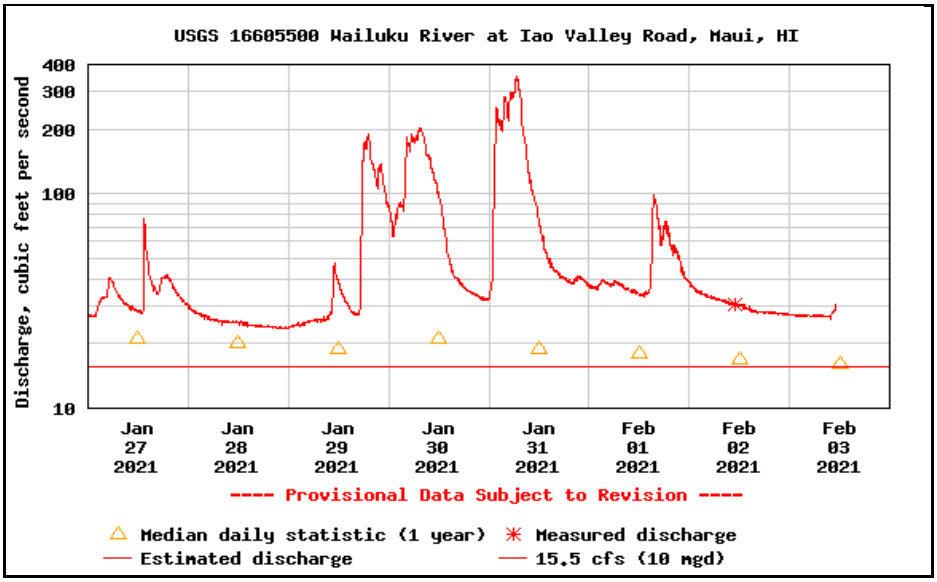

Figure 5. USGS Daily discharge (cfs) for ʻĪao Stream at ʻĪao Valley Road Bridge, Kepaniwai Park in the week preceding our field efforts on Feb. 02, 2021

Tributaries (Stream OHWM)

A review of literature, maps, and GIS data prior to our field survey revealed that ʻĪao Stream is tributary to the Pacific Ocean, a traditional navigable water (TNW),

and therefore jurisdictional under the Clean Water Act (CWA). The Project is above the influence of the ebb and flow of tide in the Project area and jurisdiction is established by the OHWM.

The results of our OHWM delineation are depicted in Fig. 6. No jurisdictional tributaries other than ʻĪao Stream were found in the Project area. In all, we delineated approximately 245 linear m (800 ft) of OHWM along the banks of ʻĪao Stream in the Project area using 13 paired points.

ʻĪao Stream flows in a natural bed through the Project area. The left bank is also natural, and incised deeply along an earthen cliff. The right bank is a fortified revetment system, designed to protect commercial properties in the Wailuku business district. At the Project site, the CBF-reinforced embankment extends from approximately 80 m (260 ft) upstream of Imi Kala St. Bridge (beyond the Project site) to some 70 m (240 ft) downstream of the bridge (within the Project site). The remaining right bank downstream of the Project is a part of ʻĪao Stream Levee No. 27, where earth and gravel fill are built up over the natural bank. A concrete-jacketed sewer line crosses the river just upstream from the bridge. Two 8-ft diameter concrete storm-drains from the business district daylight into the stream along the Levee No. 27 wall, downstream of the Project area.

Within the Project area, the width of the stream OHWM ranges from 12 to 25 m (39 to 82 ft), and the wetted channel was estimated at about 90% of the width between delineated OHWM. The most commonly encountered physical indicators of OHWM in this stream segment are: changes in vegetation; shelving; water-stains; and exposed roots (Table 2). Attachment A includes photographs taken of each bank and up- and downstream from near the center of the stream.

Water Quality

During the water quality survey, stream flow within the Project area was robust, flowing in a series of runs, riffles, and occasional pools through the channel. Water was clear and floating vegetative debris was uncommon. No additional surface water inputs were observed between sampling stations, although two dry concrete storm drains on the right bank are situated upstream of Sta. ‘Down’.

Results of the water quality measurements are provided in Table 3. Measured temperature and dissolved oxygen (DO) are typical of a swiftly flowing stream in Hawaiʻi. Temperatures ranged from 21.2 to 21.4°C. Dissolved oxygen concentrations ranged from 7.78 to 8.32 mg/L, corresponding to 89% to 93% of saturation. Values for stream pH ranged from 7.55 to 8.16 representing essentially neutral to slightly alkaline conditions at the upper range for typical

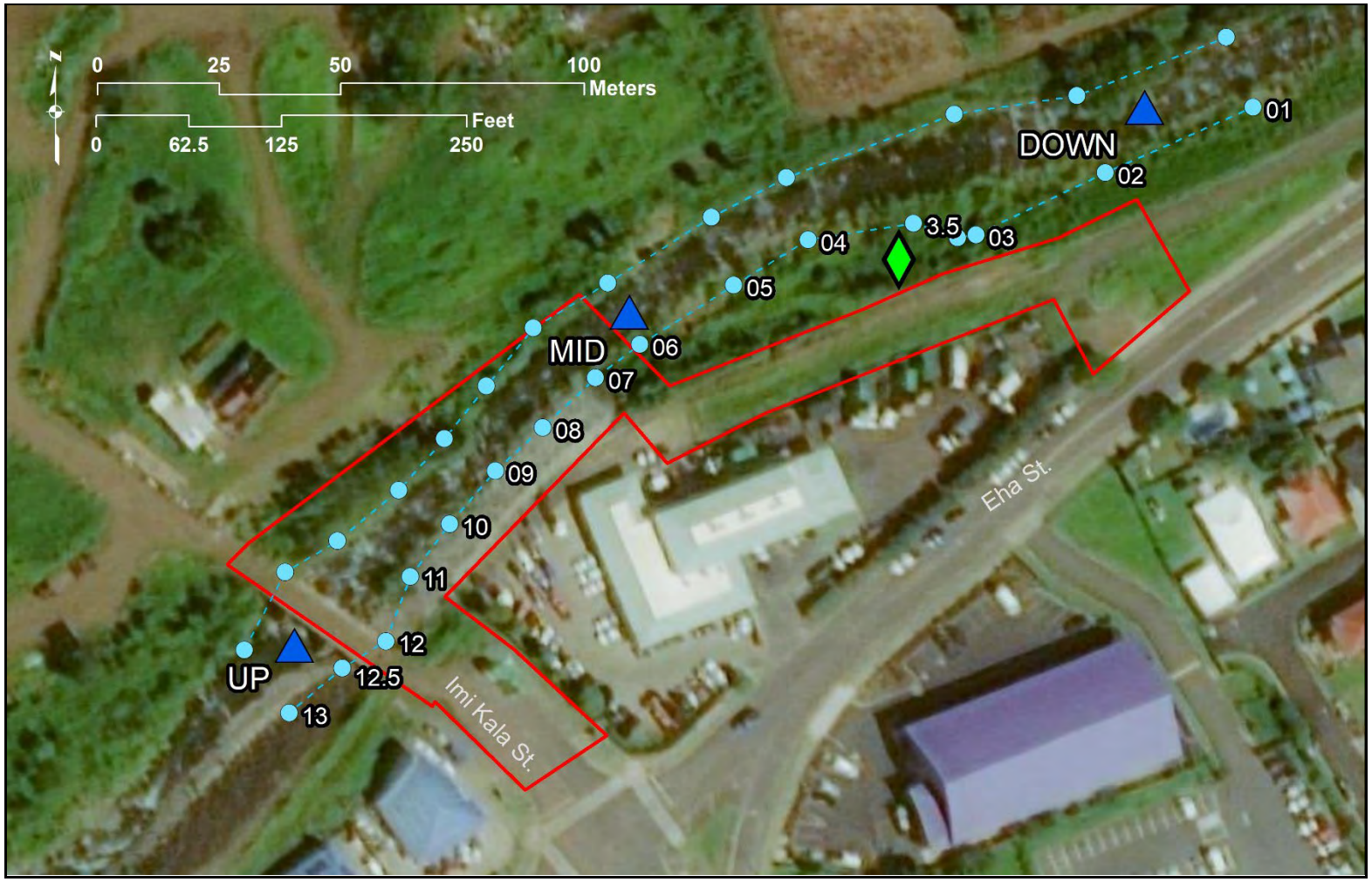

Figure 6. Project site showing water quality stations (blue triangles), OHWM survey points (light blue circles) and delineated OWHM (light blue dashed line), and location of a single tall tree tobacco plant (green diamond).

Table 2. Physical indicators of OHWM along right bank of ʻĪao Stream in the Project area.

Right Bank

Flag	Primary OHWM feature
1R	Change in vegetation, matted (bent) vegetation, change in slope.
2R	Change in vegetation, matted (bent) vegetation, change in slope.
3R	Change in slope at culvert/storm drain.
4R	Change in vegetation, matted (bent) vegetation, change in slope.
5R	Change in vegetation, matted (bent) vegetation, change in slope.
6R	Change in vegetation, matted (bent) vegetation, change in slope.
7R	Water stains on CBF embankment, change in vegetation.
8R	Water stains on CBF embankment, change in vegetation.
9R	Water stains on CBF embankment, change in vegetation.
10R	Water stains on CBF embankment, erosion/undercut bank.
11R	Water stains on CBF embankment, erosion/undercut bank.
12R	Water stains on CBF embankment, drift deposits.
13R	Water stains on CBF embankment, change in vegetation.

Hawaiian streams. Conductivities were low (between 78 and 81 µmhos/cm) at all three stations. Particulates, measured as turbidity and total suspended solids, were generally low in these samples: turbidity ranging between 0.47 and 0.62 ntu; total suspended solids ranged from 1.0 to 1.9 mg/l .

The presence of nitrate+nitrite at all stations in detected concentrations (31 µg N/l at ʻUp', 9 µg N/l at ʻMid', and 8 µg N/l at ʻDown') may indicate an influence from groundwater into the stream near the Project site. Total nitrogen concentrations at all stations fell below the detection limit. Total phosphorus concentrations were low across all stations.

Table 3. Physical and chemical water quality results for Wailuku River samples collected February 2, 2021.

Station	Temp. (°C)	Conductivity (µmhos/cm)	Salinity (psu)	pH	DO (mg/l)	DO sat. (%)
Up	21.3	80	<0.10	8.16	7.78	89
Mid	21.2	78	<0.10	7.82	8.08	91
Down	21.2	78	<0.10	7.55	8.32	93

Station	Turbidity (ntu)	TSS (mg/l)	NO_3+NO_2 (µg N/l)	Total N (µg N/l)	Total P (µg P/l)
Up	0.50	1.0	31	<70	6
Mid	0.47	1.1	9	<70	11
Down	0.62	1.9	8	<70	3

Vegetation

The vegetation in the Project area is essentially dominated by riparian and ruderal species (plants adapted to disturbed areas), characteristic of disturbed mesic lowlands in Hawaiʻi. Beyond the channel, the land beyond the right bank of the stream is urban and beyond the left bank of the stream the land is agricultural. The vegetation reflects these land uses.

Flora

A total of 38 species of ferns and flowering plants was recorded growing in the Project area (Table 4). Included are species previously recorded (*AECOS*, 2017, 2019) from surveys conducted along ʻĪao Stream in the Project vicinity. Most plants within the Project area are common, non-native species that have established on the highly disturbed banks or temporary sediment bars that form in the channel. Three plant species, primrose willow (*Ludwigia octovalvis*), *honohono* (*Commelina diffusa*), and kō or sugar cane (*Saccharum officinarum*) are early Polynesian-introduced herbs that typically grow close to water. One plant species, *ʻuhaloa* (*Waltheria indica*), is a common indigenous ruderal plant.

The lower stream bank is dominated by elephant grass (*Cenchrus purpureus*), bent downward indicating recent high streamflow. Guinea grass (*Megathyrsus*

Table 4. List of and plants and their relative abundances at the project site.

FAMILY *Species*	Common name	Status	Abundance	Notes
	FERNS AND FERN ALLIES			
NEPHROLEPIDACEAE				
Nephrolepis brownii (Desv.) Hovenkamp & Miyam.	Asian sword fern	Nat	U	<1,3>
THELYPTERIDACEAE				
Cyclosorus parasiticus (L.) Farw.	maiden fern	Nat	-	<3>
	FLOWERING PLANTS DICOTYLEDONS			
ACANTHACEAE				
Asystasia gangetica (L.) T. Anderson	Chinese violet	Nat	R	<1,3>
AMARANTHACEAE				
Amaranthus spinosus L	spiny amaranth	Nat	-	<3>
APOCYNACEAE				
Nerium oleander L.	oleander	Nat	R	<1,2>
ASTERACEAE (COMPOSITAE)				
Bidens alba var. *radiata* (Sch.Bip.) Ballard ex Melchert	Spanish clover	Nat	U	<1,2>
Calyptocarpus vialis Less	node weed	Nat	R	<1,3>
Emilia sonchifolia var. sonchifolia (L.) DC.	---	Nat	R	<1,2>
Lactuca serriola (L.)	prickly lettuce	Nat	U	<1>
Pluchea carolinensis (Jacq.) G. Don	sourbush	Nat	O	<1,3>
Tridax procumbens L.	coat buttons	Nat	O	<1,2,3>
CARICACEAE				
Carica papaya L.	papaya	Nat	R	<1,2>
EUPHORBIACEAE				
Euphorbia hypericifolia L.	graceful spurge	Nat	O	<1,3>
Macaranga tanarius (L.) Müll.Arg.	---	Nat	O	<1,2>
FABACEAE				
Desmanthus pernambucanus (L.) Thellung	virgate mimosa	Nat	O	<1,2>
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat	C	<1,2,3>
Macroptilium lathyroides (L.) Urb.	wild bean; cow pea	Nat	C	<1,2>
Neonotonia wightii (Wight & Arnott) Lackey	glycine vine	Nat	C	<1,2>
Pithecelobium dulce (Roxb.) Benth.	*ʻopiuma*; Manila tamarind	Nat	O	<1,3>
Ricinus communis L.	castor bean	Nat	O	<1,3>

Table 4 (continued).

FAMILY *Species*	Common name	Status	Abundance	Notes
MALVACEAE				
Malvastrum coromandelianum (L.) Garcke	false mallow	Nat	C	<1>
Waltheria indica L.	*ʻuhaloa*	**Ind**	R	<1>
MYRTACEAE				
Syzygium cumini (L.) Skeels	Java plum	Nat	U	<1,2>
NYCTAGINACEAE				
Boerhavia coccinea Mill.	false *alena*	Nat	U	<1,2>
ONAGRACEAE				
Ludwigia octovalvis (Jacq.) P.H.Raven	primrose willow	**Pol**?	U	<1,2>
RUBIACEAE				
Spermacoce assurgens Ruiz & Pav	buttonweed	Nat	R	<1,2>
SOLANACEAE				
Nicotiana glauca R.C. Graham	tree tobacco	Nat	U	<1>
ULMACEAE				
Trema orientalis (L.) Blume	gunpowder tree	Nat	O	<1,2>
VERBENACEAE				
Citharexylum caudatum L.	---	Nat	R	<1>
	MONOCOTYLEDONS			
ARECACEAE				
Livistona chinensis (Jacq.) R. Br. ex Mart.	Chinese fan palm	Nat	R	<1>
COMMELINACEAE				
Commelina diffusa Burm.f.	*honohono*; climbing dayflower	**Pol**	R	<1,2>
CYPERACAE				
Cyperus involucratus Rottb.	*ʻahuʻawa haole*; umbrella sedge	Nat	O	<1,3>
POACEAE				
Cenchrus ciliaris L.	buffelgrass	Nat	U	<1>
Cenchrus purpureus (Schumach.) Morrone	elephant grass	Nat	A	<1,2>
Chloris barbata (L.) Sw.	swollen fingergrass	Nat	C	<1>
Eleusine indica (L.) Gaertn.	wiregrass	Nat	U	<1,2>
*Eragrostis pectinacea (*Michx.) Nees	Carolina lovegrass	Nat	O	<1>
Megathyrsus maximus (Jacq.) B.K. Simon & W.L. Jacobs	Guinea grass	Nat	A	<1,2>
Melinis repens (Willd.) Zizka	Natal red top	Nat	C	<1,3>
Saccharum officinarum L.	*kō*; sugar cane	**Pol**	R	<1>

Table 4 (continued).

Legend to Table 4

STATUS:

Ind - indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
Nat - naturalized, exotic, plant introduced to the Hawaiian Islands since arrival of Cook Expedition in 1778, and well-established outside of cultivation.
Pol - Polynesian introduction prior to 1778.

ABUNDANCE:

R – Rare - seen in only one or perhaps two locations.
U – Uncommon - seen at most in several locations.
O – Occasional - seen with some regularity.
C – Common - observed numerous times during the survey.
A – Abundant - found in large numbers; may be locally dominant.

NOTES:

<1> Observed in this survey of the Project area.
<2> Previously reported in *AECOS* (2019) from Project vicinity.
<3> Previously reported in *AECOS* (2017) from Project vicinity.

maximus) is dominant further upslope, and the top of the bank is dominated by Natal red top (*Melinis repens*). Scattered *ʻopiuma* (*Pithecelobium dulce*) and Java plum (*Syzygium cumini*) trees line the left bank, while the right bank is CBF-reinforced and bare of trees. Clusters of *koa haole* (*Leucaena leucocephala*), castor bean (*Ricinus communis*), and parasol plant (*Macaranga tanarius*) saplings grow on both banks. Glycine vine (*Neonotonia wightii*) grows over both saplings and grasses along the stream banks.

Plants are sparse within streambed itself. Umbrella sedge (*Cyperus involucratus*) grows at the water edge, and only a single, small pocket of *honohono* was seen on the left bank at the downstream end of the area surveyed.

Fauna

Aquatic Fauna

Table 5 is a listing of aquatic species identified in ʻĪao Stream. The table includes observations made on February 2, 2021 and earlier observations made in various reaches of ʻĪao Stream (*AECOS*, 2012, 2017, 2019). Estimates of relative abundance are provided only for those species observed in the present survey. The aquatic fauna survey revealed six aquatic species, comprising one mollusk, one crustacean, three fishes, and one dragonfly. No water-obligate amphibians, reptiles, or waterbirds were observed in ʻĪao Stream during our survey.

Table 5. Checklist of aquatic species found in ʻĪao Stream in Project vicinity.

FAMILY *Species*	Common name	Status	Abundance	Notes
	ALGAE			
CYANOPHYTA	cyanobacteria			
RIVULARIACEAE				
Dichothrix sp.		---	---	<4>
OSCILLATORIACEAE				
Schizothrix sp.		---	---	<4>
Phormidium sp.		---	---	<2>
CHLOROPHYTA	green algae			
CHAETOPHORACEAE				
Cloniophora sp.				<4>
Cloniphora plumosa (Kützing) Bourrelly		**Ind**	C	<1,2>
Stigeoclonium sp.		**Ind**	---	<4>
CHARACEAE				
Chara sp.				<4>
ZYNEMATACEAE				
Spirogyra sp.		**Ind**	---	<4>
	INVERTEBRATES			
PLATYHELMINTHES, TRICLADIDA				
DUGESIIDAE				
Dugesia sp.	flatworm	Nat	---	<4>
ANNELIDA, HIRUDINEA				
Unidentified Hirudinea	free-living leech	Nat	---	<4>
ARTHROPODA, INSECTA				
DIPTERA				
CHIRONOMIDAE				
unidentified chironomid	larvae	---	---	<4>
ARTHROPODA,INSECTA				
ODONATA, ANISOPTERA				
AESHNIDAE				
Anax junius Drury	*pinao*; common green darner	**Ind**	U	<2>

Table 5 (continued).

FAMILY *Species*	Common name	Status	Abundance	Notes
LIBELLULIDAE				
Crocothemis servilia Drury	scarlet skimmer	Nat	---	<2,3,4>
Orthemis ferruginea Fabricius	roseate skimmer	Nat	---	<4>
COENAGRIONIDAE				
Megalagrion blackburni McLachlan	Blackburn's damselfly	**End**	---	<5>
Megalagrion hawaiiense McLachlan	Hawaiian upland damselfly	**End**	---	<5>
Megalagrion nigrohamatum nigrolineatum Blackburn	blackline Hawaiian damselfly	**End**	---	<5>
TRICHOPTERA				
HYDROPTILOIDAE				
unidentified hydroptiloid	---	Nat	---	<4>
BASOMMATOPHORA				
PHYSIDAE				
Physa sp.	pouch snail	Nat	---	<4>
PLANORBIDAE				
Planorbella duryi Wetherby	ramshorn snail	Nat	---	<4>
NEOTAENIOGLOSSA				
THIARIDAE				
Melanoides tuberculatus Muller	red-rim melania	Nat	---	<3,4>
NERITOPSINA				
NERITIDAE				
Neritina granosa Sowerby	*hīhīwai*	**End**	R	<1,4,5>
ARTHROPODA, MALACOSTRACA				
DECAPODA				
ATYIDAE				
Atyoida bisulcata Randall	*ʻōpae kalaʼole*	**End**	---	<5>
CAMBARIDAE				
Procambarus clarkii Girard	red swamp crayfish	Nat	---	<4>
PALAEMONIDAE				
Macrobrachium grandimanus Randall	*ʻōpae ʻoehaʻa*	**End**	---	<2>
Macrobrachium lar J.C. Fabricius	Pacific prawn	Nat	A	<1,2,3,4,5>

Table 5 (continued).

FAMILY *Species*	Common name	Status	Abundance	Notes
CHORDATA, ACTINOPTERYGII	FISHES			
PERCIFORMES				
GOBIIDAE				
Awaous stamineus Eydoux & Souleyt	*ʻoʻopu nākea*	**Ind**	A	<1,2,3,4,5>
Eleotris sandwicensis	*ʻoʻopu ʻakupa*	**Ind**	---	<5>
Lentipes concolor Gill	*ʻoʻopu ʻalamoʻo*	**End**	---	<4,5>
Sicyopterus stimpsoni Gill	*ʻoʻopu nopili*	**End**	U	<1,4,5>
Stenogobius hawaiiensis Watson	*ʻoʻopu naniha*	**End**	---	<2,5>
CYPRINODONTIFORMES				
POECILIIDAE				
Poecilia reticulata Peters	guppy, rainbowfish	Nat	U	<1,4>
Poecilia sp. hybrid complex (*salvatoris/mexicana* group)	liberty/Mexican molly	Nat	---	<2,3,4>
Xiphophorus helleri Heckel	green swordtail	Nat	R	<1,2,4>
CHORDATA, AMPHIBIA				
ANURA, BUFONIDAE				
Rhinella marina Linnaeus	cane toad	Nat	---	<4>
ANURA, RANIDAE				
Glandirana rugosa Temminck and Schlegel	wrinkled frog	Nat	---	<2>
Lithobates catesbeianus Shaw	American bullfrog, eggs	Nat	---	<4>

Legend to Table 5

STATUS:

Nat - naturalized. An introduced or exotic species.
Ind - indigenous. A native species also found elsewhere in the Pacific.
End - endemic - A native species found only in the Hawaiian Islands.

ABUNDANCE:

P - present; abundance not noted.
R - rare; only one to three individuals seen.
O - occasional; three to twelve individuals seen.
C - common; many individuals seen.
A - abundant; numerous.

Table 5 (continued).

NOTES:
<1> – Observed in the present survey.
<2> – Reported in *AECOS* (2019).
<3> – Reported in *AECOS* (2017).
<4> – Reported in *AECOS* (2012), and USFWS 2011a.
<5> – DAR data, summarized in *Hawaii Watershed Atlas* (Parham et. al, 2008).

Native aquatic biota are well-represented in the Project reach. Indigenous *ʻoʻopu nākea* (*Awaous stamineus;* Figure 7) is abundant, with observed sizes of individuals ranging between 7.5 to 20 cm (3 to 8 in). Endemic *ʻoʻopu nōpili (Sicyopterus stimpsoni)* is present but uncommon, typically seen in the swift-moving sections of the stream. Sizes of this species ranged from 7.5 to 13 cm (3 to 5 in.). Males in breeding form and coloration of both *ʻoʻopu* species were observed, and at least one gravid female *ʻoʻopu nōpili* was noted. *ʻOʻopu naniha* (*Stenogobious stimpsoni*) and *ʻoʻopu ʻalamoʻo* (*Lentipes concolor*) have been recorded in ʻĪao Stream previously (*AECOS*, 2012), but these species would be typically found in greatest abundance in the stream estuary and upper reaches, respectively.

Figure 7. Indigenous *ʻoʻopu nākea* (left) is abundant in ʻĪao Stream in the Project area; endemic *hīhiwai* (right) are rare.

Only one endemic mollusk, *hīhīwai* (*Neritina granosa*), was found under a boulder in the center of the stream (Fig. 7). *Hīhīwai* attach themselves to the bottom of rocks in areas of high-water flow, and typically inhabit lower and middle reaches of streams and rivers, but migrate slowly upstream. Before 2014,

the diversions in the ʻĪao Stream made it nearly impossible for juvenile *hīhīwai* to migrate upstream beyond the flood control channel. Prior to the return of flow to ʻĪao Stream, DAR implemented a program to collect *hīhīwai* from the estuary and release them in a continuously flowing segment of the river at ʻĪao Valley State Monument (Hau, 2007).

Non-native guppy (*Poecilia reticulata*) and green swordtail (*Xiphophorus helleri*) were observed in low numbers. Non-native (alien) Pacific prawn (*Macrobrachium lar*) are present and abundant, and commonly found in crevices or debris on the stream bottom.

Of note, non-native tilapia and suckermouth catfish were absent from ʻĪao Stream during this and prior surveys. These alien species are common in many other Hawaiian streams, where they spread diseases and fish parasites, and may prey-on and/or compete with native species for limited resources. Red-rimmed melania (*Melonides turberculata*), an introduced and usually abundant thiarid snail found in previous surveys, was not observed in the survey area in 2019 or 2021.

Waterbirds

All birds observed are common, non-native species established on Maui, and typical of the agricultural and urban environments found in the Project vicinity. No obligate waterbird species were observed during the 30-mintue waterbird count from Imi Kala St. Bridge. The stream at the Project site presents sub-optimal habitat for most protected Hawaiian waterbird species, and riparian vegetation are lacking on the CBF-reinforced embankment. Indigenous Black-crowned Night-Heron or *aukuʻu* (*Nycticorax nycticorax*) and non-native Mallard (*Anas platyrhynchos*) are two waterbird species most likely to utilize the flowing stream habitat present in the Project area, and neither species are protected under state or federal endangered species statutes (HDLNR, 2015; USFWS, nd).

Mammals

The only mammals observed from this survey were feral domestic cat (*felis catus*). No Hawaiian hoary bat or trees of suitable height for bat roosting (trees greater than 4.6 m [15 ft] tall) grow at the Project site.

Discussion and Recommendations

Jurisdictional Waters

ʻĪao Stream is a perennial tributary to the Pacific Ocean and jurisdictional under federal law. No wetlands are adjacent to the stream within the Project on the right bank of ʻĪao Stream; thus, federal jurisdiction extends only to the stream OHWM. Any work requiring fill or modifications within the OHWM may require a permit from the U.S. Army Corps of Engineers (USACE).

Federal jurisdiction is solely determined by the USACE and is based upon the USACE accepting our delineation points. Acceptance may require a field visit by a USACE representative from the Regulatory Branch to inspect all or representative locations surveyed by *AECOS*. Our delineation is not official until an acceptance letter from the USACE is received by the applicant.

Water Quality

As listed in *Hawaiʻi Water Quality Standards,* Hawaii Administrative Rules 11-54 (HDOH-CWB, 2014), ʻĪao Stream is a Class 2 inland water body, with the exception of a small segment of the stream within ʻĪao Valley State Monument that is a Class 1 inland water. ʻĪao Stream is on the Hawaiʻi Department of Health, 2018 list of impaired waters in Hawaiʻi, prepared under Section 303(d) of the Clean Water Act (HDOH, 2018). The "impaired" listing is based upon visual observations made from 2001 to 2004. The HDOH listing indicates that ʻĪao Stream may not meet water quality standards for turbidity and trash, but the stream is designated as a "Category 3" water body, meaning that insufficient data exist to make a use support determination. ʻĪao Stream has been assigned a TMDL priority code of "medium."

ʻĪao Stream discharges into Kahului Bay, considered a Class A embayment. "Kahului Harbor (Bay)" is a station listed on the HDOH 2014 list of impaired waters (HDOH, 2014). The "impaired" listing is based upon data collected from Sta. HIW00105 that indicates Kahului Harbor (Bay) does not meet Hawaiʻi water quality standards for turbidity. Kahului Harbor (Bay) is also listed as a "Category 2" water body, "Category 3" water body, and "Category 5" water body, meaning that available data and/or information indicate that some uses are attained, at least one or more designated uses is not being supported or is threatened, and a total maximum daily load (TMDL) study is needed. Kahului Harbor (Bay) has been assigned a TMDL priority code of "low."

The purpose of the water quality measurements presented in this report is to characterize existing conditions and not to establish compliance with water quality standards (Table 6). In fact, the criteria for turbidity, TSS, and nutrient measurements require making comparisons with geometric mean values, so a minimum of three separate sampling events per station would be required to generate a statistic for comparison with a criterion. Ideally, multiple samplings would encompass a "typical" range of conditions for the location. Our results may be used, together with "baseline" data collected from a series of preconstruction sampling events, to develop decision rules as part of the data quality objectives (DQO) process in an applicable monitoring and assessment program (AMAP) developed in accordance with a Clean Water Act Section 401 Water Quality Certification, if required for this project.

Table 6. Selected state of Hawaiʻi water quality criteria for streams (HAR §11-54-5.2; HDOH, 2014).

Parameter	Geometric Mean value not to exceed this value	Value not to be exceeded more than 10% of the time	Value not to be exceeded more than 2% of the time
Total Nitrogen (µg N/l)	250.0 ***180.0***	520.0 ***380.0***	800.0 ***600.0***
Nitrate+Nitrite (µg N/l)	70.0 ***30.0***	180.0 ***90.0***	300.0 ***170.0***
Total Phosphorus (µg P/l)	50.0 ***30.0***	100.0 ***60.0***	150.0 ***80.0***
Total Suspended Solids (mg/l)	20.0 ***10.0***	50.0 ***30.0***	80.0 ***55.0***
Turbidity (NTU)	5.0 ***2.0***	15.0 ***5.5***	25.0 ***10.0***

Upper values are for the wet season (November 1 through April 30).
Lower ***bold italicized*** values are for the dry season (May 1 through October 31).

Other applicable "standards":
- pH units shall not deviate more than 0.5 units from ambient conditions and not lower than 5.5 nor higher than 8.0
- Dissolved oxygen shall not decrease below 80% of saturation.
- Temperature shall not vary more than 1 C° from ambient conditions.
- Specific conductance shall not be more than 300 µmhos/cm.

ʻĪao Stream does not appear to be much degraded in terms of either suspended sediments or nutrients. Inorganic nitrogen is reported to be high in the groundwater of the watershed (Gingerich, 2008), as is typically the case with groundwater in Hawaiʻi. Exceedances of water quality standards may occur where groundwater infiltrates into the river. That is likely the case at the Sta. Up. Other measured nutrient concentrations (total nitrogen and total phosphorus) were quite low.

Prior to the enhanced base flow in 2014, water quality problems faced in the stream were related to insufficient flow to maintain a viable temperature regime for native biota. Dissolved oxygen (essential to all aquatic life) is reduced with an increase in water temperature. Many *ʻoʻopu* are temperature sensitive (Timbol and Maciolek, 1978) and high temperatures experienced in the stream may have exceeded the tolerances of the native aquatic organisms, whereas higher temperatures resulting from low base flow are tolerable by many introduced fishes and mollusks. The current water regime in the Project area appears be one of adequate flow producing water quality conditions which are supportive of native fauna.

Project work can be completed with minimum impacts to stream water quality and without negative impacts to long-term water quality if proper BMPs are implemented:

- Repair activities must be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.

- Cofferdams or similar BMPs constructed of sand bags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, should be employed around in-water work areas.

- Filter socks should be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Botanical Resources

No plants of conservation concern or enjoying statutory protection (that is, listed as threatened or endangered; HDLNR, 1998; USFWS, 2020) were noted in the Project area and, given the developed nature of the site, would not be expected to be growing there naturally.

On Maui, tree tobacco (*Nicotiana glauca*) is a non-native weed with special protection as a known host-plant of the endangered Blackburn's sphinx moth (*Manduca blackburni*; see *Invertebrate Resources*, below). One tall tree tobacco (> 1 m [3 ft]) is present within the survey area (outside the Project site) just above the right bank of ʻĪao Stream (location shown in Fig. 6).

Fauna Resources

Recommendations are partly based on U.S. Fish and Wildlife Service, Animal Avoidance and Minimization Measures (USFWS-PIFWO, nd). Implementation of the recommendations (provided below as bulleted items) by the Project contractor will minimize impacts to listed species to the maximum extent practicable.

Invertebrates

Blackburn's sphinx moth (*Manduca blackburni*) is a federally listed insect found in Hawaiʻi (USFWS, 2000) and a population is known from Maui Island. The caterpillar of this moth feeds exclusively on plants in the Family Solanaceae (USFWS, 2003; HDLNR, 2005) and particularly on the widely-distributed, non-native tree tobacco plant (*Nicotiana glauca*). Several tall tree tobacco were observed in the survey, including one tall tree tobacco (greater than 1 m [3 ft] height) above the right bank of the stream, just downstream of the Project (Fig. 6). Several other tall tree tobacco were observed on the left bank of ʻĪao Stream, but beyond the Project site and would not be impacted by Project activities. No eggs or caterpillar of *M. blackburni* were observed on the single plant on the right bank. To minimize impacts to Blackburn's sphinx moth, USFWS recommends:

- A biologist familiar with the species survey areas of proposed activities for Blackburn's sphinx moth and its larval host plants within 4-6 weeks prior to work initiation. The survey should include searches for eggs, larvae, and signs of larval feeding, such as chewed stems, frass, or leaf damage.

- If evidence of Blackburn's sphinx moth presence is found by the pre-construction survey, additional guidance with USFWS is required to avoid take.

Yellow-faced bees are listed as endangered in the Hawaiian Islands (USFWS, 2016) and five of seven species of yellow-faced bee are known to occur on Maui island (*Hylaeus anthracinus*, *H. assimulans*, *H. facilis*, *H. hilaris*, *and H. longiceps*; USFWS-PIFWO, nd.) in montane and coastal habitat. Coastal habitat for yellow-faced bee is restricted to a narrow (30 to 100 ft; 10-30 m) corridor on the

coastline (USFWS-PIFWO, nd). No individual yellow-faced bee species was observed during the survey and no potential habitat or food sources are present in the Project area.

Six species of damselflies are endangered in Hawaiʻi (USFWS-PIFWO, nd.). The three species that occur on Maui are flying earwig damselfly (*Megalagrion nesiotes*), Pacific damselfly (*M. pacificum*), and orange-black damselfly (*M. xanthomelas*). Of these, *M. pacificum* and *M. xanthomelas* may occur at elevations such as that of the Project area. The damselfly naiad develops in aquatic environments and is especially susceptible to predation by non-native fishes and poor water quality.

- BMPs for work in aquatic environments must be incorporated into Project planning to minimize the degradation of water quality and impacts to aquatic biota.

Aquatic Biota

No aquatic species protected by State of Hawaiʻi Administrative Rules (HDLNR, 1989, 2014, 2015), nor federally threatened or endangered species (USFWS, 2016) were observed in ʻĪao Stream within the Project reach. Two of the five native *ʻoʻopu* species (*ʻoʻopu nākea* and *ʻoʻopu nōpili*) were observed by our survey, and the three remaining species (*ʻoʻopu alamoʻo*, *ʻoʻopu naniha*, *ʻoʻopu ʻakupa*) have been reported from other locations in ʻĪao Stream. HDLNR regulates fisheries in the state, including the taking of *ʻoʻopu* under Hawaii Administrative Rule (HAR) §13-100-2 (HDLNR, 1989). *ʻŌpae ʻoehaʻa* (*Macrobrachium grandimanus*) and *ʻōpae kalaʻole* (*Atyoida bisulcata*) are native crustaceans that have also been reported from the ʻĪao Stream system (*AECOS*, 2012; Parham et al., 2008), but were not observed during our recent survey of the Project area.

Prior to stream flow being restored to the middle reach of ʻĪao Stream in 2014, HDLNR-DAR transported *hīhīwai* and *ʻoʻopu* from the stream estuary to suitable habitats upstream of the flood control project above flow-interrupted segments of the stream (Hau, 2007; pers. comm.). The return of stream flow has allowed these animals to migrate freely throughout the length of the stream. A marked increase in *ʻoʻopu nākea* and *ʻoʻopu nopili* abundance in recent years (*AECOS*, 2019) relative to previous surveys at ʻĪao Stream (*AECOS* 2012, 2017) suggest that the current baseflow is adequate to sustain abundant populations of *ʻoʻopu* in the middle reach. The finding of *hīhīwai* at the Project site indicates this native mollusk is also capable of migrating through the middle reach. Overall, the density of native species within this reach is good and should be protected.

Many Hawaiian native freshwater macrofauna are diadromous: eggs are laid in the stream and the larvae that hatch from these eggs move downstream and out into the ocean where they develop for a time before migrating back into freshwater to grow to maturity (Ford and Kinzie, 1982; Kinzie, 1988). Project work should be planned so as to protect the existing water quality, while also not impeding the amphidromous cycle of native aquatic species.

- Downstream and upstream migration pathways should be maintained.
- New structures should not include drains or grates that may entrain drifting larvae, nor overhanging culverts that may obstruct upstream movement of recruiting juveniles.
- Maintaining good water quality in the stream should be a priority.

Waterbirds

On Maui, protected waterbird species are Hawaiian Duck or *koloa* (*Anas wyvilliana*), Hawaiian Common Gallinule or *ʻalae ʻula* (*Gallinula galeata sandvicensis*), Hawaiian Coot or *ʻalae keʻokeʻo* (*Fulica alai*), Hawaiian endemic subspecies of Black-necked Stilt or *aeʻo* (*Himantopus mexicanus knudseni*), and Hawaiian Goose or *nēnē* (*Branta sandvicensis*; USFWS, 2011b). Hawaiian Duck have populations on all major Hawaiian Islands but hybridize extensively with non-native Mallard (*Anas platyrhynchos*), particularly on Oʻahu and Maui (Engilis et al. 2002; Uyehara et al. 2007; Fowler et al. 2009; VanderWerf, 2012). Hybrid ducks are not protected.

The reach of ʻĪao Stream at the Project has relatively fast-moving streamwater, and riparian vegetation is very limited along the CBF-reinforced embankment at the Project site. Most protected Hawaiian waterbirds favor slower-moving water and vegetated banks for nesting and forage habitat. However, any open-water body can attract waterbirds. Project activities may minimize or avoid negative impacts to protected waterbirds species if the following is implemented:

- If an endangered waterbird enters an active construction area, cease all construction activity. Work may resume after the individual leaves the area on its own volition.

Seabirds

Nocturnally-flying seabirds may become disoriented by exterior lighting and collide with man-made structures or the ground. If not killed outright, dazed or

injured birds are easy targets of opportunity for feral mammals (Podolsky et al., 1998; Ainley et al., 2001; Day et al., 2003). In Hawaiʻi, night-flying seabirds include Hawaiian Petrel (*Pterodroma sandwichensis*), Wedge-tailed Shearwater (*Ardenna pacifica*), Newell's Shearwater (*Puffinus newelli*), and Band-rumped Storm-petrel (*Oceanodroma castro*). Hawaiian Petrel, Newell's Shearwater, and Band-rumped Storm-petrel nest in upland habitat on Maui (USFWS, 2005) and are at risk of disorientation when birds (particularly fledglings) transit between the sea and inland locations during night and early morning hours. The primary cause of mortality in both Hawaiian Petrel and Newell's Shearwater is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second most significant cause of mortality of these seabirds in Hawaiʻi. No suitable nesting habitat for seabird species occur in the Project area.

- Deleterious impacts to transiting seabirds can be avoided if construction occurs during daylight hours and all outdoor lighting installed is fully "dark sky compliant" (HDLNR-DOFAW, 2016).

Mammals

Our survey identified only one mammal, domestic cat, though it is probable that domestic dog (*Canis lupis familiaris*), small Indian mongoose (*Herpestes javanicus*), and one or more of the four alien Muridae (rats and mice) currently established on the Island utilize this area to some extent. The findings of the mammalian survey are consistent with the location of the Project on the border of developed-urban and agricultural habitat. All of the aforementioned mammalian species are introduced mammals and deleterious to native ecosystems and native fauna.

While not observed from this survey, it is possible that the endemic Hawaiian hoary bat or *ʻōpeʻapeʻa* (*Lasiurus cinereus semotus*) utilizes resources in the Project vicinity and may forage on insects along ʻĪao Stream. Hawaiian hoary bat is a solitary species and potentially widespread throughout the Main Hawaiian Islands. These bats establish multiple roosts within a home territory (Bonaccorso et al., 2015), so the disturbance associated with removal of any particular roost tree would be minimal. However, bats are vulnerable during the pupping season, where a female bat carrying a pup may be unable to rapidly vacate a roost tree that is being felled, or an unattended pup may be unable to flee a tree that is being felled. Potential roost trees (trees taller than 15 ft) are present on the left bank, opposite the Project. No trees taller than 15 feet were observed in the immediate Project area, so Project-related risks to bats are minimal.

- To avoid potential deleterious impacts to roosting bats with pups, it is recommended that no woody vegetation taller than 4.6 m (15 ft) be removed during the bat pupping season between June 1 and September 15 (USFWS-PIFWO, nd.). The use of barbed wire to top fence lines may entangle flying bats and should be avoided (Zimpfer and Bonaccorso, 2010).

Essential Fish Habitat in the Project Area

Essential Fish Habitat (EFH) is defined as "those waters and substrate necessary to fish[es] for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). The Magnuson-Stevens Act (MSA) provisions at 50 CFR 600.10 provide further definition for the purpose of interpreting EFH as follows:

> *"Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle*

The Project vicinity is located within the boundaries of the Hawaiʻi Archipelago Fishery Ecosystem Plan (FEP; WPRFMC, 2009a). This place-based FEP uses an ecosystem-based approach with "geographically defined ecosystem plans containing identical fishery regulations." The FEP identifies and categorizes Management Unit Species (MUS) based on the managed fisheries and incorporates all of the management provisions of the former Fishery Management Plans, with updates. MUS known to be present in waters around the Hawaiʻi Archipelago include Bottomfish and Seamount Groundfish MUS (BMUS), Crustaceans MUS (CMUS), Precious Corals MUS (PCMUS), and Coral Reef Ecosystems MUS (CREMUS). Pelagic MUS (PMUS) are managed separately through the Pacific Pelagic FEP.

Waters and substrate in the project vicinity are designated as EFH for managed fishery species listed in Table 7. The Project is not an area of EFH, but is within 2.2 km (1.4 mi) of ʻĪao Stream coastal outlet. Waters off the mouth of the stream are designated as EFH (including water column and all bottom areas) for coral reef ecosystem, bottomfish, pelagic, and crustacean MUS. According to the EFH designations in the Hawaiʻi FEP, the Project vicinity is absent EFH for precious

corals, deep-water shrimp, and seamount ground fish. No juveniles or adults for either BMUS or CMUS have been recorded from the area (*AECOS*, 2019)

Table 7. EFH designated in Project vicinity.

MUS	Species Complex	Designated EFH
CREMUS[+]	All currently and potentially harvested coral reef taxa	Water column and all benthic substrate to a depth of 50 fathoms (fm) from the shoreline to the Exclusive Economic Zone (EEZ).
BMUS (all stages)[++]	Bottomfish Shallow Complex	Eggs and post-hatch pelagic: Water column from the surface to 240-m depth from the shoreline to the EEZ. Post-settlement and Subadult/adult: Water column from the surface to 240-m depth from the shoreline to the EEZ.
	Bottomfish Intermediate and Deep complexes	Eggs and post-hatch pelagic: Water column from the surface to 400-m depth from the shoreline to the EEZ.
CMUS[+]	Spiny/Slipper Lobster and Kona Crab complexes (all stages)	Eggs and larvae: water column from the surface to 150-m depth, from the shoreline to the EEZ. Juveniles and adults: bottom habitat from the shoreline to 100-m depth.
PMUS[+++]	Temperate/Tropical Species, Sharks and Squid complexes	Eggs and larvae: water column from the surface to 200-m depth, from the shoreline to the EEZ. Juveniles and adults: water column from the surface to 1,000-m depth, from the shoreline to the EEZ.

[+] Western Pacific Regional Fishery Management Council, 2009a.
[++] Western Pacific Regional Fishery Management Council, 2016.
[+++] Western Pacific Regional Fishery Management Council, 2009b.

The Hawaiʻi and Pelagic FEPs further identify ecologically valuable subsections of EFH for the above MUS as "habitat areas of particular concern" (HAPC). These HAPCs are based on the importance of the ecological functions provided, the sensitivity to human or development-induced environmental degradation or

stress, and rarity. There are no HAPCs within, adjacent to, or near the Project area that may be affected by the Project repairs.

In February, 2019, NMFS published a final rule to reclassify certain management unit species in the Pacific Islands as ecosystem component species (ECS; NMFS-NOAA, 2019, 84 FR 2767). An ECS means a stock that a Council or the Secretary has determined does not require conservation and management, but is identified in an FEP to achieve ecosystem management objectives. The intent is to focus management efforts on species that are in need of conservation and management, and improve efficiency of fishery management in the region. The rule reduces the number of MUS from 173 species or families to 20 in the Hawaiʻi FEP. The rule also removes the definitions of "Currently Harvested Coral Reef Taxa (CHCRT)" and "Potentially Harvested Coral Reef Taxa (PHCRT)" and revises the definitions of "Ecosystem Component Species" and "Special Permit" throughout. In the current regulations, coral reef MUS are divided into two categories: CHCRT and PHCRT. CHCRT are those species that are harvested commercially in the EEZ, and PHCRT are those species that may be potentially harvested in the future. This final rule reclassifies all coral reef MUS as ECS, so the terms CHCRT and PHCRT are unnecessary (NMFS-NOAA, 2019).

The extent of impacts associated with the project having the potential to affect EFH is limited to the transport (by entrainment in stream flow) of sediment and/or pollutants. Short-term water quality impacts to EFH due to project construction would most likely be limited to changes in turbidity levels and suspended solids in the immediate construction areas. Some change in DO may also occur, concomitant with sediment resuspension. However, any increase in turbidity is expected to be localized and of short duration. Project BMPs are intended to reduce the extent to which sediment disturbed as a result of construction would be transferred to coastal waters and, with effective implementation, these BMPs will contribute to minimal adverse impacts to EFH.

The fishes that occur in the project area are expected to actively avoid direct impacts from project activities. Some impairment of ability of EFH managed species to find prey items could occur, but this effect should be temporary and spatially limited to the immediate vicinity of construction activities. Most of the MUS that use the EFH routinely experience a turbid environment. The proposed action is expected to result in minimal adverse effects to EFH.

Other Resources of Potential Concern

Special Aquatic Sites

The flowing segment of 'Īao Stream is a series of riffles and runs with occasional pools interspersed. Riffle and pool complexes are designated "Special Aquatic Sites" by federal law (40 CFR § 230.45). The law defines these complexes and states effects caused by loss of their ecological function:

> *(a) Steep gradient sections of streams are sometimes characterized by riffle and pool complexes. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. Pools are characterized by a slower stream velocity, a steaming flow, a smooth surface, and a finer substrate. Riffle and pool complexes are particularly valuable habitat for fish and wildlife.*
>
> *(b) Possible loss of values: Discharge of dredged or fill material can eliminate riffle and pool areas by displacement, hydrologic modification, or sedimentation. Activities which affect riffle and pool areas and especially riffle/pool ratios, may reduce the aeration and filtration capabilities at the discharge site and downstream, may reduce stream habitat diversity, and may retard repopulation of the disposal site and downstream waters through sedimentation and the creation of unsuitable habitat. The discharge of dredged or fill material which alters stream hydrology may cause scouring or sedimentation of riffles and pools. Sedimentation induced through hydrological modification or as a direct result of the deposition of unconsolidated dredged or fill material may clog riffle and pool areas, destroy habitats, and create anaerobic conditions. Eliminating pools and meanders by the discharge of dredged or fill material can reduce water holding capacity of streams and cause rapid runoff from a watershed. Rapid runoff can deliver large quantities of flood water in a short time to downstream areas resulting in the destruction of natural habitat, high property loss, and the need for further hydraulic modification.*

As such, riffle and pool complexes are regulated from filling activities due to their importance to aquatic species. Provided that the stream channel is not filled significantly below the OHWM, a bank reinforcement can be completed without loss of the riffle and pool complex. River bank reinforcement at the downstream end of the survey area has been completed including some work within the OHWM, with riffle and pool habitat maintained in the stream.

Critical Habitat

Federally delineated Critical Habitat is not present in the project area (USFWS 2019). Thus, the project as currently proposed will not impinge on federally designated Critical Habitat. No equivalent habitat designation exists under state law.

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ATTACHMENT A

PHOTOGRAPHIC RECORD OF
OHWM FLAG LOCATIONS

OHWM Location 1, facing upstream

OHWM Location 1 left bank

OHWM Location 1 right bank

OHWM Location 1, facing downstream

OHWM Location 2, facing upstream

OHWM Location 2 left bank

OHWM Location 2 right bank

OHWM Location 2, facing downstream

OHWM Location 3, facing upstream

OHWM Location 3 left bank

OHWM Location 3 right bank, extends to storm drain.

OHWM Location 3, facing downstream

OHWM Location 4.5, facing upstream

OHWM 4.5 left bank

OHWM Location 4.5 right bank

OHWM Location 4.5, facing downstream

OHWM Location 6, facing upstream

OHWM Location 6 left bank

OHWM Location 6 right bank

OHWM Location 6, facing downstream

OHWM Location 7, facing upstream

OHWM Location 7 left bank

OHWM Location 7 right bank

OHWM Location 7, facing downstream

OHWM Location 8, facing upstream

OHWM Location 8 left bank

OHWM Location 8 right bank

OHWM Location 8, facing downstream

OHWM Location 10, facing upstream

OHWM Location 10 left bank

OHWM Location 10 right bank

OHWM Location 10, facing downstream

OHWM Location 12, facing upstream

OHWM Location 12 left bank

OHWM Location 12 right bank

OHWM Location 12, facing downstream

OHWM Location 13, facing upstream

OHWM Location 13 left bank

OHWM Location 13 right bank

OHWM Location 13, facing downstream

SP-1 in uplands on right bank slope.

No wetlands adjacent to stream.

Appendix B

Final Archaeological Literature Review and Field Inspection Report for the ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui Island. Prepared for R.M. Towill Corporation. Prepared by Cultural Surveys Hawai'i, Inc. April 2021.

Chapter 6E-8 Historic Preservation Review – ʻĪao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Pūʻali Komohana District, Island of Maui. Consultation between State Historic Preservation Division, Department of Land and Natural Resources, and County of Maui, Department of Public Works..

Final
Archaeological Literature Review and Field Inspection Report for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island TMKs: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por.

Prepared for
R.M. Towill Corporation

Prepared by
Jay Rapoza, B.A.,
Josephine Yucha, M.S.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Wailuku, Hawai‘i
(Job Code: WAILUKU 74)

April 2021

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

www.culturalsurveys.com

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

Management Summary

Reference	Archaeological Literature Review and Field Inspection Report for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island, TMKs: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por. (Rapoza et al. 2021)
Date	April 2021
Project Number	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: WAILUKU 74
Investigation Permit Number	CSH completed the fieldwork component of this study under archaeological fieldwork permit number 20-07, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	County of Maui; SHPD
Land Jurisdiction	County, State, and Private (Browning-Ferris Ind Of HI)
Project Funding	County of Maui, Department of Public Works
Project Location	The project is located along Wailuku River (‘Īao Steam), downstream of the Imi Kala Bridge, known as Iao Stream Levee 27, in Wailuku, Maui. The project area includes an extension of Imi Kala Street from its intersection with Wili Pa Loop and Eha Street. The project area is depicted on a portion of the 2013 Wailuku U.S. Geological Survey 7.5-minute topographic quadrangle.
Project Description	The proposed project involves the repair to a portion of the southeast bank of Wailuku River (‘Īao Steam), downstream of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity areas. The repair will include the removal and replacement of grouted riprap on the existing slope, with dumped riprap placed at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Project Acreage	The project area is 1.39 acres (0.56 hectares).
Document Purpose	This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the project, and, based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project’s planning and support the project’s historic preservation and environmental review compliance. This investigation does not fulfill the requirements of an archaeological inventory survey investigation, per HAR §13-13-276. Consequently, this report cannot be used to make formal recommendations for SHPD review and acceptance.

	Ima Kala Bridge is a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. SIHP # -5564 was previously documented during an archaeological inventory survey (AIS) for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). Tome and Dega (2004:43) assessed SIHP # -5564 as significant pursuant to HAR §13-13-284-6, Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history). No further historic preservation work was recommended.
Fieldwork Effort	Fieldwork was accomplished on 24 November 2020 by Jonas Madeus, B.A., and Jay Rapoza, B.A., under the general supervision of Principal Investigator Hallett Hammatt, Ph.D. This work required approximately 2 person-days to complete.
Results Summary	The field inspection of the project included documentation of the current condition of SIHP # 50-50-04-5564, the Imi Kala Bridge, located along the western boundary of the project area. The field inspection also identified two corrugated metal culverts and two poured concrete walls that were installed to mitigate flooding and stream bank erosion along the southern bank of Wailuku River. These features are located adjacent or just outside of the project area, and are interpreted as modern (less than 50 years old) improvements that were installed to prevent flooding and stream bank erosion. The project area also includes streambank improvements that were installed following the 13 September 2016 Wailuku River flood event.
Recommendations	CSH recommends consultation with the SHPD to determine historic preservation requirements for the proposed project. While the project area includes the Imi Kala Bridge (SIHP # 50-50-04-5564), it is CSH’s understanding that the project does not involve impacts to this historic property. If impacts to SIHP # -5564 are anticipated then consultation with the SHPD Architecture Branch is recommended. No other historic properties were identified during this field inspection that would require additional inventory or mitigation. While the project area is surrounded by a dense cluster of Land Commission Awards and within an area of rich traditional and historic land use, project-related ground disturbance is not anticipated to encounter historic properties. This assessment is primarily based on photographic evidence of the project area following the 13 September 2016 Wailuku River flood event. This event included significant erosion of the former stream bank and replacement with boulder fill and concrete. Project-related ground disturbance is anticipated to occur within this circa-2016 fill material, therefore no further archaeological work is recommended.

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Section 1 Introduction

1.1 Project Background

At the request of R.M. Towill Corporation, Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this archaeological literature review and field inspection report (LRFI) for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island, TMKs: [2] 3-4-020:048, 075, 888 (pors.) & [2] 3-4-032:001 (por.). The project is located along Wailuku River (formerly referred to as ‘Īao Steam), downstream of the Imi Kala Bridge in Wailuku, Maui. The project area includes an extension of Imi Kala Street from its intersection with Wili Pa Loop and Eha Street. The project area is depicted on a portion of the 2013 Wailuku U.S. Geological Survey 7.5-minute topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and a 2018 aerial photograph (Figure 4).

The project area is 1.39 acres (0.56 hectares). The proposed project involves the repair to a portion of the southeast bank of Wailuku River (‘Īao Steam), downstream of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity areas (Figure 5 and Figure 6). The repair will include the removal and replacement of grouted riprap on the existing slope, with dumped riprap placed at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

1.2 Document Purpose

This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the project, and, based on findings, consider cultural resource management recommendations. This document is intended to facilitate the project’s planning and support the project’s historic preservation and environmental review compliance. This investigation does not fulfill the requirements of an archaeological inventory survey investigation, per HAR §13-13-276. Consequently, this report cannot be used to make formal recommendations for SHPD review and acceptance.

Ima Kala Bridge is a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. SIHP # -5564 was previously documented during an archaeological inventory survey (AIS) for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). Tome and Dega (2004:43) assessed SIHP # -5564 as significant pursuant to HAR §13-13-284-6, Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history). No further historic preservation work was recommended.

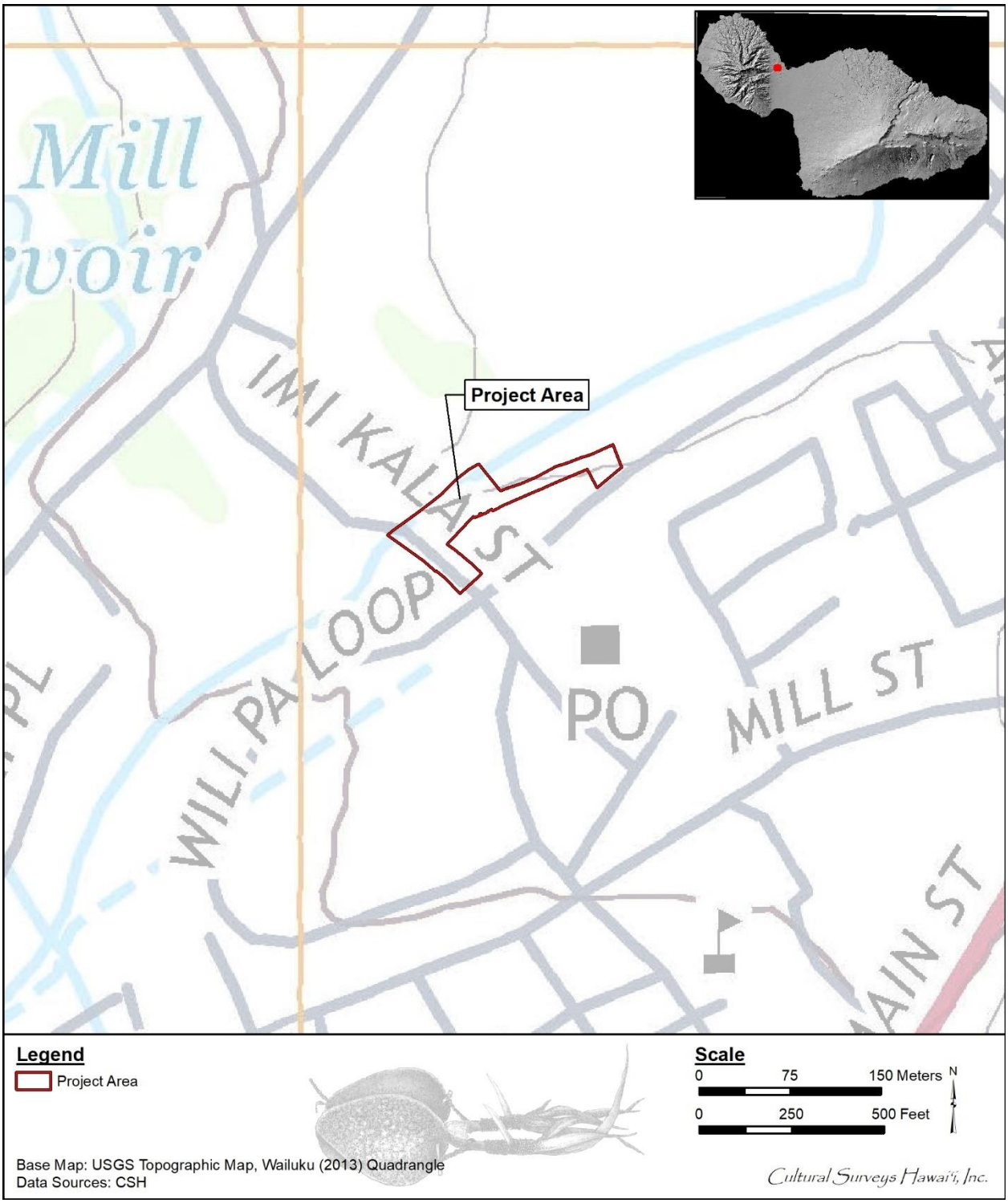

Figure 1. Portion of the 2013 Wailuku USGS 7.5-minute topographic quadrangle showing the location of the project area (U.S. Geological Survey 2013)

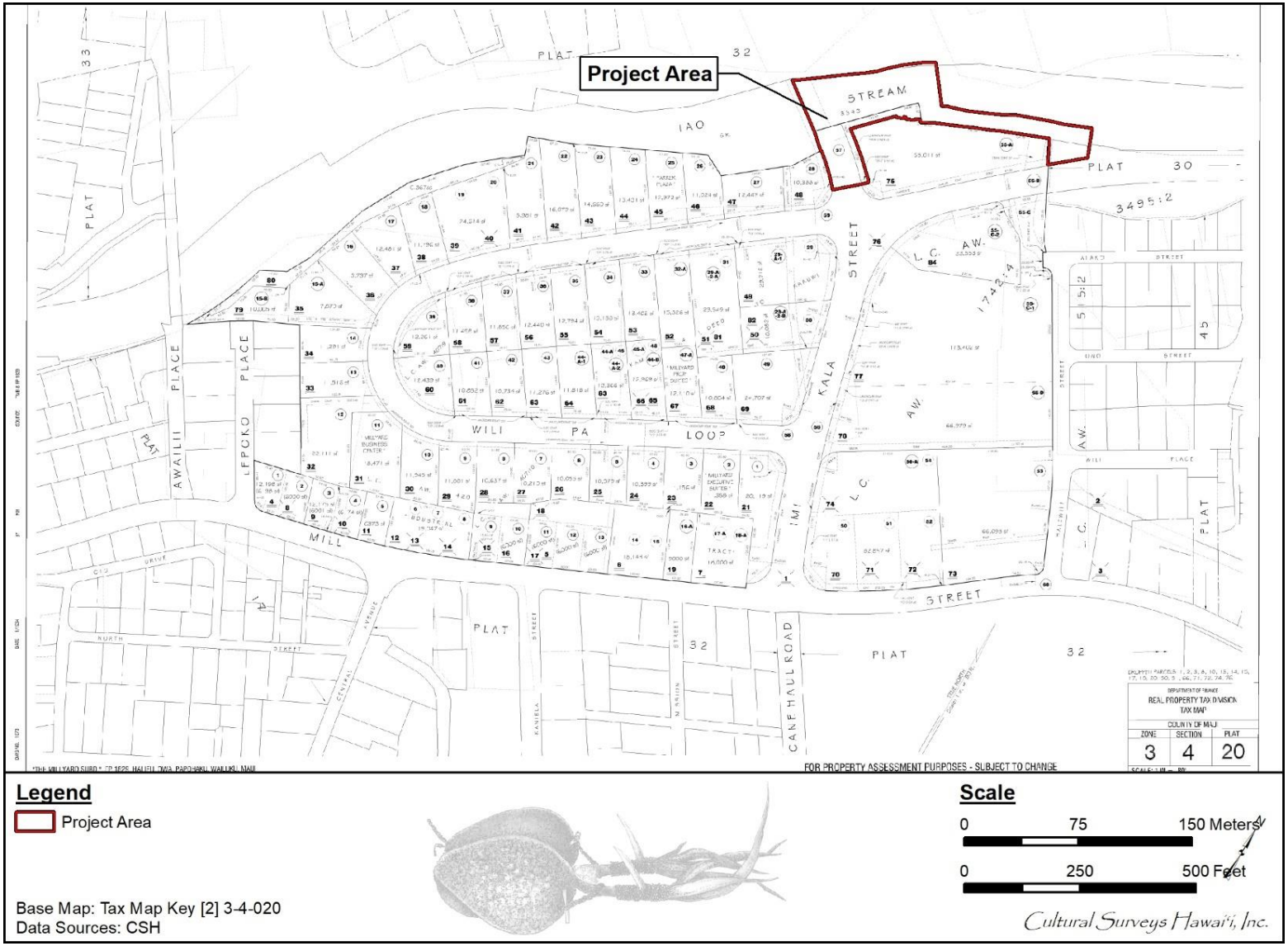

Figure 2. Tax Map Key (TMK) [2] 3-4-020 showing the project area (Hawaii TMK Service 2014)

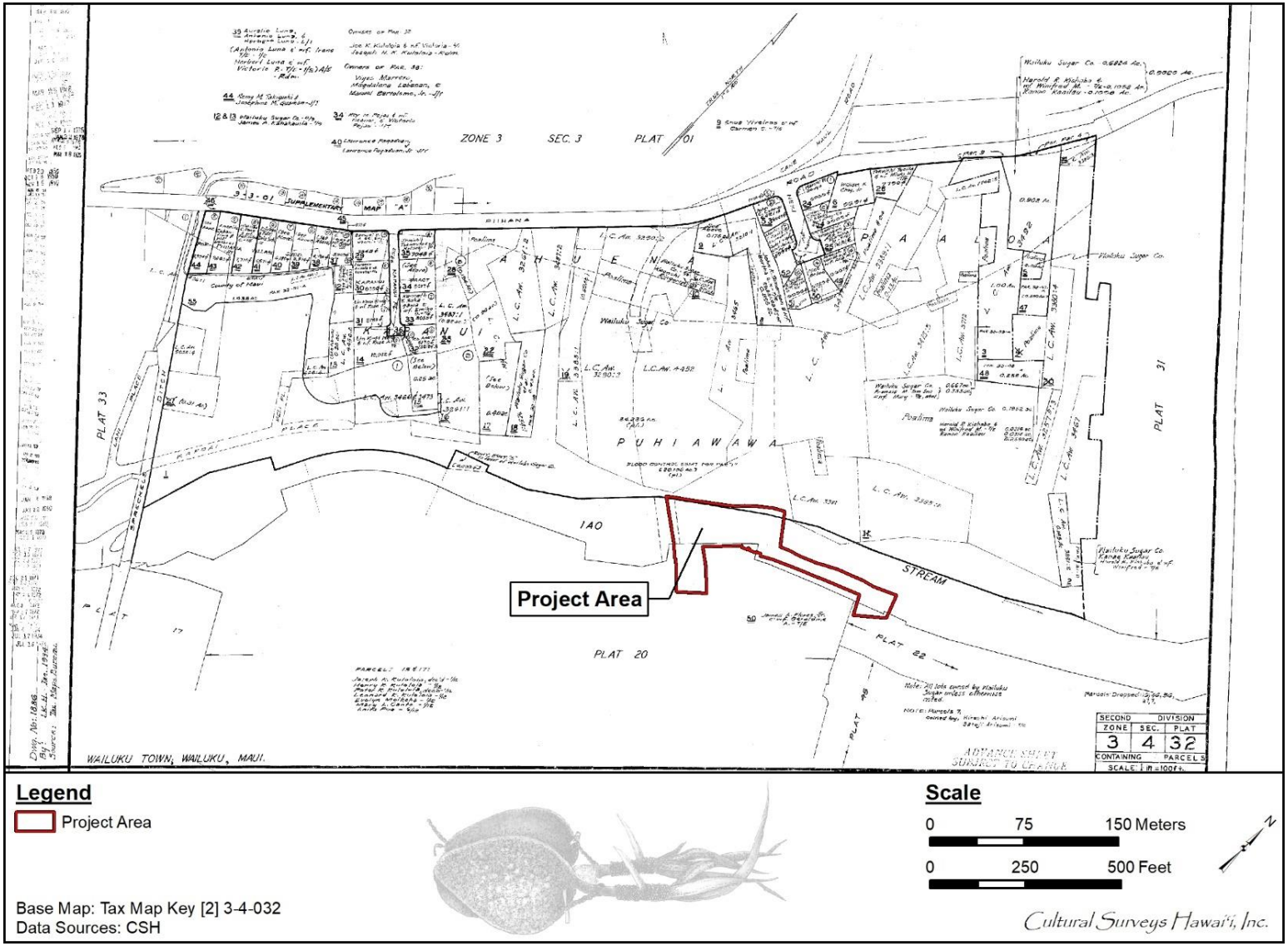

Figure 3. Tax Map Key (TMK) [2] 3-4-032 showing the project area (Hawaii TMK Service 2014)

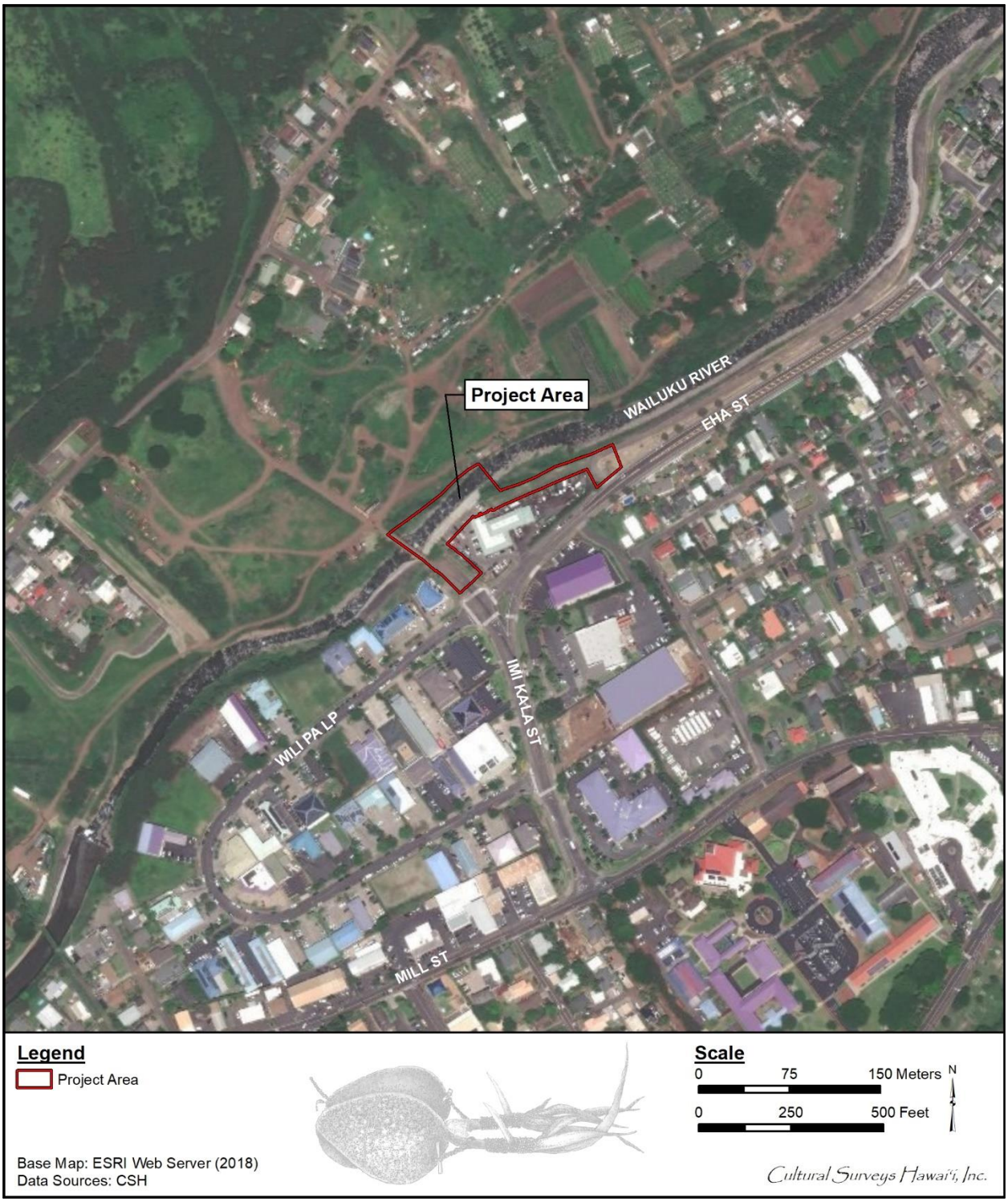

Figure 4. 2018 aerial photograph showing the location of the project area (Esri 2018)

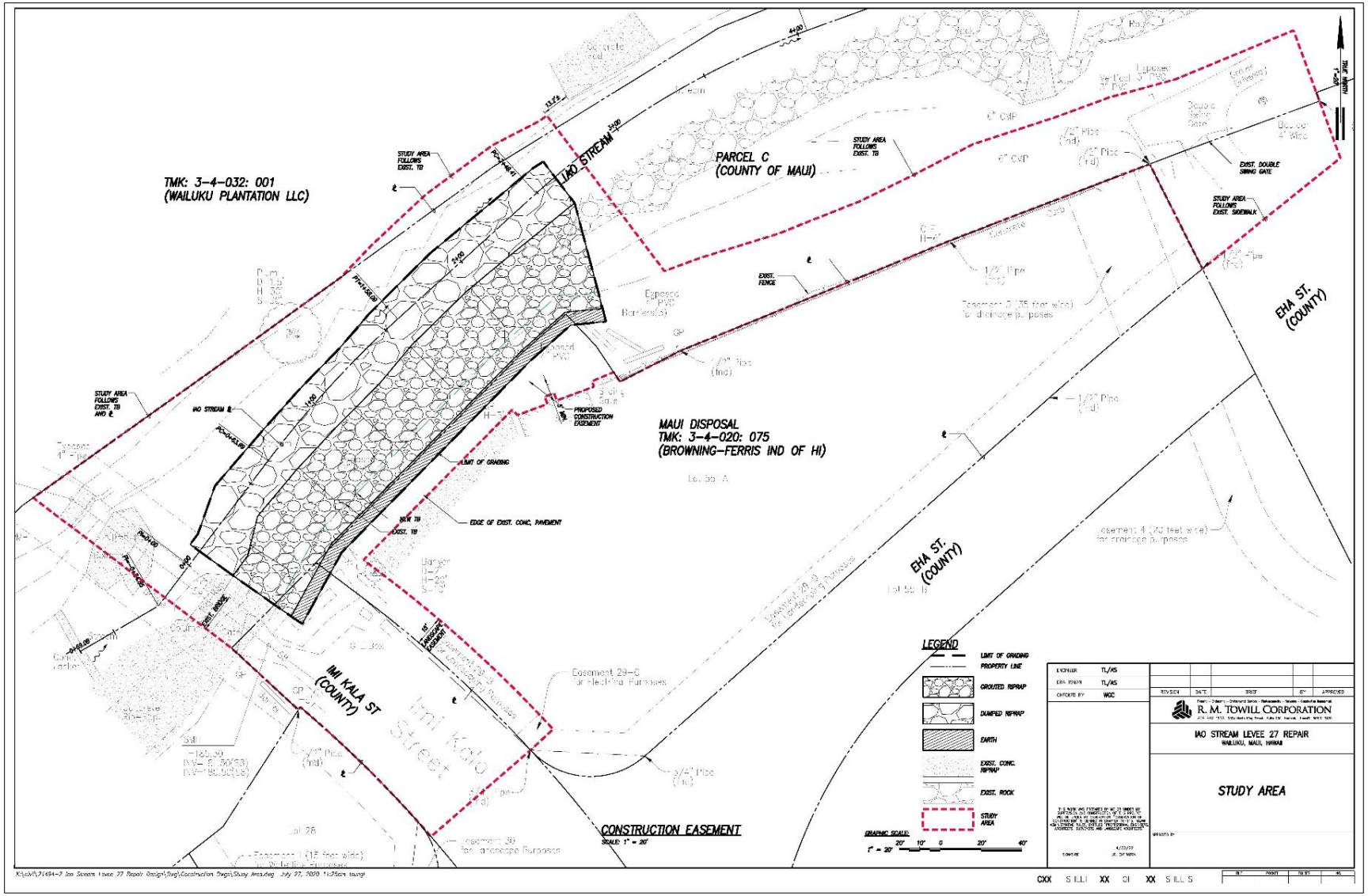

Figure 5. Iao Stream Levee 27 Repair site plan (provided by client)

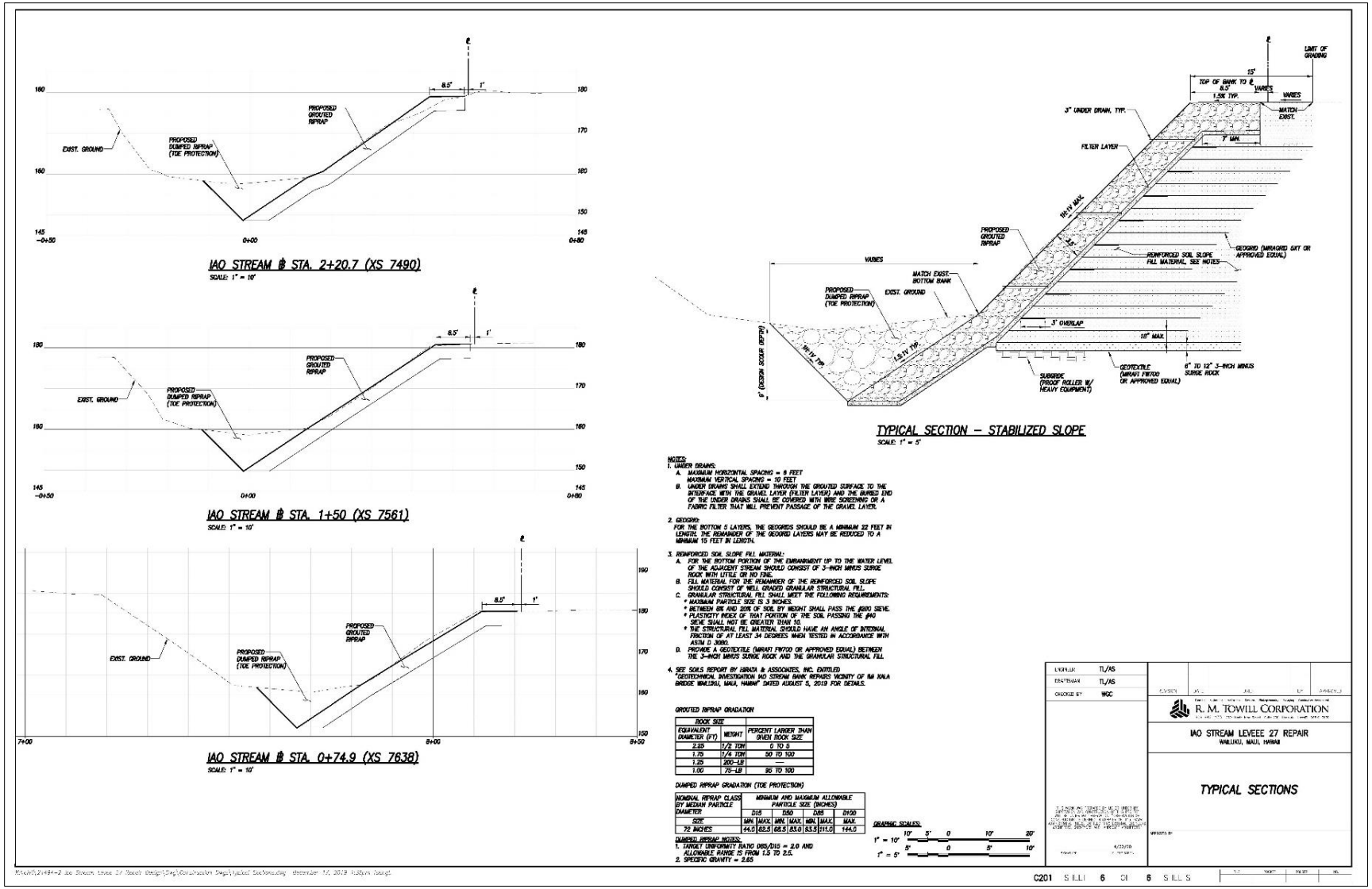

Figure 6. Iao Stream Levee 27 Repair typical sections (provided by client)

1.3 Environmental Setting

1.3.1 Natural Environment

The project area is located in the *ahupua‘a* of Wailuku, on the alluvial fan that extends outward from the stream-cut ‘Īao Valley. The project area is approximately 1.9 km (1.2 mi) west of Kahului Bay along Wailuku River. The project area is located 533.0 m (1,750 ft) northwest of the Wailuku Sand Hills dune formation that extends parallel to the east side of Lower Main Street. The elevation of the project area ranges from 48 to 52 m (157 to 171 ft) above mean sea level (AMSL).

In 2014, the average monthly air temperature for the project area was between 21.2°C (70.15°F) in February and 25.23°C (77.41°F) in August with an average annual air temperature of 23.25°C (73.84°F) (Giambelluca et al. 2014). The vicinity of the project area received a mean annual rainfall of 575.5 mm (22.66 in) between 1978 and 2007, according to the University of Hawai‘i 2011 *Rainfall Atlas of Hawaii* (Giambelluca et al. 2013).

The native ecosystem of the project area was estimated to have once been Montane dry and mesic forest and woodland as a transitional zone between subalpine forest/shrubland and wet forest or lowland dry vegetation (Pratt and Gon 1998:122-126). Presently, the project area includes *koa haole* trees (*Leucaena Leucocephala*) and invasive grasses. Nearby commercial and residential properties include plantings of coconut (*Cocos nucifera*), banana (*Musa* sp.), papaya (*Carica papaya*), *aki‘aki* grass (*Fimbristylis cymosa)* hibiscus hedges (*Hibiscus brackenridgei)*, croton (*Codiaeum variegatum*), and other exotic shrubs and grasses.

According to the U.S. Department of Agriculture (2001) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area is located within Iao cobbly silty clay, 3 to 7 percent slopes (IbB) (Figure 7).

Iao cobbly silty clay, 3 to 7 percent slopes (IbB) is described as follows:

> This soil has a profile like that of Iao clay, 3 to 7 percent slopes, except for the texture of the surface layer and the content of cobblestones.
>
> This soil is used for sugarcane and homesites. (Capability classification IIe if irrigated, IIIs if nonirrigated; sugarcane group 1; pasture group 3) (Foote et al. 1972:47)

1.3.2 Built Environment

The project area is in Wailuku town and within a portion of Imi Kala Street from the intersection of Wilipa Loop, Imi Kala Street, and Eha Street. The project area includes the paved surface of Imi Kala Street as well as modern curbs, sidewalks, cross-walks, and utility poles. A portion of the project on the eastern boundary is adjacent to Eha Street approximately running west to east. The project area surrounds the Maui Disposal commercial property and crosses the Wailuku River to its northern bank. The built environment that surrounds the project area includes primarily includes commercial properties that were construction within the former footprint of the Wailuku Sugar Mill.

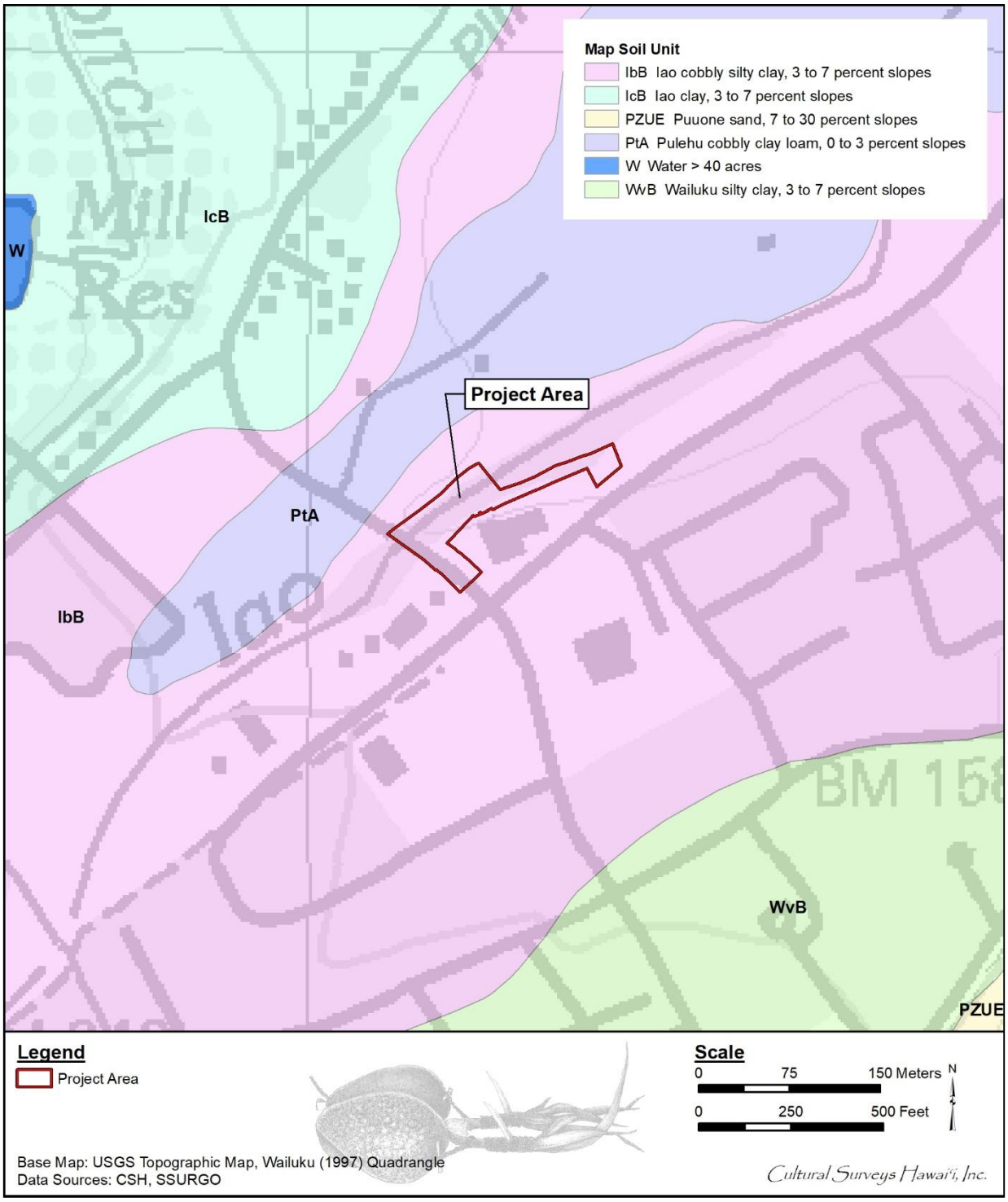

Figure 7. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001)

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this study under archaeological permit # 20-07, issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on 24 November 2020 by CSH archaeologists Jonas Madeus, B.A., and Jay Rapoza B.A., under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 2 person-days to complete. In general, fieldwork included 100 percent coverage pedestrian inspection of the project area, GPS data collection, and written and photographic recordation.

2.1.1 Pedestrian Survey

A 100 percent coverage pedestrian inspection of the project area was undertaken to identify the types and location of historic properties that may be present within the project area. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart.

2.1.2 GPS Data Collection

CSH archaeologists used a hand-held Garmin GPS unit (accuracy +/- 3 m) uploaded with a shapefile of the project area boundaries to complete the field inspection. All points of interest were recorded with the GPS unit and uploaded to ArcGIS for inclusion on project maps where applicable.

2.1.3 Recordation

Documentation included descriptions and photographs of any potential findings as well as descriptions of the natural and built environment observed throughout the project area. Descriptions and photographs were recorded using Apple Ipads equipped with standard digital form software and with digital cameras.

2.2 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai‘i State Archives and the Archives of the Bishop Museum; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina (2000) database.

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

Section 3 Background Research

3.1 Traditional Accounts

The division of Maui's lands into political districts occurred during the rule of Kaka‘alaneo, under the direction of his *kahuna*, Kalaiha‘ōhi‘a (Beckwith 1970:383). This division resulted in 12 districts, or *moku*, on the island of Maui during traditional times: Kula, Honua‘ula, Kahikinui, Kaupō, Kīpahulu, Hāna, Ko‘olau, Hāmākua Loa, Hāmākua Poko, Wailuku, Kā‘anapali, and Lāhainā (Sterling 1998:Preface). The *moku o loko*, or *moku* as it is most commonly called, literally means "to cut across, divide, separate" (Lucas 1995:77). When used as a term of traditional land tenure, a *moku* is akin to a political district, an overall land division that can contain smaller divisions of land such as '*okana, kalana, ahupua‘a, ‘ili,* and *mo‘o*. The current project area is located in coastal Kahului within the traditional boundaries of the *‘īli* of Kalua, just southeast of Mauna Kahalawai [West Maui Mountains] in the *ahupua‘a* of Wailuku.

The lands of Wailuku are traditionally known as the "locality of flying clouds" (Fornander 1916-1917:286). The *ahupua‘a* of Wailuku, Waikapū, Waiehu, and Waihe‘e were collectively referred to as "Nā wai ‘ehā" or "The Four Waters" (Handy et al. 1991:496). Nā wai ‘ehā consisted of four deep valley streams that watered four distinct areas of *kalo* (taro) land, which spread out fanwise to the shoreline (Handy et al. 1991:272). According to Kame‘eleihiwa (1992:241), the combined area of these four *ahupua‘a* was once known as "Pu‘ali Komohana," which means "western sun-setting isthmus (Andrews 1865:73). Much of the historical and traditional information for the Kahului region derives from portions of Wailuku *Ahupua‘a* with populations located in the uplands, along the streams and valleys of Mauna Kahalawai.

3.1.1 Place Names

While traditional accounts of the Kahului area are relatively scarce, an analysis of the place name meanings for the region surrounding the project area may yield some insight into the patterns of life in the area. In the preface of *Place Names of Hawaii*, Pukui et al. (1974:x) cite Samuel Elbert's description of the relationship of names-to-places in Hawai‘i:

> 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 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 Western contact. Literal translations of several of the place names for land areas and divisions near the project area are listed in Table 1. Unless otherwise noted, the translations in the table are taken from Pukui et al. (1974).

Table 1. Place names and meanings within the Wailuku Ahupua‘a

Hale ki‘i (*Heiau*)	*Lit.*, “image house”; a *heiau* (Walker Site 44) located in Wailuku at the Pihana *heiau* complex, along the ‘Īao Stream in the region of Paukūkalo; according to Kamakau, Maui chief Kekaulike was brought here to die in 1736
‘Īao (Stream)	*Lit.*, “cloud supreme”; ‘Īao Stream brings the water of ‘Īao Valley to the ocean at Paukūkalo, a point just northwest of Kahului Harbor
Ka‘a (Point)	*Lit.*, “rolling”; a shoreline promontory just east of Kahului Bay
Ka‘ahumanu (Avenue)	*Lit.*, “the bird [feather] cloak”; avenue named in honor of Queen Ka‘ahumanu, favorite wife of Kamehameha I, who became *kuhina nui* (regent) to Kamehameha II and Kamehameha III and an ardent supporter of the Protestant mission in the Hawaiian Islands; she died in 1832, at Mānoa, on the island of O‘ahu (Kamakau 1992)
Kahului (Kaihuwa‘a)	*Lit.*, “the winning”; according to Malo (1951a:268), “the Kahului was a disposition or order of battle in which the main body of the soldiers were drawn up in the form of a crescent, with the horns pointing forwards”; this formation was “undoubtedly derived from the place of the same name,” a “flat and treeless” region (Malo 1951a:268)
Kalialinui (Gulch)	Possible literal translation “large tree or plant used for medicine” (Malo 1951a)
Kalua (*‘Ili*)	*Lit.*, “the pit”; *‘ili* that includes much of the commercial hotel land of the Kahului Harbor, the Kaiser clinics, Maui Memorial Medical Center, Queen Ka‘ahumanu Center, and the Maui Mall
Kanahā (Pond)	*Lit.*, “the shattered (thing)”; Sterling (1998) notes that salt was gathered at Kanahā and that the pond was named by high ranking chiefess, Kahamaluihi; name of Kanahā pond (SIHP # 50-50-04-1783), wildlife sanctuary, and beach
Mauna Kahalawai	*Lit.*, “the gathering of waters”; West Maui Mountains (Pellegrino 2009)
Mau‘oni (Pond)	One of the two fishponds located at the shore of Kanahā
Nehe (Point)	*Lit.*, “rustle”; point of land along the Waiehu coastline. (Pellegrino 2009)
‘Owā (‘Ili)	Cry of the *‘auku‘u* (heron) which suggests *‘owā* to cry; a measurement equal to half the width of a finger, of fishing nets (Mākahi a ‘owā; the width of one and a half fingers); *‘ili* where the Sand Hills, Baldwin High School, the Maui Arts & Cultural Center, and the U.H. Maui College are situated
Paukūkalo	*Lit.*, “taro piece”; present-day shoreline community located at the northernmost region of the Kahului Harbor; ‘Īao Stream reaches the ocean at Paukūkalo, a region reported to have once been heavily planted in kalo (wetland taro)

Pihana (Heiau)	*Lit.*, “fullness”; the Pihana Heiau (listed as Walker Site 43) is a sacred place located within the *‘ili* of Paukūkalo; stories include it being built in a single night by the legendary race of Menehune, who brought the stones from Paukūkalo Beach; the construction of this *heiau* has been attributed to Maui Chief Kahekili.
Pu‘ali Komohana	Translated by Andrews (1865:73) as “western sun-setting isthmus”; combined area of Wailuku, Waikapū, Waiehu, and Waihe‘e ahupua‘a
Pu‘unēnē	*Lit.*, “goose hill”; a land area named after a cinder cone, once located just inland of Papa‘ula, mined for its gravel during WWII to construct the runways at the U.S. Naval Air Station Kahului (Fornander 1916)
Wailuku (Ahupua‘a)	*Lit.*, “water of destruction”; a reference to the battle which took place at ‘Īao between the forces of Kamehameha I and the Maui chiefs; Pukui et al. (1974) believes the name is older than the famous battle; Westervelt (Saito 2011) makes special reference to the waters of Wailuku in ‘Īao (*Lit.*, “asking for clouds”) emptying into the Kahului Harbor; Fornander recorded that Wailuku was the place of flying clouds (Westervelt 1910)

3.1.2 Traditional Accounts

A *mo‘olelo* (traditional story) concerning a beautiful woman named Luahinepii, takes its setting in the ‘Īao valley of Wailuku and mentions Paukakalo beach area, which is approximately 3 m (about 2 mi) northwest of the current project area. According to Field (1912:149) in Sterling (1998):

> At the base of this noble perpetual sentinel to Iao Canyons [*Kukaemoku—‘Iao Needle*] lived, a few centuries ago, a most beautiful maiden. Her figure and form
>
> were so near perfection that a Raphael or a Michael Angelo [*sic*] might have selected her for a model representing a Hawaiian Venus. Her name was Luahinepii (climbing old woman), a name most unsuitable to a maiden so beautifully fair. She possessed, however, a voice so unpleasant and hideous that other maidens, jealous of her unsurpassed natural beauty, made fun of her.
>
> Luahinepii had a lover who lived at the beach near Paukukalo. Other maidens looked upon him as a possible suitor, but like all true lovers he turned a deaf ear to their entreaties.
>
> The rival belles met and agreed to circulate a report to this wise: “Ua lohe-ia ko leo kapu e ko ipo i Moealoha” (Your sacred voice has been heard by your lover at Lover’s-Dream). This soon reached the ear of Luahinepii. She felt deeply these to her, most humiliating words. In her frantic moments she sought to end her life and to free herself from the cares and woes of this deceptive world. …Luahinepii scaled to the top of Kukaemoku, called Nanahoa, and from its dizzy height dashed herself headlong to the valley beneath, and the waters of Iao were made incarnadine with her blood. (W. H. Field in Sterling 1998:83)

A traditional account regarding the construction and dedication of the fish ponds named Mau‘oni and Kanahā at Kahului appears in Sterling (1998). According to the *mo‘olelo*, Kapi‘ioho‘okalani, one-time ruler of O‘ahu and half of Moloka‘i, began building the pond walls, but Kamehamehanui, *mō‘ī (king*) of Maui in the mid-1700s, finished the construction. Kapi‘ioho‘okalani was killed in battle before he could complete the construction of the pond walls. After Kamehamehanui finished building the walls, he placed a *kapu* (taboo) on the bank, or *kuapā*, dividing the two ponds. The chiefess Kahamaluihi was born of such high rank that she was able to break the *kapu* by walking on the center *kuapā* of the ponds. Following this act, Kamehamehanui allowed her to name them. She named Kanahā for her brother, and Mau‘oni for the identity she travelled by to protect her status as a high chiefess. Sterling (1998) also noted two references by Samuel Kamakau (1992), which credit Kihapi‘ilani as having originally built the stonework separating the two ponds at a much earlier time than the work performed by Kamehamehanui.

Kanahā and Mau‘oni Ponds are approximately 1.0 km (about 0.6 mi) east and northeast of the current project area, respectively These ponds were the subject of many legends and sayings. In one legend concerning a Hawaiian couple who lived near the ponds, the origin of the name Wailuku is explained:

> One day Kapoi’s wife went out to gather ‘*ūhini* (grasshoppers) and found an owl’s nest with seven eggs. Thinking they were duck eggs, she took them and gave them to Kapoi. He realized what they were, but refused to give them back to the owl who

> appeared and requested their return. Kapoi then smashed the eggs against the stone wall surrounding the house. Infuriated over the senseless loss, ‘A‘apueo, the mother owl, and her mate, Pueokaia, gathered owls from all the islands. All of the men and chiefs of the area, including Kapoi and his wife, were destroyed. The place mauka of the ponds where the cruel breaking of ‘A‘apueo’s eggs was avenged was called Wailuku “water (of) destruction.” (Clark 1989:8)

3.1.3 Settlement and Subsistence

The relative scarcity of recorded place names for Kahului may be an indication of a population that was widely spread out between settlements with denser populations at Wailuku and settlements further east beginning at Hāmākua Loa. The upland portion of Wailuku Ahupua‘a was resplendent with vast taro fields fed by the ‘Īao Stream. The fertile valleys of four major perennial streams of windward West Maui Mountains formed the largest continuous area of wet-taro cultivation in the Hawaiian Islands (Handy 1940:496). The high degree of cultivation within Wailuku Ahupua‘a, along the flood plain of ‘Īao Stream, gives evidence that a substantial population would have been established in the region during the pre-Contact period.

During an 1828 tour around Maui, missionaries Richards and Green noted the fertility of the Wailuku region. In an excerpt from a letter penned in 1830 and published in the Missionary Herald in 1831, Richards and Green (1831:182) described Wailuku as “a populous and fertile district on the windward side of the island, … a very desirable place for a new station…” They further relayed their observations as follows:

> No district of equal extent on the islands, produces more abundantly the necessaries of life, than Wailuku. Indeed, many districts on Maui and some parts of Hawaii depend for sustenance on this favored valley. It contains of course a numerous population… The district of Wailuku would furnish sustenance for an immense population. (Richards and Green 1831:182)

Handy et al. (1991) describe the stream of Wailuku as the great torrent that drains the highest cloud-capped uplands of western Maui through the deep ‘Īao Valley. The agricultural landscape of much of the upper section of present-day Wailuku is built on old terrace sites. Two named Native Hawaiian ‘*auwai* (irrigation ditches), Kalaniauwai and Kamaauwai, were constructed for irrigating *kalo* on the alluvial plains that stretch both north and south of the Wailuku River (Lonoaea v. Wailuku Sugar Co. [9 Haw. 654] in Sterling 1998:86), the latter of which is a contributing feature to Maui Historic District 3 and still in existence.

Beyond the alluvial sediments of the stream valley as the lower elevations lead into the central isthmus of Maui, the landscape was once dominated by windswept Pleistocene sand dune deposits. The following excerpt of a newspaper article published in *Pacific Commercial Advertiser* distinguishes the differences between the two areas:

> The isthmus of Waikapu [and Wailuku] lies but little above the level of the sea, and is composed of dry sand. Since the goats and cattle have been allowed to run there, they have destroyed the vines and bushes which served to confine the sand on the windward side, and the “dunes” have been driven nearly to the leeward beach, and will soon usurp the whole of the lower part of the isthmus. The wind here rushes across in fierce gusts between the two divisions of the island, and renders the

> navigation of the bay at times quite dangerous. On the western slope of the isthmus, and towards the windward side, lie the cultivated portions of Waikapu and Wailuku, which, with the valleys behind them, are very fertile. (Anonymous 1858:409)

3.1.3.1 Ke Kula o Kama‘oma‘o

Traditional habitation and cultural activities centered on ‘Īao Valley and present-day Wailuku Town vicinity. However, most Wailuku Ahupua‘a lands lay in the large eastern extension, which includes Kahului Harbor and continues east beyond Sprecklesville. This approximately 24,000-acre eastern portion of Wailuku Ahupua‘a, known as *Ke Kula o Kama‘oma‘o,* or the Plains of Kama‘oma‘o, and also referred to as Wailuku Commons, differs pronouncedly from the western portion of the *ahupua‘a* in the virtual absence of permanent habitations until the very late nineteenth century.

A description of Wailuku Ahupua‘a configuration was given by W.D. Alexander in *A Brief History of Land Titles in the Hawaiian Kingdom*: “On Maui the lands of Waikapu and Wailuku appropriated almost the whole of the isthmus so as to cut off half of the lands in the district of Kula from access to the sea” (Alexander 1890:106). A possible explanation for this may include an effort by the politically powerful Wailuku to secure valued resources in the eastern portion of greater Kahului Bay. In addition to common marine resources, drift resources, such as drift logs from the Pacific Northwest, ivory from drifting whale carcasses, and iron embedded in drifting ships or flotsom, may have also been collected in Kahului Bay due to its exposure to trade winds.

Another potential explanation is that the northeastern portion of the isthmus was held by Wailuku for political purposes. Ross Cordy (1981:198-200) suggested a “buffer zone” extended across the central portion of Maui Island, which presumably served as a relatively unoccupied border or “no man’s land” between the two powerful competing societies of Maui (West Maui and East Maui) until the unification of Maui under the ruling chief Pi‘ilani circa 1600. Cordy’s theory suggests that Wailuku held the northeastern portion of the isthmus in order to minimize conflict with the forces of East Maui. Evidence suggests that the Hawaiians of Wailuku were not particularly interested in living in the eastern portion of the *ahupua‘a,* strongly favoring the vicinity of ‘Īao Stream instead. Economic reasons certainly would have existed for excluding Kula people, particularly by reserving access to marine resources. By limiting coastal access, the population of Kula was kept low, and tensions with East Maui were minimized.

The sandy plains of Ke Kula o Kama‘oma‘o also were known by Hawaiians in traditional times as a wandering place of the souls (Beckwith 1970), a place where dead spirits waited for a friendly escort, perhaps a family *‘aumakua* (guardian spirit embodying an animal form), to show them the way to eternity:

> The worst fate that can befall a soul is to be abandoned by its aumakua and left to stray, a wandering spirit (kuewa) in some barren and desolate place, feeding upon spiders and night moths. Such spirits are believed to be malicious and to take delight in leading travelers astray; hence the wild places which they haunt on each island are feared and avoided. Such are the plains of Kama‘oma‘o on the island of Maui. (Beckwith 1970:154)

According to Helen P. Hoyt (1976), Kama‘oma‘o is a region where the “Marchers of the Night,” or *Ka huaka‘i o ka Po*, are sometimes heard and seen. According to Beckwith (1932:199), when

these spiritual “Night Marchers” appear, “[i]t is said that such a sight is fatal unless one has a relative among the dead to intercede for him…

> The marchers carried candlenut torches which burned brightly even on a rainy night. They might even be seen in broad daylight and were followed by whirlwinds such as come one after another in columns. They cried “Kapu o moe!” as a warning to stragglers to get out of the way or to prostrate themselves with closed eyes until the marchers passed. (Beckwith 1932:199)

Such beliefs and residential patterns were likely mutually reinforcing. Because people did not live in any numbers in areas such as Kama‘oma‘o, these locales became associated with *po‘e auana wale* (spirits of the dead). The cultural association with these spirits discouraged subsequent residence in such places. Conceptions of abodes of the dead were not so much ideas of discrete specific spots but were rather perceptions of vast desolate areas which might extend over tens of thousands of acres.

The current project area is located on alluvial soils deposited by the Wailuku River near the sandy plains of Kama‘oma‘o (Figure 8). The Sand Hills stretch across Kama‘oma‘o and are traditionally, historically, and archaeologically known for the presence of numerous Hawaiian burials.

3.1.4 Heiau

In addition to the myriad of traditional land boundaries for taro *lo‘i* arranged along the flow of ‘Īao Stream, two *heiau*, Haleki‘i and Pihana, were constructed atop a low ridge immediately west of the ‘Īao Stream in Paukūkalo, overlooking the fertile coastal plains of Wailuku, Waihe‘e, and Waiehu (Kirch 1997:67). Both Haleki‘i and Pihana were *luakini heiau* with important traditional linkages to famous chiefs (Kirch 1997). Pihana is noted as the birthplace of Keōpuōlani in 1778, a woman descended from a lineage of *tabu* chiefs of divine rank, and raised in Wailuku, Olowalu, and Hāmākua on Maui (Kamakau 1992:259). She gave birth to two royal male heirs of Kamehameha I, Liholiho (Kamehameha II [Reign: 1819-1824]) and Kauikeaouli (Kamehameha III [Reign: 1825-1854]), and a daughter.

Based on traditional accounts, initial construction of the Pihana-Haleki‘i *heiau* complex occurred during the reign of Kaka‘e, or about AD 1510 (Sterling 1998). Radiocarbon dated samples from the *heiau* complex returned a date range between AD 1400-1600 (Kirch 2010), which supports the construction time-frame provided through traditional stories. In later centuries, the *heiau* complex was rebuilt and rededicated by succeeding chiefs, most notably Kamehameha following his success at the battle of *Ke pani wai o ‘Īao* in 1790 (Fornander 1880a). Remnants of Pihana and Haleki‘i heiau remain at the top side of a lithified sand dune overlooking the entrance to Kahului Harbor.

Additional, though less historically prominent, *heiau* existed in relative abundance within Pu‘ali Komohana. In Wailuku, once stood 11 additional *heiau*: Kaluli, Keahuku, Olokua, Olopio, Malena, Pohakuokahi, Lelemako, Kawelowelo, Kaulupala, Palamaihiki, and Oloolokalani. These *heiau* were reputedly consecrated by Liholiho in his tour of Maui in 1801 but destroyed in the following century by agrarian development across the central isthmus.

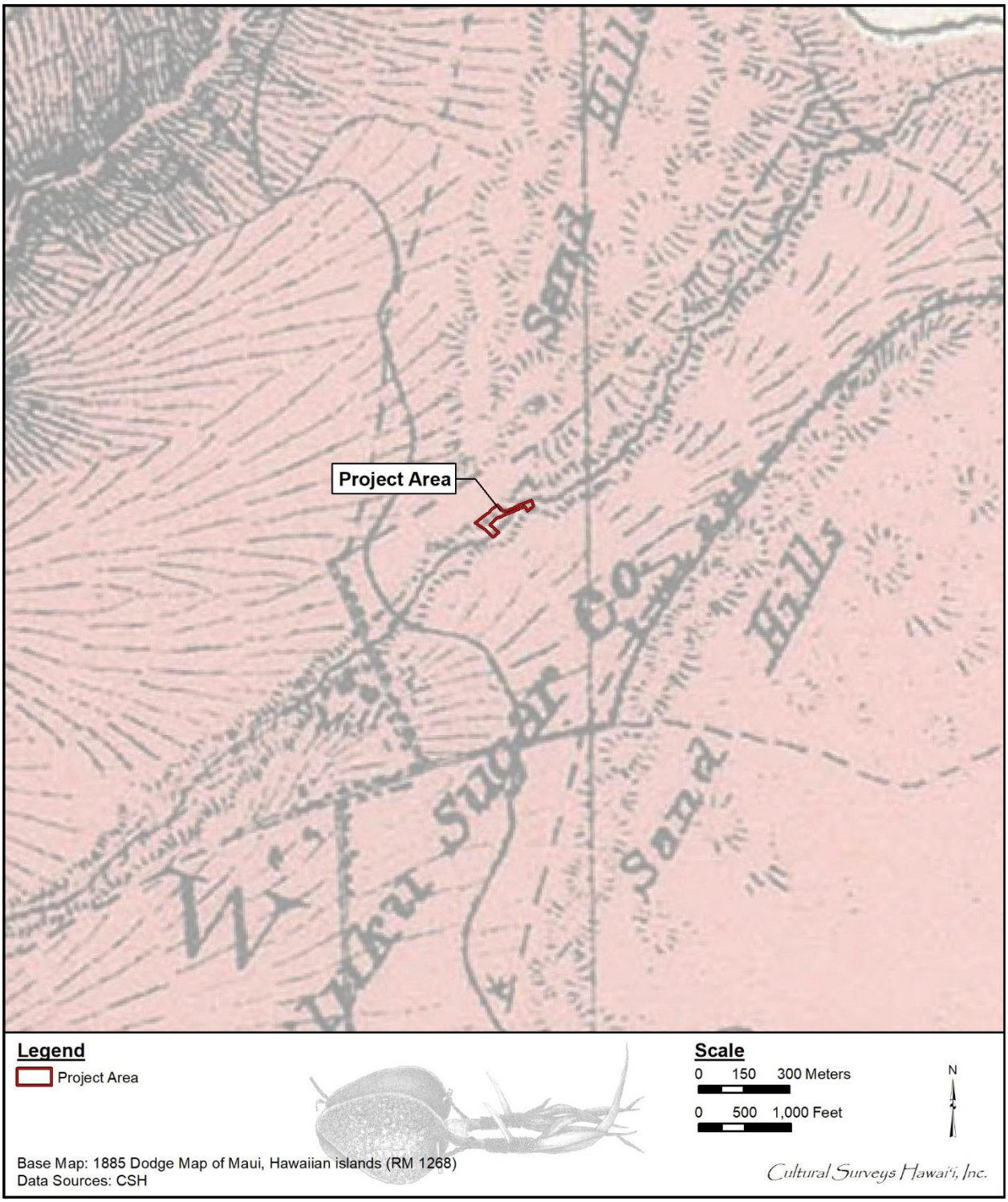

Figure 8. Portion of Dodge (1885) map showing the project area along the Wailuku River and adjacent to the Sand Hills and Wailuku Sugar Company

3.1.5 Politics and Warfare

The presence of ceremonial structures, such as *heiau*, provides evidence that Wailuku was a place of political stability. The agricultural region of Wailuku was the most politically important division of all *Na Wai ‘Eha*. The royal compound Wailuku chiefs once lay at the foot of ‘Īao Valley. From this region, the chiefs of Wailuku ruled Maui for 15 centuries. According to Kamakau (1991), the earliest of the chiefs of ‘Īao was perhaps Kaha‘i. In the 1450s, Chief Pi‘ilani ruled over all Maui and the islands of Lāna‘i and Moloka‘i. He was succeeded by his son, Kihapi‘ilani, followed by his son, Kamalālāwalu; a chief so highly regarded that ever since his time, the island has been spoken of with esteem as “Maui o Kama” or “Royal Maui”. Chief Kekaulike remained in power until the chiefdom was passed to his son Kamehameha-nui in 1690 (Fornander 1880a:314). By the second half of the eighteenth century, Maui *ali‘i* (royalty), including the ruling chief Kahekili, reportedly had been residing at Wailuku enjoying the surf of Kehu and Ka‘akau (Kamakau 1992).

The *moku* of Wailuku and Hāna comprised the two rival societies on Maui Island. During the mid-sixteenth century and the reign of Wailuku Chief Pi‘ilani, “Hana chiefs finally acknowledged the West Maui king’s rule” (Cordy 1981). While the chiefly intra-island rivalry between East and West Maui was settled, the political rivalry between the *ali‘i* of Hawai‘i Island and Maui Island continued. Where Hāna had been the primary stage of battle, Wailuku would come to take a central role in the fight for political gain during the latter half of the eighteenth century. It was in the sand hills of Wailuku that Kahekili and his forces from O‘ahu and Maui would do battle with the armies of Kalani‘opu‘u, chief of Hawai‘i, that had invaded Maui.

Between 1775 to 1779 there was continual fighting between Kalani‘opu‘u of Hawai‘i and Kahekili of Maui (Kamakau 1992:84). King Kahekili had become a renowned warrior. Kahekili was the son of Kekaulike and younger brother of Kamehameha-nui (Kamakau 1992:87). His army of hand-picked warriors were known by their tattoos; half their bodies were tattooed black, even the inside of their eyelids and their gums. Following a losing battle at Kaupō in 1775, Kalani‘opu‘u dedicated several war *heiau* on Hawai‘i Island to aid in the defeat of Kahekili. Upon hearing this news, Kahekili sent for the *kahuna* Kaleopu‘upu‘u, who directed construction of the *heiau* of Kaluli and Pu‘uohala on the north side of Wailuku. When Kaluli Heiau was completed, Kaleopu‘upu said to Kahekili, “This is the house of your god; open the sluice gate that the fish may enter” (Kamakau 1992:85).

In 1776, Kalani‘opu‘u’s warriors landed at Keoneo‘o‘io, with war canoes extending all the way to Mākena, and proceeded to ravage the countryside.

> There, the invading army proceeded to ravage the countryside. Kalani‘opu‘u then landed with additional forces at Kīhepuko‘a at Kealia, (at the area where the Waikapū Stream meets the ocean) with his invading force beached along the Mā‘alaea coastline. His advance regiment of 800 men made ready to battle Kahekili, chief of Maui, at his stronghold across the isthmus at Wailuku. The invading army was “eager to drink the waters of the Wailuku [Stream].”
>
> Across the plains of Pu‘u‘ainako and Kama‘oma‘o shone the feather cloaks of the soldiers… Ka-hekili was at Kalanihale just below Kihahale and above the plateau of Ka‘ilipoe at Pohakuokahi… Kaleopu‘upu‘u [said] to Ka-hekili, “The fish have entered the sluice; draw in the net.” (Kamakau 1992:85)

The forces of Kahekili descended on and destroyed the soldiers of Kalaniopu‘u, slaying the elite soldiers of Kalaniopu‘u on the sand hills at the southeast of Kalua:

> ...the Maui army had the advantage of a well-chosen position. The Hawaiians had to fight uphill or else drift down to the sand hills. In either case advance was difficult… There was a full day of savage fighting, marked by inhuman acts of awful brutality. The native account of the battle says: “It was not a war characterized by deeds of princely courtesy.” Many noted names of valiant chiefs were never again mentioned in Hawaiian story. The story and the life ended together in this Wailuku battle. (Westervelt 1977:139-140)

The battle that took place received the name “The furious destruction at Kakanilua,” named after the sand hills below Wailuku. Only two men escaped to Kīheipuko‘a [Kīhei] to tell Kalaniopu‘u the news of their defeat. After a second day of warfare, Kalaniopu‘u sued for peace and was granted such by Kahekili and his messengers. Kalaniopu‘u then returned home to Hawai‘i Island (Kamakau 1992:88-89).

3.2 Early Historic Period

3.2.1 Western Contact

Kahekili was at Wailuku when Captain James Cook and his ships *Resolution* and *Discovery* encountered Maui. Cook first sighted the island on 26 November 1778 with his ship *Resolution* positioned three miles off Kahului, he recorded in his logbook:

> In the country was an elevated saddle hill, whose summit appeared above the clouds. From this hill, the land fell in a gentle slope, and terminated in a steep rocky coast, against which the sea broke in a dreadful surf. Finding that we could not weather the island, I bore up, and ranged along the coast to the Westward. It was not long before we saw people on several parts of the shore, and some houses and plantations. The country seemed to be both well wooded and watered; and running streams were seen falling into the sea in various places. (in Speakman 1978:23)

Cook records that the Hawaiians who came out in canoes to trade for supplies appeared “to be of the same nation with the inhabitants of the islands more to leeward [i.e., O‘ahu and Kaua‘i] which we had already visited [ten months earlier in January 1778]; and… they knew of our having been there” (in Speakman 1978:23-24).

3.2.2 Battle of Kepaniwai and the Unification of the Hawaiian Islands under Kamehameha I

In 1790, ‘Īao Valley was the site of the last great conflict on Maui. Kamehameha I of the Island of Hawai‘i landed at Kahului to battle the army commanded by Kahekili’s son Kalanikūpule. Kamehameha’s warriors used small cannons, muskets, and ammunition obtained from an American trading ship to rout the Maui defenders. Kamehameha’s modern weapons struck terror into the hearts of the Maui warriors. The Maui army attempted to escape into the ‘Īao Valley. The carnage that followed was so great that ‘Īao Stream was said to have been choked with the corpses of the vanquished defenders, giving the campaign the name “Battle of Kepaniwai,” (the damming of the waters). The high chiefs and royalty of Maui fled to other islands (Alexander 1899:129). Kamehameha, meanwhile returned to the Big Island to deal with Keōua Kuahu‘ula, the last

independent chief on Hawai‘i Island, who had been raiding Kamehameha’s territory while he was away (Kamakau 1992:151).

When Ka‘eokulani, ruling chief of Kaua‘i, heard how narrowly Kalanikūpule and the other chiefs of Maui had escaped death in the war on Maui, and how the waters of Īao had been choked with the bodies of the slain, he was so upset that he set sail to war against Kamehameha. He met Kahekili on O‘ahu, who was now ruling chief over O‘ahu, Moloka‘i, Lāna‘i, and Maui, and persuaded him to join in the war against Kamehameha. Upon arrival on Maui, the war party camped at Wailuku and Waiehu (Kamakau 1992:159).

Kahekili made his home at Pihana and Paukūkalo, and he proceeded to give Waiehu to the Kaua‘i chief Ki‘ikiki, causing discontent among the chiefs of Maui who had to give up some of their lands. This led to a revolt against the Kaua‘i chiefs. A battle was fought at Paukūkalo, adjoining Waiehu. The son of Kahekili, Koalaukani, arose victorious. Though he had been surrounded by Kaua‘i warriors, Koalaukani dodged all of the spears thrown by them and emerged the hero of Paukūkalo (Kamakau 1992:160).

In 1791, Kahekili led his forces to the Island of Hawai‘i to meet Kamehameha in battle. The fighting ended with the indecisive battle of Kepuwaha‘ula, and Kahekili returned to Maui where he died in 1793 (Kamakau 1992:160-162). He was succeeded by Koalaukani, better remembered as Kahekili II, the last independent King of Maui. Kahekili II died a year later (Kamakau 1992:168), and in 1795, Kamehameha defeated the combined forces of O‘ahu and Maui. In 1810, Kaumuali‘i, the last independent king of Kaua‘i and Ni‘ihau, submitted to Kamehameha giving him control of a unified Kingdom of Hawai‘i (Kamakau 1992:196). With the peace engendered during Kamehameha’s reign, no further accounts of events and life at Wailuku are recorded in the remainder of the eighteenth century.

3.2.3 Keōpuōlani

Pihana at Wailuku is noted as the birthplace of Keōpuōlani in 1778, a woman descended from a lineage of *tabu* chiefs of divine rank, and raised in Wailuku, Olowalu, and Hāmākua on Maui (Kamakau 1992:259). She gave birth to two royal male heirs of Kamehameha I, Liholiho (Kamehameha II [Reign: 1819-1824]) and Kauikeaouli (Kamehameha III [Reign: 1825-1854]). Through Keōpuōlani, they were said to have a family genealogy tracing back to the god Ulu, who descended from Hulihonua, an order of priests known as *kahuna*, and Keakahulilani, the first man and woman created by the ancient gods of Hawai‘i (Mookini 1998:6).

Keōpuōlani’s ancestors on her mother’s side (Keku‘iapoiwa II) were said to have been ruling chiefs of Maui dating to the reign of Kaka‘alaneo, who ruled Maui and Lāna‘i from his court in Lele (the ancient name of Lahaina) (McKinzie 2003:130), around the time when the voyages of migration between Hawai‘i and the islands in the South Pacific had ceased, ca. AD 1360 (Fornander 1919:313). It was believed that Kaka‘analeo’s direct ancestor was a *mo‘o inanea*, a mythical *mo‘o ‘aumakua* (lizard guardian spirit) (Beckwith 1970:450). Keōpuōlani was also named Kalanikauika‘alaneo at birth, which may have been for her legendary ancestor, Kaka‘alaneo.

Keōpuōlani was also named after her great-grandmother, Keku‘iapoiwanui, wife of Kekaulike, chief of Maui in the late 1600s. Keku‘iapoiwanui and Kekaulike were *kapu moe* (chiefs of the prostrating *tabu*) on Maui, whose children were Kalola Pupuka o Honokawailani (an *ali‘i kapu* of

Maui and Hawai‘i), and her brother, Kahekili, ruling chief of Maui and O‘ahu. Keōpuōlani inherited her rank of *ni‘aupi‘o* (high chief) from both of her parents (Kamakau 1992:69). Kahekili was one of the last chiefs of Maui and made Wailuku his home, at the entrance to ‘Īao Valley (Ashdown 1970:35).

Keōpuōlani’s ancestors on her father’s side (Kiwala‘o) were descendants of chiefs who had ruled the island of Hawai‘i for many generations. Her father Kiwala‘o was son of Kalani‘opu‘u and grandson of Kalaninui‘iamamao, the first-born of the ruling chiefs of the island of Hawai‘i (Fornander 1880b:204). According to Malo (1951b), the genealogies of Keōpuōlani and her ancestors were found in the Kumulipo, a traditional Hawaiian creation chant. In this chant, the *kapu* chiefs of O‘ahu, Kuali‘i, Peleioholani, and Kahahana, are given prominence. The genealogy of Kumu‘uli was praised by the ancient Hawaiian chiefs and quoted in the famous chant of Kuali‘i, the warrior king of O‘ahu, which was recited in honor of Keōpuōlani, the *kapu* descendant of the Maui line of kings (Mookini 1998:6).

Keōpuōlani broke the *tabu* of men and women eating separately. She first welcomed missionaries to the Hawaiian Islands and taught her own children how to read and write. She became a Christian and helped to spread Christianity to Hawaiians on Maui, “thus the highest tabu chiefess became the first Hawaiian convert” (Kamakau 1992:262). She died in 1823 in Lāhainā at the age of 55.

Prior to 1832, at which time the land where the present-day Bailey House Museum was granted to the Protestant missionaries, the prominent tract of land above the ‘Īao River was once the royal compound where Hawaiian chiefs lived. In January 1836, the Princess Nahi‘ena‘ena and her husband Leleiohoku went to live in Wailuku. The Princess died less than a year later during the birth of a child, and she was buried in Lāhainā. In the years following the loss of Nahi‘ena‘ena, the remaining chiefs and *ali‘i* of Maui continued to make Lāhainā their official residence (Kamakau 1992:340-349).

3.2.4 Early Nineteenth Century

With the death of Kamehameha I in 1819, warfare between the ranking Hawaiian chiefs was set aside by powerful changes within traditional Hawaiian society. Four decades of interaction with American, Russian, British, and French traders had opened the way for Christianity. The establishment of a system of schools throughout the islands was vigorously pursued by the governing chiefs of Hawai‘i, aided by the newly-arrived American Protestant missionaries beginning in 1820 (Kuykendall 1938).

In 1830, Protestant missionaries stationed at Wailuku recorded school attendance figures for the out-stations of Wailuku: Waihe‘e (612 students), Waikapū (329 students), and Waiehu (103 students) (Richards and Green 1831). In 1840, American scientists aboard the U.S. Navy ship *Vincennes* landed at Lahaina and travelled over land to the district of Wailuku, where they noted that native Hawaiian timber grew in sizes suitable for the construction of canoes (Wilkes 1845:252). In 1850, the protestant Reverend Henry Cheever observed:

> As you get into the valley and vega of Wailuku, you see numerous remains of old *kihāpai*, or cultivated lots, and divisions of land now waste, showing how much more extensive formerly was the cultivation, and proportionally numerous the people, than now... The whole valley of Wailuku, cultivated terrace after terrace,

> gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it. (Cheever 1851:124)

According to the diary of the Catholic priest, Father Favens, he first visited Wailuku on 15 June 1846. By the end of 1847, a small Catholic chapel had been constructed at Wailuku. Stormy weather soon destroyed this native-style frame chapel. The first solid-frame church at Wailuku was constructed by the Mission Brothers of Honolulu and dedicated to St. Anthony on 5 March 1854 (Schoofs 1978a:291-292). The St. Anthony School held classes as early as 1848, and by 1855, the school had its own resident priest. The large premises of St. Anthony's Church and School were the center of Catholic life in Wailuku. The land on which the church and school is located measures 11.20 acres. The cemetery across Lower Main Street has an area of 5.878 acres (Schoofs 1978a:294). Part of this land was deeded by King Kamehameha IV in 1868.

3.2.5 The Māhele and the Kuleana Act

The most significant change in land-use patterns and land allocation came with The Māhele and the privatization of land in Hawai‘i. The establishment in 1839 by Kamehameha III (Kauikeaouli) of a Bill of Rights for the people of Hawai‘i, followed by a formal constitution in 1840, hastened the shift of the Hawaiian economy from that of a subsistence-based economy to that of a market-based economy. The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society.

During the Māhele, all of the lands in the Kingdom of Hawai‘i were divided between the *mō‘ī*, *ali‘i* (royalty), *konohiki* (overseer of an *ahupua‘a*), and *maka‘āinana* (common people/tenants of the land) and passed into the Western land tenure model of private ownership. In 1848, the crown and the *ali‘i* received their land titles, and in 1850, the *maka‘āinana* began receiving their *kuleana* (individual land parcels) awards (Alexander 1890:114). Crown Lands were defined as: "…private lands of His Majesty Kamehameha III, to have and to hold for himself, his heirs and successors forever; and said lands shall be regulated and disposed of according to his royal will and pleasure subject only to the rights of tenants" (Kingdom of Hawaii 1848).

Wailuku was declared as "Crown Land" to be used to support the Kingdom of Hawai‘i. Ruth Ke‘elikolani, half-sister of Kamehameha V (Lot Kapuāiwa), inherited the *ahupua‘a* of Wailuku from Lot Kapuāiwa on his death in 1872. Ruth Ke‘elikolani then sold a portion of her Wailuku land holdings to the sugar-industrialist Claus Spreckels in 1882. Spreckels subsequently received Land Grant 3343 from King Kalakaua, that consisted of 24,000 acres of the southeastern portion of the Wailuku Ahupua‘a (Zambucka 1977:48).

Lands were further partitioned and set aside as Government lands, which were defined and managed as indicated below:

> …those lands to be set apart as the lands of the Hawaiian Government, subject always to the rights of tenants. And we do hereby appoint the Minister of the Interior and his successors in office, to direct, superintend, and dispose of said lands, as provided in the Act … (p)rovided, however, that the Minister … shall have the power, upon the approval of the King in Privy Council, to dispose of the government lands to Hawaiian subject, upon such other terms and conditions as to him and the King in Privy Council, may seem best for the promotion of agriculture, and the best interests for the Hawaiian Kingdom… (Kingdom of Hawaii 1848)

In 1850, most of the chiefs ceded a third of their lands to the Government in order to obtain an allodia title for the remainder and thus greatly increasing the Government land base (Alexander 1890:114). The designation of lands to be set aside as Government lands, paved the way for land sales to foreigners. Therefore, in 1850, the legislature granted resident aliens the right to acquire fee simple land rights (Moffat and Fitzpatrick 1995:41-51).

In designations of lands as either Crown or Government, and through all awards of whole *ahupua‘a* and *‘ili* (land district), the rights of the native tenants were expressly reserved, “Koe na Kuleana o Kanaka” (Reserving the Rights of Native Tenants) (Alexander 1890:114). In an Act ratified on 6 August 1850, the gathering rights of the common people for personal use, which included the gathering of both terrestrial and marine resources, in addition to the right to water and the right of way on the lands of the *konohiki*, were guaranteed and embodied in Section 10477 of the Civil Code (Alexander 1890:114-115). By this same Act, resolutions passed by the Privy Council granted fee simple titles, free of all commutation, with the exception of awards granted within the towns of Honolulu, Lāhainā, and Hilo, to all native tenants for their cultivated lands and house lots (hereafter referred to as *kuleana* land) (Alexander 1890:115). Claims of the native tenants, or *kuleana* land claims, were presented to the Land Commission whose duty was to:

> …ascertain the nature and extent to each claimant’s rights in land, and to issue an Award for the same which is prima facie evidence of title “and shall furnish as good and sufficient a ground upon which to maintain an action for trespass, ejectment or other real action against any other person or persons whatsoever, as if the claimant, his heirs or assigns had received a Royal Patent for the same” (Alexander 1890:110).

Land Commission Awards (LCAs) are *kuleana* land awards or claims that were approved by the Land Commission and granted by ministers representing the Kingdom of Hawaii’s Department of the Interior. These awards were granted to tenants of the land, Native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners who could prove occupancy on the parcels prior to 1845.

The project area is surrounded by a dense clustering of Land Commission Awards (LCAs) that extend throughout this portion of Wailuku Ahupua‘a (Figure 9, Figure 10, and Table 2). LCA documentation and testimony was reviewed via the Waihona ‘Aina (2000) database. LCAs that border or extend within the project area include: 3495:2 (to Kawaahie/Kawahie, wahine, contains 18 *lo‘i*;, 1 house lot), 1742*M:4 (to Kaauwai, Z., contains 5 *lo‘i* and 3 *mo‘o* of *kalo),* 3385:1 (to Pahoa, contains 22 *lo‘i),* 3290:3 (to Mahoe, contains 21 *lo‘i,* 1 house lot), 4452*M (Kalama, Hazaleleponi, contains Contains 2 house lots), 3465 (to Keawe, contains 13 *lo‘i),* 3477 (to Kekaona/ Kekoona, contains 21 *lo‘i*; 1 house lot), 3381 (to Puniho, contains 25 *lo‘i),* 3385:2 (to Paho, contains 22 *lo‘i.*

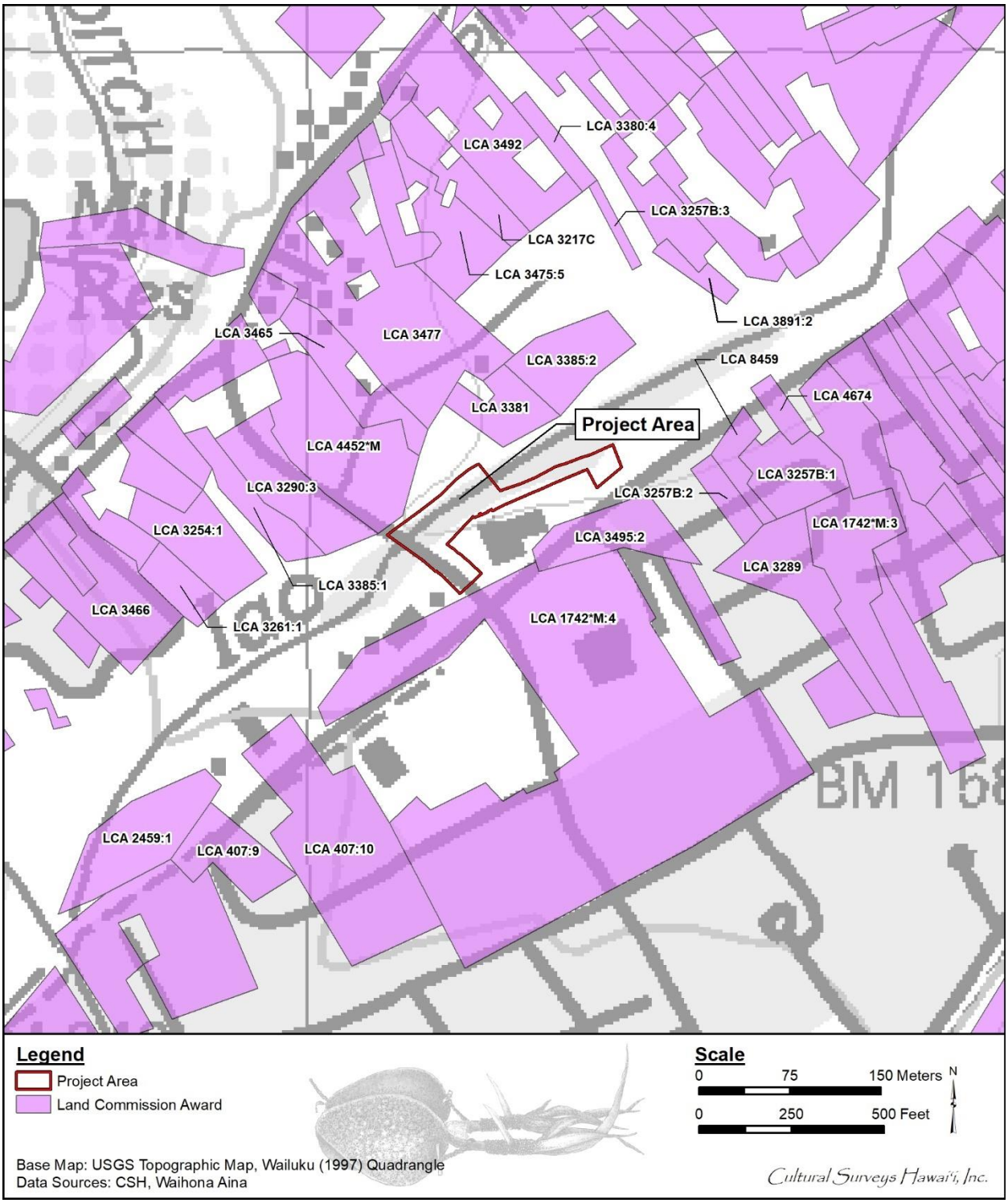

Figure 9. Portion of the 1997 Wailuku U.S. Geological Survey topographic quadrangle with an overlay showing the distribution of Land Commission Awards in the vicinity of the project area

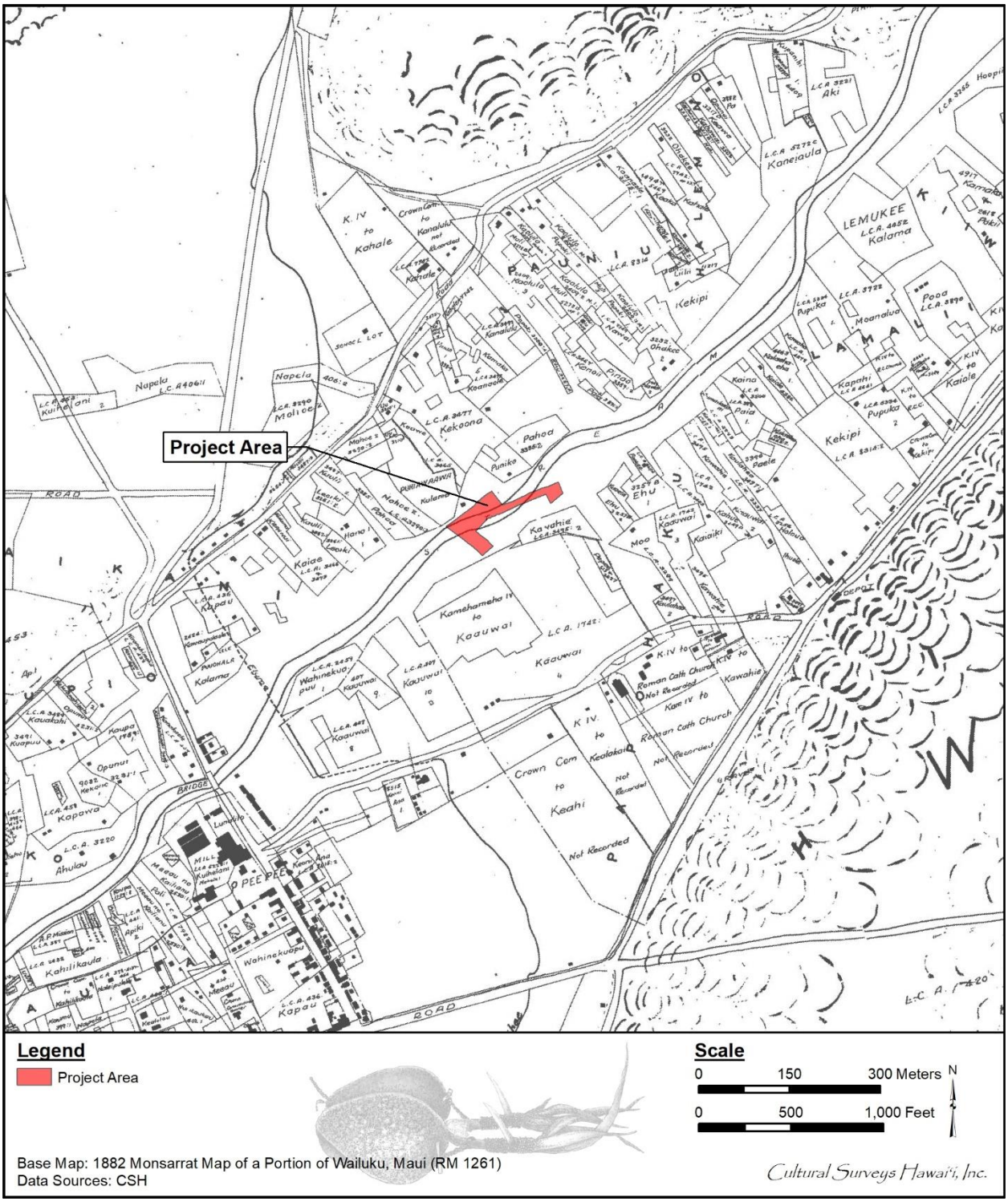

Figure 10. Portion of Monsarrat (1882) map showing LCAs and structures in the vicinity of the project area

Table 2. Land Commission Awards in the immediate vicinity of the project area

Land Claim #	**Claimant**	***‘Āpana* (Sections)**	***‘Ili* (Land Division)**	**Description**
407:9	Kaauwai, Z.	15	Halaua, Imiau, Waikani, Kalua, Owa, Pohakuuhi	Contains 3 *lo‘i* and sugarcane
407:10				
1742*M:3	Kaauwai, Z.	8	Paeohi, Papohaku, Kailoaiki, Wailoanui, Kamani, Kaluaahoo (Kaluaaha), Owa	Contains 5 *lo‘i* and 3 *mo‘o* of *kalo*
1742*M:4				Contains 1 *lo‘i*
2459:1	Kawahinekuapuu	6	Halaula, Kalua, Wailuku, Namailou, Peepee, Kaunaheana, Haliau, Iao	*kalo* land in the *ili* of Haliau
3217C	Kamaka	1	Kapaaloa	Contains 1 *lo‘i*
3254:1	Hana 1/ Holoua	2	Ahuena	Contains 5 *lo‘i*
3257B:1	Ehu	3	Papohaku, Kapaalaea	Contains 3 *lo‘i and* 2 *kalo* lands
3257B:2				
3257B:3				
3289	Moo	1	Papohaku	Contains 20 *lo‘i*
3290:3	Mahoe 2	4	Ahuena, Puhiawaa	Contains 21 *lo‘i,* 1 house lot
3380:4	Popoki	4	Pauniu	Contains 26 *lo‘i,* 1 *kula*, 1 house lot
3381	Puniho	2	Kahewa, Ahuena	Contains 25 *lo‘i*
3385:2	Pahoa	2	Ahuena, Kahewa	Contains 22 *lo‘i*
3465	Keawe	1	Ahuena	Contains 13 *lo‘i*
3466	Kaiae	2	Kapanui, Kaououku	Contains 8 *lo‘i*
3475	Koanaole	5	Halemanu, Pauniu, Kapaola	Contains 31 *lo‘i,* 1 house lot

3477	Kekaona/ Kekoona	1	Ahuena	Contains 21 *lo‘i*; 1 house lot
3492	Kanalulu	1	Kapaaloa, Kapaalaa	Contains 39 *lo‘i*; 1 *kula*
3495:2 & 4	Kawaahie/Kawahie, wahine	4	Papohaku	Claimed a total of 18 *lo‘i*; 1 house lot
3891:2	Paia	2	Puhakoli, Pauniu, Puhakulii, Puhakuuli	Contains 19 *lo‘i,* 1 *kula*
4452*M	Kalama, Hazaleleponi	7	Mokuhinia, Kaohe, Puhiawaawa, Lemukee, Puohala, Manienie	Contains 2 house lots
4674	Pookee	0	Papohaku	Contains 8 *lo‘i*

3.2.6 Mid to Late 1800s

3.2.6.1 Wailuku Sugar

During the American Civil War in the 1860s, Hawaiian sugar prices rose significantly, leading to the formation of 12 large sugar plantations on the island of Maui; the most of any Hawaiian Island. The Wailuku Sugar Company was organized in 1863. The enterprise was a cooperative venture of James Robinson & Company, Thomas Cummins, J. Fuller, and C. Brewer & Company. The Catholic Mission agreed to give the Wailuku Sugar Company a right-of-way across their property for a railroad. In this manner, the enterprise laid a railway line to Waiehu and Waihe‘e, by way of Lower Wailuku (Condé and Best 1973:267).

Maui’s earliest plantations were limited regionally to available natural water sources. The innovations of irrigation and equipment such as deep wells, allowed plantations to expand and increase production.

By 1867, the Waiuku Sugar Company encompassed 500 acres and was producing approximately 800 tons of sugar. The company incorporated in 1875 and began to buy out land near the vicinity of the mill and by 1880 the sugar company was producing more than 1, 550 tons of sugar (Figure 11 and Figure 12).

With the success of sugar and with Wailuku’s economic expansion came the need for the importation of foreign labor. In short order, Portuguese, Japanese, and Filipinos increased the population of the district, which made the need for development and larger churches necessary. The first western-style structure in Kahului was a warehouse built in 1863, and a nearby store was recorded as having been built in 1873. The Catholic St. Anthony Church in Wailuku became the first stone church erected in central Maui. It was dedicated on 3 May 1873 (Schoofs 1978b).

The success of sugar grown in the region also resulted in a second large plantation, in Waihe‘e, producing over 757 tons of sugar and 45,000 gallons of molasses in 1865. The Waihe‘e mill manager was Samuel T. Alexander, and the mill’s head foreman was Henry P. Baldwin, both of whom would later resign to establish a small sugar enterprise of their own in upper Pā‘ia (Abner Blanks Gilmore 1936). In 1869, on land located just west of Pā‘ia, a small *kuleana* of 11.94 acres was purchased by Alexander and Baldwin, both eager to apply their agricultural experience to their own plantation. This initial land purchase was the beginning of the development of the entire central isthmus for sugar cultivation. In rapid succession, the partnership of Alexander & Baldwin (A&B) expanded its operations by purchasing other small *kuleanas*, setting up a mill, and attracting more investment capital (Dean 1950).

Beginning in 1878, the first steam locomotive of the Kahului and Wailuku Railroad, an English-made Fowler locomotive named “Queen Emma”, had been set up on three miles of track at the Kahului Harbor, and in 1879 began to run between the sugar mills of Wailuku and the Port of Kahului (Best 1978:13; Conde 1993:47). In short order, the Hawaiian Commercial & Sugar Company (HCS) plantation of Claus Spreckels ran English-built Fowler steam locomotives through their fields to move harvested cane to a mill in Spreckelsville and thence to the Kahului Harbor for shipment.

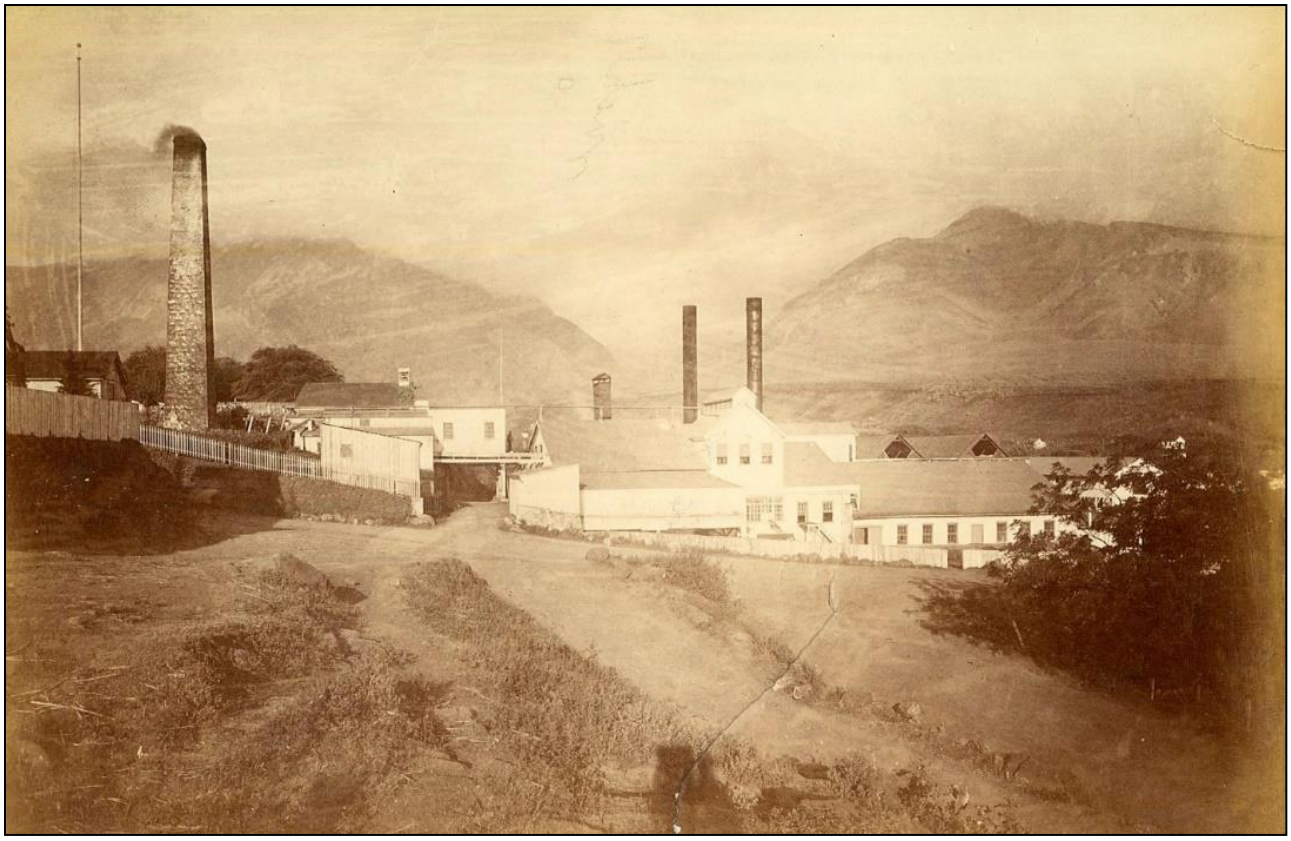

Figure 11. Circa 1870 photograph of the Wailuku Sugar Company mill constructed in the 1860s, located at the end of Market Street (collection of R. Hill, CSH)

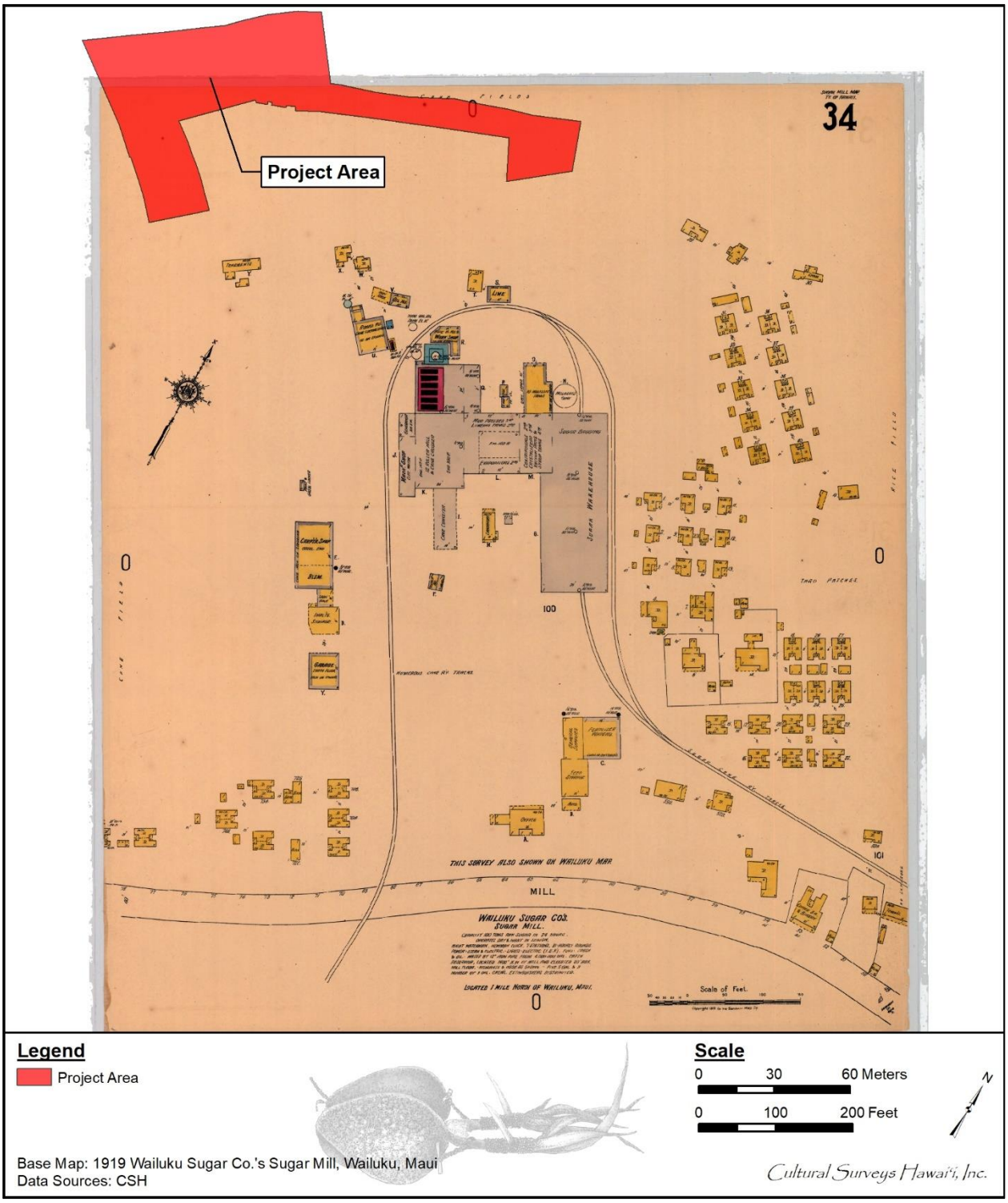

Figure 12. 1919 Wailuku Sugar Co.'s Sugar Mill in reference to the Project area; note the tenements buildings, locomotive maintenance buildings, and a lime building closest to the project area

The economic progress of sugar demanded the importation of people from the Philippine Islands, Japan, Puerto Rico, and Portugal. The sale of government lands in Wailuku for sugar helped to supplement income to the government of Hawai‘i, an economic condition which intensified with the collapse of the whaling trade in the 1860s and the signing of the Reciprocity Treaty of 1876, with the United States. The Reciprocity Treaty allowed Hawaiian sugar into the California market duty free. The American settlement of California hastened the need for Hawaiian sugar, following the loss of sugar production in Louisiana during the Civil War. Between 1860 and 1880, Wailuku prospered with approximately 2,250 acres in sugar and a foreign population diversified to effectively harvest nearby forests to burn for steam power, to plant and grow sugar cane, to mill and bag sugar, and to transport the product by railroad to the Port of Kahului (MacLennan 1997:97-104). William H. Bailey bought the Edward Bailey & Sons Plantation from his father and combined it with the Wailuku Sugar Plantation. He became manager in 1878 and president in 1882 (McCullough 2010:252).

In these early days of the industry, each sugar mill was powered by oxen. By the 1880s, all the mills were powered by steam. It was during this time that Wailuku became a plantation center predominantly populated by foreign labor. An 1880 map of the Island of Maui by Dodge (RM 1269) shows the project area extending between an unimproved trail or road in the present-day alignment of Lower Main Street and an improved road in the present-day alignment of North Market Street (Figure 13). The project area is crossed by Spreckels ditch, which is still present along this alignment.

Large numbers of sugar laborers arrived on Maui during the late 1800s and early 1900s; many of them Catholics, swelled the settlement of plantation camps around the existing Catholic churches (Figure 14). In this manner, Wailuku and the region around Pu‘uohala Village became the centers of plantation camp housing for the Wailuku Sugar Company. In all, there were 11 camps for the Wailuku Sugar Plantation. The sugar mill of the enterprise was located along the ‘Īao Stream in the northern portion of Wailuku (Figure 15).

In 1873, the Wailuku Catholic Boy’s School had 74 pupils. The changeover from teaching in the Hawaiian language to English was accomplished at the Wailuku Catholic Boy’s School by Father Sullivan in 1875. In 1884, the Franciscan Sisters took the helm at St. Anthony’s Girls’ School. When the Mary Knoll Sisters took over this position in 1928, the school’s enrollment went from 400 pupils to over a thousand, at which time work commenced on a new Girl’s High School Building, which was completed in 1940 (Schoofs 1978a:300-301).

3.2.6.2 Wailuku Sugar Company

As Wailuku Sugar Co. continued to expand, the technology progressed as well. In 1890, the water powered mill was upgraded to a six-roller steam powered mill. The Waikapu Sugar Company, along with the Waihe‘e Sugar Company, was acquired and the annual production reached 4, 349 tons of sugar (Dorrance and Morgan 2000). Harvested acreage steadily grew annually from 1, 268 acres in 1895 and peaking at 3, 482 acres in 1933.

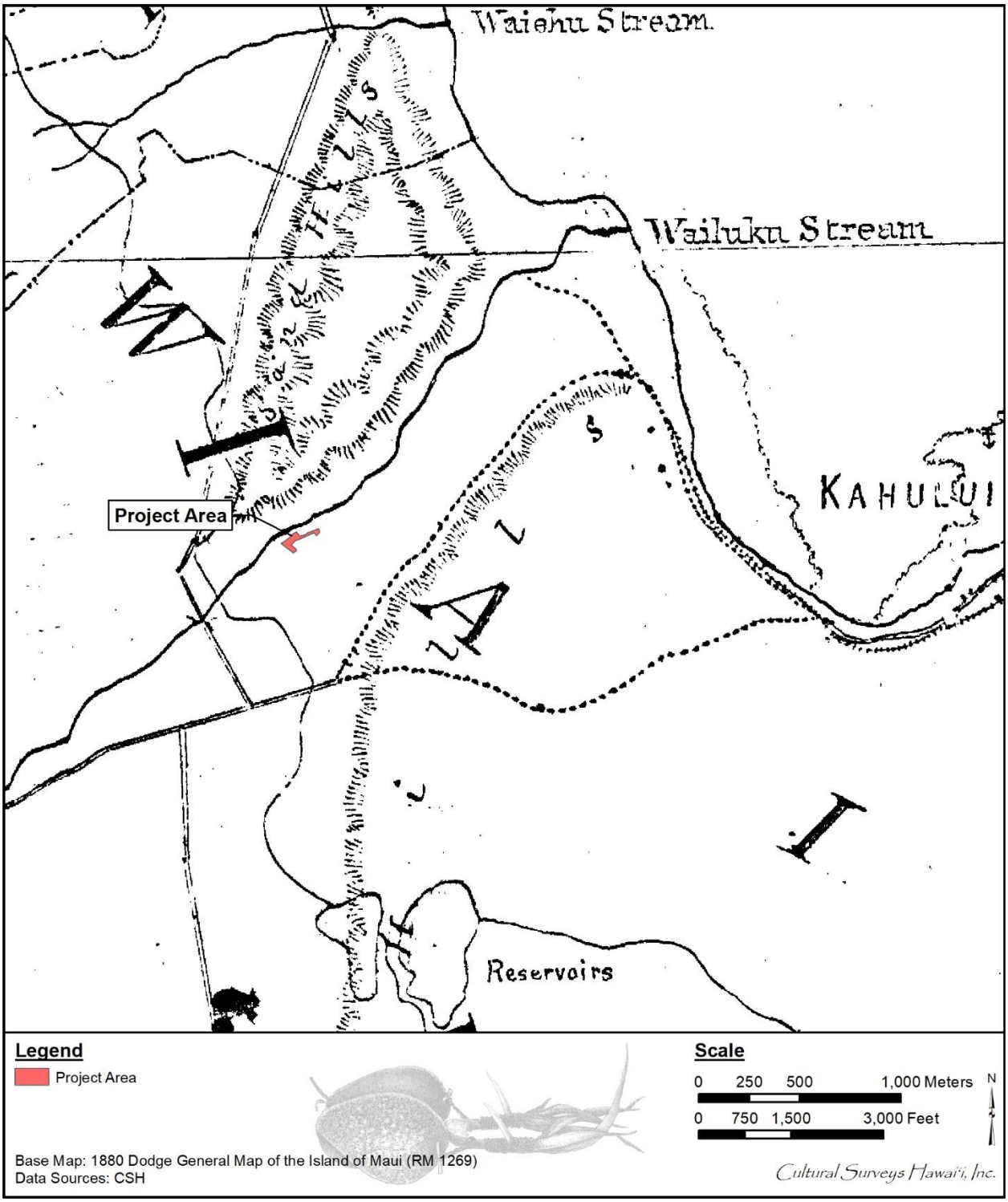

Figure 13. Portion of 1880 Dodge map of the Island of Maui (RM 1269) depicting the project area in relation to the sand hills, various roads and trails, and plantation ditches (Dodge 1880)

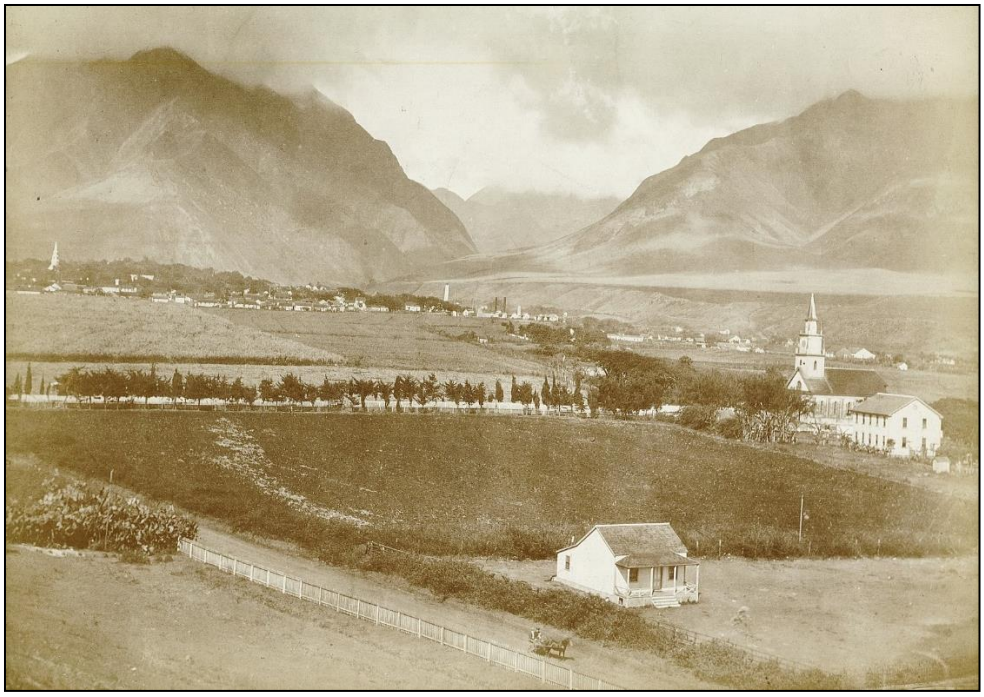

Figure 14. Circa 1870 photograph showing the town of Wailuku and the spire of the Ka‘ahumanu Church (at upper left) and a horse-drawn cart in the foreground appears to be heading toward Kahului on a portion of the government road, present-day Lower Main Street (c collection of R. Hill, CSH), view to northwest

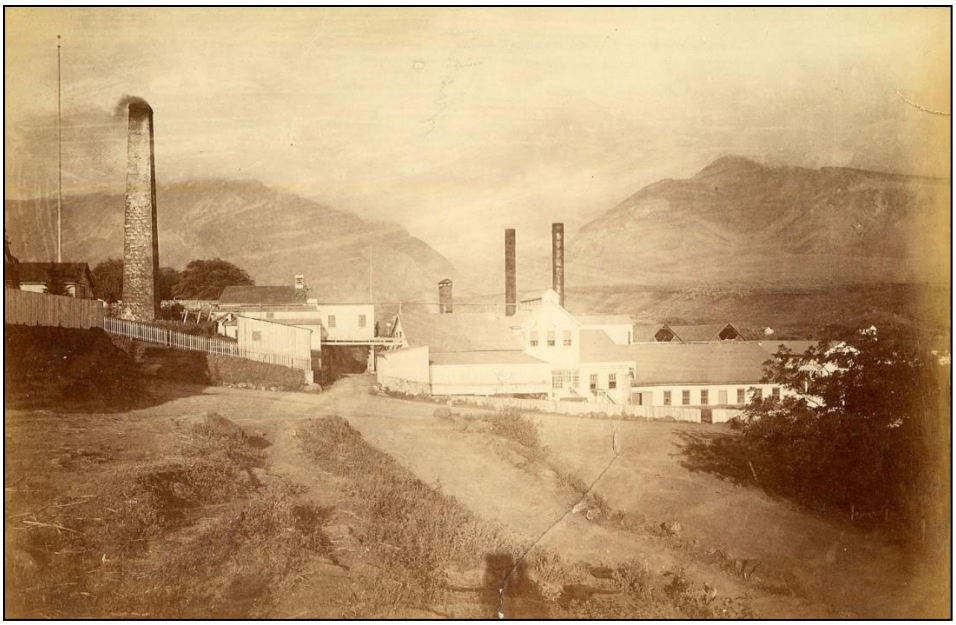

Figure 15. Circa 1870 photograph of the Wailuku Sugar Company mill constructed in the 1860s, located at the end of Market Street (collection of R. Hill, CSH)

By 1936, the Wailuku Sugar Company replaced almost all animal power with mechanical industrial equipment (Table 3). 60 mules were kept and used for light hauling in inaccessible areas. Overall production reached 1, 025 Tons of cane per 24 hours (Abner Blanks Gilmore 1936:204).

The Wailuku factory was located on the outer bounds of Wailuku and was comprised of eleven villages that included over 460 housing units, recreational areas, a factory dairy farm, and a taro farm. The plantation population was recorded at 1, 059 men, 361 women, and 1,174 children occupying 501 houses. The payroll listed 845 men, 14 women, and 51 minors for a total of 944 employees. From 1950 through 1954, the eleven villages now comprised of 400 housing units, recreational grounds, a Federal Credit Union, and two baseball parks. Several of the villages were sold for urban development and promotion of private home ownership. The population in 1950 was recorded at 1, 798 (633 men, 346 women, and 819 children) people occupying 400 factory owned homes and 160 privately owned houses (Abner Blanks Gilmore 1936:205-206; Gilmore 1954:124)

Between 1936 and 1954, harvested acreage steadily grew annually from 2,854 acres in 1935 and peaked at 3,549 acres in 1939 while the highest year of production was 1950 with 23, 933.82 tons of sugar with 8.23 tons of sugar per acre. Overall production reached 1, 200 tons of cane per 24 hours (Gilmore 1954:123).

By the 1970’s, over 30,000 tons of sugar was being produced a year but as urban development and other agricultural operations (pineapple and macadamia nut) became more prominent, C. Brewer & Company began to sell off land. Sugar production began to decrease by 1986 with only 19, 885 tons of sugar produced. The milling process was contracted out to Hawaiian Commercial & Sugar Company and by 1988 the Wailuku Sugar Company ended sugar operations (Dorrance and Morgan 2000:66)

According to the SHPD, their GIS records indicate one historic property is located near the vicinity of the project area (SIHP 50-50-04-1181). This identified historic property was recorded as the “Wailuku grindstone” and measures approximately 1.6 x 1.5 x 0.9 m. The grindstone was originally identified in the Wailuku River and was later moved to the courtyard of the Wailuku Sugar Company (SHPD correspondence January 28, 2020).CSH was unable to locate further recordation regarding previous archaeological recordation, the provenience of SIHP # -1181, or the current location and condition of the historic property.

Table 3. Wailuku Sugar Co. factory equipment (Abner Blanks Gilmore 1936)

Mechanical Feature	Function	Specs/Dimension
Cane handling	Cane transfer	Unlisted
Milling equipment	Milling	Rollers (2-roll 28” x 72”), crushers (4 sets 34” x 78”, knives (26 knives, 2 9/16” x 1 ½”, conveyer belt (572 rpm)
1st mill front roll opening	Mill openings	3/8”, 32.2’ per minute rolling revolution, 64.6 tons of linear pressure per foot
2nd mill front roll opening		5/16”, 16.6’ per minute rolling revolutions, 61.5 tons of linear pressure per foot
3rd mill front roll opening		5/16”, 19.0’ per minute rolling revolutions, 63.1 tons of linear pressure per foot
4th mill front roll opening		1/4”, 22.4 per minute rolling revolutions, 693.2 tons of linear pressure per foot
1st mill roll grooving	Mill grooving	3 rolls, 1 1/3d grooves per inch
2nd mill roll grooving		Front roll 1 1/3d grooves per inch, top and back rolls 4 grooves per inch
3rd mill roll grooving		All rolls 4 grooves per inch
4th mill roll grooving		All rolls 4 grooves per inch
2 Stirling boilers	Steaming cane	6,032 sq. ft. heating surface, 160 lbs
3 hrt boilers		84” x 20’, 2, 540 sq. ft. heating surface, 135 lbs
300 kw “G-E” generator	Electric plant	20’ x 30” 400 hp Nordberg-Todd uniflow engine
105 kw Westinghouse generator		16” x 20” 140 hp Skinner engine
2 baffled juice heaters	Clarification	632 sq. ft.
15 juice settlers		11 juicers at 352 cu. Ft. capacity, 4 juicers at 270 cu. Ft. capacity
Pre-evaporator	Evaporation	10’ diameter
Standard quadruple effect evaporator		8’7” diameter, 2,950 sq. ft. heating surface, total heating surface 11, 800 sq. ft
Syrup and remelt tanks	Pan supply tanks	2, 160 cu. Ft. capacity

Molasses tanks		2,140 cu. Ft capacity
Premium sugar calandria pan	Vacuum pans	10’ diameter, 1,1645 sq. ft. heating surface and 795 cu. ft capacity
Premium sugar calandria pan		11’ diameter, 1,052 sq. ft. heating surface and 1100 cu. ft capacity
Secondary sugar coil pan		10’ diameter 733 sq. ft. heating surface and 600cu. ft capacity
Secondary sugar calandria pan		10’ diameter 1,165 sq. ft. heating surface and 795 cu. ft capacity
Evaporator, pans, central vacuum pump	Vacuum and Condenser system	28” diameter, 36” stroke Lorenz pump, 22” x 36” Corliss engine
14 0-type crystallizers	Crystallizers	740 cu. ft. working capacity
4 U-type crystallizers		892 cu. ft. working capacity
8 Premium sugar centrifugal pump	Centrifugals	40” x 24” hydraulic machines powered by 4” Worthington centrifugal pump (900 rpm, 350’ head, 150 hp steam turbine)
14 Secondary sugar centrifugal pump		40” x 24” (powered by a 35 hp motor and 75 hp motor
Warehouse	Sugar storage	85’ x 160’, 30 sugar bags high, 5,000 tons storage capacity
Storage tanks	Molasses storage	400 ton capacity
Oil storage	Fuel storage	15,000 gallon capacity
Supply warehouse	Supply storage	80’ x 100’
Carpenter Shop	Shop building	50’ x 160 ft
Blacksmith Shop		
Cane car repair		
Tractor repair		
Auto repair		
Truck repair		

3.2.6.3 Sugar Competition

Competition was supplied by Claus Spreckels, who engineered a similar irrigation ditch from Honomanū in East Maui to lands located just inland of Kahului, where the Spreckelsville mill plantation camp were built. Spreckels invested three million dollars in the Hawaiian Commercial & Sugar Company (HC&S), and competed for sugar lands, warehouse space, railway lines, and shipping schedules with the Alexander & Baldwin venture (Dorrance and Morgan 2000).

By 1881, Spreckels had installed electric lighting in his mill to grind cane at night; the first of his many innovations to make sugar more profitable. Following his success in building the Honomanū Ditch linking East Maui water sources with his sugar fields in the central isthmus, Spreckels engineered the Waihe‘e Ditch (also named the Spreckels Ditch) in 1882, to tap water resources from West Maui. The 15-mile-long ditch started at the 435-ft elevation of Waihe‘e Stream, and carried 60 million gallons of water (per 24-hour day) to the Wai‘ale Reservoir at the 214-ft elevation of Wailuku. Spreckels became the first plantation owner to irrigate his fields with mountain water from both East and West Maui. By 1888, the Spreckels plantation covered 28,000 acres, making it the largest sugar plantation in the world (Wilcox 1996).

During this period, the major enterprise out of Kahului was the Kahului Railroad Company. In 1879, the Kahului Railroad Company was formed by Thomas H. Hobron, William O. Smith and William H. Bailey. The first rails were laid at a small wharf at Kahului on 30 June 1879. Three miles of track to the village of Wailuku were completed by 10 September 1879. By 1881, the Kahului Railroad was carrying raw sugar to the port of Kahului from both the Wailuku Sugar Company and from the Alexander & Baldwin mills in Pā‘ia and Hāmākua .In 1884, Kahului Railroad became a freight forwarder and subsidiary of Wilder Steamship Company (Best 1978).

By 1897, the Spreckels-owned HC&S Company attempted a blockade of the Kahului wharf to drive the Wilder Steamship Company out of business. To circumvent the blockade, the directors of Alexander & Baldwin purchased the disputed 5.47-acre harbor-front parcel owned by Spreckels and created a partnership of other plantations to drive Spreckels out of business. By 1898, financial pressures forced Spreckels to give up control of HC&S to a partnership headed by Samuel T. Alexander and Henry P. Baldwin after a long and fierce battle. In less than a year, the Alexander and Baldwin-owned HC&S Company was shipping sugar from landings at Pā‘ia, Huelo, Kīhei and Nāhiku to the newly-formed California & Hawaiian Sugar Refining Company in California. By 1899, Alexander & Baldwin had successfully taken over the sugar interests of Claus Spreckels and had negotiated a friendly purchase of the Kahului Railroad Company (Dean 1950).

The HC&S Company’s Lowrie Ditch project began in 1898. This project brought an additional source of water to the arid plains south of Kahului. William J. Lowrie’s plan was to begin the ditch at the Pāpa‘a‘ea Reservoir, deep in East Maui at the 1,000 ft elevation, and maintain a 4-ft drop per mile following the ditch’s initial plunge from the Kailua reservoir. Steep mountain gulches were traversed using the force of the constant weight of water flowing in a series of siphons. The Halehaku Gulch, at 250 ft deep, and the Māliko Gulch, at over 350 ft deep, were both crossed by giant siphons fabricated of three-eighths-inch iron pipelines that were set in place by Japanese laborers. The allocation of water began at a weir located above Pā‘ia. The first tenth of the water flow in the Lowrie Ditch was divided out to the Pā‘ia Plantation (an 11/20ths share) and the Ha‘ikū Plantation (a 9/20ths share). The distance traveled, from Kailua to the plantation’s Kīhei boundary, was 21.9 miles (Thrum 1900:155-157).

3.2.7 Early to Mid 1900s

The bubonic plague broke out in Kahului in the year 1900. The first recorded death caused by the plague occurred on Saturday, February 4th. An article in the *Maui News* from 17 February 1900 documents effects of the plague at the time.

> The plague has reached Maui. Six deaths have occurred and the whole of Chinatown [in Kahului] is a heap of ashes. The people of Maui are aroused to action and feel confident of being able to control and stamp out the pest in a short time...
>
> ...Sheriff Baldwin at once established a strict quarantine at Kahului which is still maintained. The Maui Board of Health met at once and selected a site for a pest house and one for a detention camp, the latter being established at the race track of the Maui Racing Association...
>
> ...by noon on Monday [Feb. 13] the detention camp was ready for its occupants. Over 200 Chinese, Japs and natives were fumigated and dressed in new suits, and at two o'clock the procession quickly moved out to their new quarters. Scarcely had they reached their destination before everything was prepared for the destruction of their old quarters. At three o'clock a cloud of dust and broken timbers leaped into the air, accompanied by the savage roar of dynamite; then another and another, being the exterior houses of the doomed district. Soon dense volumes of smoke, through which pierced yellow shafts of flame, told that the work of destruction was begun. In two hours, the whole block from the Kahului saloon to the Custom House was a heap of glowing ashes. The breeze was from the sea and no trouble was experienced in holding the fire within the prescribed district. Kahului town was entirely cordoned off with corrugated iron fences and, before the year was out, the plague had been eradicated. (Bartholomew 1985)

Prior to 1900, development in the port town of Kahului was likened to a “squatter’s town.” After the bubonic plague outbreak led to the decision to burn most of Kahului, the street alignments were rebuilt as “blocks.” By 1905, dredged harbor coral had been used to fill and level much of the Kahului water-front to create a more orderly and sanitary business district. Early structures constructed within this waterfront business district included the Baldwin National Bank of Maui (constructed in 1906) and the Pu‘unene Store at Kahului (constructed in 1908) (Burns 1991).

In 1901, a well-drilling company from Honolulu, operated by the McCandless Brothers, was retained by the HC&S plantation to drill 12 wells at the site for a new mill at Pu‘unēnē. The water was to be used for mill operations as well as for irrigation. All 12 wells were successes, according to the records of the head engineer, James Sutton McCandless (McCandless 1936). The new sugar mill at Pu‘unēnē (Figure 16 and Figure 17) began operations in 1902 (Dean 1950), supplementing the work done by the Pā‘ia Mill. Both mills, and the network of railroad lines connecting the company’s fields and villages, continued to grow. Between 1900 and 1905, acreage harvested doubled, from 2,484 to 4,827 acres, and sugar production more than doubled, from 17,857 to 39,411 tons (A. B. Gilmore 1936). The adoption of heavier rails and a wider rail gauge caused HC&S to completely renovate the plantation railroad (Condé and Best 1973). The plantation villages of the Pu‘unēnē area grew quickly to surround the new mill (Figure 17 and Figure 18). Between a huge influx of immigrant workers in 1909, and the burning of village areas of Pā‘ia and

Figure 16. Pu‘unēnē Mill circa 1935 (courtesy of A&B Sugar Museum)

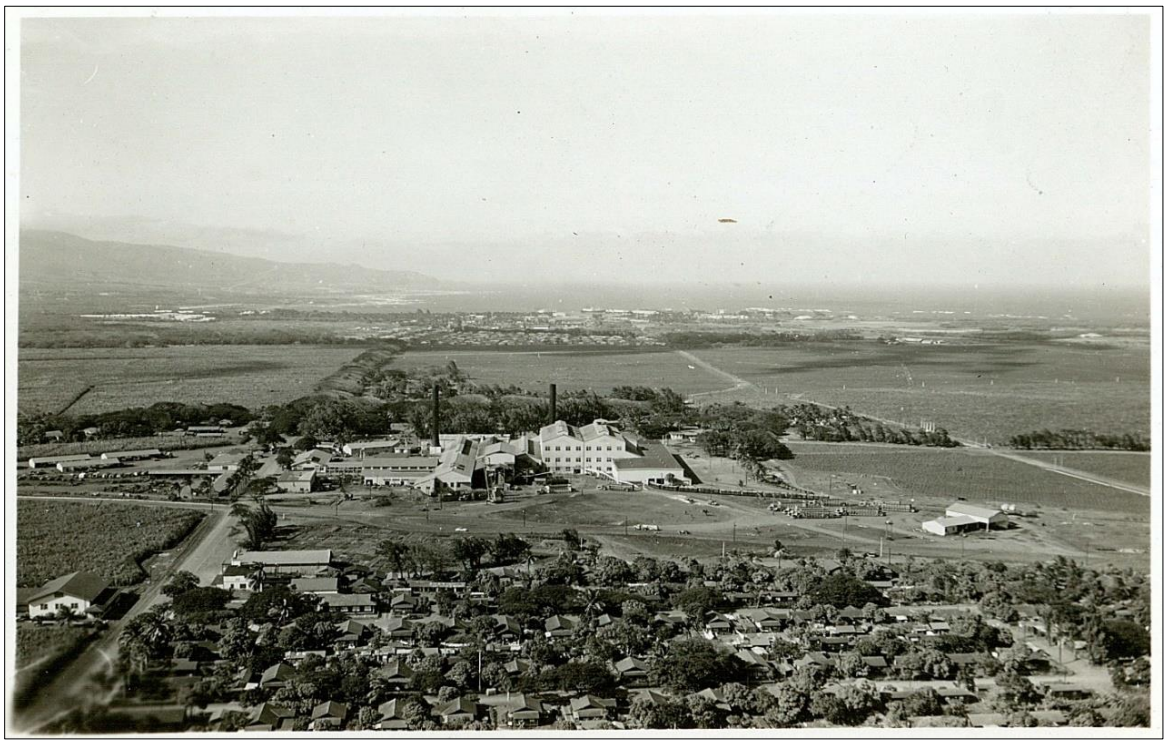

Figure 17. Pu‘unēnē Mill and camps (foreground); Kahului Bay and Harbor in left background (courtesy of A&B Sugar Museum)

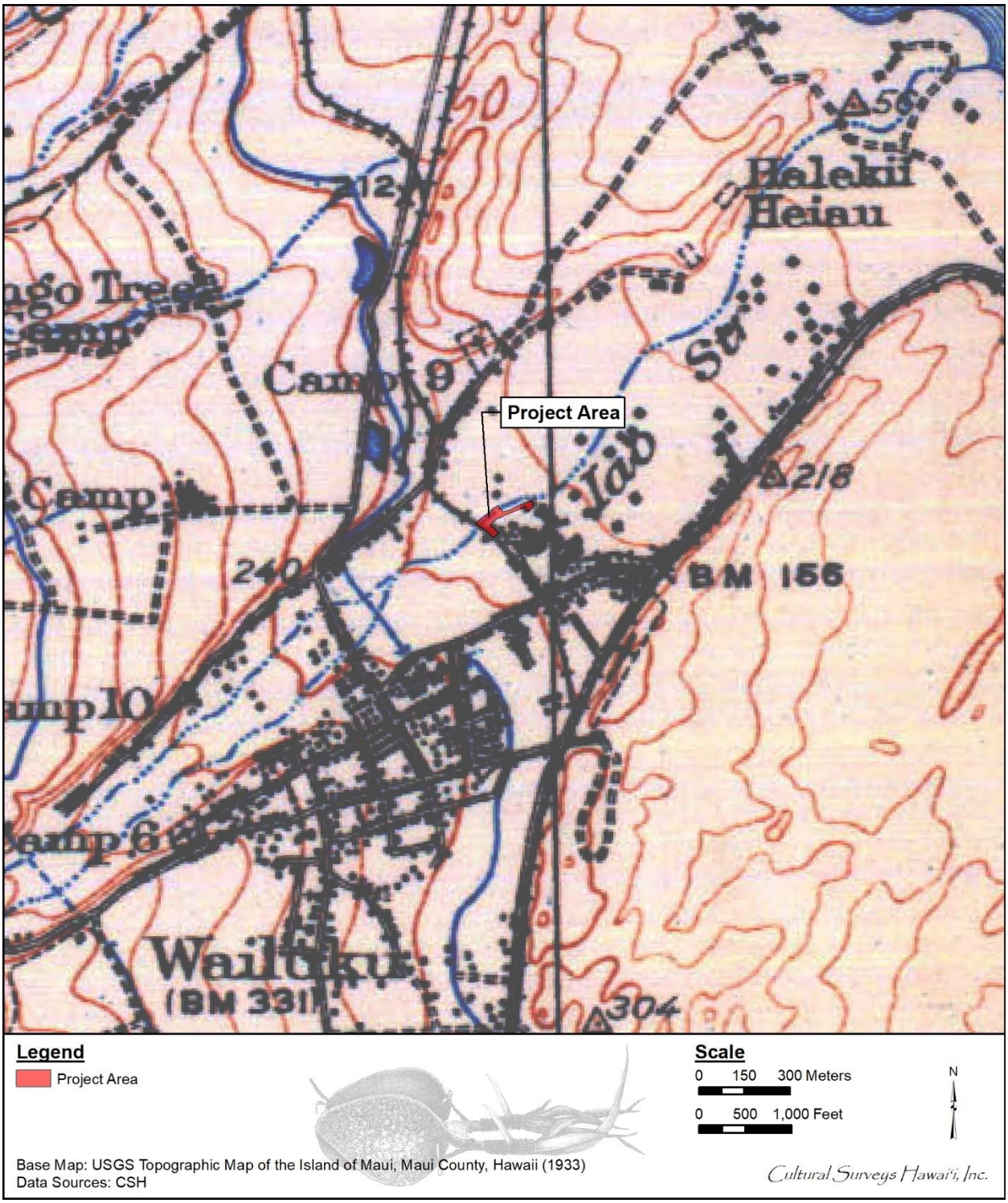

Figure 18. Portion of 1933 USGS topographic map showing the project area; note railway system within and surrounding project area (U.S. Geological Survey 1933)

Kahului to control smallpox in 1910, changes to the camp system were in full swing. The plantation workforce continued to expand until 1917, when the United States entered World War I, and the accompanying draft seriously depleted the labor pool. By 1919, postwar requirements for sugar had driven the price to $471.40 per ton: an all-time high (Burns 1991). Nine main camps were in place across the Pu‘unēnē plains by the 1920’s, including MeGerrow Camp, Yung Hee Camp, Afong Camp, Spanish B Camp, Alabama Camp, Green Camp, Camp 4, Sam Sing Camp and Camp 8.

3.2.8 World War II

During World War II, the shoreline west of Pier 2 contained 20 buildings constructed by the U.S. Navy as a base of operations for military shipping .Nine structures were built by U.S. Navy Construction Battalion (SeaBee) workers, and eleven structures were refurbished for military service (NARA 2008). Supplies for military bases including the 4th Marine Division camp at Kokomo, the 10th Amphibious Training Battalion at Mā‘alaea, the Underwater Demolition Team training base at Kīhei, Naval Air Station Puunene and Naval Air Station Kahului were either transferred directly to each base, stored at the 18th Service Battalion Storage Depot at Kahului Harbor, or stored at an ammunition depot located above Makawao town.

On 16 November 1942 grading and construction work commenced on NAS Kahului by Pacific Naval Advanced Base (PNAB) personnel, who were soon replaced by the 39th SeaBees. By 20 September 1943 the first aircraft of VC-23 (Composite Squadron 23) landed with personnel and gear on hand for duty. Carrier Air Service Unit 32 assumed command of modifying and maintaining the aircraft of each visiting training squadron for combat duty in the Pacific Theater of Operations (Eggertsen 1947). The 39th SeaBees built 19 concrete ammunition storage magazines in Kanahā Pond, structures that remain today as storage bunkers for the County of Maui and the State of Hawai‘i. Construction of NAS Kahului continued in mid-June 1944 with the arrival of the 142nd SeaBees (United States Department of the Navy 1947).

In full operation, both NAS Puunene and NAS Kahului were themselves virtual cities. Each employed hundreds of civilian clerical and maintenance workers and provided housing for thousands of U.S. military personnel. At NAS Kahului, Construction Battalion Maintenance Unit (CBMU) personnel from CBMU 563 arrived on December 29, 1943. The unit was responsible for the continued operation of refrigeration, water purification, and electrical components in kitchens, hospitals, churches, barracks, and offices. The open coastline at NAS Kahului allowed for live-fire training areas, where gunners practiced firing machine guns from turrets constructed to duplicate those aboard scout-bombers and torpedo bombers (U.S. Navy 1945).

Immediately following the August 1945 surrender of Japan to the military forces of the United States, additional facilities essential to the operation of NAS Kahului were removed from NAS Puunene. A bowling alley, bakery, and other specialized structures at NAS Puunene were relocated to NAS Kahului, only to be partially or entirely destroyed by a series of tidal waves that struck NAS Kahului facilities in 1946. On 1 April 1946, the Kahului Harbor and NAS Kahului suffered serious damage after a tidal wave generated in the Aleutian Islands, Alaska, struck the north coast of Maui. Kahului Harbor was left empty when the water receded. The Coast Survey tide gage recorded 5 waves with heights in excess of 9 ft during the first 90 minutes of the tsunami, two of the waves being greater than 11 ft (Green 1946).

At the end of WWII, the small harbor landing at Kā‘anapali closed. All pineapple shipments from the Baldwin Packers cannery in Lāhainā were trucked to the port of Kahului for shipment. The systematic closing of all military installations on Maui saw the departure of over 15,000 men from “Maui’s Own” 4th Marine Division. During October and November 1945, Marines of the 23rd, 24th, and 25th Regimental Combat Teams, plus their attached support groups, boarded aircraft carriers docked at the port of Kahului for deactivation in California (Proehl 1946). By 30 June 1947, the transfer of NAS Kahului to the Civilian Aviation Authority for the Territory of Hawai‘i was well underway. Virtually all military equipment of NAS Kahului had been shipped to military installations in Guam, Okinawa, or Midway Island (Eggertsen 1947).

3.2.9 Post-World War II into the Modern Era

Following World War II, buildings erected during reconstruction of Kahului in the 1910s and 1920s slowly gave way to postwar modernization. HC&S Company camp housing for the Kahului Store, including housing along Mill Street and Pu‘unēnē Avenue for stevedores and railroad workers, began to be dismantled. Areas once occupied by the military returned to cattle ranching, pineapple, and sugar cultivation.

The pace of social change began to accelerate. The political power base of the County of Maui began to include *Nisei*, second-generation Japanese Americans who had returned from service in Europe during World War II. Their involvement in county politics began to swing political power from the large agribusiness owners to the union leaders representing plantation workers eager for a change (Speakman 1978)

Trucks and buses had replaced passenger transportation once provided by railroads. Cars that had been set up on blocks and stripped of their rubber tires as a wartime rationing measure were back on Maui’s roads (Bartholomew and Bailey 1994). By 1950, Kahului Railroad Company locomotives had been relegated to shuttling dockside cargo, such as fertilizer, between the Pacific Chemical and Fertilizer Company warehouses along the Kahului Harbor (Gilmore 1954). A modern drive-in movie theater was constructed in the *kiawe* and sand dunes just west of Raw Fish Camp, which was located just inland and north of the present-day Harbor Lights Condominiums.

Early postwar years (1946-1950) saw the construction of H. P. Baldwin High School and Maui Memorial Hospital in Wailuku. In 1947, plans began for wholesale development of Kahului as a master-planned community providing fee-simple ownership of single-family homes (The Honolulu Advertiser 1956). The majority of the homes, located between Baldwin High School and Pu‘unēnē Avenue, were purchased by plantation employees and servicemen returning from duty overseas. This trend continued throughout the 1950s, with plantation camp populations falling in the outlying communities, including Pu‘unēnē, and rising in the central town site of Kahului’s new “Dream City” (Dean 1950).

In the years during the Korean War (1950-1953), the modernization of the workforce and stronger unions brought a host of changes to the central region of Maui. Gone were the railroads of the prewar age, replaced by trucks and mechanized sugar and pineapple harvesters. The modernization of Kahului Harbor meant that canned pineapple, bulk sugar and molasses could be loaded onto ships faster.

The Kahului Shopping Center opened in 1951 to serve the needs of the area’s new residents. The first two hotels built in Kahului, the Maui Palms and the Maui Hukilau, both opened in the

mid-1950s, sharing a thin stretch of beach along the harbor, west of the former military buildings of the Kahului Section Base. Kanahā Pond Wildlife Sanctuary (SIHP # 50-50-04-1783), a former royal fishpond, was established in 1952 to protect the cultural remains of the original fish pond wall structure and three endangered wetland bird species: the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), and Hawaiian duck (*Anas wyvilliana*) (James 2002). Also in 1952, Commercial airline operations began at the Maui Airport.

Both beach-side hotels, Kahului Store, Kahului School, the Kahului Shopping Center, and other businesses and residences were heavily damaged when a tidal wave originating along the coast of Chile hit the Kahului area on 23 May 1960. A tidal wave generated in Prince William Sound, Alaska, hit the Kahului area 28 March 1964, causing localized flooding, but far less damage than the 1960 event (Lander and Lockridge 1989).

On 12 March 1959, Hawai‘i became the 50th State of the Union. With labor costs for both sugar and pineapple steadily rising in the post-war years, driven primarily by labor union demands, both industries responded by adopting new technical innovations.

Containerized shipping revolutionized the freight industry in the early 1960s, leading to the redesign of gantry systems and hardstand support areas to facilitate the moving and storage of the new containers at the Kahului Harbor. The Matson Navigation Company, a subsidiary of Alexander & Baldwin, became the leader in the development of an industry-wide standard for intermodal containers (Dean 1950).

The Kahului Railroad Company sold off its locomotives and rolling stock and became the Kahului Trucking and Storage Company in 1966. The Haleakala Storage & Transfer Company, a privately-owned company, took over much of the specialized freight-forwarding operations once done by the railroad (Hawaii Business and Industry 1966).

Also in 1966, new construction began on the Kahului campus of Maui Community College, following the transfer of the former vocational school from the State Department of Education to the University of Hawai‘i. Funded by a fixed percentage of Hawai‘i state revenues, construction spending at the Kahului campus accelerated through the mid-1970s (Roth 1992). The second of three regional shopping centers to serve the Kahului area, the Maui Mall, opened in 1971, this retail space replaced a sprawling HC&S Company lumber yard. It was joined a year later by the Ka‘ahumanu Shopping Center. Alexander & Baldwin Inc., the largest landowner in Kahului, continued to expand residential housing in the “Dream City” incrementally between 1970 and 1990 (Hooser and Stewart 1995b). Large-scale construction projects in Central Maui, such as The Maui Arts and Cultural Center (MACC) (constructed in 1993), Keopuolani Park (constructed in 1999), the Maui Lani Dunes golf course (constructed in 1989) and the residential build-out of Maui Lani (1996-present) were precursors for light industrial development in the Wailuku Town portion of the *ahupua‘a.*

Following the closing of the Wailuku Sugar Company mill in 1989, much of the former agricultural land along the eastern banks of the ‘Īao Stream was developed as the Iao Parkside Condominium: a development consisting of 47 buildings constructed in phases between 1992 and 2002, with large-scale light industrial development utilizing much of the remainder of the former sugar lands of Wailuku along the western bank of the ‘Īao Stream (Hooser and Stewart 1995b).

Design of a new Kahului Airport Terminal Complex began in 1985. Consisting of three phases, the $36.5 million complex took five years to complete. Work included additions and alterations to existing structures, roads, parking areas, aprons, a new terminal, taxiways, runways, landscaping, cargo terminal and relocation of the FAA tower. Support facilities included a new helipad and cargo terminal (Schlapak and Kali 2006). By 1995, after the completion of these facilities, the Kahului Airport was ranked as one of the busiest small airports in the United States, logging over 4 million passengers (Hooser and Stewart 1995b). By 2005, the number of passengers travelling through the Kahului Airport had more than doubled, to 8.5 million (Hawaii Small Business Development Center Network 2006).

Kahului area has continued to expand commercially. HC&S closed Pu‘unēnē Mill, its last operable mill and the last sugar plantation in Hawaii in 2016 (Cataluna 2016). Surrounding former sugar cane lands are primarily fallow with some new commercial development and plans for renewed agricultural production.

Figure 19. Kahului Harbor in 1957, with the first two Maui hotels visible in the right of the frame (CSH Archives)

3.2.10 Modern Land Use

In 1905, the Honolulu Iron Works constructed a new sugar mill for the Wailuku Sugar Company (Figure 20) on a site located just north of the St. Anthony’s Church and School (Figure 21), itself adjacent to the County of Maui Papohaku Park.

Many homes and buildings in Wailuku town date from the 1920s; the heyday of prosperity of the Wailuku Sugar Company. Many private and public buildings in Wailuku have plantation-inspired architectural and historical significance. Beginning in the early years of the twentieth century, the Wailuku Sugar Company, took control of the Spreckels Ditch, which runs transverse to and collects water from the Waihe‘e, Waiehu, and Wailuku Streams, and engaged in a 20 year dispute with HCS of Kahului over control of the water collected. In 1924 the two companies agreed to a division of the water based on the number of hours each received the flow of water per day and night. The 1933 U.S. Geological Survey topographic quadrangle depicts the expansion of Wailuku town, nearby plantation camps, and water courses (see Figure 18). The Wailuku Sugar Company was making a profit at the time of statehood in the late 1950s but cut its last cane crop in 1988. After that it tried diversifying under the name Wailuku Agribusiness, planting macadamia groves and building the Maui Tropical Plantation in Waikapū (Wilcox 1996:122; Wood 2008).

A 1946 Iao Valley Water Rights map shows the development of the street grid of Wailuku, the alignment of Spreckels Ditch, and the Baldwin High School (Figure 22). A 1977 aerial photo depicts the expansion of development that has occurred surrounding the project area and in Kahului (Figure 23)

Following the closing of the Wailuku Sugar Company mill in 1989, much of the former agricultural land along the eastern banks of the ‘Īao Stream was developed as the ‘Īao Parkside Condominium; a development consisting of 47 buildings constructed in phases between 1992 and 2002 with large-scale light industrial development utilizing much of the remainder of the former sugar lands of Wailuku along the western bank of the ‘Īao Stream (Hooser and Stewart 1995a:32).

On Tuesday, 13 September 2016, Maui experienced one of the largest flood events in the county’s history (Figure 24 and Figure 25). In one day, the storm dropped nearly 10 inches of rain in Pu‘u Kukui and resulted in the signing of an emergency proclamation by Maui County Mayor Alan Arakawa (Davis 2016). According to an article by Chris Sugidono (2017) of *The Maui News*: “Some have referred to it as a 100-year flood, though data collected from the U.S. Geological Survey estimate it as possibly a 500-year recurrence.” Data from the USGS Pacific Islands Water Science Center reported that “the river moved 10,900 cubic feet per second down the valley or roughly 81,500 gallons per second. It was 200 times as large as the 35-year average for Sept 13.” The gauge station recording the data was destroyed when the river channel near it burst open and expanded “from about 40 feet wide up to three times the size.”

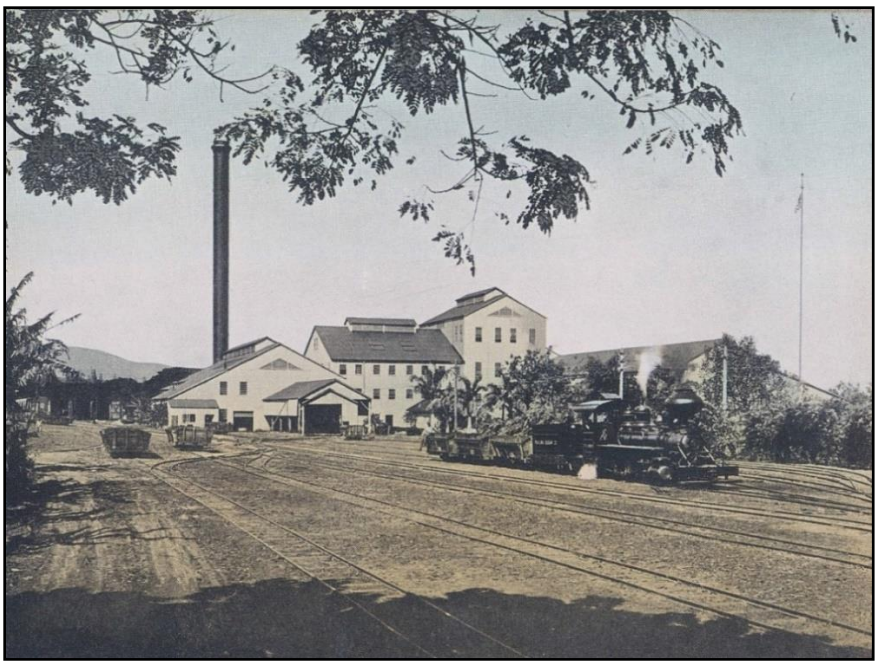

Figure 20. Circa 1924 photograph of the second Wailuku Sugar Mill (built in 1880) prior to the dissolution of the Wailuku Sugar Company in 1989 (Iron Works 1924)

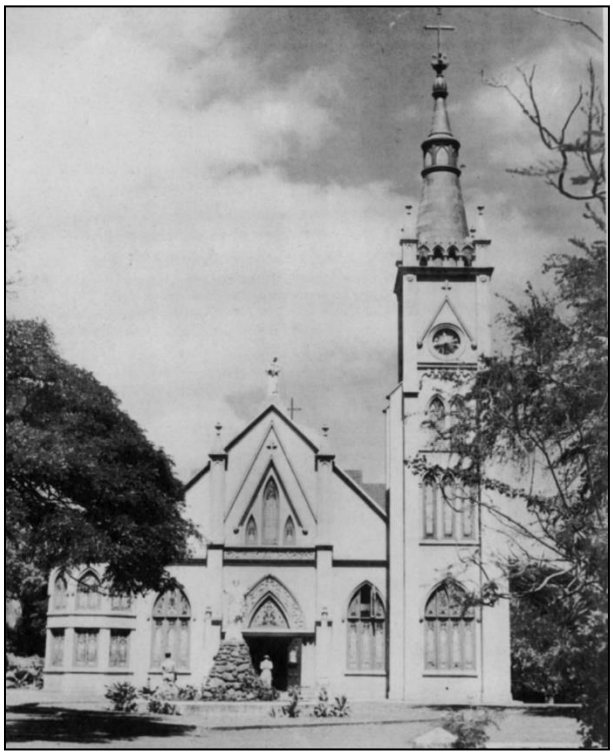

Figure 21. Circa 1945 photograph of St. Anthony’s Church, the first stone church in central Maui (News 1945)

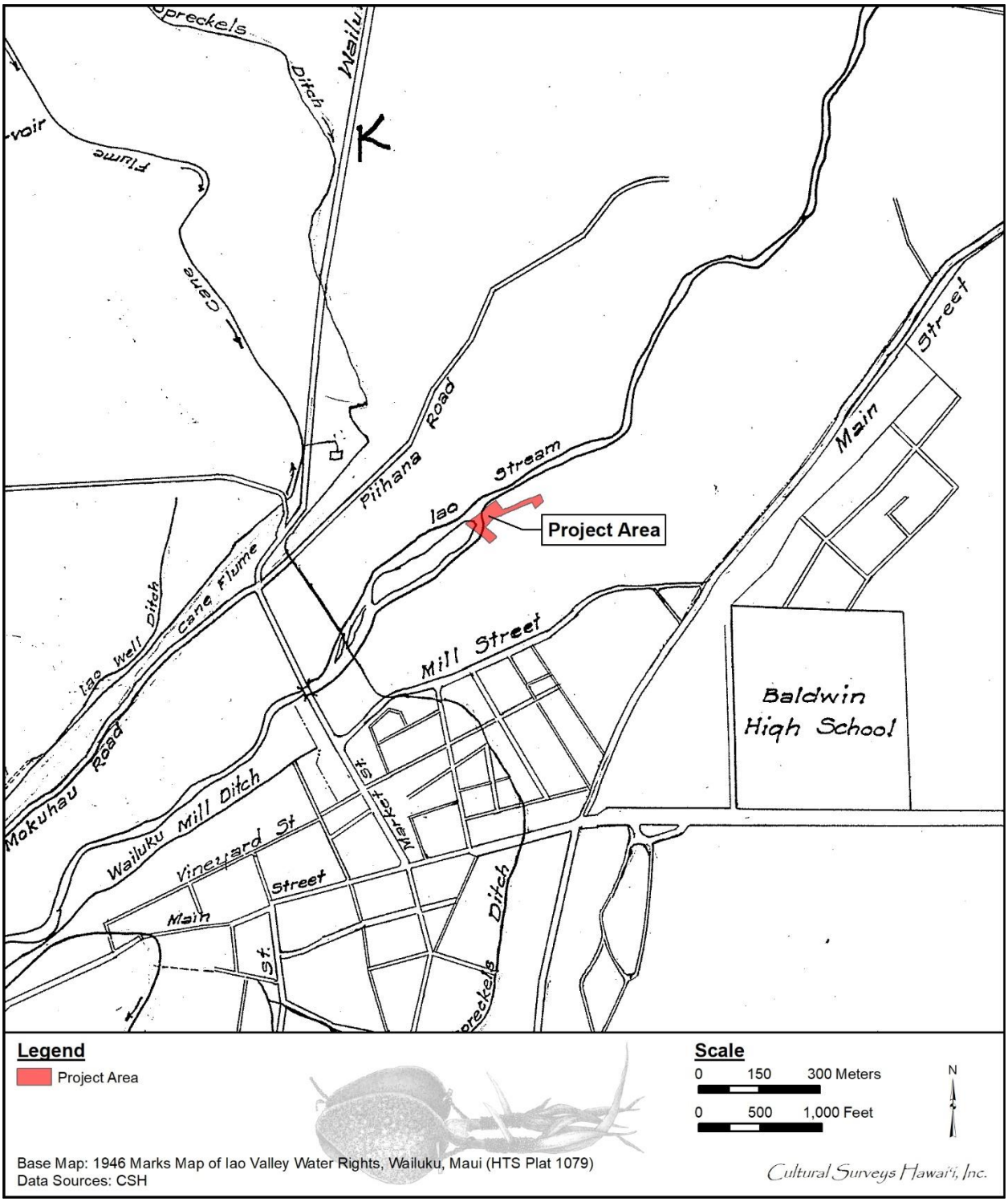

Figure 22. Portion of the 1946 Iao Valley Water Rights map showing the project area

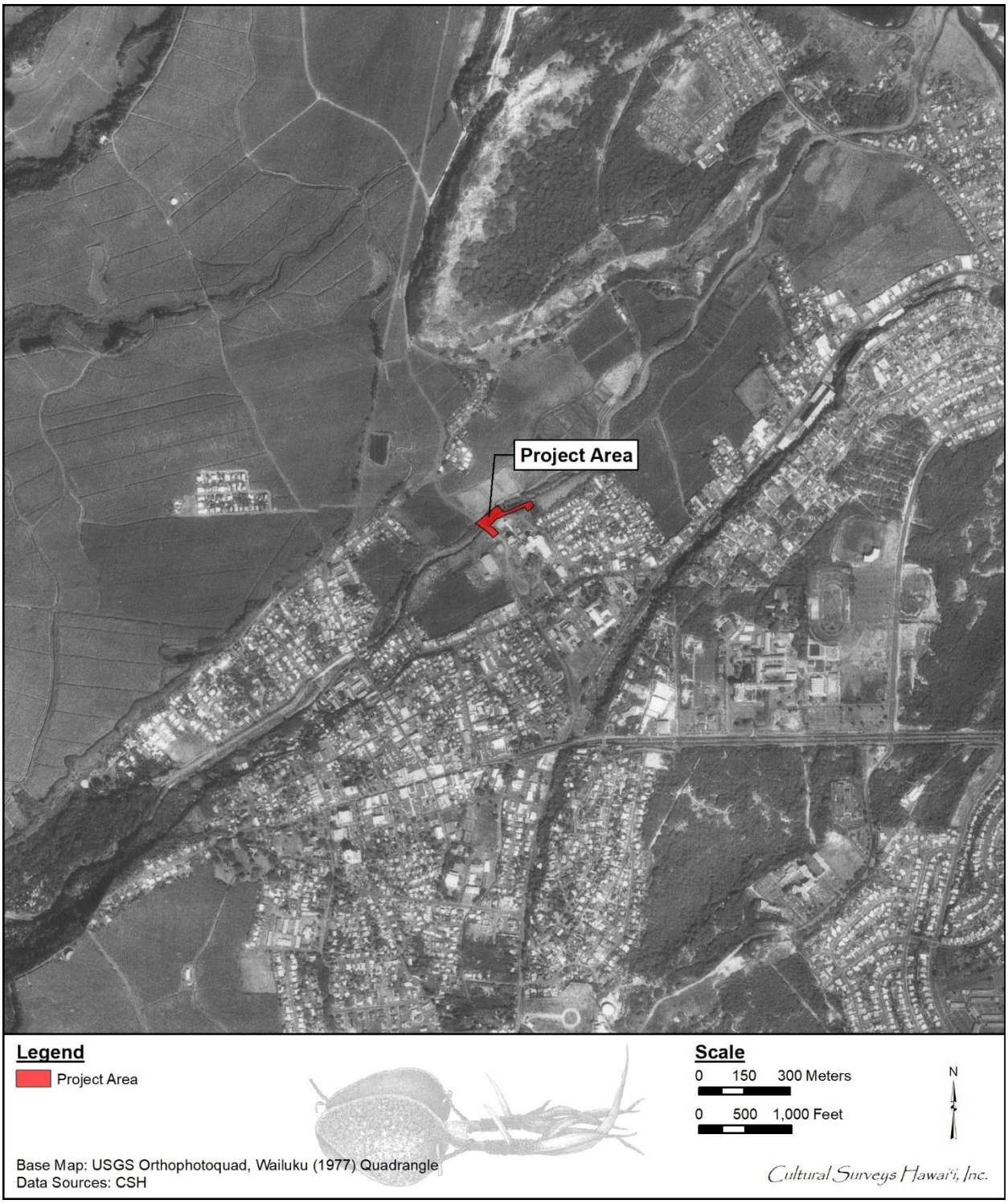

Figure 23. 1977 aerial orthophoto showing extensive development around the project area

Figure 24. A portion of riverbank showing erosion of Wailuku River, taken from Imi Kala Bridge; Maui Disposal in back right of photo (courtesy of Maui County Department of Public Works)

Figure 25. Levee repairs along Wailuku River (courtesy of Maui County Department of Public Works)

3.3 Previous Archaeological Research

The earliest archaeological studies on the island of Maui were a part of island-wide surveys conducted in the early 1900s (Stokes 1917; Walker 1931). These studies tended to focus on the generation of descriptive lists of large-scale architecture or traditional ceremonial heiau sites. Walker (1931) described ten *heiau* (Walker Sites 45-54) in the vicinity of the project area including: Keahuku Heiau (SIHP # 50-50-04-0045); Olokua Heiau (SIHP # -0046); Olopio Heiau (SIHP # -0047); Malena Heiau (SIHP # -0048); Pohakuokahi Heiau (SIHP # -0049); Lelemako Heiau (SIHP # -0050); Kawelowelo Heiau (SIHP # -0051); Kaulupala Heiau (SIHP # 0052); Palamaihiki Heiau (SIHP # -0053); and Oloolokalani Heiau (SIHP # -0054).

Between 1931 and 1976, only sporadic archaeological studies were undertaken in the area. Following the passage of the National Historic Preservation Act in 1966 and HRS Chapter 6E, which established the Historic Preservation Program in 1976, archaeological studies occurred as a condition of development on a more frequent basis. The lands surrounding the project area have been subject to a variety of studies including archaeological reconnaissance investigations, field inspections, archaeological inventory survey (AIS) investigations and assessments, archaeological monitoring, and burial treatment programs. Previous archaeological studies in the vicinity of the project area are detailed below (Figure 26 and Table 4). The location of historic properties identified by previous archaeological studies in the vicinity of the project area are depicted in Figure 27 and also described in Table 4.

Historic structures listed on the National Register of Historic Places and located within 500 m of the project area include the Ka‘ahumanu Church (SIHP # -1500), the Wailuku Civic Center (SIHP # 50-50-04-1616), Henry Perrine Baldwin High School/Wailuku Elementary School (SIHP # -1630), the Wai‘ale Drive Bridge (SIHP # -1633), and the Bailey House (SIHP # -3000).

3.3.1 Kennedy (1989)

Between 1 and 7 January 1983, Archaeological Consultants of Hawaii, Inc. (ACH) conducted an archaeological walk-through reconnaissance survey of Wailuku Project District #3 and Pihana District #2 (Kennedy 1989). Three historic properties were identified including SIHP # -50-50-04-2985, a small rock mound interpreted as a potential burial site, SIHP # -2986, a likely Chinese grave with a ‘typically Chinese’ marker (Kennedy 1989:5), and SIHP # -2987, a small agricultural terrace complex. Mahalani Cemetery (no SIHP number assigned) was also documented.

3.3.2 Estioko-Griffin (1990)

On 14 December 1989, Estioko-Griffin (1990) conducted a field inspection at the Waiehu Development Increment C (TMK: 2-3-3-01: 10 por.). One partially exposed in situ human skeleton was identified along with several cranial fragments in the vicinity. Faunal skeletal remains were also identified. One concrete tombstone with apparent Chinese characters was also recorded. Estioko-Griffin (1990) recommended community consultation and possible reinternment on site. Archaeological monitoring was recommended due to the likelihood of encountering human remains in the project area.

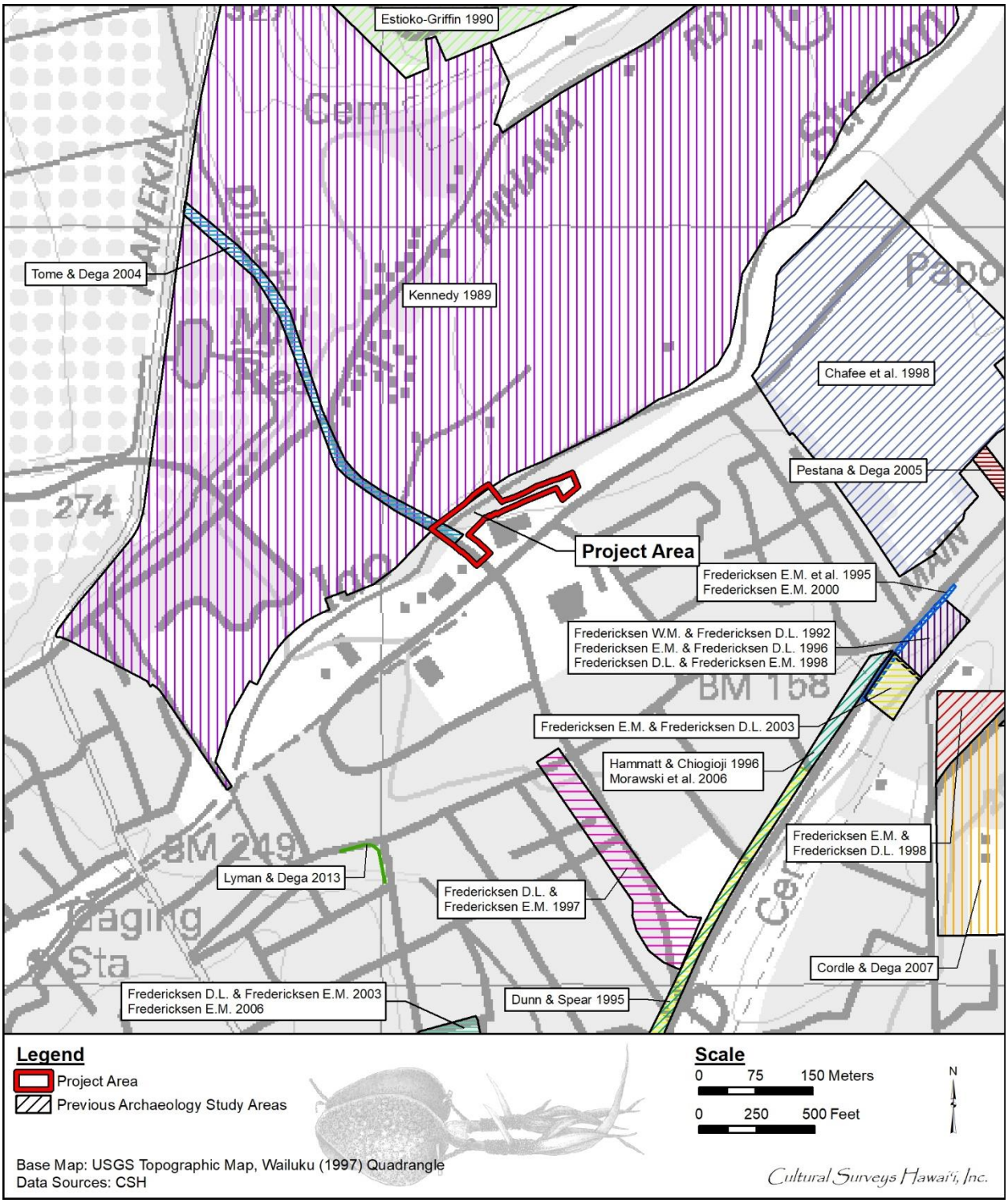

Figure 26. Portion of the 1997 Wailuku USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the project area (U.S. Geological Survey 1997)

Table 4. Previous archaeological studies in the vicinity of the project area

Reference	Type of Study	Location	Results (SIHP # 50-50-04-####)
Kennedy (1989)	Reconnaissance survey	Wailuku Project District #3 and Pihana District #2 (TMKs: [2] 3-3-multiple plats, and [2] 3-4-multiple plats)	Recorded three historic properties: SIHP # -2985 (ACH-PH-1), a small rock mound; SIHP # -2986 (ACH-PH-2), a Chinese grave marker; and SIHP # -2987 (ACH-PH-3), a terrace complex; also noted ACH-PH-4, Mahalani Cemetery (no SIHP # assigned)
Estioko-Griffin (1990)	Field Inspection	Waiehu Development Increment C (TMK : 2-3-3-01 :10 por.)	Identified at least one exposed in situ human burial site, human cranial fragments scattered faunal skeletal remains, and a concrete tombstone with Chinese characters
Fredericksen and Fredericksen (1992)	Archaeological survey (surface only)	Lower Main St. at the intersection with Mill St. (76 Station) (TMK: [2] 3-4-039:082)	No historic properties identified
Fredericksen et al. (1995)	Archaeological inventory survey	Easement along Lower Main St and the intersection with Mill St (TMKs: [2] 3-4-039:081–83)	Documented surface remnants of SIHP # -3112, Kahului Railroad bed and identified SIHP # -4127, a buried habitation site with a potential burial pit outline
Dunn and Spear (1995)	Archaeological monitoring	Waiale Rd from Waiinu Rd to Main St overpass (TMKs: [2] 3-4-002:036; [2] 3-4-003:019; and [2] 3-4-010:002)	Identified three historic properties: SIHP # -4005, a previously disturbed burial; SIHP # -4067, an isolated hearth; and SIHP # -4068, a cultural layer with 16 pre-Contact burials and 21 habitation features
Hammatt and Chiogioji (1996)	Archaeological field inspection	Waiale Rd and Lower Main St (TMKs: [2] 3-4-multiple plats)	No historic properties identified
E.M. Fredericksen and Fredericksen (1996)	Archaeological data recovery	Lower Main St. at the intersection with Mill St. (76 Station) (TMKs: [2] 3-4-039:081, and 082)	Investigated SIHP # -4127, a buried habitation site, encountered an immature monk seal (*Monachus schaunislandi*) burial and 33 additional component features

D.L. Fredericksen and E.M. Fredericksen (1997)	Archaeological inventory survey	Mahalani Street Extension (TMKs: 3-8-46: por. 1,2,3,4,17,18,30, and 32; 3-8-07 por. 121)	No historic properties were identified
D. L. Fredericksen and E. M. Fredericksen (1998a)	Archaeological inventory survey	Intersection of Lower Main St and Mill St (TMK: [2] 3-4-039:082)	Documented a continuation of SIHP # -4127, buried habitation layer; identified SIHP # -4414, burial of two individuals within a test pit
E. M. Fredericksen and D. L. Fredericksen (1998a)	Archaeological inventory survey	150 Lunalilo St (TMK: [2] 3-8-007:047)	Identified SIHP # -4418, a buried habitation layer containing pits, hearths, refuse pit, a possible posthole, and traditional materials including worked human bone
Chaffee et al. (1998)	Archaeological inventory survey	Wailuku Parkside Property (TMKs: [2] 3-4-030:019, 020 por., and 023 por.)	No historic properties identified
Fredericksen (2000)	Inadvertent discovery	Easement on Lower Main St and Mill St	Reported an inadvertent burial, designated a component of SIHP # -4127, that was discovered during archaeological monitoring (no associated monitoring report available)
E. M. Fredericksen and D. L. Fredericksen (2003)	Archaeological monitoring	MECO Substation, Lower Main St (TMK: [2] 3-4-039:051	Documented a continuation of SIHP # -4127, a buried habitation layer
D. L. Fredericksen and E. M. Fredericksen (2003)	Archaeological inventory survey	Lokenani Hale, Wailuku Elderly Apartments (TMKs: [2] 3-4-012:045, 047, 048, 083, and 086)	Identified SIHP # -5484, former Nishiwa Bakery foundation
Tome and Dega (2004)	Archaeological inventory survey	TMKs: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por.	No historic properties identified, Imi Kala road extension crosses a historic bridge (SIHP #-5564), Spreckels Ditch (SIHP #-1508), and a previously unrecorded irrigation ditch (SIHP #-5566).

Pestana and Dega (2005)	Archaeological inventory survey	709 Uluhea Way (TMK [2] 3-4-022:005)	No historic properties identified
E.M. Fredericksen (2006)	Archaeological monitoring	Lokenani Hale, Wailuku Elderly Apartments (TMKs: [2] 3-4-012:045, 047, 048, 083, and 086)	Identified SIHP # -5763, buried road bed/cobble road base underlying Loke and Nani streets within off-site sewer and water line excavations
Morawski et al. (2006)	Archaeological monitoring	Kehalani Mauka Subdivision	Identified SIHP # -5680, one complete in situ human burial site, -5965 and -5966, isolated and disturbed human remains, -5963, a historic roadbed, and -5964, a portion of a historic sugarcane flume
Cordle and Dega (2007)	Archaeological monitoring	Henry Perrine Baldwin High School, proposed eight classroom building (TMK: [2] 3-8-007:004)	Henry Perrine Baldwin High School is designated as SIHP # -1630 (NRHP #00000667); no additional historic properties identified
Lyman and Dega (2013)	Archaeological inventory survey	Mill St and Central Ave (retaining wall) (TMKs: [2] 3-4-007:051, 067, and 147)	Identified SIHP # -7721, an early twentieth century dry-stacked stone retaining wall

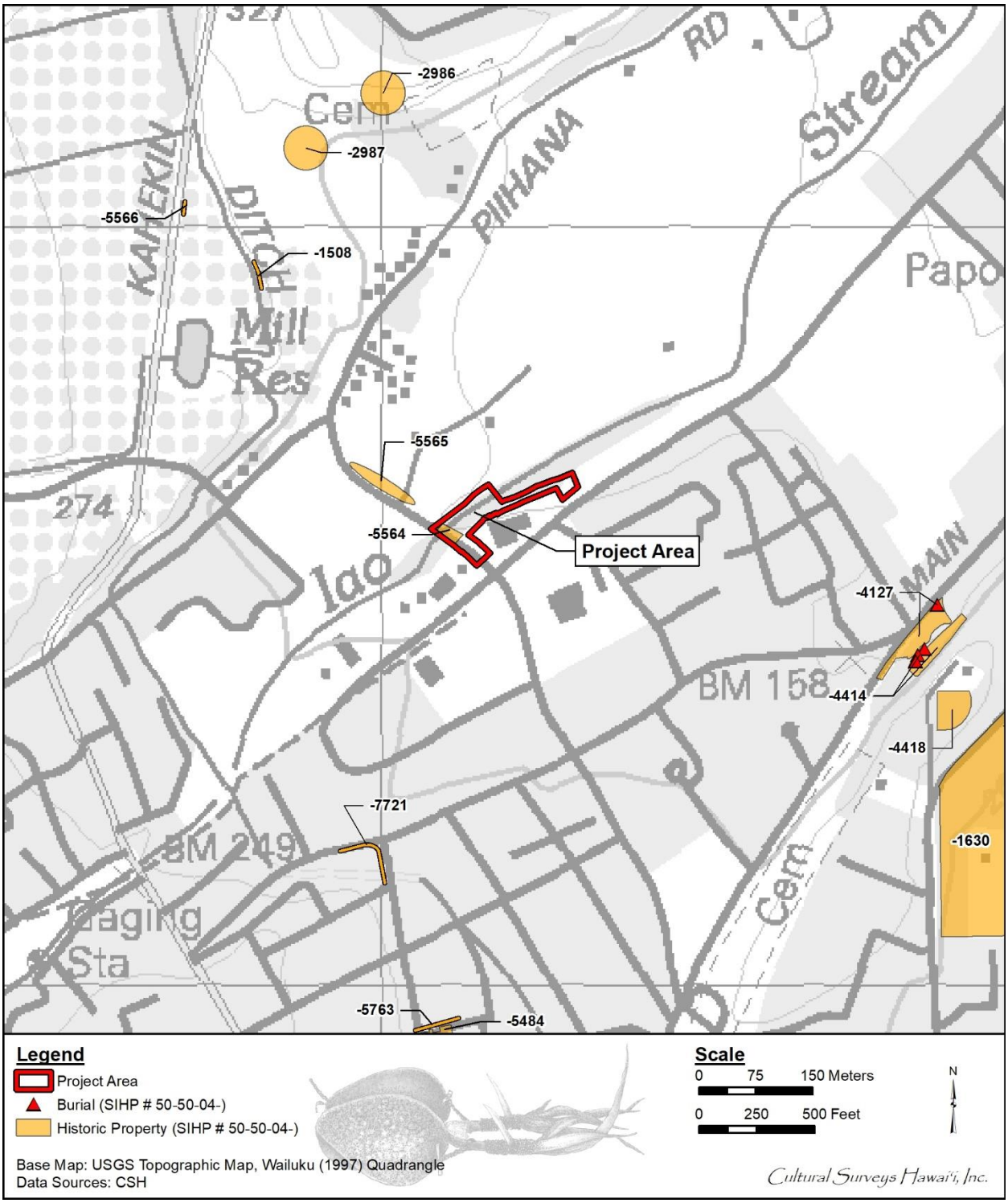

Figure 27. Portion of the 1997 Wailuku USGS 7.5-minute topographic quadrangle showing previously documented historic properties in the vicinity of the project area (U.S. Geological Survey 1997)

3.3.3 Fredericksen and Fredericksen (1992)

In 1992, Xamanek Researches conducted a surface survey at TMK: [2] 3-4-039:82 for a proposed Texaco Service Station. the site of the current 76 Station. This parcel is directly north of the MECO Wailuku Substation #3 property, and it is currently owned by Mid-Pac Petroleum and has an active 76 Gas Station business. They noted the presence of a “feature containing a concentration of water-worn stones” near the roadway (Fredericksen and Fredericksen 1992:3). The feature is remnant from the Kahului Railroad bed, designated SIHP # -3112. Due to dense vegetation of the area, archaeological monitoring was recommended.

3.3.4 Fredericksen et al. (1995)

In June 1995, Xamanek Researches conducted an archaeological inventory survey (AIS) for the right-of-way easement along Lower Main Street fronting the gas station parcel for a DPW project to widen the road and install traffic signals at the intersection with Mill Street (TMK: [2] 3-4-039:81-83) (Fredericksen et al. 1995). The project area was approximately 450 ft long. Remnants of the Kahului Railroad bed (SIHP # -3112) were documented on the surface, extending about 1 to 1.5 m above the ground level. Subsurface testing included seven backhoe trenches, five auger tests, and a test unit within Parcel 82. Overall, the area appeared heavily impacted by development. However, a buried habitation site (SIHP # -4127) was identified in the northern portion of the project area. SIHP # -4127 consisted of a remnant cultural layer with a possible burial pit outline, traditional artifacts, and shell midden. Archaeological data recovery was recommended.

3.3.5 Dunn and Spear (1995)

From February through April 1995, Scientific Consultant Services, Inc. (SCS) conducted archaeological monitoring for an 18” sewer line project along the eastern side of Waiale Road (TMKs: [2] 3-4-002:36; 3-4-003:19; 3-4-10:2) (Dunn and Spear 1995). The project extended from Waiinu Road north toward the Main Street overpass and into Lower Main Street. Three historic properties were identified along the Sand Hills area. SIHP # 50-50-04-4005 is a previously disturbed human burial encountered in the backfill surrounding a previous pipeline trench located south of West Kaahumanu Avenue. SIHP # -4067 is an isolated hearth feature located south of Oluloa Drive. Radiocarbon dating of charcoal from the feature supported a pre-Contact time frame.

SIHP # -4068 was identified as a very fine sand cultural layer containing 16 pre-Contact burials and 21 habitation features, located north of Nakoa Drive. The habitation features were interpreted as nine pre-Contact postholes, four post-Contact postholes, three hearths, a possible burial pit, and concentration of non-human remains, and three unknown features (Dunn and Spear 1995:14). Various traditional and historic artifacts also were recovered from SIHP # -4068 including basalt and volcanic glass flakes, shell scrapers, echinoid abraders, marine shell, mammal and fish bones, charcoal, and glass, ceramic, and metal fragments. Scattered human remains also were recovered during probe trenches on the southeast side of Waiale Road at the intersection with Kaohu Street.

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charcoal, and glass, ceramic, and metal fragments. Scattered human remains also were recovered during probe trenches on the southeast side of Waiale Road at the intersection with Kaohu Street.

A reinterment site was established at the location of SIHP # -4068 Burial #s 1 and 8 for all the recovered remains found during the project. Three concrete caps were used to preserve the areas. Portions of some SIHP # -4608 burial features (#s 5, 9, and 12) remained *in situ* beyond the excavation areas. Burial #s 10 and 11 also were preserved in place.

3.3.6 Hammatt and Chiogioji (1996)

On 13 October 1996, CSH conducted an archaeological field inspection, as a component study for an archaeological and historical assessment, of an approximate 500-ft long corridor of the Waiale Road/Lower Main Street ROW (Hammatt and Chiogioji 1996). A surface survey conducted throughout the project area did not identify any new historic properties on the shoulder of the developed roadway comprising the project corridor. A berm was observed along the eastern extent of the project area, identified as a remnant berm servicing the now out-of-use Wailuku Sugar Co. railroad line. The interpretation of the berm was confirmed by discarded rail segments lying along the base of the berm; however, the discarded rails were the only remainder of the historic era feature. Researchers recommended an archaeologist remain on site for all ground disturbing activities associated with this project due to known subsurface historic properties previously identified by Dunn and Spear (1995), for the potential to encounter human burials, and because the project was to be conducted near the historic Waiale Road Bridge.

3.3.7 Fredericksen and Fredericksen (1996)

In 1996, Xamanek Researches completed archaeological data recovery on SIHP # -4127 (Fredericksen and Fredericksen 1996). Two strata of cultural layers were identified. The upper layer, Layer 1, contained evidence of historic disturbances, as well as 18 features. The underlying Layer II contained a considerable amount of food midden, traditional artifacts, and 16 features including an intentional immature monk seal (*Monachus schaunislandi*) burial with a severely fractured skull. Radiocarbon dating of Layer II supported a late pre-Contact period (D. L. Fredericksen and E. M. Fredericksen 1998a:21).

3.3.8 Fredericksen D.L. and Fredericksen E.M. (1997)

In 1997, Xamanek Researches conducted an archaeological inventory survey for portions of the Mahalani Street Extension project in Mahalani Street Extension in Wailuku (TMKs: 3-8-46: por. 1,2,3,4,17,18,30, and 32; 3-8-07 por. 121) (Fredericksen and Fredericksen 1997). Two phases were completed, a reconnaissance survey and a series of subsurface excavations. Eight machine excavated trenches were completed in high probability areas. No historic properties were identified. Archaeological monitoring was recommended for any ground disturbance activities in the project area due to the likelihood of encountering human remains in the vicinity.

3.3.9 D. L. Fredericksen and E. M. Fredericksen (1998a)

During the summer of 1997, Xamanek Researches conducted an AIS for the proposed Texaco Service Station project (D. L. Fredericksen and E. M. Fredericksen 1998a). Twelve backhoe trenches were excavated in the lower portion of the project area, between Lower Main Street and the area less than 160 ft AMSL. Safety precautions restricted the use of the backhoe in the upper portion, above 160 ft AMSL. A continuation of the previously identified buried habitation site

(SIHP # -4127) was remnant in nine trenches in the lower portion. SIHP # -4127 included a sand cultural layer containing historic and traditional artifacts in addition to at least seven pit features and a possible waterworn cobble pavement. Previously disturbed cultural material was observed in the other three backhoes trenches. The previous disturbance to the area primarily was caused by the dismantling of the Kahului Railroad (D. L. Fredericksen and E. M. Fredericksen 1998a:40).

The investigation in the upper portion of the project area included the monitoring of seven geotechnical test pits and the manual excavation of one test trench. A burial pit containing a minimum of two individuals was discovered during the excavation of Test Pit (TP) 5a. Individual # 1 was in a flexed position, and Individual # 2 was indicated by an articulated hand and forearm that extended into the sidewall. The burials were preserved in place. The burials were associated with a cultural layer that also contained traditional and post-Contact artifacts, charcoal, and features. The cultural layer and burial site were designated as SIHP # -4414. The authors note:

> There is no clear evidence that Sites 4127 and 4414 are contiguous. Site 4127 lies some 20 to 30 feet below Site 4414. The latter probably originates from the top of the dune to the south, while the former appears to be associated with habitation sites along the level of Lower Main Street. (D. L. Fredericksen and E. M. Fredericksen 1998a:50)

Radiocarbon dating on a basin-shaped pit feature (Feature 1.1b) sample from SIHP # -4414 yielded a conventional age of 410 +/- 100 and calibrated date ranges of AD 1325 to 1340 and AD 1390 to 1670 (two sigma, 95% probability). D. L. Fredericksen and E. M. Fredericksen (1998a:50) reported that “the two sites identified on the parcel are not one contiguous site, but rather represent [two] occupation periods separated by as much as 100 to 200 years.”

3.3.10 E. M. Fredericksen and D. L. Fredericksen (1998a)

Between July and September 1997, Xamanek Researches conducted an AIS of a 1.679-acre parcel for the Na Leo Pulama O Maui Immersion Preschool and Family Language Resource Center (TMK: [2] 3-8-07:47), located adjacent to the northwest corner of the Henry Perrine Baldwin High School property, at 150 Lunalilo Street. The parcel is within the Wailuku Sand Hills and the Pu‘uone sand dune complex. Subsurface testing revealed a relatively undisturbed historic property identified as a traditional habitation layer and designated as SIHP # -4418. The buried cultural layer extended over approximately 2,000 sq m (0.49 acres) in the northwestern portion of the parcel and was encountered between 10 and 30 cmbs. Cultural materials also had been exposed on the surface in the area. Nine features were identified, consisting of five basin-shaped pits, two hearths, a refuse pit, and a possible posthole (E. M. Fredericksen and D. L. Fredericksen 1998a:42). The traditional materials included worked human bone, various coral, shell, urchin, bone, and stone tools, faunal and marine remains, charcoal, fire-cracked rock, and waterworn pebbles. SIHP # -4418 was interpreted as dating between the sixteenth and seventeenth centuries based on radiocarbon analysis results (E. M. Fredericksen and D. L. Fredericksen 1998a). Intact sand dune deposits were present over the entirety of the project area.

3.3.11 Chaffee et al. (1998)

In January 1998, SCS conducted an AIS for the proposed Wailuku Parkside Property (TMK: [2] 3-4-30:19, 20 por., 23 por.). The investigation included 40 backhoe trenches throughout the 24.64-acre project area. No significant cultural deposits or features were encountered. The area

appeared “heavily impacted by prior mechanical development of the soil” including sugarcane cultivation and grubbing activities (Chaffee et al. 1998:i, 16). Overall, the stratigraphy consisted of various fill material overlying decomposing bedrock or an old riverbed deposit near the ‘Iao Stream.

3.3.12 Fredericksen (2000)

In October 1997, Xamanek Researches conducted a mitigation project in the easement along Lower Main Street, fronting the gas station parcel. Notably, at this time, CSH has been unable to obtain a copy of the mitigation report by E. M. Fredericksen and D. L. Fredericksen (1998b). According to E. M. Fredericksen and D. L. Fredericksen (2003), a human burial was discovered at 75 cmbs. The burial is a component of the SIHP #-4127, habitation area. The burial was preserved in place and the proposed electrical conduit was rerouted. According to D. L. Fredericksen and E. M. Fredericksen (1998b:4-5), Xamanek Researches conducted archaeological monitoring for the easement project in late 1997 to January 1998 for an electrical conduit trench and installation of two man-hole boxes. They report that an *in situ* burial was found and preserved in place, and disarticulated human remains were to be reinterred at a later date. It was also noted that the report of findings for the monitoring project was pending. It is not clear whether the burial is the same as the one discussed for the mitigation project.

3.3.13 E. M. Fredericksen and D. L. Fredericksen (2003)

Between October and November 2002, Xamanek Researches conducted archaeological monitoring for a proposed MECO Substation in TMK: [2] 3-4-039:051 (E. M. Fredericksen and D. L. Fredericksen 2003). It was noted that five marked post-Contact graves were present in the parcel. Ground disturbance included the removal of a portion of the sand dune behind the substation, a retaining wall, and a conduit trench to Lower Main Street. The excavation areas were around the outside of the current substation, on the eastern and southwestern side and along the Lower Main Street shoulder. Overall, fill material was present in the upper 30 to 50 cm of the excavations and was overlying natural dune sand. A continuation of a previously identified buried habitation site (SIHP # -4127) was encountered during excavations for the retaining wall and for the conduit trench that extended in between the substation and a manhole box near the Lower Main Street easement. The cultural layer contained considerable traditional artifacts, marine midden, fish and mammal remains, charcoal, and burnt *kukui* nut shells. As described above, SIHP # -4127 was initially documented by Fredericksen et al. (1995) during an AIS of the right-of-way along the adjacent gas station parcel. The site was subsequently documented by Fredericksen and Fredericksen (1996) during an archaeological data recovery and by D. L. Fredericksen and E. M. Fredericksen (1998a) during an AIS of the gas station parcel. E. M. Fredericksen and D. L. Fredericksen (2003:3) stated it was likely that SIHP # -4127 continued within the MECO property. Archaeological monitoring was recommended for any future groundwork.

3.3.14 D. L. Fredericksen and E. M. Fredericksen (2003)

In 2003, Xamanek Researches completed an archaeological inventory survey for the proposed Lokenani Gardens Wailuku Elderly Housing Project in Wailuku (D. L. Fredericksen and E. M. Fredericksen 2003). The survey identified SIHP # -5484, the foundation of the former Nishiwa Bakery that was built in 1950 and demolished in the 1980s. Archaeological monitoring was recommended for the project in consultation with the SHPD.

3.3.15 Tome and Dega (2004)

In 2004, Scientific Consultant Services (SCS) conducted an archaeological inventory survey for the proposed Imi Kala Street and Neki Place Extension Routes (Tome and Dega 2004). The study identified a historic single-stacked rock wall within the Neki Extension. In the Imi Kala Road extension, three historic properties were identified that include the Imi Kala Bridge (SIHP # 50-50-04-5564), Spreckels Ditch (SIHP # 50-50-07-1508), and a previously unrecorded irrigation ditch (SIHP # 50-50-04-5566).

3.3.16 Pestana and Dega (2005)

In July 2005, SCS completed an archaeological assessment of 0.45-acre lot at 709 Uluhea Way (TMK: [2] 3-4-22:05), off Lower Main Street (Pestana and Dega 2005). The investigation included nine backhoe trenches. No significant cultural deposits or features were encountered. Overall the stratigraphy consisted of various fill material overlying “an extremely densely-bedded cobble and boulder layer” (Pestana and Dega 2005:12). Based on the cultural sensitivity of the Lower Main Street area, archaeological monitoring was recommended for any future groundwork.

3.3.17 Fredericksen (2006)

Following the 2003 archaeological inventory survey for the Lokenani Gardens Wailuku Elderly Housing Project, in 2006, Xamanek Researches completed archaeological monitoring for the for the same project area (Fredericksen 2006). Archaeological monitoring documented SIHP # -5763, a buried road bed/cobble road base underlying Loke and Nani streets within off-site sewer and water line excavations for the project.

3.3.18 Morawski et al. (2006)

Between December 2003 and July 2005, Scientific Consultant Services (SCS), Inc and Archaeological Services Hawaii (ASH), conducted archaeological monitoring at the proposed Kehalani Mauka Subdivision in Wailuku and Waikapu Ahupua’a (TMK: 3-5-02:01 por. and 3-5-01:17 por.) (Morawski et al. 2006). Five historic properties were identified and included SIHP # -5680, one complete in situ human burial site, -5965 and -5966, isolated and disturbed human remains, -5963, a historic roadbed, and -5964, a portion of a historic sugarcane flume. Future archaeological monitoring was recommended for any ground disturbance in the Kehalani Mauka Subdivision area.

3.3.19 Cordle and Dega (2007)

Between May 2004 and August 2005, SCS conducted archaeological monitoring for the Henry Perrine Baldwin High School for a proposed Eight Classroom Building (Cordle and Dega 2007). It was noted that the excavation documentation for this project had been lost and was not available for the report of findings. However, reportedly, the ground disturbances associated with the new building were relatively shallow (<100 cmbs) and no significant cultural materials or deposits were observed. No natural sand deposits were reported. It was noted that the dune sand likely had been removed from the area previously (Cordle and Dega 2007:10).

3.3.20 Lyman and Dega (2013)

In 2013, SCS completed an archaeological inventory survey for the Mill Street and Central Avenue Retaining Wall Project (Lyman and Dega 2013). During the survey, SIHP # -7721, a dry-

stacked stone retaining wall, was documented extending along the western edge of Central Avenue north to the intersection of Mill Street, then continuing approximately 5 meters along the southern edge of Mill Street. SIHP # -7721 was assessed as significant pursuant to HAR §13-13-275-6, Criterion “d” (information content). Lyman and Dega (2013:18) recommended no further work for this historic property. Following the completion of the survey, the Central Avenue portion of SIHP # -7721 was reconstructed as a modern wall. The Mill Street portion of SIHP # -7721 remains intact and consists of a cut and faced basalt stone and mortar retaining wall abutting the modern concrete sidewalk.

Section 4 Results of Fieldwork

On 24 November 2020, CSH completed a 100 percent coverage pedestrian inspection of the project area, GPS data collection, and written and photographic recordation. Fieldwork was completed by Jonas Madeus and B.A., Jay Rapoza, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 2 person-days to complete.

The field inspection of the project included documentation of the current condition of SIHP # 50-50-04-5564, the Imi Kala Bridge, located along the western boundary of the project area (Figure 29). Ima Kala Bridge was previously documented during an AIS for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). Tome and Dega (2004:43) assessed SIHP # -5564 as significant pursuant to HAR §13-13-284-6, Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history). No further historic preservation work was recommended. A description of SIHP # 50-50-04-5564 is provided in Section 4.1.

The field inspection also identified two corrugated metal culverts and two poured concrete walls that were installed to mitigate flooding and stream bank erosion along the southern bank of Wailuku River (Figure 30 through Figure 33). These features are located adjacent or just outside of the project area, and are interpreted as modern (less than 50 years old) improvements that were installed to prevent flooding and stream bank erosion. The project area also includes streambank improvements that were installed following the 13 September 2016 Wailuku River flood event (see Figure 29).

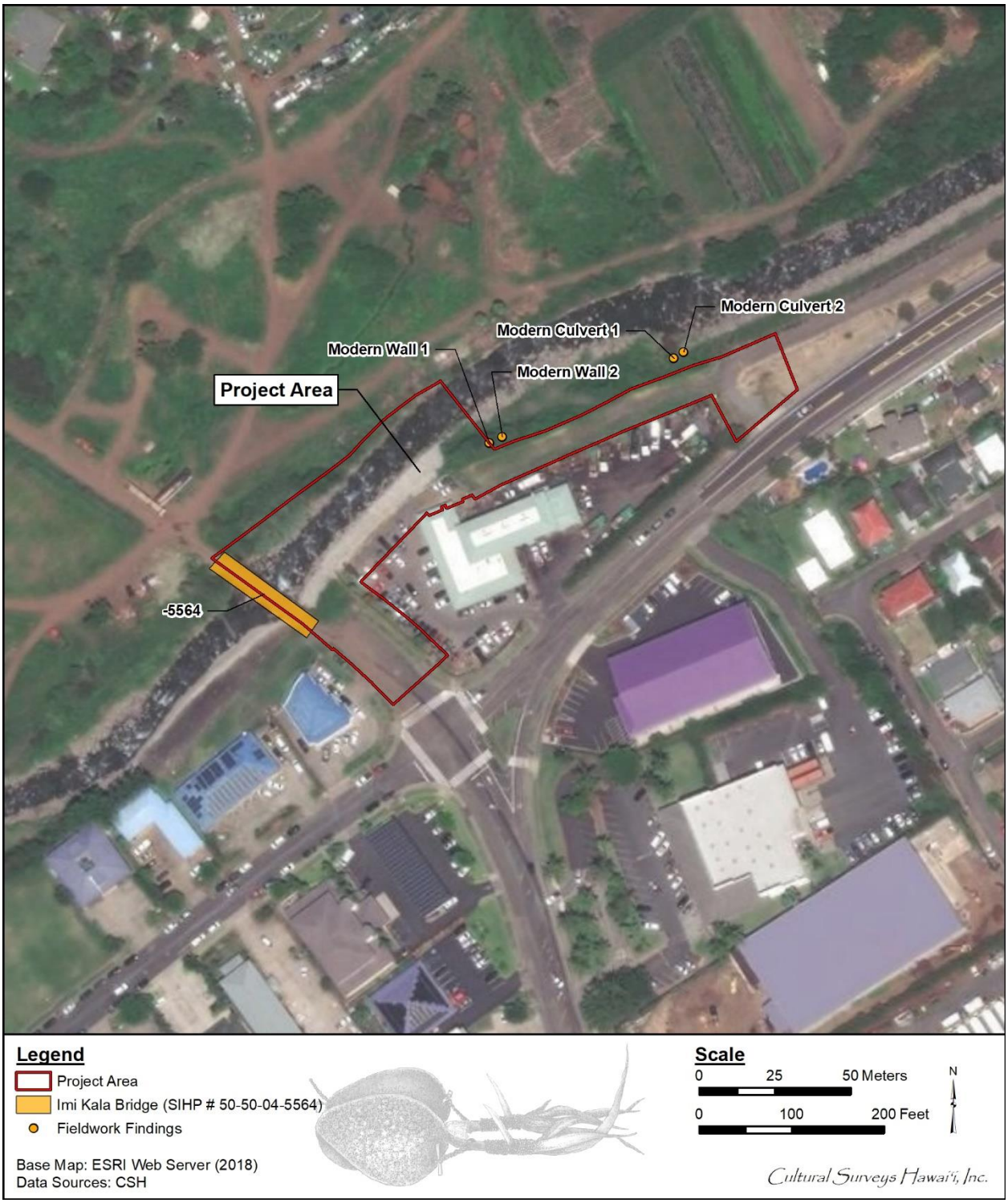

Figure 28. Aerial photograph depicting the location of historic properties and modern structures within or in the vicinity of the project area (Esri 2018)

Figure 29. General view of the project area showing modern streambank improvements (foreground) and Imi Kala Bridge (SIHP -5564) spanning Wailuku River, view to southwest

Figure 30. General view of Modern Culvert 1, view to the northeast

Figure 31. General view of Modern Culvert 2, view to the east

Figure 32. General view of Modern Wall 1, view to the southwest

Figure 33. General view of Modern Wall 2, view to south

4.1 **SIHP # 50-50-04-5564**

FORMAL TYPE:	Bridge (Imi Kala Bridge)
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic (Plantation)
TAX MAP KEY:	N/A
LAND JURISDICTION:	State/County
PREVIOUS DOCUMENTATION:	Tome and Dega (2004)

SIHP # 50-50-04-5564 is the Imi Kala Bridge that spans the Wailuku River. The Imi Kala Bridge was previously documented by Tome and Dega (2004) as follows:

> Site -5564 encompassed an approximate area of 186 m² and consisted of a single, historic bridge. The site was located approximately 30 m northwest of the Imi Kala Street *cul-de-sac* and it crossed ‘Iao Stream. Situated in a southeast-northwest (120°/305°) direction, the bridge was constructed utilizing concrete to form the bridge’s two middle and stream bank supports while wooden planks, iron/steel I-beams, and additional concrete was used to construct the traveling surface. Located directly under the traveling surface of the bridge were utility lines (*i.e.*, water, sewer), which served the residents of the area. During its heyday, the bridge not only served the area’s now defunct Wailuku Sugar Mill but the area’s local residents as well. Documentation of Site -5564 was limited to paper and photographic description. (Tome and Dega 2004:18)

Tome and Dega (2004) also provide a plan view map of the historic property (Figure 34). As part of the field inspection, CSH revisited the historic property and recorded some additional observations. The Imi Kala Bridge measures approximately 33 m long by 6 m wide, and 5 m high (Figure 35 through Figure 37). The two bridge supports within Wailuku River are constructed of cut mortared basalt stone. A yellow metal gate has been installed on the south side of the bridge. The surface of the bridge is concrete and is surrounded by metal railings.

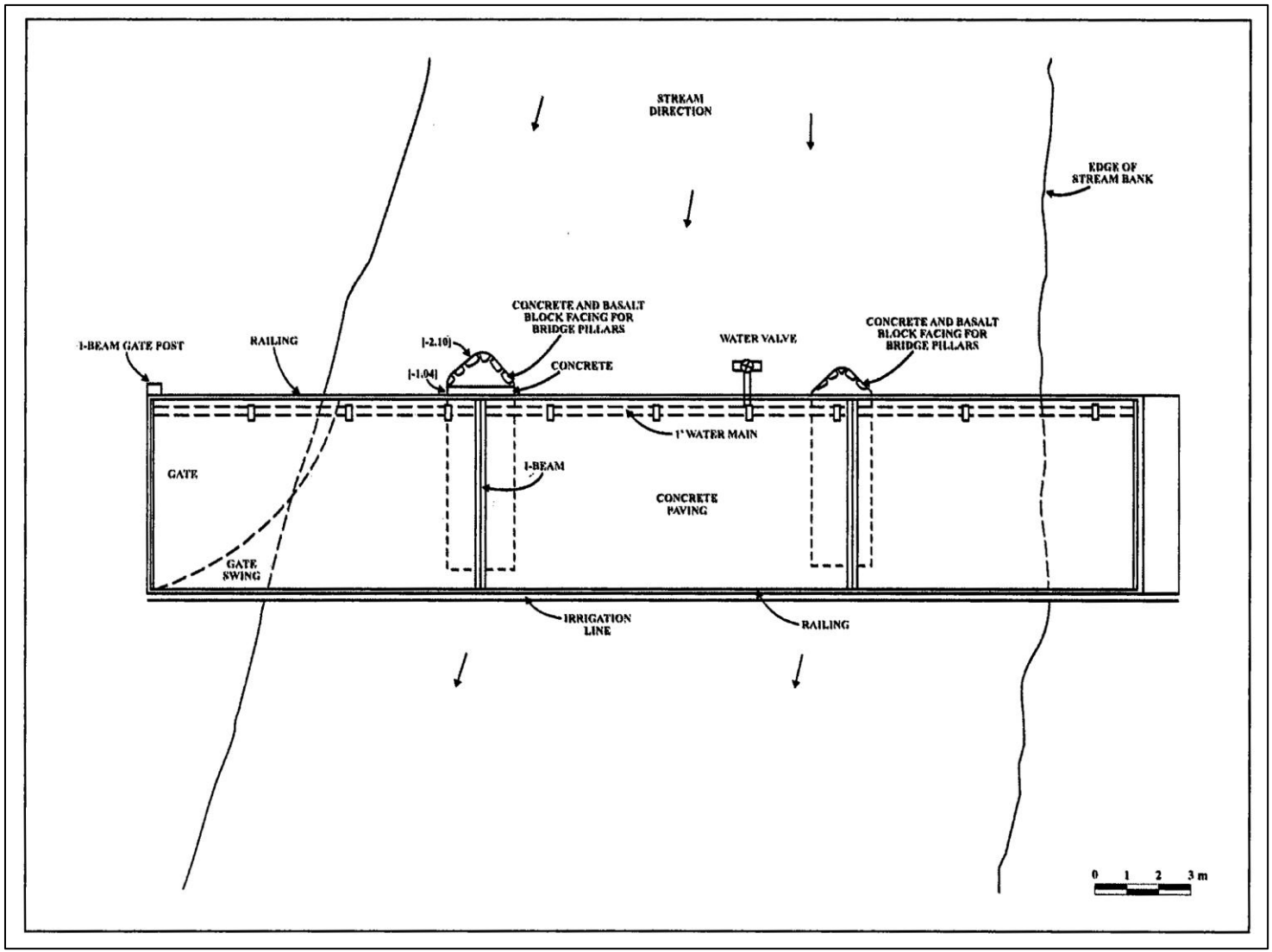

Figure 34. SIHP # 50-50-04-5564 plan view map from Tome and Dega (2004:19)

Figure 35. General view of the Imi Kala Bridge (SIHP -5564) showing surface, railings, and basalt supports, view to northwest

Figure 36. General view of the surface of Imi Kala Bridge (SIHP # -5564) showing railings, view to north

Figure 37. General view of the surface of Imi Kala Bridge (SIHP # -5564), view to northwest

Section 5 Summary and Recommendations

At the request of R.M. Towill Corporation, CSH has prepared this LRFI for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island, TMKs: [2] 3-4-020:048, 075, 888 (pors.) & [2] 3-4-032:001 (por.). The proposed project involves the repair to a portion of the southeast bank of Wailuku River (‘Īao Steam), downstream of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity areas. The repair will include the removal and replacement of grouted riprap on the existing slope, with dumped riprap placed at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

On 24 November 2020, CSH completed a 100 percent coverage pedestrian inspection of the project area, GPS data collection, and written and photographic recordation. The field inspection of the project included documentation of the current condition of SIHP # 50-50-04-5564, the Imi Kala Bridge, that was previously documented by Tome and Dega (2004). The field inspection also identified two corrugated metal culverts and two poured concrete walls that were installed to mitigate flooding and stream bank erosion. These features are interpreted as modern (less than 50 years older) improvements that were installed to prevent flooding and stream bank erosion.

CSH recommends consultation with the SHPD to determine historic preservation requirements for the proposed project. While the project area includes the Imi Kala Bridge (SIHP # 50-50-04-5564), it is CSH’s understanding that the project does not involve impacts to this historic property. If impacts to SIHP # -5564 are anticipated then consultation with the SHPD Architecture Branch is recommended. No other historic properties were identified during this field inspection that would require additional inventory or mitigation. While the project area is surrounded by a dense cluster of Land Commission Awards and within an area of rich traditional and historic land use, project-related ground disturbance is not anticipated to encounter historic properties. This assessment is primarily based on photographic evidence of the project area following the 13 September 2016 Wailuku River flood event (see Figure 24 and Figure 25). This event included significant erosion of the former stream bank and replacement with boulder fill and concrete. Project-related ground disturbance is anticipated to occur within this circa-2016 fill material, therefore no further archaeological work is recommended.

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MICHAEL P. VICTORINO
Mayor
ROWENA M. DAGDAG-ANDAYA
Director
JORDAN MOLINA
Deputy Director
GLEN A. UENO, P.E., L.S.
Development Services Administration
RODRIGO "CHICO" R. RABARA, P.E.
Engineering Division
JOHN R. SMITH, P.E.
Highways Division
Telephone: (808) 270-7745
Fax: (808) 270-6267

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
200 SOUTH HIGH STREET, ROOM NO. 410
WAILUKU, MAUI, HAWAII 96793

March 24, 2021

Dr. Alan S. Downer, Ph.D., Administrator
Department of Land and Natural Resources
State Historic Preservation Division
Kakuhihewa Bldg., Suite 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Attention: Dr. Susan Lebo, Ph.D.

SUBJECT: REQUEST FOR STATE HISTORIC PRESERVATION DIVISION (SHPD) CONCURRENCE WITH "NO HISTORIC PROPERTIES AFFECTED" FOR THE 'ĪAO STREAM LEVEE 27 REPAIR PROJECT
DPW JOB NO. 18-36
WAILUKU AHUPUA'A, WAILUKU DISTRICT, MAUI ISLAND
TMK: (2) 3-4-020:048, 075, 888 POR. & (2) 3-4-032:001 POR.

Dear Dr. Downer:

The County of Maui, Department of Public Works (DPW) has submitted the subject project for review under Hawai'i Revised Statutes 6E-8 and is now providing this request for the State Historic Preservation Division (SHPD) concurrence with "no historic properties affected" for the project.

Project Description
The proposed project involves the repair to a portion of the southeast bank of Wailuku River ('Īao Stream), downstream of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity areas. The repair will include the removal and replacement of grouted riprap on the existing slope, with dumped riprap placed at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Identification of Historic Properties
An archaeological literature review and field inspection (LRFI) report for the subject project was prepared by a project consultant in February 2021 (Rapoza et al. 2021). The LRFI included documentation of the current condition of SIHP #50-50-04-5564, the Imi Kala Bridge, located along the western boundary of the project area. The field inspection also identified two corrugated metal culverts and two poured concrete walls that were installed to mitigate flooding and stream bank erosion along the southern bank of Wailuku River. These features were located adjacent or just outside of the project area, and were interpreted as modern (less than 50 years old) improvements that were installed to prevent flooding and stream bank erosion.

Evaluation of Significance
The Imi Kala Bridge (SIHP #50-50-04-5564) was previously documented during an archaeological inventory survey (AIS) for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). Tome and Dega (2004:43) assessed SIHP #-5564 as significant pursuant to HAR §13-13-284-6, Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history). No further historic preservation work was recommended.

Determination of Effects to Significant Historic Properties
DPW confirms that the subject project will not impact the Imi Kala Bridge (SIHP #50-50-04-5564). Based on the information provided in the project's LRFI report, there is a low likelihood of encountering subsurface historic properties in the project area. Accordingly, DPW requests SHPD concurrence with a project effect determination of "no historic properties affected" for the subject project.

Should you have any questions, please contact Kristi Ono at kristi.ono@co.maui.hi.us or (808) 270-7745. Thank you.

Sincerely,

ROWENA M. DAGDAG-ANDAYA
Director of Public Works

RMDA/KO/CSH (ED21-0303)

S:\ENG\PROJECTS\02 CIP\2018\18-36 ADDITIONAL WORK FOR IAO STREAM LEVEE NO. 27\01 DESIGN\H ENVIRONMENTAL\6E-8\2021-03-24 DPW COVER LETTER.DOC

DAVID Y. IGE
GOVERNOR OF
HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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

March 31, 2021

IN REPLY REFER TO:
Project No.: 2021PR00247
Submission No: 2021PR00247.002
Doc. No.: 2103IK10
Archaeology

Rowena Dagdag-Andaya, Director
County of Maui
Department of Public Works (DPW)
200 S. High St.
Kalana O Maui Bldg., 4th Fl
Wailuku, HI 96793
c/o Kristi Ono
Kristi.Ono@co.maui.hi.us

Dear Rowena Dagdag-Andaya:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
County of Maui DPW Job No. 18-36
‘Īao Stream Levee 27 Repair Project
Literature Review and Field Inspection Report
Wailuku Ahupua‘a, Pū‘ali Komohana District, Island of Maui
TMK: (2) 3-4-020:048, 075 por., 888 por.; and (2) 3-4-032:001 por.

This letter provides the State Historic Preservation Division’s (SHPD’s) review of the County of Maui Department of Public Works (DPW) ‘Īao Stream Levee 27 Repair Project, DPW Job No. 18-36. SHPD received the submittal on March 1, 2021, including a County of Maui DPW cover letter, construction plans, and project location maps. Additionally, SHPD reviewed an archaeological literature review and field inspection report titled *Archaeological Literature Review and Field Inspection Report for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island TMKs: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por.* (Rapoza et al., February 2021). Subsequently, SHPD requested a letter from the County of Maui requesting concurrence with an HRS 6E-8 project effect determination and additional information on March 11, 2021. SHPD received the County’s letter requesting SHPD’s with a determination of “No historic properties affected” for the proposed project on March 31, 2021 (Submission No. 2021PR00247.002).

The DPW proposes to repair a portion of the southeast bank of Wailuku River (‘Īao Stream). The project area comprises 1.39 acres situated along the Wailuku River and downstream of the Imi Kala Bridge (SIHP Site 50-50-04-5564). The proposed repairs will include removing and replacing grouted riprap on the existing slope with dumped riprap placed at the slope's base to protect against scour. Ground disturbances will extend 250 ft along the streambank to a maximum depth of 9 ft. According to the submittal, previous ground disturbances include repairs to the former stream bank due to the September 2016 Wailuku River flood event and consisted of boulder fill and concrete.

Cultural Surveys Hawaii, Inc. (CSH) produced an archaeological literature review and field inspection report (Rapoza et al., February 2021) for the subject project. The report provides a project background, description of the environmental setting, field and research methods, a detailed history of the area, previous archaeological studies, fieldwork results, and recommendations. CSH conducted a 100 percent pedestrian survey of the project area with transects spaced at 5-meter intervals. One previously documented historic property was briefly updated during the survey. The report indicates the Imi Kala Bridge (SIHP Site 50-50-04-5564) was initially recorded during an

archaeological inventory survey for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). The bridge was assessed significant under Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history), and no further work was recommended. Additionally, the survey identified two corrugated metal culverts, and two poured concrete walls to mitigate flooding and stream bank erosion along the southern bank of the Wailuku River. These features are located outside of the project area and interpreted as modern (less than 50 years old). According to the report, the Imi Kala Bridge will not be impacted by the proposed project. CSH recommended consultation with the SHPD to determine historic preservation requirements for the proposed project and consultation with the SHPD Architecture Branch if impacts are anticipated to the Imi Kala Bridge.

In a letter dated September 21, 2004 (Log No. 2004.2798, Doc. No. 0409MK08), SHPD concurred with the significance assessment for the Imi Kala Bridge. Additionally, SHPD indicated the bridge was adequately documented. However, **please note** that should a future project involve impacts to the Imi Kala Bridge, SHPD may request re-assessment of the integrity and site significance of the bridge by a SOI qualified architectural historian, historian, or historical architect.

In a letter dated March 24, 2021 (Submission No. 2021PR00247.002), DPW indicated the proposed project would not impact the Imi Kala Bridge (SIHP Site 50-50-04-5564). The DPW made an HRS 6E-8 project effect determination of "No historic properties affected" for the ʻĪao Stream Levee 27 Repair Project.

Based on the information above, **SHPD concurs** with the DPW's project effect determination of "No historic properties affected" for the current County of Maui project. Pursuant to HAR §13-284-7(e), when the SHPD agrees that the action will not affect any significant historic properties. This is the SHPD's written concurrence and notification that the HRS 6E historic preservation review process is complete. The permit issuance process may proceed.

Additionally, **SHPD requests** interim protection measures be implemented prior the start of construction. Please install temporary orange construction fencing around portions of the Imi Kala Bridge that will be situated near construction activities.

Although LRFI report does not fulfill the requirements of an archaeological inventory survey as specified in HAR §13-276-5, it serves to facilitate project planning and supports the historic preservation review process. Please provide two hardcopies and one text-searchable pdf copy of the LRFI report, clearly marked Final, along with a copy of this letter, to the SHPD Kapolei office, attention Library. Additionally, provide a text-searchable pdf copy, clearly marked Final, to HICRIS Project 2021PR00247 using the project supplement option, and a pdf copy to Lehua.K.Soares@hawaii.gov.

Please attach to the permit: In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, native 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) 652-1510.

Please contact ʻIolani Kauhane, Maui Archaeologist III, at iolani.kauhane@hawaii.gov for any matters regarding archaeological resources or this letter.

Aloha,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: dsa.engineering@mauicounty.gov
public.works@mauicounty.gov
Trevor Yucha, tyucha@culturalsurveys.com

Appendix C

Draft Cultural Impact Assessment for the ‘Īao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island. Prepared for R.M. Towill Corporation. Prepared by Cultural Surveys Hawai'i, Inc. March 2021.

DRAFT
Cultural Impact Assessment for the Iao Stream Levee 27 Repair Project, Wailuku Ahupuaʻa, Wailuku District, Maui TMKs: portions of [2] 3-4-020:048, 075, 888, and 3-4-032:001

Prepared for
R.M. Towill Corporation

Prepared by
Kamuela Kaapana, M.Ed,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc.
Kailua, Hawaiʻi
(Job Code: WAIEHU 4)

March 2021

Oʻahu Office
P.O. Box 1114
Kailua, Hawaiʻi 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

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

Management Summary

Reference	Cultural Impact Assessment for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui, TMKs: portions of [2] 3-4-020:048, 075, 888, and 3-4-032:001 por. (Kaapana and Hammatt 2021)
Date	March 2021
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: WAILUKU 75
Agencies	County of Maui
Land Jurisdiction	County of Maui
Project Location	The project area is located along Wailuku River (‘Īao Stream), downstream from the Imi Kala Bridge and includes construction site access, mobilization, and construction activity areas. The project area is depicted on a portion of the 2013 Wailuku U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Description	The proposed project will include repair to the streambanks in the vicinity of Imi Kala Bridge. The repair will include the installation of concrete boulder fill (CBF) at the toe of the slope. The design of the repairs to the slope is assumed to consist of removal of the existing CBF and replacement with the new CBF, excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth, and increasing the size of the boulders to withstand stream velocity during a 100-year recurrence interval storm event.
Project Acreage	The project area is 1.39 acres.
Document Purpose	This cultural impact assessment (CIA) was prepared to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s *Guidelines for Assessing Cultural Impacts*) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance Criterion e, pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6. 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). The document will likely also support the project's historic preservation review.
Results of Background Research	Background for this project yielded the following results presented in approximately chronological order: 1. The project area is situated in the *ahupua‘a* (land division usually extending from the uplands to the sea) of Wailuku which is located in the larger *moku* (district) of Wailuku on the central isthmus of the island of Maui. 2. Wailuku Ahupua‘a was included in the traditional *‘okana* (subdistrict) of Nā Wai Eha, or "The Four Streams." This area is home to the four largest streams found on the windward coast of Maui; Waikapū, Waiehu, Wailuku, and Waihe‘e. The streams of Wailuku include the perennial Wailuku River also known as ‘Īao Stream. Tributaries that flow into Wailuku River include Nākalaloa, Po‘onāhoahoa, Kinihāpai, and Ae streams. 3. Pihanakalani Heiau, Haleki‘i Heiau, and Kaluli Heiau are just a few *heiau* (pre-Christian place of worship) within the Wailuku Ahupua‘a. 4. Wailuku was the site of Kalanihale, the royal palace of the ruling chief of Maui, Kahekili. 5. An article first published in the Hawaiian newspaper *Ke Au Hou* then cited in Sterling's *Sites of Maui* explains the Kapela Burial Cave in ‘Īao Valley. Sources say it was Maui's noted burial place for *ali‘i* (chiefs). The following *ali‘i* were said to have been put to rest at Kapela cave: Heleipawa, Aikanaka, Kahaianuia, Hema, Luanuu, Kamea, Hua, Pau, Paumakua, Haho, Palena, Hanalaaiku, Kakaalaneo, Kekaulike, Kamehameha-nui, Laka, and Kalanikuihonoikamoku (Sterling 1998:80). 6. The high degree of cultivation within Wailuku Ahupua‘a and its near neighbors gives evidence that a substantial population would have been established there during the pre-Contact period. According to Cordy, the settlement of Wailuku represented one of two (or perhaps three) population concentrations on Maui (Cordy 1981:198–199). 7. The 1790 invasion of Maui by Kamehameha of Hawai‘i Island is memorialized in many place names within Wailuku. The Battle of ‘Īao is also known as the Battle of Kepaniwai. This battle is said to have been one of the most bitter battles fought by Kamehameha I in his bid to control the Hawaiian Islands. 8. Although almost 300 individual parcels were awarded by the Land Commission as Kuleana Awards (land awarded to Native tenants who occupied or cultivated said land) within the *ahupua‘a* of Wailuku, these claims represented lands that were located in the upland portion of the *ahupua‘a*. Nine of these claims lie within the vicinity of the project area.

	9. In 1872, the Wailuku Sugar Company was established. By 1925, Wailuku Sugar Company took control over other smaller sugar mills throughout Maui. During the sugar plantation era, water diversions were established to transport water from streams and rivers to the sugar plantation fields. 10. Water diversion and water rights have been a serious issue amongst cultural practitioners and *kama‘āina* of Wailuku and the Wailuku Water Company, which controls the water flow/access.
Results of Community Consultation	CSH attempted to contact Native Hawaiian Organizations, agencies, and community members as well as cultural and lineal descendants in order to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 57 individuals or groups; 11 responded and three of these *kama‘āina* and/or *kūpuna* met with CSH for a more in-depth interview. Consultation was received from the following community members: 1. Dr. Scott Fisher, *kama‘āina*, Chief Conservation Officer, Hawaiian Islands Land Trust 2. Skippy Hau, *kama‘āina*, Aquatic Biologist, Department of Land and Natural Resources. 3. Foster Ampong, *kama‘āina*
Identification of Cultural Practices	Community consultation conducted as part of this CIA has identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Wailuku Ahupua‘a: 1. Gathering of various stream life such as *hīhīwai (*Endemic snail, *Neritinu graposa)*, *‘o‘opu (Eleotridae*, *Gobiidae*, and *Blennidae)*, and *‘ōpae ‘oeha‘a* (clawed shrimp, *Macrobrachium grandimanus).* 2. Use of water from Wailuku River for sustainable practices, such and individual/family *lo‘i* and other types of agricultural farming.
Identification of Impacts to Cultural Practices	No impacts to ongoing cultural practices were identified within the project area during community consultation for this CIA.
Impacts and Recommendations	Based on the results of community consultation and CSH’s expertise in conducting cultural impact assessments, the following actions are recommended to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups: 1. Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all

	activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the event that *iwi kūpuna* (ancestral remains) 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 construction, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance. 3. Mr. Ampong stressed the importance that workers on the project should be cognitive of the history of Wailuku. Wailuku consisted of a *pu‘u one* system and it was a customary practice for Native Hawaiians to bury loved ones in this area. Even though the land area is predominately developed, there is still potential for disturbing *iwi kūpuna*.

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Section 1 Introduction

1.1 Project Background

At the request of R.M. Towill on behalf of the County of Maui, Cultural Surveys Hawai‘i, Inc. (CSH) hass conducted a cultural impact assessment (CIA) for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui, TMKs: portions of [2] 3-4-020:048, 075, 888, and 3-4-032:001 por. The project area is depicted on a portion of the 2013 Wailuku U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3),and a 2018 aerial photograph (Figure 4).

The project is located along the Wailuku River (‘Īao Stream), downstream of the Imi Kala Bride in Wailuku, Maui. The project will include repair to the streambanks in the vicinity of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity area. The repair will include the installation of concrete boulder fill (CBF) at the toe of the slope. The design of the repairs to the slope is assumed to consist of removal of the existing CBF and replacement with the new CBF, excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth, and increasing the size of the boulders to withstand stream velocity during a 100-year recurrence interval storm event.

1.2 Document Purpose

The purpose of this CIA is to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s *Guidelines for Assessing Cultural Impacts*) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance Criterion e, pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6. 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). The document will also support the project’s historic preservation review.

1.3 Scope of Work

The scope of work for this cultural component 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.

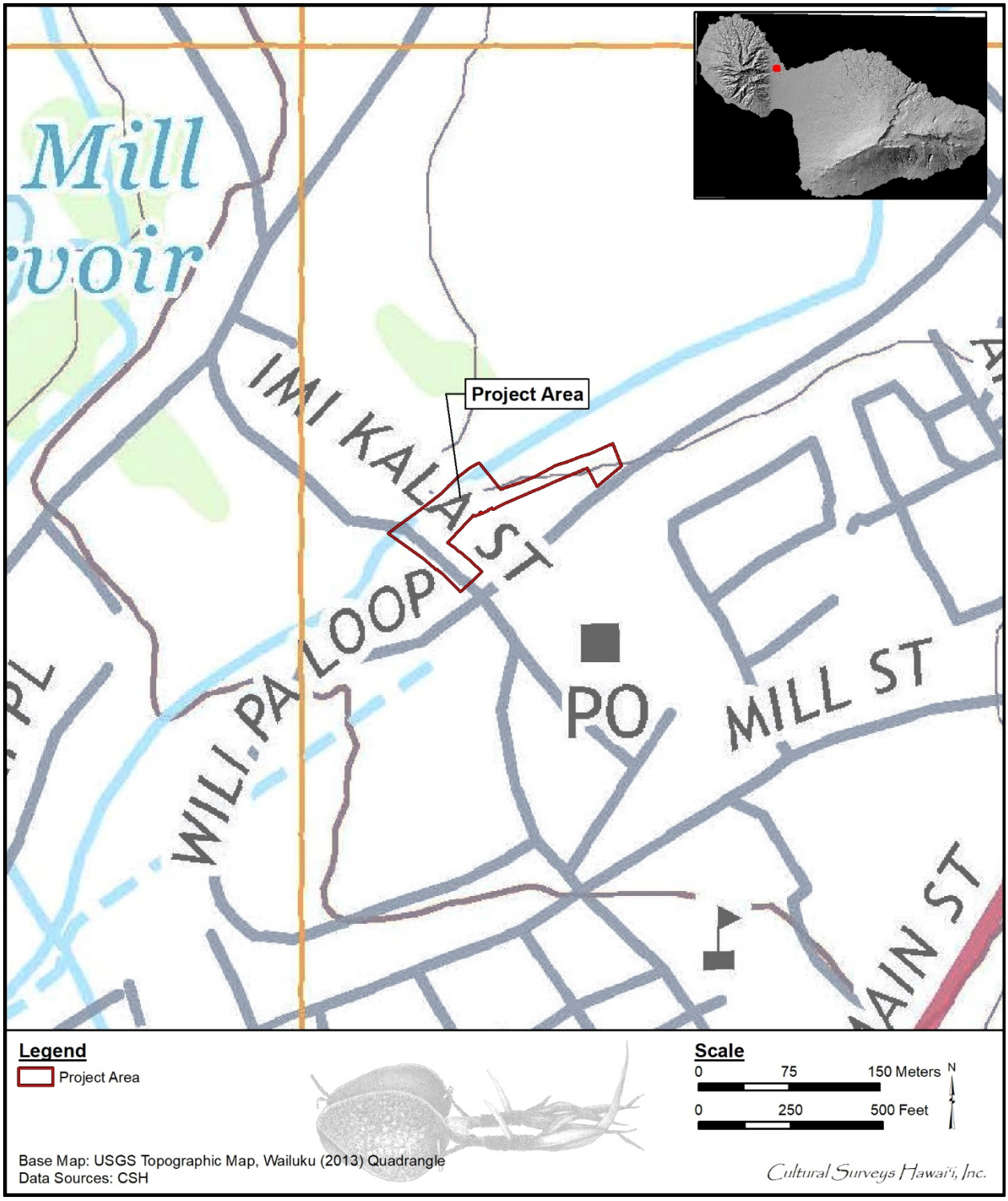

Figure 1. Portion of the 2013 Wailuku USGS 7.5-minute topographic quadrangle showing the project area

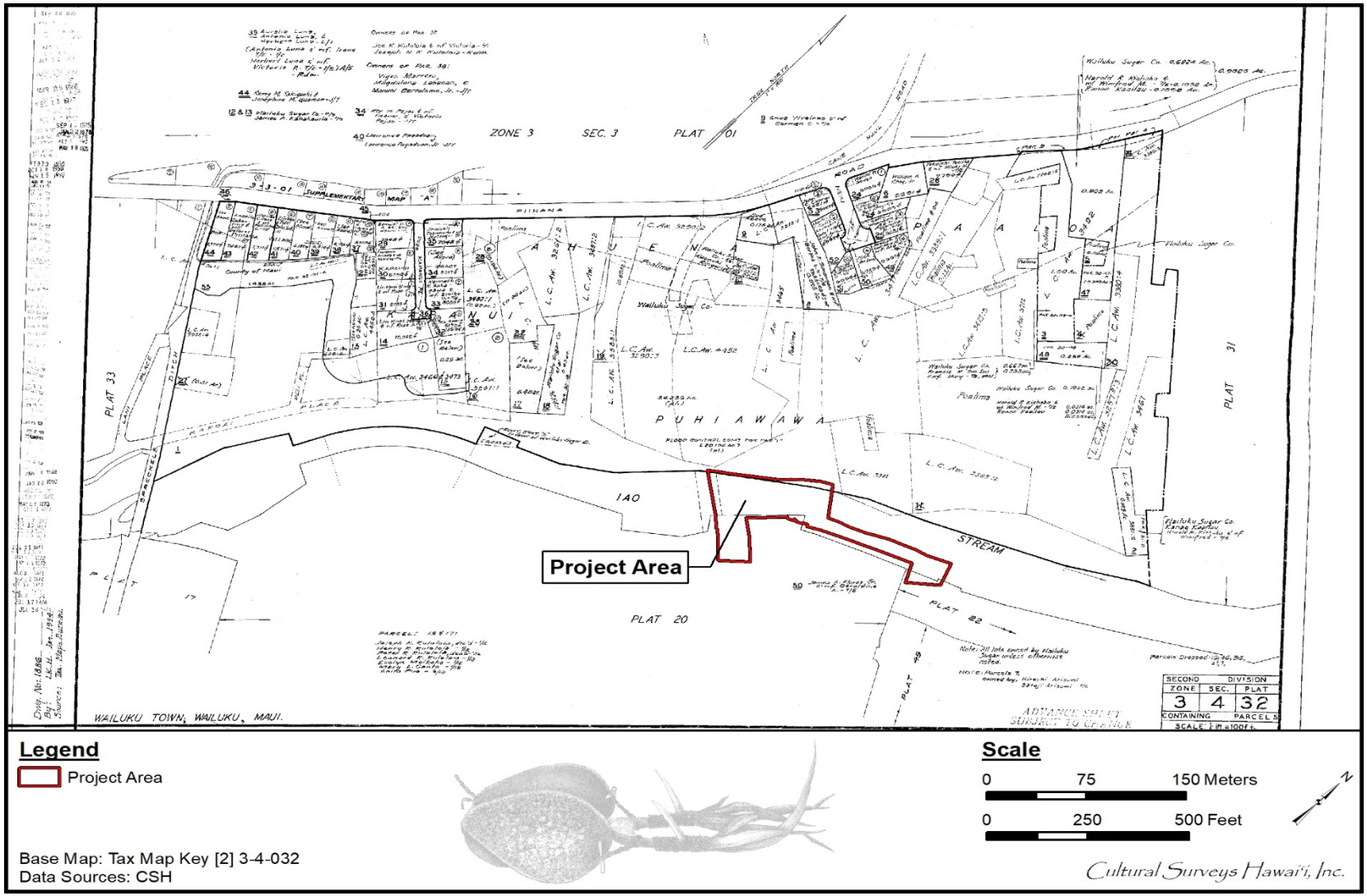

Figure 2. Tax Map Key (TMK): [2] 3-4-032 depicting the project area (Hawai‘i TMK Service 2014)

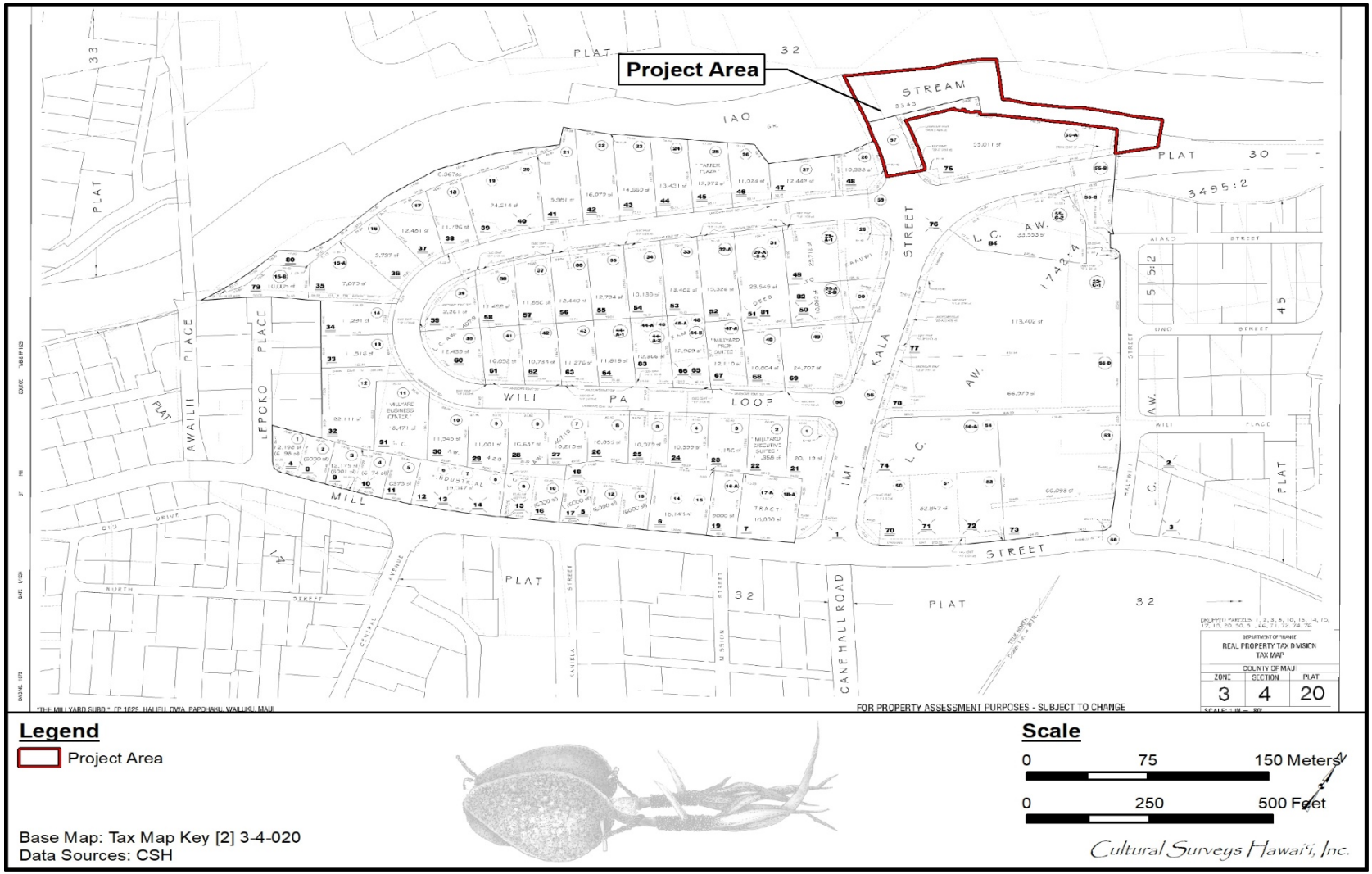

Figure 3. TMK: [2] 3-4-020 showing the project area (Hawai‘i TMK Service 2014)

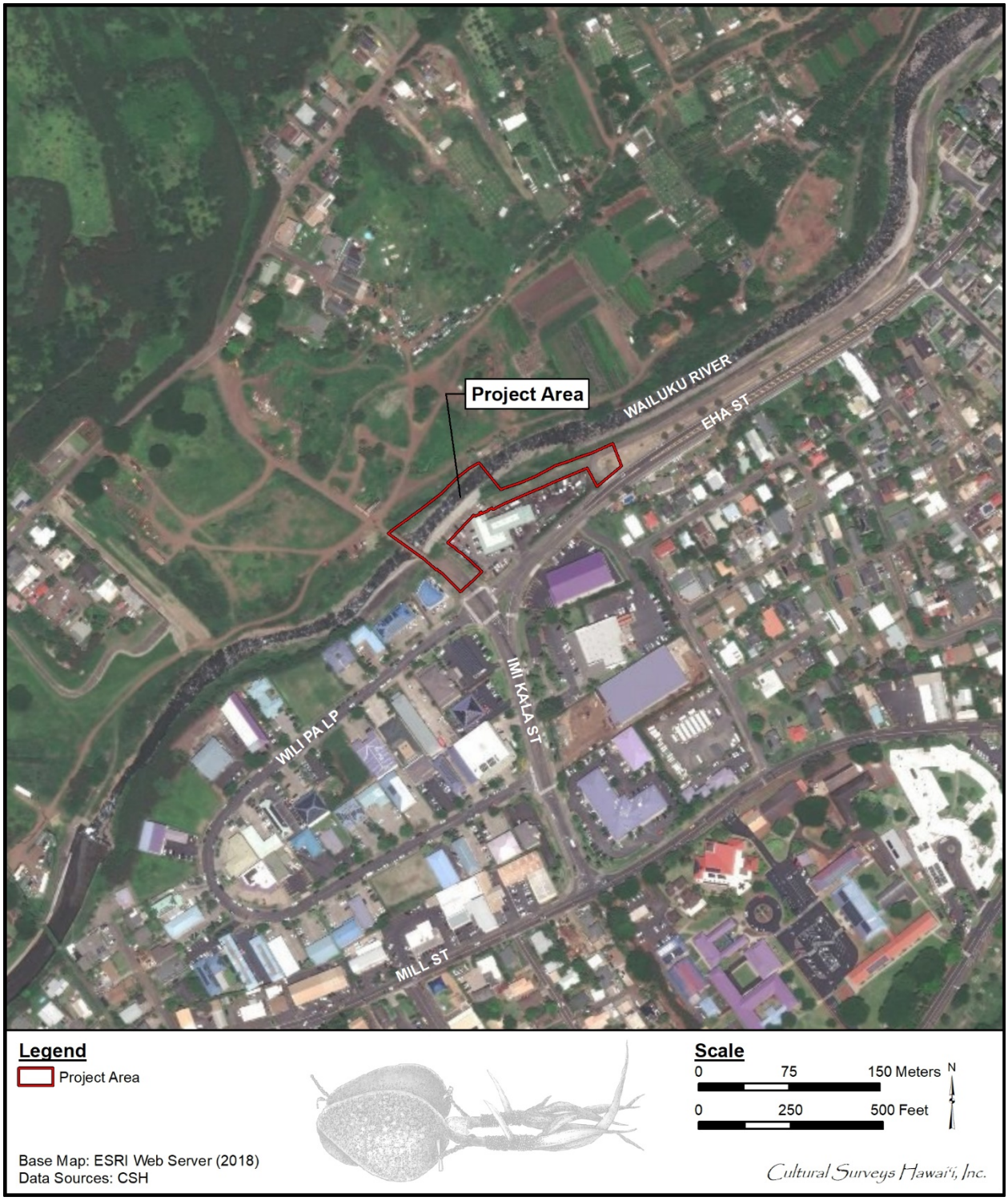

Figure 4. Aerial photograph showing the location of the project area (ESRI 2018)

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.

1.4 Natural Environment

The project area is situated in the *ahupua‘a* (traditional land division typically running from the mountains to the sea) of Wailuku which is located in the larger *moku* (district) of Wailuku on the central isthmus of the island of Maui:

> On Maui the lands of Waikapu and Wailuku appropriated almost the whole of the isthmus so as to cut off half of the lands in the district of Kula from access to the sea. These two ahupuaas, together with Waiehu and Waihee, which were independent, belonging to no Moku, were called Na Poko, and have been formed into a district in modern times. [Alexander in Sterling 1998:63]

James (2002) also explains the land formation of the Wailuku Ahupua‘a and its uniqueness:

> The present-day land division of Wailuku includes all of the Central Velley between east and west Maui, as well as ‘Īao Valley and the northern portion of Kīhei. It is the only land area in the Hawaiian Islands bordered by mountains on two opposite sides and the sea on the other two sides. [James 2002:56]

The *ahupua‘a* of Wailuku holds one of the four main water sources of Maui, more commonly known as Nā Wai ‘Ehā. In addition to Wailuku, Nā Wai ‘Ehā includes the *ahupua‘a* of Waikapū, Waiehu, and Waihe‘e.

> There are in this region four streams in succession from the different gorges of the mountain, significantly named, it is thought, from the events of battles which have transpired upon them. Waikapu – The water where the conch was blown, and the engagement began. Waiehu – The water where the combatants smoked with dust and perspiration. Wailuku – The water of destruction, where the battle began to be fierce and fatal. Waihee – The water of total rout and defeat, where the army melted away. [Sterling 1998:63]

Wailuku is on the alluvial fan that extends outward from the stream-cut ‘Īao Valley. The project area is approximately 1.9 km (1.2 miles) west of Kahului Bay along Wailuku River. The project area is located 533.0 m (1,750 feet [ft]) northwest of the Wailuku Sand Hills dune formation that extends parallel to the east side of Lower Main Street. The elevation of the project area ranges from 48 to 52 m (157 to 171 ft) above mean sea level (AMSL).

In 2014, the average monthly air temperature for the project area was between 21.2°C (70.15°F) in February and 25.23°C (77.41°F) in August with an average annual air temperature of 23.25°C (73.84°F) (Giambelluca et al. 2014). The vicinity of the project area received a mean annual

rainfall of 575.5 mm (22.66 inches) between 1978 and 2007, according to the University of Hawai‘i 2011 *Rainfall Atlas of Hawaii* (Giambelluca et al. 2013).

The native ecosystem of the project area was estimated to have once been Montane dry and mesic forest and woodland as a transitional zone between subalpine forest/shrubland and wet forest or lowland dry vegetation (Pratt and Gon 1998:122–126). Presently, the project area includes *koa haole* trees (*Leucaena Leucocephala*) and invasive grasses. Nearby commercial and residential properties include plantings of coconut (*Cocos nucifera*) banana (*Musa* sp.), papaya (*Carica papaya*), *‘aki‘aki* grass (*Fimbristylis cymosa)* hibiscus hedges (*Hibiscus brackenridgei),* croton (*Codiaeum variegatum*), and other exotic shrubs and grasses.

1.4.1 *Ka Lepo* (Soil)

According to the U.S. Department of Agriculture (2001) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area sits on Iao cobbly silty clay, 3 to 7% slopes (IbB) (Figure 5).

The Iao Series is described by Foote et al. (1972) as follows:

> This series consists of well-drained soils on valley fill and alluvial fans. These soils developed in alluvium derived from basic igneous rock. They are nearly level to moderately sloping. Elevations range from 100 to 500 feet. The annual rainfall amounts to 25 to 40 inches. […]
>
> These soils are used for sugarcane. Small acreages are used for pasture and homesites. The natural vegetation consists of bermudagrass, feather fingergrass, koa haole, lantana, and Natal redtop. [Foote et al. 1972:46]

1.4.2 *Nā Makani* (Winds)

There are many terms that can differentiate types of *makani* (wind). There are general terms that describe the intensity or direction of the wind, relating the wind to a story, or to the landscape. 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]

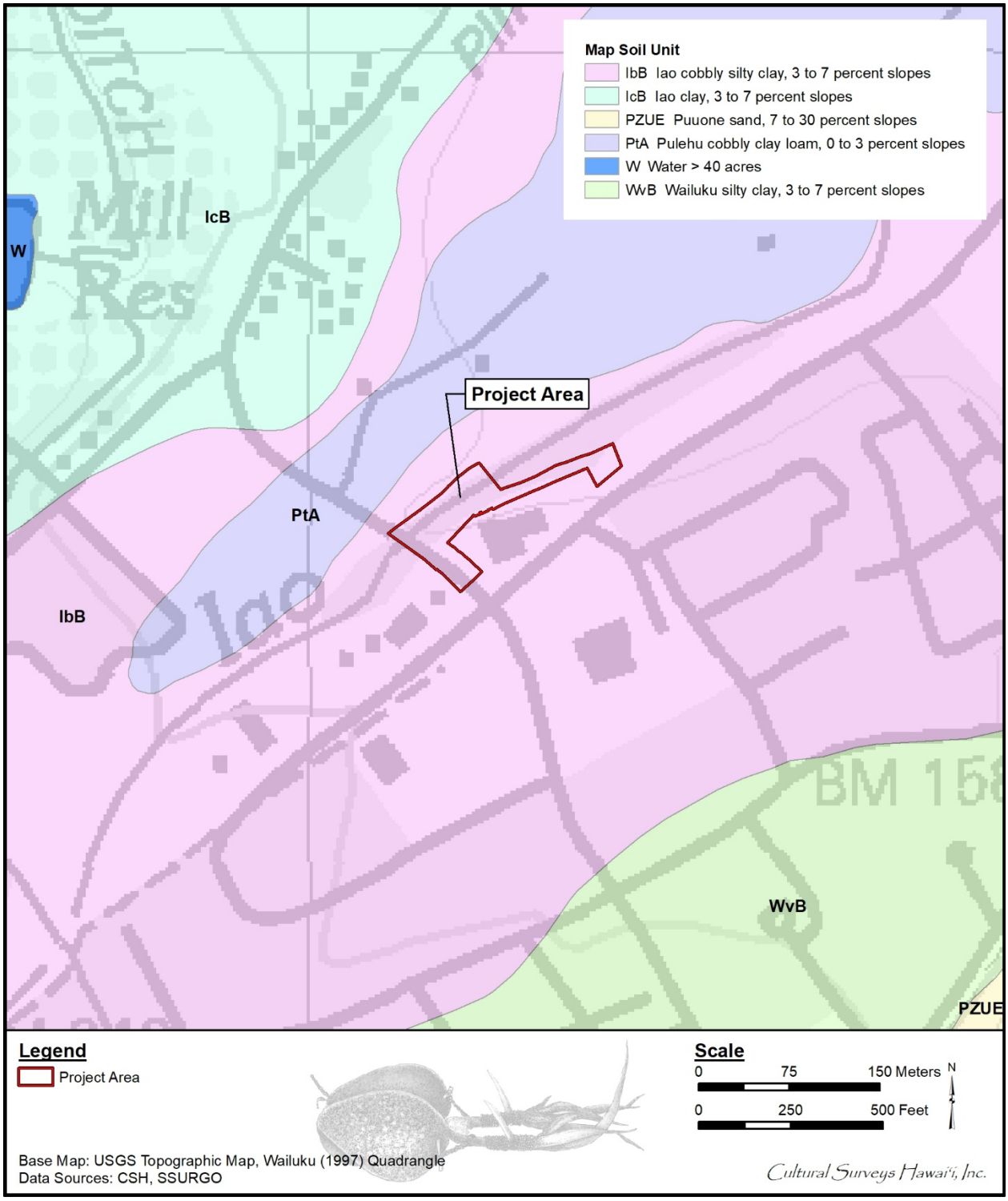

Figure 5. Overlay of the *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (USDA SSURGO 2001)

1.4.2.1 *Nā Makani o Nā Wai ‘Ehā* (The Winds of Nā Wai ‘Ehā)

The Wind Gourd of La‘amaomao tells the story of Pāka‘a and his son Kuapāka‘a who are descendants of the wind goddess La‘amaomao. With their possession of her special wind gourd, they could control and call forth the winds of Hawai‘i. Pāka‘a’s chant traces the winds of and surrounding Maui Island. Pāka‘a’s chant is listed below and recounts the various winds associated with Nā Wai ‘Ehā:

[…]	[…]
Kololio mai o Waikapu,	Kololio is of Waikapū,
Ka Iaiki ko Wailuku,	I‘aiki is of Wailuku
Ka Oopu ko Waihee,	O‘opu is of Waihe‘e
[…]	[…]
[*Ke Au Okoa* 1867]	[Nakuina 2005:55]

The chant called out by Pāka‘a referenced I‘aiki as the wind of Wailuku. In *Sites of Maui* (Sterling 1998), however, Sterling lists *lawe malie* as another wind name of Wailuku. Included below are the winds of Nā Wai ‘Ehā as recounted by Rebecca Nuuhiwa:

> Wailuku’s wind is the Makani-lawe-malie, the wind that takes it easy.
>
> Waiehu’s wind is the Makani-hoo‘eha-ili, the wind that hurts the skin.
>
> Waikapu’s wind is the Makani-ko-kololio, the gusty wind,
>
> Waihee’s wind is the Makani-kili-‘o‘opu.
>
> [Nuuhiwa in Sterling 1998:62]

There are a few differences in Sterling’s compilation compared to the ones mentioned in the newspaper *Ke Au Okoa* (1867) and Nakuina’s *The Wind Gourd of La‘amaomao* (2005). It is not uncommon for places to have more than one wind and wind name.

1.4.2.2 Maui Vortex

The wind chant by Pāka‘a recognizes an upwardly circulating wind pattern in the following lines: “*He pelu ka makani no kai, He kupa he okee ka makani”* which translates to “The wind that doubles up is of the lowlands, Kupa and Okea are the winds” (*Ke Au Okoa* 1867; Nakuina 2005:56). There is a variation of spelling in regard to the Okea/Okee wind. In both, *Ke Au Okoa* (1867) and Sterling (1998), the wind name is written as Okee, however, in Nakuina (2005) the wind is spelled as Okea. When looking into the word, *okee*, its meaning supports the idea of these winds moving in a upward circular motion. *Okee* translate as, “To veer, as the wind, to change, as direction; to eddy” (Pukui and Elbert 1986:281).

The Maui Vortex is a diurnal weather pattern, dissipating in the evening when the slopes of Haleakalā cool. It was modelled in 1949 by Luna Leopold, Chief Meteorologist at the Pineapple Research Institute (Leopold 1949), and again in 1966 by the National Weather Service (Peterson 1966).

1.4.3 *Nā Ua* (Rains)

Precipitation is a major component of the water cycle and is 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).

It was a customary and necessary tradition to grant a name for each type of rain. Rains were named to show their action toward plants or the supposed effects on people or their possessions (Pukui and Elbert 1986:361). According to Akana and Gonzalez:

> Rain names are a precious legacy from our kūpuna 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:xx]

Wailuku was no exception in this naming practice. The subsections below list rains closely associated with Wailuku as well as the other *ahupua‘a* in Nā Wai ‘Ehā.

1.4.3.1 Ka Ua Hō‘eha‘ili

This rain is associated with Waiehu, Maui and Akana and Gonzalez (2015) define its name to mean “to hurt the skin” (Akana and Gonzalez 2015:36). Below is a reference to this rain found in a *kanikau* (lamentation) about the passing of Joseph Nāwahīokalani‘ōpu‘u:

He aloha, he lihaliha, he kūmākena	Loving, heartsick, grief-stricken
He ‘ū iā ‘oe	Mourning for you
E Hon. Iosepa Kaho‘oluhi Nāwahiokalani‘ōpu‘u	O Hon. Joseph Kaho‘oluhi Nāwahiokalani‘ōpu‘u
A ha‘o ē!	We shall truly miss you!
I uē ‘ia mai nei ‘oe e Nā Wai ‘Ehā	You have been mourned by the lands of the four waters
E ka makani Kili‘o‘opu o Waihe‘e	By the Kili‘o‘opu wind of Waihe‘e
Ka ua Hō‘eha‘ili o Waiehu	And the Hō‘eha‘ili rain of Waiehu

[Akana and Gonzalez 2015: 36–37]

1.4.3.2 Ka Ua Kili‘o‘opu

Ka Ua Kili‘o‘opu is a rain associated with Wailuku, however, through various *kanikau* and *mele* (songs), this rain has been associated with other parts of Nā Wai ‘Ehā. According to Akana and Gonzalez (2015), Ka Ua Kili‘o‘opu was listed as a rain for Waikapū as well as Wailuku (Akana and Gonzalez 2015:83–84):

This rain appears in a *kanikau* for Kamakaokalani, who is said to be from Waihe‘e by referring to the name of the rain, Ka Ua Kili‘o‘opu.

Ku‘u kāne mai ka ua Kili‘o‘opu o Waihe‘e	My dear husband from the Kili‘o‘opu rain of Waihe‘e
‘Au‘au ka ‘uhane I ka wai o Nī‘aukawa	The spirit bathes in the water of Nī‘aukawa

[Akana and Gonzalez 2015:83]

Akana and Gonzalez (2015) also reference a *mele* in which the lyrics mention “ka ua Kili‘o‘opu o Waihe‘e” (Akana and Gonzalez 2015:83). However, the authors noted that in their research on this *mele*, it has been known that the sources of this *mele* “place the Kili‘o‘opu at Waiehu not a Waihe‘e”:

He loa Pu‘ukoa‘e	Expansive is Pu‘ukoa‘e
He pāpā‘ōlelo na ka makan	A conversation held by the wind
Makani lū ‘inoi nā lehua o Kaukini	Wind that violently scatters the lehua blossoms of Kaukini
Polipoli Pūlehu i ka ua Kili‘o‘opu o Waihe‘e	Pūlehu is polished by the Kili‘o‘opu rain
Me ka ua nā māmala ‘ino a ka wai	With the rain come hard strokes of the water

[Akana and Gonzalez 2015:83]

1.4.3.3 Ka Ua Līlīlehua

Ka Ua Līlīlehua is a rain found throughout various areas of Maui. It is described as a gentle mist that resembled “tiny drops on the lehua blossom” (Akana and Gonzalez 2015:155). In a *mele inoa* (name chant) for Princess Ka‘iulani, Prince Leleiōhoku composed this *mele* and referenced the rain and Waiehu as such:

E aloha a‘e ana ho‘i	Greetings to
I ka ua Līlīlehua	The Līlīlehua rain
I ka lawe mālie i ka pili	Softly moving in
Ko‘iawe i ka wai o Waiehu	Lightly showering the waters of Waiehu

[Akana and Gonzalez 2015:157–158]

1.4.3.4 Uhiwai Mist

The Uhiwai is a heavy fog that means “water covering” (Akana and Gonzalez 2015:254) and is closely associated with ‘Īao. The following proverb mentions this mist of ‘Īao.

Nae iki ‘Īao i ka uhiwai.

Translation:

(Mount) ‘Īao is barely breathing in the heavy mist.

[Akana and Gonzalez 2015:255]

1.4.4 *Nā Kahawai* (Streams)

As previously mentioned, Wailuku is part of a greater land division named Nā Wai ‘Ehā or The Four Waters, valleys that were rich in land with taro and the streams spread fanwise toward the sea (Handy and Handy 1972:272).

Nā Wai ‘Ehā are “[…] four great valleys which cut far back into the slopes of West Maui and drain the eastward watershed of Pu‘u Kukui and the ridges radiating northeastward, eastward, and southeastward” (Handy and Handy 1972:496)

The streams of Wailuku include the perennial ‘Īao Stream also known as Wailuku River. Handy and Handy (1972) describe Wailuku River saying, “Wailuku is partly landbound, but its stream flows into Kahului Bay, which has been eroded by the ocean out of what was formerly the stream mouth” (Handy and Handy 1972:496). Wailuku River drains from the heights of the western Maui uplands through the deep gorges of ‘Īao Valley (Figure 6). Tributaries that flow into Wailuku River include Nākalaloa, Po‘onāhoahoa, Kinihāpai, and Ae streams.

1.4.5 *Ka Lihikai a me Ka Moana* (Seashore, Ocean)

Traditionally, the seashore and ocean areas were vitally important for resource extraction in the early days of settlement, and fishermen along the coast maintained a respected status within traditional Hawaiian society. Kanahele (1995:17) asserts that “early Hawaiians regarded fishing as the oldest, and hence the most prestigious of professions.”

The shoreline, beaches, and the deep oceans of Wailuku were a popular spot for all, from the *ali‘i* to the *maka‘āinana* (commoners). Places like Kehu or Ka‘akau were once known to be favorite spots for *ali‘i* to surf (Sterling 1998:75).

1.4.6 Built Environment

The project area is in Wailuku town and within the existing road right-of-way (ROW) of Imi Kala Street from the intersection of Wilipa Loop, Imi Kala Street, and Eha Street. The project area includes the paved surface of Imi Kala Street, curbs, sidewalks, cross-walks, and utility poles. A portion of the project on the eastern boundary is adjacent to Eha Street approximately running west to east. The project area encompasses the extant Maui Disposal property and crosses the Wailuku River where it runs east along the Wailuku River for approximately 150 m. The built environment that surrounds the project area includes Maui Disposal, the Wailuku Post Office, and commercial properties.

Figure 6. Wailuku River in ‘Īao Valley, taken between 1883 and 1905 (Brother Bertram Photo Collection, Hawai‘i State Archives)

Section 2 Methods

2.1 Archival Research

Research centers on Hawaiian activities including *ka‘ao* (legends), *wahi pana* (storied places), *‘ōlelo no‘eau* (proverbs), *oli* (chants), *mele*, traditional *mo‘olelo* (stories), traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, historic maps, and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. Other archives and libraries including the Hawai‘i State Archives, the Bishop Museum Archives, the University of Hawai‘i at Mānoa’s Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau 2014), the State Historic Preservation Division (SHPD) Library, the State of Hawai‘i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also repositories where CSH cultural researchers gather information. Information on Land Commission Awards (LCAs) were accessed via Waihona ‘Aina Corporation’s Māhele database (Waihona ‘Aina 2021), the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2015), and the Ava Konohiki Ancestral Visions of ‘Āina website (Ava Konohiki 2020).

2.2 Community Consultation

2.2.1 Scoping for Participants

We begin our consultation efforts with utilizing our previous contact list to facilitate the interview process. We then review an in-house database of *kupuna* (elders), *kama‘āina* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs; includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. We also contact agencies such as SHPD, OHA, and the appropriate Island Burial Council where the proposed project is located for their response to the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also open to referrals and new contacts.

2.2.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the project purpose, the intent of the study, and how their *‘ike* (insight) and *mana‘o* (opinion) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and *kūkākūkā* [consultation, discussion] in participant’s choice of place over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions.

As the group interview progresses, questions are based on interviewee's answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) providing missing details for *mo‘olelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *ahupua‘a*; past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka‘ao* and *mo‘olelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

In order to ensure the safety of participants and comply with state and county COVID-19 mandates, no in-person interviews were conducted as part of this CIA. While it is always a preference to meet with participants in person, CSH cultural researchers were able to effectively communicate with participants via telephone, email, and video conference call interviews.

2.2.3 Interview Completion

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask them to make any necessary edits. Once the interviewee has made those edits, we incorporate their *‘ike* and *mana‘o* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant's transcription, interview summary, and any photos taken during the interview. We also include a thank you card and honoraria. This is for the interviewee's records.

It is important to CSH cultural researchers to cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *‘ohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *‘ohana* and community.

"*I ulu no ka lālā i ke kumu*—the branches grow because of the trunk," an *‘ōlelo no‘eau* (#1261) shared by Mary Kawena Pukui with the simple explanation: "Without our ancestors we would not be here" (Pukui 1983:137). As cultural researchers, we often lose our *kūpuna* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other informants if we have lost our *kūpuna*. CSH makes it a point to reach out to the *‘ohana* of our fallen *kūpuna* and pay our respects including sending all past transcriptions, interview summaries, and photos for families to have on file for genealogical and historical reference.

Section 3 Traditional Accounts

3.1 *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, storytelling is better heard rather than read for much becomes lost in the transfer from the spoken to the written word and *ka‘ao* 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* (gods) 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*, to *akua* and *kupua* (supernatural beings), to finally *maka‘āinana*, 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* and *maka‘āinana*. 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.

3.1.1 *Nā Ka‘ao*

3.1.1.1 The Battle of the Owls

One traditional account relates the naming of the *moku* of Wailuku and of a hill named Pueokaia. In Pukui and Curtis's *The Water of Kāne* (1994), the naming of Wailuku is recounted in

the *mo‘olelo* of *The Battle of the Owls*. Mistaking owl eggs for duck eggs, a woman of Maui brings home eight owl eggs to her husband, Kapoi. Kapoi, in disgust, proclaims that the eggs are of an owl and no good to eat. At this moment the mother owl, to whom the eggs belonged, appears and appeals to the husband that the eggs be returned to her nest. The husband, who was a cruel man smashed, the eight owl eggs leaving the mother owl with only bits of shell (Pukui and Curtis 1994:188–189).

In *Sites of Maui*, Sterling (1998:89) cites W.H. Uaua (1871) who recounts the reaction of the mother owl:

> The owl gathered up the broken shells and the yokes that were dashed against the stone wall and took them all. She flew with them in tears, to the presence of Pueokaia on the western side of Wailuku. He was her husband and the seven eggs that were mercilessly smashed by Kapoi were theirs. [W.H. Uaua in Sterling 1998:89]

According to Pukui and Curtis (1994), this travesty toward their offspring would not be tolerated:

> Her mate was very angry. ‘Cruel man!’ he shouted.
>
> ‘We shall punish him!’
>
> ‘What can two owls do against a man?’
>
> ‘Two owls? Four hundred owls! Four thousand owls! Fly to the west and tell all owls of this cruel deed. I shall fly to Hawai‘i. Let us gather the owls of every island to our aid.’
>
> The owls of every island came. Those of Ni‘ihau and Kaua‘i met the owls of O‘ahu. Flying together in a great flock they joined the owls of Moloka‘i, Lāna‘i, and Kaho‘olawe. When they were united with the flocks from Hawai‘i and from Maui their numbers filled the sky and shut out the sun’s light. A fierce battle followed. [Pukui and Curtis 1994:188–189]

Following the unification of their flocks, Uaua (1871) recounts the ensuing Battle of the Owls:-

> […] the battle began at Wailuku. […] How the owls and men fought! The men and chiefs were destroyed; many men of the Four-Waters. Kapoi and his wife were also killed. Because the owls caused such destruction the place was called Wai-luku (Water-of-destruction) to this day. [W.H. Uaua in Sterling 1998:74]

The home of the father owl, Pueokaia, was rumored to be on a small hill above a place named Awau in Wailuku, and the hill still bears the owl’s name to this day (W.H. Uaua in Sterling 1998:89).

3.1.1.2 Luahinepi‘i

‘Īao Valley is the subject of a number of *ka‘ao* and *mo‘olelo*. One legend tells of a woman named Luahinepi‘i who came to her end after jumping from Kūkaemoku, the 2,250-ft peak also known as the ‘Īao Needle (Figure 7).

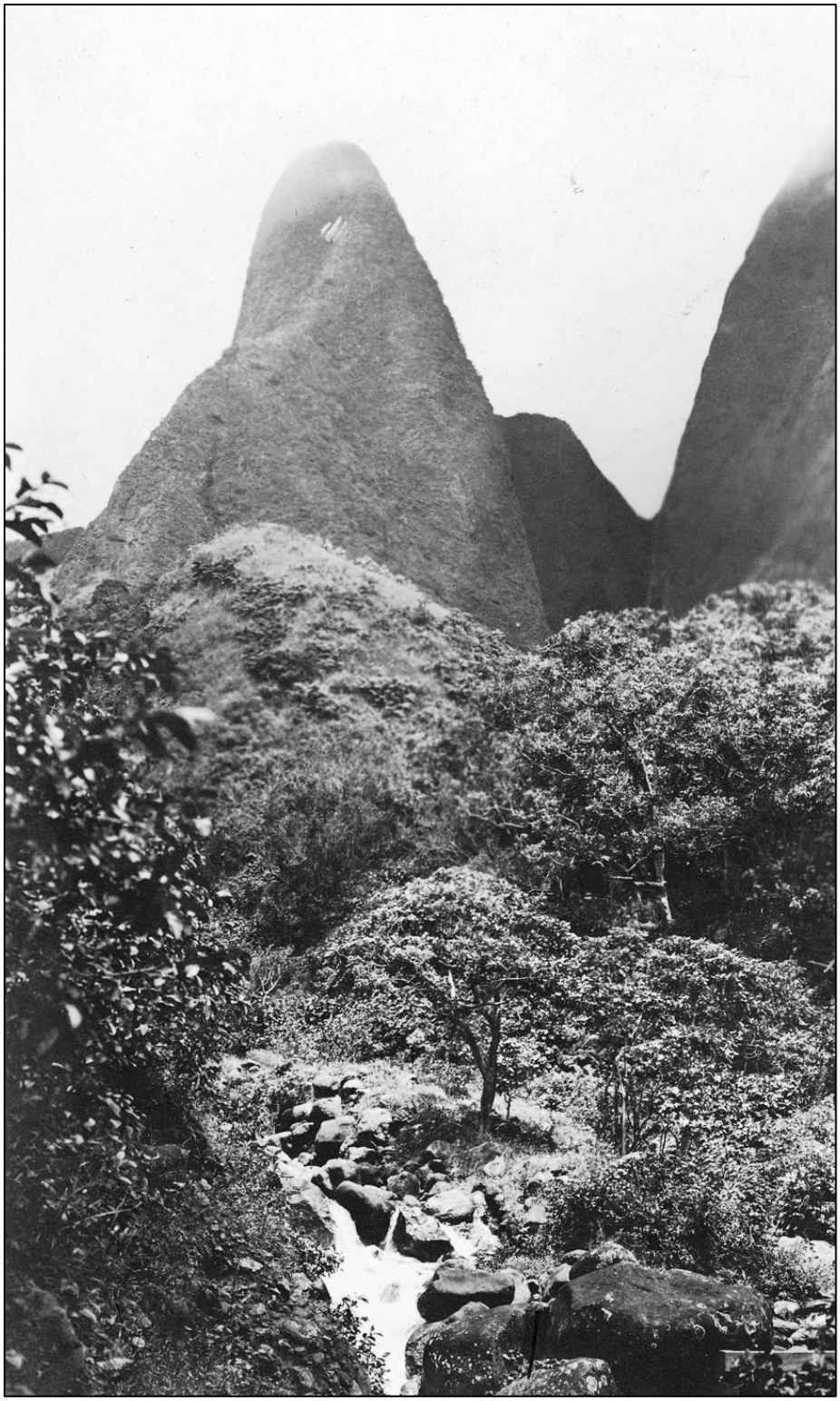

Figure 7. Kūkaemoku, the 2,250-ft peak also known as ‘Īao Needle (USC Pierce Collection)

The story of Luahinepi‘i is recounted in Sterling (1998):

> At the base of this noble perpetual sentinel to Iao Canyons [*Kukaemoku*–‘Īao Needle] lived, a few centuries ago, a most beautiful maiden. Her figure and form was so near perfection that a Raphael or a Michael Angelo might have selected her for a model representing a Hawaiian Venus. Her name was Luahinepii (climbing old woman), a name most unsuitable to a maiden so beautifully fair. She possessed, however, a voice so unpleasant and hideous that other maidens, jealous of her unsurpassed natural beauty, made fun of her.
>
> Luahinepii had a lover who lived at the beach near Paukukalo. Other maidens looked upon him as a possible suitor, but like all true lovers he turned a deaf ear to their entreaties.
>
> The rival belles met and agreed to circulate a report to this wise: ‘Ua lohe- ia ko leo kapu e ko ipo i Moealoha’ (Your sacred voice has been heard by your lover at Lover’s-dream). This soon reached the ear of Luahinepii. She felt deeply these to her, most humiliating words. In her frantic moments she sought to end her life and to free herself from the cares and woes of this deceptive world […] Luahinepii scaled to the top of Kukaemoku, called Nanahoa, and from its dizzy height dashed herself headlong to the valley beneath, and the waters of Iao were made incarnadine with her blood. [Sterling 1998:83]

3.1.1.3 Pu‘uokamoa and ‘Īao

This account speaks of the formation of ‘Īao Needle. ‘Īao, who is a daughter of the demigod Maui, was always kept secluded because of her beauty. No one attempted to approach her in fear of what Maui might do to them. However, one day, ‘Īao met Pu‘uokamoa, who was half-man and half-fish god. ‘Īao would soon go missing to meet with Pu‘uokamoa. Suspicious of her absences, Maui consulted with his *kahuna* (advisor) in order to find the truth. According to legend, when Maui learned his daughter was in love with Pu‘uokamoa, he became angry and captured Pu‘uokamoa and planned to burn him to death. The volcano goddess, Pele, a friend of Pu‘uokamoa, convinced Maui not to burn him but instead transformed him into a pillar of stone which is now known as the ‘Īao Needle (Denham et al. 1992:9).

3.1.1.4 The Owls of Kama‘oma‘o

Ke Kula o Kama‘oma‘o, or the Plains of Kama‘oma‘o, is cited as a home to owl deities, considered one of the oldest *‘aumakua* (personal family gods) in Hawaiian tradition. The endemic *pueo* (Hawaiian short-eared owl; *Asio flammeus sandwichensis*) was once worshiped by early Hawaiians as a god (Titcomb and Gagne 1976). Pueo-nui-akea was the name of an owl who traversed the Plains of Kama‘oma‘o and restored life to wandering souls (Beckwith 1970:124).

Fornander recalls the story of Pūmai‘a who was a heroic young man that fell to the hands of a spirit (Fornander 1918-1919:6:550–554). This spirit, Pu‘ukolea, had a dual body, capable of shape-shifting in ways the mere human, Pūmai‘a, could not. After falling to Pu‘ukolea, Pūmai‘a’s spirit returned home but continued to be chased by Pu‘ukolea. Pūmai‘a fled till he reached the plains of Kama‘oma‘o. There an owl by the name of Pueonuiokona began battling Pu‘ukolea and ultimately killed him; his entrails were scattered about the plains.

3.1.2 *Nā Mo‘olelo*

3.1.2.1 Lepeamoa

In the legend of Lepeamoa, Wailuku was the name of a chiefess, the wife of Mauinui, chief of Maui, and sister of Kākuhihewa, chief of O‘ahu. In the *mo‘olelo*, Mauinui challenges Kākuhihewa to a cockfight where the winner receives all property and the life of the opponent. With the assistance of two demi-gods, Lepeamoa and Kauilani, Kākuhihewa is victorious. Following his victory, Kākuhihewa refuses to take Mauinui’s life and peace between the two kingdoms was established (Westervelt 1963:204–245).

3.1.2.2 The Wicked Chief, Hua

Wailuku is known as the death place of the Maui chief Hua. According to the *mo‘olelo*, Hua was a wicked chief who condemned his *kahuna* to death. In retaliation, the *kahuna* brought a severe drought to the islands. Fornander wrote,

> Hua, the chief, lived on, and because of the lack of water and food he sailed for Hawaii, the home of his elder brother; but because Hawaii also suffered from lack of water and food he came back and lived at Wailuku. Wailuku also did not have any water, and that caused the chief to be crazed, so he leaned against the edge of the precipice and died, and that was the origin of the saying ‘The bones of Hua rattle in the sun.’ [Fornander 1918-1919:5:516]

3.1.2.3 Wakalana and the Wonderful Iron Knife

Wakalana was a chief who resided in Wailuku. In the thirteenth century, Wakalana rescued five foreigners from a shipwreck off the coast of Wailuku. The rescued foreigners were believed to be Japanese and the captain of the ship possessed a sword unlike any ever seen in the islands. The sword became known as “the long wonderful iron knife” and was a “tremendously effective weapon, when matched with wooden daggers and war clubs” (Westervelt 1977:95–96).

After Kalauhuiohua, chief of Hawai‘i, and his army invaded the island of Maui, the sword became the possession of a Hawaiian warrior, Kualu, who hid the sword on the island of Moloka‘i. Following successful battles with the islands of Maui, Moloka‘i, and O‘ahu, Kalauhuiohua attempted to invade Kaua‘i where his army was defeated and he was taken captive by Kukona, chief of Kaua‘i. The sword, also known as “the lost knife of Wailuku,” was eventually exchanged for the life and return of Kalauhuiohua (Kalakaua 1990:177–205).

3.1.2.4 Iwikauikaua

Iwikauikaua, a chief originally from the island of Hawai‘i, visited the island of Maui where his sister, Kapukini, was wife of the ruling chief Kauhiakama. Following the death of Kauhiakama, who was slain in battle on O‘ahu, a council of Maui chiefs gathered to debate going to war with O‘ahu. Iwikauikaua advised the Maui chiefs to refrain from retaliation, stating “the chiefs of Oahu are united, and a war upon them means a conflict with the whole island” (Kalakaua 1990:344). A chief of Wailuku disagreed with Iwikauikaua and expressed his desire to have the Maui forces take up arms against the O‘ahu king.

Several remarks of a sneering character had been dropped within his hearing, and finally a chief from Wailuku, glancing insultingly toward him (Iwikauikaua), declared that the chiefs of Maui were “not afraid to use their spears” (Kalakaua 1990:345).

3.2 *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 Kailua tangibly link the *kama‘āina* of Kailua 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* or even certain individuals within an *‘ohana*, and many have been lost, forgotten or kept secret through time. Place names also convey *kaona* 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* (waterway or ditch), 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).

3.2.1 *Nā Inoa ‘Āina a me Nā Wahi Pana* (Place Names and Storied Places)

An analysis of place name meanings (Table 1) for the region surrounding the project area may yield insight into the patterns of life in that area. Features of this area include *heiau* (pre-Christian place of worship), *‘ili* (land section, subdivision), streams, surf, *palena* (boundaries), and *pu‘u* (hills). Literal translations of several of the place names near the project area are listed below. Unless otherwise noted, the translations are taken from Pukui et al. (1974). Figure 8 shows a map of Wailuku with approximate locations of *wahi pana.*

Table 1. Place names and *wahi pana* of Wailuku

Name	Translation
Ha‘akupu	*Lit.,* “to cause growth.” Mentioned in LCAw 643 to George W. Macy for Lydia Anne (Soehren 2014).
Haleki‘i (*Heiau*)	*Lit.,* “image house.” A *heiau* (Walker Site 44) located in Wailuku at the Pihana Heiau complex (see subsection 3.2.4), along the ‘Īao Stream in the region of Paukūkalo. According to Kamakau, Maui chief Kekaulike was brought here to die in 1736.
Hi‘iwela(*‘Ili*)	Mentioned in LCAw261 and 4917 to Kamaka and Poki (Soehren 2014).
‘Īao (Stream)	*Lit.,* “cloud supreme.” ‘Īao Stream brings the water of ‘Īao Valley to the ocean at Paukūkalo, a point just northwest of Kahului Harbor.
Ka‘ahu (Surf)	*Lit.,* “the garment.” An ancient surfing area in Wailuku (Soehren 2014).
Ka‘ahumanu (Avenue)	*Lit.,* “the bird [feather] cloak.” Avenue named in honor of Queen Ka‘ahumanu, favorite wife of Kamehameha I, who became *kuhina nui* (regent) to Kamehameha II and Kamehameha III and an ardent supporter of the Protestant mission in the Hawaiian Islands. She died in 1832, at Mānoa, on the island of O‘ahu (Kamakau 1992).
Ka‘ākaupōhaku	*Lit.,* “the north (or right hand side) stone.” It was known as an ancient surfing area (Soehren 2014).
Kahului (Kaihuwa‘a)	*Lit*., “the winning.” According to Malo (1951:268), “the Kahului was a disposition or order of battle in which the main body of the soldiers were drawn up in the form of a crescent, with the horns pointing forwards.” This formation was “undoubtedly derived from the place of the same name,” a “flat and treeless” region (Malo 1951:268).
Kalapaoka‘īlio (Ridge)	*Lit.,* “the ridge of the dog.” The boundary between Wailuku and Waikapū runs up this ridge (Soehren 2014).
Kāluli (*Heiau*)	*Lit.,* “to sway, bend.” Walker Site 42, repaired during the reign of Kahekili, its *kahu* (priest) was Kaleopu‘upu‘u. Totally destroyed (Soehren 2014).
Kaopuohe (*‘Ili*)	Mentioned in LCAw 3534 to Kauaki‘iwai (Soehren 2014).
Kaupali (*‘Ili*)	Mentioned in LCAw 3291 to Makaena (Soehren 2014).
Kaulupala (*‘Ili/Heiau*)	*Lit.,* “the ripe breadfruit.” Mentioned in LCAw 3255 to Hoopuaina. Walker Site 52, consecrated by Liholiho in his tour of Maui in 1801 (Soehren 2014).
Kawelowelo (*Heiau*)	*Lit.,* “the flying streak.” Walker Site 51, consecrated by Liholiho (Soehren 2014).
Keahukū (*Heiau*)	*Lit.,* “the slaughter by stoning.” Walker Site 45, consecrated by Liholiho “[…] preceeding the peleleu fleet” (Soehren 2014).
Kukalepa (*‘Ili*)	Mentioned in LCAw 397 to H. Kuihelani (Soehren 2014).
Kumuwiliwili (*‘Ili*)	*Lit.,* “wiliwili (*Erythrina sandwicensis*) tree.” Mentioned in LCAw 2414 to Kailihuna and LCAw 406 to Napela (Soehren 2014).

Name	Translation
Lelemākō (*Heiau*)	*Lit.,* “rough leaping.” Walker Site 50, consecrated by Liholiho (Soehren 2014).
Lo‘iloa (*‘Ili*)	*Lit.,* “long taro patch.” Mentioned in LCAw 643 to George W. Macy for Lydia Anne (Soehren 2014).
Mākole (*‘Ili*)	*Lit.,* “red-eyed.” Mentioned in LCAw 215 to Henry Brooks. His LCA also included a fishing ground named Papaulu (Soehren 2014).
Malena (*Heiau*)	Consecrated by Liholiho “[...] preceeding the peleleu fleet” (Soehren 2014).
Malumaluakua (*Heiau*)	*Lit.,* “shelter of the gods.” Consecrated by Liholiho “[…] preceeding the peleleu fleet” (Soehren 2014).
Maniania (*‘Ili*)	*Lit.,* “a shuddering sensation.” Mentioned in LCAw 3530 to Keala and Kapaweuweu (Soehren 2014). Also the name of a stream in Wailuku.
Mauna Kahalawai	*Lit.,* “the gathering of waters.” West Maui Mountains (Pellegrino 2009)
Mau‘oni (Pond)	One of the two fishponds located at the shore of Kanahā. This pond is approximately 300 m east of the project area.
Olokua (*Heiau*)	Walker Site 46, consecrated by Lihoho “[…] preceeding the peleleu fleet” (Soehren 2014).
Oloolokalani (*Heiau*)	Walker Site 54, consecrated by Liholiho (Soehren 2014).
Olopio (*Heiau*)	Walker Site 47, consecrated by Lihoho “[…] preceeding the peleleu fleet” (Soehren 2014).
Oukea (*‘Ili*)	Mentioned in LCAw 7907 to Kuke (Soehren 2014).
‘Owā (*‘Ili*)	Cry of the *‘auku‘u*, heron, which suggests *‘owā*; to cry thus. A measurement equal to half the width of a finger, of fishing nets (*Mākahi a ‘owā*; the width of one and a half fingers). *‘Ili* where the Sand Hills, Baldwin High School, the Maui Arts & Cultural Center and the U.H. Maui College are situated.
Palamaihiki (*Heiau*)	Walker Site 53, consecrated by Liholiho (Soehren 2014).
Paukūkalo	*Lit.,* “taro piece.” ‘Īao Stream reaches the ocean at Paukūkalo, a region reported to have once been heavily planted in *kalo* (wetland taro). It has also been noted as an ancient surfing area (Soehren 2014).
Pihana (*Heiau*)	*Lit.,* “fullness.” Stories of this Paukūkalo *heiau* include it being built in a single night by the legendary race of Menehune, who brought the stones from Paukūkalo Beach. Pukui also states the construction of this *heiau* has been attributed to the Maui chief, Kahekili. It is listed as Walker Site 43. The Pihana Heiau is a sacred place located within the *‘ili* of Paukūkalo.
Pohakuokahi	*Lit.,* “stone of Kahi.” Walker Site 49, consecrated by Liholiho in his tour of Maui in 1801 (Soehren 2014).

Name	Translation
Puakea (*‘Ili*)	*Lit.,* “white blossom.” Mentioned in LCAw 490 to Kapaweuweu (Soehren 2014).
Pu‘ali Komohana	Translated by Andrews (1865:73) as “western sun-setting isthmus.” Combined area of Wailuku, Waikapū, Waiehu, and Waihe‘e *ahupua‘a*.
Pu‘u Kukui (*Palena/Pu‘u*)	*Lit.,* “candlenut hill.” A hill with an elevation of 5,788 ft on the boundary between Lahaina and Wailuku (Soehren 2014).
Pu‘u Lio (*Palena/Pu‘u*)	A hill at an elevation of about 3,130 ft, marking the boundary between Wailuku and Waikapū between Kalapaokailio ridge and Kapilau ridge (Soehren 2014). Also a stream in Wailuku.
Pu‘unēnē	*Lit.,* “goose hill.” A land area named after a cinder cone, once located just inland of Papa‘ula, mined for its gravel during WWII to construct the runways at the U.S. Naval Air Station Kahului (Fornander 1916).
Wailuku (*Ahupua‘a*)	*Lit.,* “water of destruction,” a reference to the battle which took place at ‘Īao between the forces of Kamehameha I and the Maui chiefs. Sterling (1998) states that Pukui et al. (1974) believe the name is older than the famous battle. Westervelt (Saito 2011) makes special reference to the waters of Wailuku in ‘Īao (*Lit.,* “asking for clouds”) emptying into the Kahului Harbor. Fornander (1916-1917:4[2]:304) recorded that Wailuku was the place of flying clouds (Westervelt 1910).

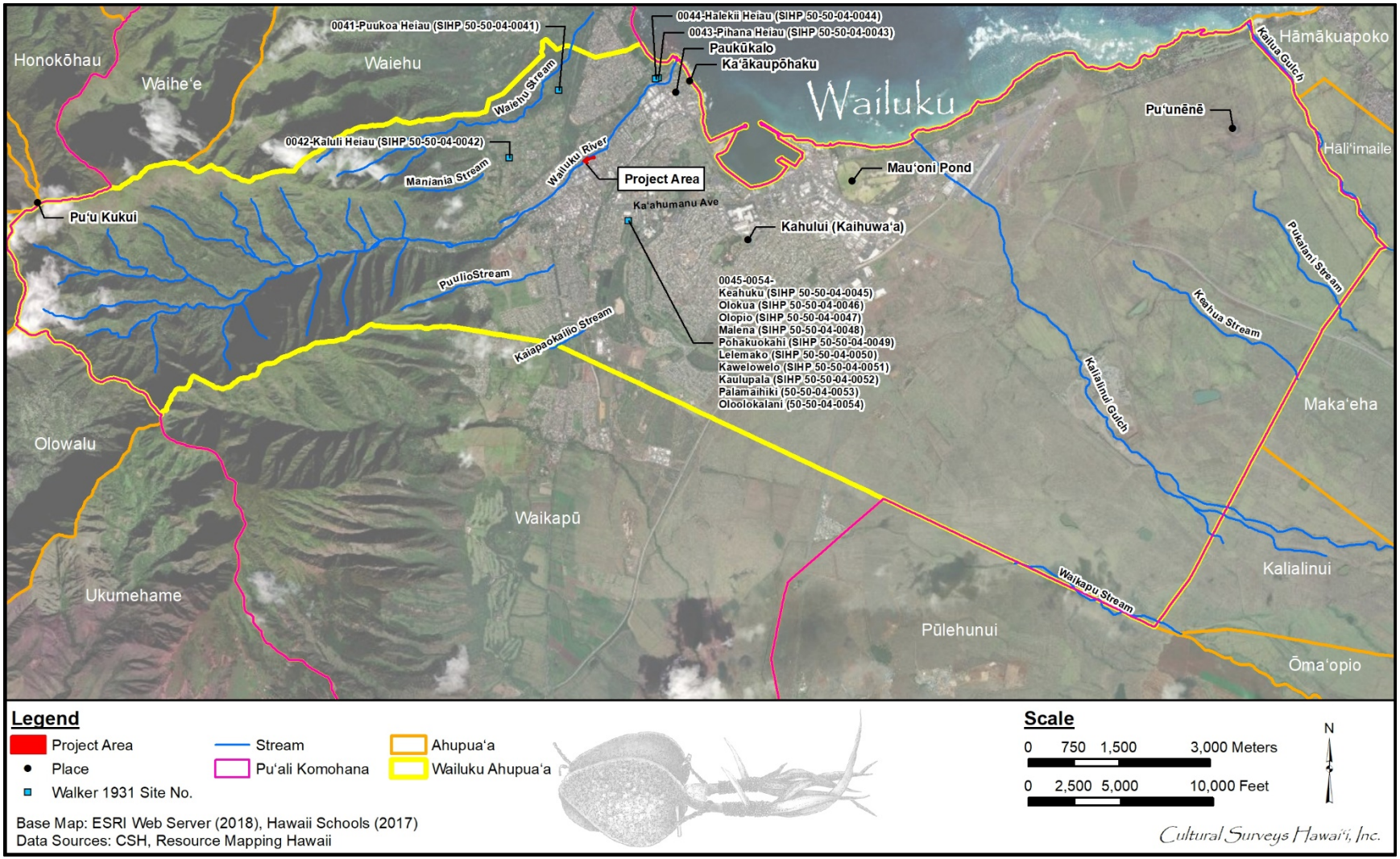

Figure 8. Portion of 2018 ESRI and 2017 Hawaii Schools aerial photograph showing *wahi pana* of Wailuku

3.2.2 ‘Īao Valley and Royal Burials

Wailuku was the residence for many royal families. ‘Īao Valley was once the site for royal burials. Pukui et al. (1972) explains that, “infinite caution surrounded the bones of an *ali‘i*. High rank brings powerful enemies, and a chief’s bones were especially in danger of being profaned” (Pukui et al. 1972:109). Walker (1931) elaborates on the lore and secrecy of royal ‘Īao Valley burials saying:

> Iao Valley is reputed by legend as a place of royal sepulturer for many of the ancient kings of Maui and neighboring islands. But the locations of all such burials are kept carefully secret so that even the late King Kalakaua was unable to find any of them in spite of the extensive investigations which were instigated by him. [Walker 1931:296]

An article published in *Ke Au Hou* on 29 June 1911, which appears in Sterling (1998), mentions the Kapela Cave located in ‘Īao Valley:

> The secret cave of Kapela in Iao was Maui’s noted burial place and is situated at Olopio, close beside the cliff of Kakae at Kalahiki. It is said that the entrance is under water and another one is on the sheer precipice on the left side. There the well known ruling chiefs, those with supernatural traits, strong men and famous persons who served their chiefs in a marvelous way were buried. […] There also were put the important chiefs of Maui, namely: Heleipawa, Aikanaka, Kahaianuia, Hema, Luanuu, Kamea, Hua, Pau, Paumakua, Haho, Palena, Hanalaaiku, Kakaalaneo, Kekaulike, Kamehameha-nui and Laka and last of all Kalanikuihonoikamoku who died in 1736. The very last chiefs that were laid there, according to reports, were Kaeokulani, Keopuolani, Nahienaena, and Keokianapauokalani but some said that the last three were hidden away in the sea, several hundred ruling chiefs were placed in this secret cave and many valuables of every description. [Sterling 1998:80]

In the article *Iao Valley: The Yosemite of Hawaii* which appears in *The Mid-Pacific Magazine* from February 1912, W.H. Field also discussed the Kapela Burial Cave.

> Perhaps Kapela, the highest peak of the Lihau ridge, overlooking Olowalu, is the most interesting one in Iao. Among its dark recesses, is the cave containing the bones of the kings and chiefs of Maui. In this cave were supposed to have been hidden the bones of Kahekili, King of Maui, and Kalanikupule, his son, and other royal personages of Maui. There is no doubt that this cave known as Kapela-kapu-o-na-lii, contains treasures of untold value. Not only bones of high chiefs and chiefesses were hidden for fear of being made into fish hooks, etc., but feather cloaks or royal ahuulas belonging to King Kahekili and other Maui rulers may be there still. [Field 1912:151]

3.2.3 Kalanihale

Wailuku was the site of Kalanihale, the royal palace of the ruling chief of Maui, Kahekili. Following the defeat of Hawai‘i’s forces, Kalani‘ōpu‘u, the ruling chief of Hawai‘i, proposed that his wife, Kalola, who was also the sister of Kahekili, sue for peace, however, Kalola refused, proposing that her son and prince, Kīwala‘ō, be sent as ambassador.

> Runners carried the news of the coming of this prince to the Maui king. He was lying on a mat in the royal grass house at Wailuku. Ka-lani-hale —‘the heaven house’—was the name of this home of the king.
>
> As Kiwalao drew near the door all the Maui chiefs prostrated themselves before him, while the king lazily turned over and partly raised himself, lifting his head in token of friendly greeting. To have turned away from the prince, letting his face look down, would have been the sign of immediate death of his visitor. Kiwalao, with slow and dignified tread, crossed the room and seated himself in his uncle’s lap. Then both wailed over the troubles which had brought them together, and over the deaths among their followers. [Westervelt 1977:141–142]

3.2.4 *Nā Heiau*

3.2.4.1 Pihana Heiau Complex

Pihana Heiau (Figure 9) is located on the west side of Wailuku River (‘Īao Stream) crested upon a sand ridge adjacent to the Wailuku Sugar Company mill. Illustrated in Sterling (1998):

> Tradition relates. Kiikewa, the high chief who lived at ‘the time of Kakae; the king of West Maui, built the Heiau of Pihana-every rebellious high chieftains of Maui were sacrificed at this heiau, but, no alii whose lineage was tainted were sacrificed on its alter; Liliha is the name of the Luapa‘u (offal pit). Halekii is the heiau reserved for the females of high rank and is situated on the makai side of the bluff-Kalola is another name. The whole combined in general is Pihana. It is said there is a cave beneath Pihana, and Liliha is the mouth of the cave. [Sterling 1998:75–76]

Thrum (1908) shared that Pihana Heiau was classified as a *luakini*, or a sacrificial *heiau*, used by Kamehameha I before defeating Maui forces in the Battle of Kepaniwai (Battle of ‘Īao):

> It is said of Pihana that on Kamehameha’s invasion of Maui, in 1790, with an army of warriors which resulted in the defeat of Kalanikupule’s forces in the celebrated battle of Pani-wai-o-Iao, the conqueror invoked the blessing of his war god Kukailimoku the great, and sacrificed upon its altars. [Thrum 1908:46]

3.2.4.2 Kaluli Heiau

Located above the Puohala Camp, Kaluli Heiau was repaired during the time of Kahekili by the *kahuna* Kaleopuupuu. Sterling (1988) shared that:

> Through Kaleopuupuu’s advice to Kahekili, the heiau of Kaluli in Puuohala, on the northern side of Wailuku was restored. While Kaleopuupuu performed his rites there he uttered a prophecy to Kahekili, ‘The fish have gone through the sluice gate and are caught in the fine meshed net’ […]
>
> In the year 1776, when Kamehameha was almost forty, the war canoes of Kalaniopuu and his son, Kiwala‘o, ventured forth from Kohala. [Sterling 1998:75]

Figure 9. A lecture at Pihana Heiau in 1957; photo taken before site’s restoration (Hawai‘i State Archives)

3.2.5 *Nā Loko* (Ponds)

3.2.5.1 Mau‘oni and Kanahā

On the north shore of the central isthmus lie the *loko i‘a* (fishponds) of Mau‘oni and Kanahā. A traditional story concerning their construction appears in Sterling (1998:87–88), based on an interview with Mrs. Rosalie Blaisdell in 1923 by J.F.G. Stokes. According to tradition, an O‘ahu chief started construction of the pond walls but it was finished by Kamehamehanui, king of Maui in the mid-1700s. The story established that Kapi‘iohookalani, the original architect of the two ponds and one-time king of O‘ahu and half of Moloka‘i, was killed in battle before he could complete the construction of the pond walls. It was said that the workers who built the pond were citizens of O‘ahu, Moloka‘i, and Maui. They would stand so close together and pass *pōhaku* from Makawela to Kanahā (Sterling 1998:87).

Kapi‘iohookalani’s daughter, Kahamaluihiikeaoihilani, sought her brother, Kanahāokalani, and searched Moloka‘i and Maui for him. The pond walls were finished by Kamehamehanui, who placed a *kapu* (taboo) on the bank, and built a *kuapā* (wall of a fishpond), dividing the two ponds. The chiefess Kahamaluihiikeaoihilani was born of such high rank that she was able to break the *kapu* by walking on the center *kuapā* of the ponds. Following this act, Kamehamehanui allowed her to name the ponds. She named Kanahā for her brother, and Mau‘oni for the identity she travelled by to protect her status as a chiefess of the highest rank. Sterling (1998) also noted two references by Samuel Kamakau (1992) stating that Kihapi‘ilani built the stonework separating the two ponds at a much earlier time than the work performed by Kamehamehanui.

The Kanahā Pond Wildlife Sanctuary (State Inventory of Historic Places [SIHP] # 50-50-05-1783) was established by the State of Hawai‘i in 1971 to protect the cultural remains of the original fishpond wall structure, and three endangered wetland bird species: the Hawaiian stilt (*ae‘o; Himantopus mexicanus knudseni*), Hawaiian coot (*‘alae kea; Fulica alai*), and Hawaiian duck (*koloa; Anas wyvilliana*). Over 50 species of birds have been observed here, including herons, geese, ducks, owls, plovers, sandpipers, *‘ūlili* (tattlers; *Heteroscelus incanus*), *‘alae ke‘oke‘o* (Coot; *Fulica alai*), pheasants (*Lophura leucomelanos*) and doves (Pukui et al. 1974).

3.3 *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* (“to cause growth,” 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 a proverb 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. The following proverbs concerning Waiehu come from Mary Kawena Pukui’s *‘Ōlelo No‘eau* (Pukui 1983).

3.3.1 *‘Ōlelo No‘eau* #1481

The subsequent *‘ōlelo no‘eau* all pertain to the Wailuku plains area known as Kama‘oma‘o. This place was famous for its connection to wandering spirits.

> *Kama‘oma‘o, ka ‘āina huli hana.*
>
> At Kama‘oma‘o, land of activities.
>
> Ghosts who do not go to the pō of their ancestors often wander about in certain areas. Kama‘oma‘o, Maui is such a place. The activities of such ghosts usually annoy the living. [Pukui 1983:160]

3.3.2 *‘Ōlelo No‘eau* #1514

> *Ka ‘ōlohe puka awakea o Kama‘oma‘o.*
>
> The bare one of Kama‘oma‘o that appears at noonday.
>
> The plain of Kama‘oma‘o, Maui, is said to be the haunt of ghosts (‘ōlohe) who appear at night or at noon. Also a play on ‘ōlohe (nude), applied to one who appears unclothed. [Pukui 1983:164]

3.3.3 *‘Ōlelo No‘eau* #1761

> *Ke kula o Kama‘oma‘o ka ‘āina huli hana.*
>
> The plain of Kama‘oma‘o – that is the place where plenty of work is to be found.
>
> A taunt to one who talks of looking for work but does not do it. The plain of Kama‘oma‘o, Maui was said to be the haunt of ghosts whose activities were often terrifying. [Pukui 1983:189]

3.3.4 *‘Ōlelo No‘eau* #1711

This proverb references Wailuku in relation to battles that took place between warring chiefs on Maui.

> *Ke inu aku la paha a‘u ‘Ālapa i ka wai o Wailuku.*
>
> My ‘Ālapa warriors must now be drinking the water of Wailuku.

> Said when an expected success has turned into a failure. This was a remark made by Kalaniōpu‘u to his wife Kalola and son Kiwala‘ō, in the belief that his selected warriors, the ‘Ālapa, were winning in their battle against Kahekili. Instead they were utterly destroyed. [Pukui 1983:184]

3.3.5 *‘Ōlelo No‘eau* #2300

This *‘ōlelo no‘eau*, as mentioned earlier, references the four famous waters of Maui; Waihe‘e, Waiehu, Waikapū, and Wailuku.

> *Nā wai ‘ehā.*
>
> The four waters.
>
> A poetic term for these places on Maui: Wailuku, Waiehu, Waihe‘e, Waikapū, each of which has a flowing water (wai). [Pukui 1983:251]

3.3.6 *‘Ōlelo No‘eau* #2912

An *‘ōlelo no‘eau* for Wailuku, Maui.

> *Wailuku i ka malu he kuawa*.
>
> Wailuku in the shelter of the valleys.
>
> Wailuku, Maui, reposes in the shelter of the clouds and the valley. [Pukui 1983:319]

3.4 *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.
>
> 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]

There exist a number of *mele* that mention Wailuku as well as other areas within Nā Wai ‘Ehā. These particular *mele* may also be classified as *mele wahi pana* (songs for legendary or historic places). *Mele wahi pana* may or may not be accompanied by *hula* (dance) or *hula wahi pana* (dance for legendary or historic places). As the Hula Preservation Society notes,

> *Hula Wahi Pana* comprise a large class of dances that honor places of such emotional, spiritual, historical, or cultural significance that chants were composed

> for them. Only the composers of the chants could know the deepest meanings, as they would be reflections of their feelings and experiences […] Since the subjects of *Wahi Pana* compositions are extremely varied, their implementation through hula are as well. Coupled with the differences from one *hula* style and tradition to the next, *Hula Wahi Pana* can be exceptionally diverse. They can be done sitting or standing, with limited body movement or wide free movement; with or without the use of implements or instruments; with the dancers themselves chanting and/or playing an implement or being accompanied by the *ho‘opa‘a* [drummer and *hula* chanter (memorizer)]. Beyond the particular *hula* tradition, what ultimately determines the manner in which a *Hula Wahi Pana* is performed are the specific place involved, why it is significant, the story being shared about it, and its importance in the composer's view. [Hula Preservation Society 2014]

3.4.1 Haleakalā Hula

This *mele* was composed in 1941 by Alice Nāmakelua; honoring the highest peak in Maui, Haleakalā. The fourth verse of this *mele* mentions Wailuku using the poetic phrase, "*malu o ke ao*":

Kuahiwi nani ‘oe Haleakalā	You are a beautiful mountain, Haleakalā
Kaulana ho‘i ‘oe kū kilakila	You are famous and stand majestically
‘O Makawao ia ua kaulana	At Makawao, this rain is well known
I kāohi ia iho o ka lā‘au	It falls gently on the trees
He ‘Ūkiu e ka ua o ka ‘āina	‘Ūkiu is the name of the rain of this land
Me ka makani aheahe ‘olu‘olu	Here the wind is soft and cool
E aho nō ‘oe a e komo mai	You should come in
A e ho‘ola‘i ka malu o ke ao	Relax in the shade of the clouds
Puana ka inoa i lohe ‘ia	Tell the name so that it can be heard
Kuahiwi nani ‘oe Haleakalā	You are a beautiful mountain, Haleakalā

[huapala.org, n.d.]

3.4.2 I Waikapū Ke Aloha/No Nā Wai ‘Ehā

The lyrics below appear under the names of two different *mele*, "I Waikapū Ke Aloha" as well as "No Nā Wai ‘Ehā." Unfortunately, the composer for "I Waikapū Ke Aloha" is unknown. However, Scott Hai, who was from Ke‘anae but moved to Waihe‘e, is credited for composing "No Nā Wai ‘Ehā." The *mele* focuses on the areas of Nā Wai ‘Ehā:

I Waikapū ke aloha	In Waikapū

Ka makani Kokololio	The gusty wind named Kokololio
Pili i ka poli nahenahe	Held in warm arms
He ‘inikiniki mālie	Gently pinching
I Wailuki [Wailuku] iho ‘oe	You were in Wailuku
I ka piko a‘o ‘Iao	To the summit of Iao
(*Ka makani lawe mālie*)	(Gentle wind)
Lihilihi o ka pua rose	Petals of the roses
He ‘inikiniki mālie	Gently pinching
I Wai‘ehu iho ‘oe	You were in Waiehu
Ka makani hō‘eha ‘ili	The wind that pierces the skin
Me ka ‘uhiwai a‘o uka	With the fog of the upland
Me ke a‘o ia uka	heavy fog
He ‘inikiniki mālie	Gently pinching
I Waihe‘e kāua	Both of us were in Waihe‘e
Ka makani Kili‘o‘opu	With the wind named Kili‘o‘opu
Me ka wai a‘o Eleile	With the water of Eleile
He ‘inikiniki mālie	Gently pinching
I Lahaina iho ‘oe	You were in Lahaina
Ka makani Kaua‘ula	With the Kaua‘ula wind
Me ka malu ‘ulu a‘o Lele	Amid the shelter of the breadfruit trees of Lele
He ‘inikiniki mālie	Gently pinching
Ha‘ina mai ka puana	Here ends my song
No nā wai ‘ehā	Of the four waters
E ho‘i nō e pili	Return, let us be together
He ‘inikiniki mālie	Gently pinching

[huapala.org, n.d.]

3.4.3 Mauna Kahālāwai

The composer of this *mele* is unknown, however, the showcase of love for the island of Maui is seen throughout the *mele*. The ridges of Mauna Kahālāwai, also known as West Maui Mountains touched each of Nā Wai ‘Ehā. It is from these mountain ranges the waters flow to become Nā Wai ‘Ehā.

Hanohano i ka maka	Great wonders to the eyes
Ke ‘ike aku	To behold
Mauna Kahalawai o Maui	Mt. Kahalawai o Maui
E noho mai a i luna	It is there, up high
I luna ma na wahi ki‘eki‘e	Upon the highest point
I noho i lalo Kahakuloa	And there below is Kahakuloa
Waiehu, Paukukalo, ame Wailuku	Waiehu, Paukukalo, and Wailuku
Waikapū ‘a‘ole po‘ina Mā‘alaea	Waikapū, do not forget Mā‘alaea
Aloha i ka po‘e o ka ‘āina	Greetings and love to the people of the land
Aloha i ka po‘e o ka ‘āina	Greetings and love to the people of the land
Ha‘ina ‘ia mai ka puana	This is the end if my story
Mauna Kahalawai nou kēia mele	Mt. Kahalawai, this is your song
He inoa mai kahiko mai	A name from ancient times
Mauna Kahalawahi ‘o Maui	Mt. Kahalawai of Maui
Mauna Kahalawahi ‘o Maui	Mt. Kahalawai of Maui

[huapala.org, n.d.]

3.4.4 Nā Wai Kaulana

This *mele* was composed by Alice Nāmakelua to praise and honor “the four famous streams of West Maui” (huapala.org, n.d.) as well as other areas within Maui. Places like Kepaniwai, ‘Īao, and Haleakalā are distinguished *wahi pana* not only for their land formations, but for the *mo‘olelo* that accompany these areas.

‘Ike ana i ka nani o Maui	Seeing the beauty of Maui
I Kepaniwai o ‘Īao	Kepaniwai at ‘Īao
Ke kokolo a ka uwahi o Kula	The drifiting of the dust of Kula
Me he uhiwai ala no ka uka	Like fog, there in the uplands
Hui:	Chorus:

Ka‘apuni ‘oe a puni ‘o Maui	You travel around Maui
E ‘ike i nā wai ‘ehā	And see the four streams
O Waikapū, o Wailuku, o Waiehu	Waikapū, Wailuku, Waiehu
Kaulana nā wai ‘ehā	Famous are the four streams
He ‘īnikiniki mālie	Gently piercing is
O Waihe‘e i ka makani Kili‘o‘opu	Waihe‘e by the wind Kili‘o‘opu
O nā wai kaulana ‘ia a‘o ku‘u ‘āina	These are the famous streams of my land
O nā wai kaulana ‘ia a‘o ku‘u ‘āina	These are the famous streams of my land
I luna a‘o Haleakalā	Above Haleakalā
‘Ike ia e ka nani kamaha‘o	See the wondrous beauty
‘Alawai aku ‘oe i ka nani	If you glance over there, you will see
Ka nani o ke kukuna o ka lā	The beautiful rays of the sun
Eia iho hoi ia nani	Here is the beauty
O ka nani o ka pua li‘ulā	A mirage of flowers
He pua māka‘ika‘i mau ia	Stroll between the flowers
E ka nui ma ke lehulehu	Multitudes, growing in profusion
Kaulana nā pua like ‘ole	Flowers so famous, like no other
‘A‘ohe no a‘e like aku	Yes, none can compare to
Me ka nani o ka pua roselani	The beauty of the rose
O ka wehi a‘o ku‘u ‘āina	They adorn my land

[huapala.org, n.d.]

3.4.5 Waikapū/‘Iniki Mālie

Similar to “I Waikapū Ke Aloha” and “No Nā Wai ‘Ehā,” “Waikapū” and “‘Iniki Mālie” have the same lyrics but are printed under two different song titles. “Waikapū” is credited to James Kahele. Unfortunately the composer for “‘Iniki Mālie” is unknown (Elbert and Māhoe 1970:56).

Waikapō[ū] makani kokolo lio	Waikapū has a swift blowing wind
Makani houhou ‘ili	Wind that pierces the skin
‘Ini‘iniki mālie	Gently pinching it

Wailuku makani lawe mālie	Wailuku has a gently blowing wind
Makani houhou ‘ili	Wind that pierces the skin
‘Ini‘iniki mālie	Gently pinching it
Wai‘ehu makani ho‘eha ‘ili	Wai‘ehu has a wind that pricks the skin
Makani houhou ‘ili	Wind that pierces the skin
‘Ini‘iniki mālie	Gently pinching it
Waihe‘e makahi kili‘o‘opu	Waihe‘e has a cool wind
Makani houhou ‘ili	Wind that pierces the skin
‘Ini‘iniki mālie	Gently pinching it
Ha‘ina mai ana ka puana	This ends my song
Makani houhou ‘ili	Wind that pierces the skin
‘Ini‘iniki mālie	Gently pinching it

[huapala.org, n.d.]

Section 4 Historical Accounts

4.1 Pre-Contact to Early Post-Contact Period

Various legends and early accounts of Wailuku Ahupua‘a indicate a notable population of long-settled, pre-Contact Hawaiians inhabited the Wailuku area. In ancient times, Wailuku was known as a chosen gathering and residential site for Maui *ali‘i* (James 2002:56). James provides the following description of seventeenth century Wailuku:

> From the seventeenth century it was densely populated, by Hawaiian standards, with the Pihanakalani Heiau complex serving as a spiritual center. The beaches were lined with coconut groves, and along the shores were the thatched *hale* of fishermen and those concerned with the high chief's war canoes. Wailuku, Paukūkalo, and Waiehu were popular surfing spots amongst the chiefs of Maui, and from Waihe‘e to Wailuku lay the largest continuous area of wetland taro cultivation in the Islands. [James 2002:56]

Handy and Handy reiterate the prolific cultivation of *kalo* in Wailuku District saying that "in ancient times [Wailuku District] was the largest continuous area of wet-taro cultivation in the islands" (Handy and Handy 1972:496). *Kalo* was perhaps the most distinguished plant within traditional Hawaiian horticulture and society. This is echoed in pre-Contact descriptions of agricultural cultivation in Wailuku which are dominated by passages illustrating the prominence of *kalo*. Handy and Handy describe the multifaceted role taro played in the pre-Contact era and its significance in the socio-cultural order:

> The function and nature of the taro plant, its cultivation and use, were responsible not only for its primal place in mythology but for the fact that the cult associated with it, namely that of the male god Kane (= Wakea) as first procreator, and of *Ka-wai-‘ola-a-Kane* or 'The-life-giving-water-of Kane,' although less elaborated than that of the rain-father Lono, was more fundamental, not only in Hawaii but throughout Polynesia. It was, in fact, the basic cult of the primal procreator of nature and man, out of the union of Sky and Earth.
>
> Actually the course of fresh-water streams and ditches patterned the entire subsistence economy, and through this, the whole round and cycle of individual and social activity. The streams and ditches were the regulators, the law givers, in communal relationship; not directly, but because upon their water depended the taro, and upon the taro depended man.
>
> The requirements of labor, in connection with building and maintenance of dams, ditches, terraces, and embankments, and the planting, tending, and harvesting of the taro, determined the ordering of cooperative work and relationships between individuals and families within the community. This cooperation in turn was responsible for the obligations in the matter of work required of individuals and the right of individuals and families to a share in the products.
>
> Finally, taro in its habit of growth established a biological prototype of the form in which heredity and relationship were conceived. The taro growth supplied one of the terms in which the family system of the civilization was framed: *‘ohana*,

> meaning the dispersed biological family group as a whole. *‘Oha* means a shoot or sucker from the base of a plant, but essentially and primarily was applied to the buds from the corm of the taro that were broken off and replanted by the gardener. With the substantive suffix added, *‘oha-na* literally means ‘offshoots,’ or ‘that which is composed of offshoots.’ The family stock, then, budding and branching from parent stocks, was conceived of in terms of the habit of reproduction of the taro. [Handy and Handy 1972:76]

Sterling (1998) references the work of H.T. Cheever (1851) describing Wailuku:

> As you get into the valley and vega of Wailuku, you see numerous remains of old kihapais, or cultivated lots, and divisions of land now waste, showing how much more extensive formerly was the cultivation, and proportionally numerous the people, than now […]
>
> The whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it. [Cheever in Sterling 1998:75]

According to Cordy, the settlement of Wailuku represented one of two (or perhaps three) population concentrations on Maui:

> The Kaupo, Kipahulu, Hana, Koolau, and Hamakua districts of northeast Maui form a wet, fertile contiguous area that would have been a dominant population center early in Maui’s settlement. On West Maui, the large valleys of Waihee and Wailuku would have been another fertile focus, and to the southwest, the permanent streams of Lahaina and Olowalu would have been conceivably another early population area. [Cordy 1981:198–199]

4.1.1 Battle of Kakanilua

In 1776, the army of Kalani‘ōpu‘u landed at Keone‘ō‘io with their war canoes, a force so vast that the area between Makena and Honua‘ula was said to have been completely filled by these canoes. There, the invading army proceeded to ravage the countryside. Kalani‘ōpu‘u then landed with additional forces at Kīheipuko‘a at Keālia to Kapa‘ahu (Kamakau 1992:85). Here his elite army of *Alapa* and *Pi‘ipi‘i* warriors, 800 men strong, landed ready for war. It was alleged that these men were of equal stature and all carried spears of identical length. Their appearance is related as being a “magnificent spectacle” marching across the plains of Kama‘oma‘o wearing their feather cloaks and helmets. They were ready to battle Kahekili at his stronghold across the isthmus at Wailuku. Their army was said to be eager to drink the waters of the Wailuku Stream (Fornander 1880:152–153).

Samuel Kamakau recounts the invasion of Kalani‘ōpu‘u:

> Across the plains of Pu‘u‘ainako (Cane-trash-hill) and Kama‘oma‘o shone the feather cloaks of the soldiers, woven in ancient pattern and colored like the hues of the rainbow in red, yellow and green, with helmets on their heads whose arcs shone like a night in summer when the crescent lies within the moon. Kahekili was at Kalanihale just below Kihahale and above the plateau of Ka‘ilipoe at Pohakuaokahi. Said Kaleopu‘upu‘u to Ka-hekili, ‘The fish have entered the sluice; draw in the net’. (Kamakau 1992:85)

Furthermore, Kamakau specifies that:

> The great battle took place between Waikapu and Wailuku. Ka-lani-‘opu‘u expected to enter Wailuku at Kakanilua, but Ka-hekili’s men rose at dawn and occupied the sandhills of Kama‘oma‘o, and a portion of them took their stand on the side toward Waikapu turn, so that the forces of Ka-lani-‘opu‘u, who had supposed that the battle would be at Kakanilua, found a divided front from which spears, javelins, and other missiles poured like water. Death-dealing weapons poured down like a swift rainstorm beating the sides of the fisherman’s canoe and agitating the surface of the sea like a cloudburst over the deep ocean. The terrified soldiers were surrounded and took to flight; they were driven by Ka-hekili‘s men like leaves before a whirlwind. The plains of Kama‘oma‘o became like a fishpond through whose sluice gate the sea flooded, Ka-lani-‘opu‘u‘s men [became] like the mullet driven by the sound of beating into the sluice gate of ‘Uko‘a; and the sea rose up to the walls. Like the fiery petals of the lehua blossoms of Pi‘iholo were the soldiers of Ka-hekili, red among the leaves of the *koa* trees of Liliko‘i or as one glimpses them through the *kukui* trees of Ha‘iku. Like the creeping branches of the *‘ulei,* so moved the cloaked warriors, young and middle-aged, over the *‘ilima*-covered plain of Paholei. A chill seized Ka-lani-‘opu‘u as he crouched in the canoe, mourning the dead who lay like fish stupefied by the poison spread by the great fisherman, Ka-hekili. Like grasshoppers on the plain, easily to be caught by women, so they lay in the heat of the sun snuggled close to the blossoms of the grasses. [Kamakau 1992:87]

Kalani‘ōpu‘u’s army was annihilated in what was called Ahulau Ka Pi‘ipi‘i i Kakanilua or Slaughter-of-the-Pi‘ipi‘i-at-Kakanilua (Kamakau 1992:86), one of the most legendary battles of pre-Contact Hawai‘i.

4.1.2 Kamehameha and the Battle of ‘Īao

After Kamehameha I conquered his island home of Hawai‘i, he was more than eager to gain control of the other islands, with Maui being his next target. Maui, at that time, was ruled by Kahekili, who also ruled Moloka‘i, O‘ahu, and Kaua‘i. In 1785, while Kahekili was living on O‘ahu, Kamehameha decided to make his attack on Maui, in Hāna. At first the attack seemed successful and it appeared that Kamehameha’s army would be victorious, however, soon the battle changed and the warriors of Maui drew out Kamehameha’s army.

> When Kamehameha had conquered his own island, he was more than ever eager to gain control of the remainder of the group. But a great obstacle stood in his way in the person of Kahekili, Moi of Maui. By the time Kamehameha had become sole king of the island of Hawaii, Kahekili had succeeded in making himself overlord of Maui, Molokai, Oahu, and Kauai.
>
> Toward the end of 1785, Kamehameha sent an army under the command of his younger brighter to attempt the reconquest of Hana on Maui. This attempt met with some success at first but the invaders were later driven out. [Hoskins n.d:7]

In 1790, Kamehameha I invaded Maui again. The Battle of ‘Īao is also known as the Battle of Kepaniwai, meaning the “Dammed Stream.” Prior to the Battle of ‘Īao, Kahekili had gained control

of O‘ahu, Lāna‘i and Moloka‘i. However, in 1790, the defining battle establishing Kamehameha’s supremacy over the army defending Maui began at Pu‘unēnē. Crossing the channel from the island of Hawai‘i with his war fleet, Kamehameha I overwhelmed the Maui forces in Hāna enroute to engaging the main island defense force gathered along Maui’s northern coastline. Kamehameha I assembled his invasion forces at Kahului. With Kahekili on O‘ahu, the defense of Maui fell to his son, Kalanikūpule. The Maui forces were swept across the isthmus and destroyed at ‘Īao Valley, above Wailuku. The high chiefs and royalty of Maui fled to other islands, and Kamehameha I went on to defeat the combined forces of Kahekili and Kalanikūpule at Nu‘uanu, on O‘ahu in 1795.

The Battle of ‘Īao is said to have been one of the most bitter battles fought by Kamehameha I in his bid to control the Hawaiian Islands. The following passage recounts the Battle of ‘Īao and Kamehameha’s triumph in detail, citing his arrival to Maui and his route through parts of the *ahupua‘a* and *moku* of Wailuku.

> One tradition indicates that Kamehameha’s war canoes landed at Kalepolepo near Keālia Pond from where he proceeded inland toward Wailuku. The four streams of this region tell the story of the unfolding battle. Kamehameha placed a *kapu* on the first stream he came to, reserving it for *ali‘i*. Waikapū (‘water of the conch’) was where the sacred conch shell was blown sounding the call to war. At Wailuku (‘water of destruction’) Stream, the battle became fierce and many warriors were killed. The Maui armies were routed and took flight by way of the third stream, Waiehu (‘water spray’), kicking up the water in a frenzied dash to get away. By Waihe‘e (‘squid liquid’) Stream the Maui army was utterly defeated and simply melted away like the ink of a fleeing octopus.
>
> However, another description of this decisive battle speaks of a landing at the Kawela area of Kahului Bay, perhaps a second wave, where two days of fighting into ‘Īao Valley took place. Here, with the help of a cannon, a terrible slaughter of commoners took place and in such great numbers that the dead bodies dammed up the water of Wailuku Stream. It has since been referred to as Kepaniwai, or ‘the water dam.’ From here people fled to Kauwa‘upali (‘precipice climbers’ or ‘clawed of the cliff’) and ‘Īao Needle, scrambling up the steep cliffs to escape. Women, children, and the elderly fled up the gulch called A‘i, now known as Black Gorge. Chief Kalanikūpule and other Maui *ali‘i* are said to have escaped over the *pali* (cliff) to Lahaina, where they secured canoes and fled to O‘ahu.
>
> Facing the valley entrance, Mauna Kane is the peak on the right, named after one of the major Hawaiian gods. On the left is Mauna Leo, meaning ‘voice mountain,’ which, according to one source was changed to Lī‘ō (‘terror’) after the invasion by Kamehameha. This fight between the armies of Hawai‘i and those of Maui is now known as the Battle of ‘Īao. [James 2002:62–63]

4.2 Early Historic Period

The missionary census of 1831-1832 recorded a total population of 2,256 in Wailuku Ahupua‘a, comprising 918 adult males, 860 adult females, and 478 children (Schmitt 1973:18). By the time of the 1840 census, the Wailuku population dropped to 1,364, representing a decrease of 892 in just four years (Schmitt 1973:38).

An account by one of the missionaries in Wailuku, Rev. Richard Armstrong, gives a vivid picture of a tsunami at Kahului where the “entire village of 26 native grass houses” was carried away; in his journal entry of 8 November 1837, Armstrong records the following:

> A strange phenomenon appeared last evening in our neighborhood. About seven o’clock in the evening, the waves of the ocean just opposite our station, at a small harbor [i.e., Kahului], gradually receded from the shore to a distance of some 15 or 20 rods leaving multitudes of fishes upon the ground, so that the children observing it ran and picked up some of them; leaving a small schooner also, which was at anchor in the harbor, without sufficient water to float her completely, and the wave slowly formed itself as it were into an embankment, or as the natives said, a ‘steep precipice.’ Then, as if having collected strength enough for the onset, the wave rushed back upon the beach, overflowed the banks, and carried away the entire village of 26 native grass houses with all their effects and inhabitants, some 40 or 50 rods inland, throwing most of the wrecks of houses, broken canoes, fowls, beasts, men, women, and children into a small lake of perhaps three miles circumference, which lay immediately inland from the village.
>
> The rush of the wave was so sudden and unexpected, that the inhabitants of the village, unlike Lot in Sodom, had no warning whatever, except a few who seeing the sea receding from the shore suspected a corresponding reflux, and fled inland in season. But it is not easy for water to baffle a Hawaiian, this being the element with which he is most familiar. Some swam single handed with the waves. Others took their children in their arms. Others the sick on their backs and bore them up until the waters ceased from the earth. One man took his old mother on his back and swam with her until he reached the dry land, but, laying her down on the ground, he found she was dead. Another poor old woman, having no one to assist her, and it being dark got into the small lake and was drowned. These are all the lives that were lost. [*Maui News,* 10 November 1937]

James Jarves (1844), the first editor of *The Polynesian*, the third English-language newspaper in the Hawaiian Islands, included news about events in Kahului. He noted a “remarkable oscillation of the ocean” that occurred at Kahului on 7 November 1837:

> At Maui, the sea retired about 20 fathoms, and returned with great speed, in one immense wave, which swept before it houses, trees, canoes, and all else exposed to its fury. At the village of Kahului, the inhabitants, as at Honolulu, followed with rapturous delight the retreating wave, when suddenly it turned upon them, rising like a steep wall, rushed forward to the shore, burying the natives in its foam, and destroying the whole hamlet. [Jarves 1844:19–20]

The use of the northern coastline landing at Kahului by early Europeans proved difficult, for far more records exist of early explorers and merchant ships at anchor off the southern, more protected coastline of Maui than along the exposed, northern coast. An account by the American missionary Rufus Anderson (1864) portrays the obstacle of landing in Wailuku District:

> We were bound to Wailuku, situated near the western side of the isthmus connecting West and East Maui. After crossing the channel the wind increased, and so rough was the sea that our landing seemed not quite safe. Mr. Alexander met us

> on the shore, but in such a stand-storm that we were obliged to veil our faces. We breasted the gale for a dozen miles, and near Wailuku were wet to the skin by a storm of rain. [Anderson 1864:176]

During the early and middle 1800s, the Hawaiian demography was affected by two dramatic factors: radical depopulation resulting from Western disease and nucleation around the developing port towns. Traditional Hawaiian populations lived in a largely dispersed settlement pattern. Although there were royal centers and areas of more concentrated population, these areas never came close to rivaling the populations of the historic port towns that developed on Hawai‘i’s shorelines during the 1800s. Kuykendall (1938) notes that from 1830 to 1854:

> The commercial development during this period, by magnifying the importance of a few ports, gave momentum and direction to a townward drift of population; the population of the kingdom as a whole was steadily going down, but the population of Honolulu, Lahaina and Hilo was growing. [Kuykendall 1938:313]

4.2.1 The Māhele (1848)

The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—that introduced private property into Hawaiian society. In 1848, the Crown and the *ali‘i* received their land titles. *Kuleana* awards to commoners for individual parcels within the *ahupua‘a* were subsequently granted in 1850. The Crown Lands were considered the private lands of the monarch, and many lands were sold or mortgaged during the reigns of Kamehameha III and IV to settle debts to foreigners. To end this practice, the Crown Lands were made inalienable in 1865, and their dispensation was regulated by a Board of Commissioners of Crown Lands, which effectively put them under the administrative control of foreign-born residents (Kame‘eleihiwa 1992:310). Before the passage of the Act of 3 January 1865, which made Crown Lands inalienable, Kamehameha III and his successors did as they pleased with the Crown Lands, selling, leasing, and mortgaging them at will (Chinen 1958:27).

In 1850, the Privy Council passed resolutions that affirmed the rights of the commoners or native tenants. To apply for fee-simple title to their lands, native tenants were required to file their claim with the Land Commission within the specified time period of February 1846 and 14 February 1848. The Kuleana Act of 1850 confirmed and protected the rights of native tenants. Under this act, the claimant was required to have two witnesses who could testify they knew the claimant and the boundaries of the land, knew that the claimant had lived on the land for a minimum of two years, and knew that no one had challenged the claim. The land also had to be surveyed.

Not everyone who was eligible to apply for *kuleana* lands did so and, likewise, not all claims were awarded. Some claimants failed to follow through and come before the Land Commission, some did not produce two witnesses, and some did not get their land surveyed. Out of the potential 2,500,000 acres of Crown and Government Lands, less than 30,000 acres of land were awarded to the Native Hawaiian tenants (Chinen 1958:31).

The project area is surrounded by a dense clustering of LCAs that extend throughout this portion of Wailuku Ahupua‘a (Figure 10). LCA documentation and testimony was reviewed via the Waihona ‘Aina (2021) database. LCAs that border or extend within the project area include: 3495:2 (to Kawaahie/Kawahie, wahine, contains 18 *lo‘i*; one house lot), 1742*M:4 (to Kaauwai,

Z., contains five *lo‘i* and three *mo‘o* of *kalo),* 3385:1 (to Pahoa, contains 22 *lo‘i),* 3290:3 (to Mahoe, contains 21 *lo‘i,* one house lot), 4452*M (Kalama, Hazaleleponi, contains two house lots), 3465 (to Keawe, contains 13 *lo‘i),* 3477 (to Kekaona/ Kekoona, contains 21 *lo‘i*; one house lot), 3381 (to Puniho, contains 25 *lo‘i),* 3385:2 (to Paho, contains 22 *lo‘i*).

Table 2. List of LCAs around the vicinity of the project area

Land Claim No.	Claimant	Description
1742*M:2	Kaauwai, Z.	Contains five *lo‘i* and three *mo‘o* of kalo.
3290:3	Mahoe	Contains 21 *lo‘i* and one house lot
3381	Puniho	Contains 25 *lo‘i*
3385:1	Pahoa	Contains 22 *lo‘i*
3385:2	Paho	Contains 22 *lo‘i*
3465	Keawe	Contains 13 *lo‘i*
3477	Kekaona/Kekoona	Contains 21 *lo‘i* and one house lot
3495:2	Kawaahie/Kawahie	Contains 18 *lo‘i* and one house lot
4452*M	Kalama, Hazaleleponi	Contains two house lots

4.3 Mid-1800s to 1900s

During the American Civil War in the 1860s, Hawaiian sugar prices rose significantly, leading to the formation of 12 large sugar plantations on the island of Maui, the most of any Hawaiian Island. The Wailuku Sugar Company was organized in 1863. The enterprise was a cooperative venture of James Robinson & Company, Thomas Cummins, J. Fuller, and C. Brewer & Company.

4.3.1 Sugar Plantations

Dorrance and Morgan (2000) wrote about the 165 years of sugarcane cultivation in Hawai‘i:

> Early sugar makers found several varieties of wild cane: red, greenish-red, purple, green, yellow-striped, and variegated. The first Western cane farmers erected a mill amidst a large patch of cane, hired native workers, and harvested the surrounding field. The cane would be trimmed of leaves, hauled away by oxen and fed by hand into the wooden or stone grinders of an animal-powered mill.
>
> As the population of Native Hawaiians began to decline, the Kingdom of Hawai‘i and sugar cane plantation owners began contracting workers from other countries.

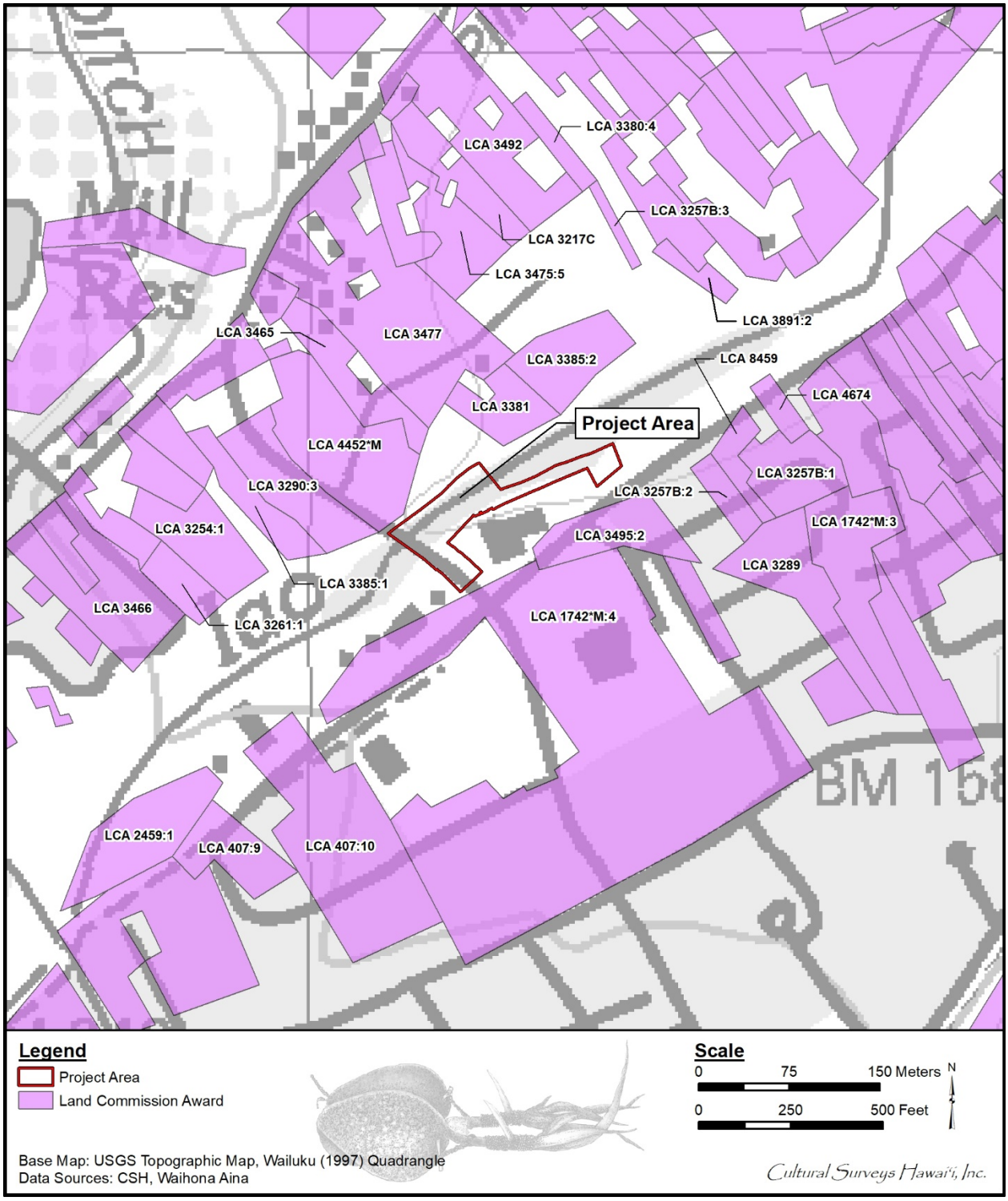

Figure 10. Map indicating LCAs around the vicinity of the project area

> Prior to the overthrow of the Hawaiian Kingdom in 1893, ‘the Chinese, Portuguese and northern Europeans, the Japanese […]’ were among the firsts to be brought over to Hawai‘i, while Filipinos were brought over after the annexation of Hawai‘i in 1898. [Dorrance and Morgan 2000:4]

Throughout the years of the sugar plantation era, Maui once produced 38 sugar plantation companies, some short-lived, some which were bought out by other companies, and some who were in it for the long haul:

> [...] the Pacific Commercial Advertiser excitedly described a similar development occurring on the island of Maui: ‘What a change has taken place in Waikapu within two years! Where there were a few taro -patches…a village has sprung up with its sugar mill and buildings, its waving cane fields and busy laborers, scattering industry, thrift, and contentment everywhere. Here, where a few hundred dollar’s worth of taro was formerly raised, fifty thousand dollars worth of sugar may now annually be made and sent to market.’ [Takaki 1983:16–17]

Within Nā Wai ‘Ehā, there were two main sugar companies, Waihee Sugar Company and Wailuku Sugar Company.

4.3.1.1 Waihee Sugar Company

The Waihee Sugar Company held 800 acres of land used for sugar cultivation, producing approximately 1,000 tons annually (Dorrance and Morgan 2000:64). Starting in 1862, Waihee Sugar Company was owned and managed by Linton Torbert until 1865, then Samuel Alexander and Henry Baldwin until 1869. One of the last managers of the company was Capt. James Makee. Eventually, the Waihee Sugar Company was sold to Wailuku Sugar Company and “ceased to be an independent enterprise” (Dorrance and Morgan 2000: 64–65).

At the start, the Waihee Sugar Company showed promise as the first production figures for the crop of 1865 yielded 757 tons of sugar and 45,000 gallons of molasses. An article published in the December 1883 issue of *The Honolulu Advertiser* commenting on the sugarcane fields and their bright prospects mentions the opening of Waihee Mill:

> The cane is green, fresh and growing vigorously. To look over the thousands [of] acres of flowering cane ripe for the mill is a beautiful sight. The Wailuku mill after a temporary suspension, is grinding and turning out a fine quality of sugar from cane which gives a highly satisfactory yield. The Waikapu Mill is also in full blast, and I understand the Waihee will commence to-day. The planters of Maui should be in high spirits. The prospect never looked brighter. [*Honolulu Advertiser* 1883:2]

Remnants of the Waihee Mill were still standing in 1958 (Figure 11).

4.3.1.2 Wailuku Sugar Company

A group of partners began the Wailuku Sugar Company in 1862, one of them being C. Brewer & Company; it was managed by Rev. Edward Bailey (Dorrance and Morgan 2000:65). As the years progressed, Wailuku Sugar Company expanded its operation by acquiring neighboring plantations and other LCA parcels around the area. By 1925, many of the LCAs within the vicinity were acquired by C. Brewer & Company and the Wailuku Sugar Company.

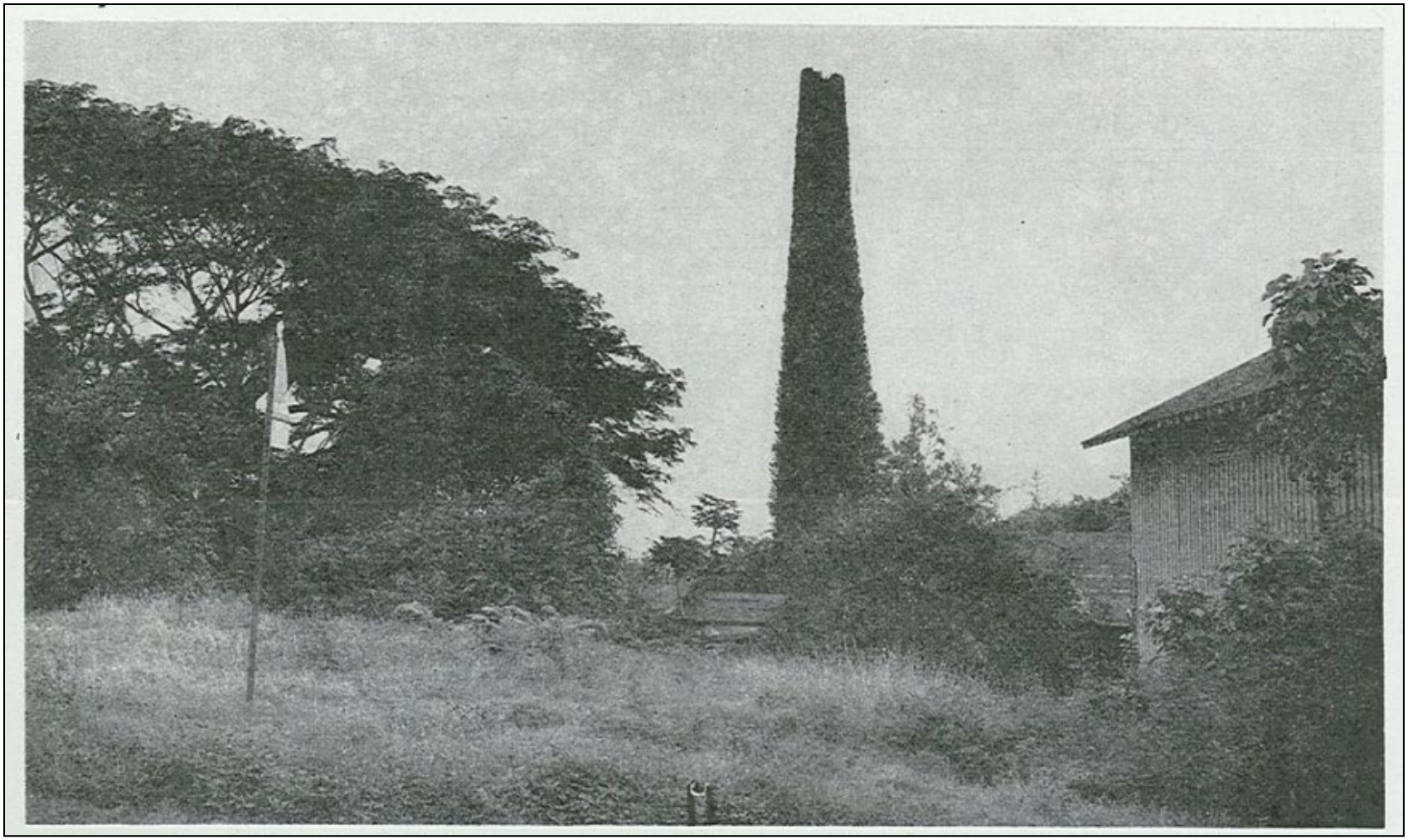

Figure 11. Smokestack and other remnants of Waihee Mill in 1958 (HC&S Breeze 1958)

Throughout the years, production of sugar evolved and started to include macadamia nuts, pineapple, and was later consumed by urban development. By 1988, Wailuku Sugar Company shut down all its sugarcane operations (Dorrance and Morgan 2000:66).

4.3.1.3 The Hawaiian Commercial and Sugar Company (HC&S)

In 1882, Spreckels, following his success in building the Honomanu Ditch linking East Maui water sources with his sugar fields in the central isthmus, further capitalized on that success to engineer the Waihe‘e Ditch (also named the Spreckels Ditch) in West Maui. The 15-mile-long ditch started at the 435 ft elevation of Waihe‘e Stream, and carried 60 million gallons of water (per 24-hour day) to the Wai‘ale Reservoir at the 214 ft elevation of Wailuku. Spreckels became the first plantation owner to irrigate his fields with water from both Haleakalā and the West Maui mountains (Wilcox 1996). By 1888, the Spreckels plantation covered 28,000 acres, making it the largest sugar plantation in the world, however, financial pressures forced Spreckels to give up control of HC&S to Alexander & Baldwin in 1898 after a long and fierce battle (Dean 1950).

In 1899, HC&S determined that cultivating the Pu‘unēnē plains required far more water than the original Hamakua Ditch could provide. The Lowrie Ditch project, completed in 1900, was undertaken to provide an additional source of water to the central Maui plains (Thrum 1900). The ditch began at the Pāpa‘a‘ea Reservoir, at 1,000 ft elevation, and maintained a 4-ft drop per mile following the ditch’s initial plunge from the Kailua reservoir. Steep mountain gulches were traversed using the force of the constant weight of water flowing in a series of siphons. The Halehaku Gulch, at 250 ft deep, and the Māliko Gulch, at over 350 ft deep, were both crossed by giant siphons fabricated of 3/8-inch iron, and set in place by Japanese laborers. At a weir located above Pā‘ia, the allocation of water began. The first tenth of the water flow in the Lowrie Ditch was divided out to the Pā‘ia Plantation (an 11/20ths share) and the Haikū Plantation (a 9/20ths share) (Thrum 1900).

In 1899, HC&S was planning its new mill at Pu‘unēnē which processed its first cane in 1902 (Bartholomew and Bailey 1994:121). By 1902, with the new Pu‘unēnē mill completed, a new milling contract with HC&S provided that all cane loaded by the Kihei Plantation Company was to be ground and manufactured into sugar by HC&S. Pu‘unēnē Mill and Pā‘ia Mill, as well as the network of railroad lines connecting the company’s fields and villages, experienced continued growth in the early twentieth century. Between 1900 and 1905, acreage harvests doubled, from 2,484 to 4,827 acres. Tons of sugar produced more than doubled, from 17,857 to 39,411 (Gilmore 1936), and the adoption of heavier rails and a wider rail gauge caused HC&S to completely renovate the plantation railroad (Condé and Best 1973).

From the time it opened and for several years after, Pu‘unēnē was home to the largest sugar mill in the world (Figure 12). At the height of its production, Pu‘unēnē mill covered a vast 33,000 acres. A total of 16,000 was used for sugarcane and the remaining acreage contained residential camps, a hospital, a grade school, a church, and recreational facilities for the employees (Bartholomew and Bailey 1994:121)

Figure 12. Hawaiian Commercial & Sugar Company mill (Bartholomew and Bailey 1994)

4.3.2 Kahului Railroad Company

The Kahului Railroad Company, founded by Thomas Hobron, was incorporated on 1 July 1881. By 1886, with a terminal established at Kahului, the railroad comprised a line from Kahului to lower Pā‘ia and from Kahului to the town of Wailuku. In 1886, the railroad company was sold to Wilder Steamship Company which subsequently applied for and received, in 1889, authorization from the Hawaiian government to engage in maritime shipping operations. Ten years later, in 1899, the railroad company was once again sold, this time to the Hawaiian Commercial & Sugar Company, headed by Henry P. Baldwin.

The Kahului Railroad berm (SIHP # 50-50-04-3112) was part of the network laid by the Kahului Railroad Company. By the early decades of the twentieth century, the branch of the railroad between Kahului and Wailuku handled transportation of all freight to and from the Wailuku Sugar Company, Libby McNeill & Libby's pineapple plantation, and the businesses within Wailuku Town. Additionally, it served as transport for the community, with students and other commuters riding the railway until Kahului Railroad implemented a bus service for its passengers in the mid-1930s (Bartholomew and Bailey 1994:79). The company was responsible for the development of Kahului Harbor; in addition to its work on the breakwaters, the company improved upon the existing docks in order to provide a sturdier wharf for shipping its cargo. This improvement facilitated the harbor's growth as a major shipping port.

The railroad continued to operate until 1966, making it not only the first but also the last operating railroad in Hawai‘i. In 1970, a part of the Kahului Railroad was brought to life as a portion of its deserted tracks was laid down in Lahaina and the surrounding area to serve as a scenic, historic railway for tourists and residents (Bartholomew and Bailey 1994:80).

4.3.3 Water Diversion

In order to maximize the growth of sugar production, many sugar plantation owners were looking for innovative ways to effectively grow and process sugarcane. Water diversions from the main water sources (streams) were being engineered as a means to help with sugar production.

In 1879, Claus Spreckels achieved success in building the Haiku (Spreckels) Ditch linking East Maui water sources at Honomanū to his sugar fields in the central isthmus. By 1882, the Waihe‘e (Spreckels) Ditch was successfully engineered in West Maui, an endeavor that was not without complications:

> Rapid [p]rogress is being made with the Spreckels Waihee ditch, a large dam is being constructed high up in the Waihee gulch. Tunneling through the sand hills was not a success, the men had finally to cut down through from the top of the hills until they got the level, then put in the pipes covered by an arched roof. The Spreckels mills now appear to be too far away from the cane, and the probabilities are that two more mills and works will be put up immediately, back of Kahului, distant about one and half miles. [*Honolulu Advertiser* 1882:2]

The 15-mile-long ditch started at the 435 ft elevation of the Waihe‘e Stream, and carried 60 million gallons of water per 24-hour day (mgd) to the Wai‘ale Reservoir at the 214 ft elevation. In 1882, millions of gallons of water were released for Waikapū sugar fields (Adler and Spreckels 1966). Spreckels became the first to irrigate his fields with water from both the East and West Maui mountains (Wilcox 1996).

However, this new diversion of water created an issue amongst the residents of Maui. By diverting waters from the freshwater streams, many Native Hawaiians were left with very little to no water to sustain their lands. A Native Hawaiian *kama‘āina* of Kula, Maui wrote about concerns of the sugar plantation industry in *Ka Nupepa Kuoka*, a Native Hawaiian newspaper.

> *Auwe! Pau Wailuku i ka mahiko. Ua hiki mai ma ko makou nei keena hana, he palapala na S. D. Hakuole, o Kula, Maui, e hai mai ana i ka pau loa o ka aina o Wailuku i ka mahina i ke ko. A ke hai hou mai nei no ke hoomaloo ia nei na loi kani kalo oe na haole, i wai e kanu ai i ke ko. A ke makau nei oia, e pau ana ka ai ana o na kanaka oia wahi i ka ai ana I ka poi, a e ai wale aku ana no paha i ka balena oolea hoeha niho, a […] palaoa mama e maona ole aku na kanaka Hawaii. Oiai ua maa na kanaka i ka ai i ka poi.* [*Ka Nupepa Kuokoa* 1866]
>
> A letter by S.D. Hakuole, of Kula, Maui arrived at our office, declaring that the land of Wailuku is being lost due the cultivation of sugarcane. Furthermore, he states the current condition of once cultivated taro patches being dried up by the foreigners, where they are now planting sugarcane. Also, he fears that Hawaiians of that place will no longer be able to eat poi, and that there will probably only be hard crackers which hurt the teeth when eaten, a cracker to snack on, but does not stratify the hunger of the Hawaiian people. Let it be known that the Hawaiian people are accustomed to eating poi. [Translation provided by Hui o Nā Wai ‘Ehā n.d]

Another article from *Ka Nupepa Kuokoa* shared the same issues for Waikapū:

> *No Waikapu holookoa. He maikai no ka noho ana o ka aina; eia nae, ua hapa ka ulu nui ana o na mea kanu, no ka uuku o ka wai, i ka ua mea he nui o ka wela o ka la i keia mau la. Ua maloo na loi kalo, nakakaka ka lepo. O ka mahiko o Waikapu nei, aohe no he maloo o ke ko, no ke kamau iki no o kahi wai, a ke maloo uuku mai nei nae ma ke kauwahi.* [*Ka Nupepa Kuokoa* 1872]
>
> Waikapū is a pleasant place to live however the plants only grow half as well because of the insufficient supply of water, due to the drought these days. Taro patches have dried up, the earth has cracked. The sugarcane belonging to the plantation here in Waikapū has not dried up because they have a little water. Only in a few places do they dry. [Translation provide by Hui o Nā Wai ‘Ehā n.d.]

An article from *Ka Lahui Hawaii* in 1876 describes the river of Wailuku sustaining the *lo‘i kalo* that are planted from the ocean to the cliffs. The article then describes the effect of *lo‘i kalo*, the emergence of sugarcane, and the selling of land to foreigners:

> *‘O Wailuku ke kahawai i palahalaha no ka mai kala ana, no ka mea, he nui na kau papa loi, mai kai mai o Nehe, a komo i uka o na pali o Iao. I keia wa nae, ke hookamaaina maila ke ko, ma kahi o ke kalo, a ke ne mau maila ke ko e hoopiha i na loi. Me he mea la, he mau makahiki hou aku i koe, e pau loa ana paha na loi kalo, a he ko wale no. E lua no nae kumu e koe ai ka aaina aole paa i ke ko. 1. O ke aloha i ka poi kalo, ka ai makuahine o keia aina. 2. O ka aua i ka aina taro, aole e kuai a hoolimalima aku me ka haole.* [*Ka Lahui Hawaii* 1876]

> Wailuku is the river that is spread out for the farming of taro, because the taro patches are many, from the ocean of Nehe, entering the cliffs of ‘Īao. However in this period of time, sugar is becoming acquainted with instead of taro, and sugarcane is nagging to fill the taro patches. It is as if there are a few years left and all the taro patches will be gone and there will only be sugarcane. 1. Love for poi from taro, the mother food of this land. 2. The withholding of taro land, not to be sold or leased to the foreigner. [Translation provided by Hui o Nā Wai ‘Ehā n.d]

A newspaper article published in 1883 mentions “rumors of a big water suit ahead, of the people Kuleana holders of Waiehu against Sir Claus Spreckels” (*Honolulu Advertiser* 1883:2). Wailuku Sugar Company took over Waihee Plantation in 1895, at which time, Waihe‘e (Spreckels) Ditch became a source of conflict and legal action.

The diversion of water to feed the sugar plantations created a shift in the livelihood of the residents of Maui, especially those of Nā Wai ‘Ehā. Established in 2003, Hui o Nā Wai ‘Ehā is an organization determined to “address the negative impacts caused by dewatering of Nā Wai ‘Ehā Streams by Sugar Plantations and corporate water companies” (Hui o Nā Wai ‘Ehā, n.d):

> As the plantation industry began to flourish in Nā Wai ‘Ehā, then began the demise of the cultural landscape and Hawaiian way of life. Many families had to leave their homes and farmlands because the stream water resources that sustained them had diminished or completely disappeared. [Hui o Nā Wai ‘Ehā n.d]

4.4 Mid- to Late 1900s

By 1900, Wailuku had a system drawing water from ‘Īao Valley to a reservoir in town, a newspaper, three hotels, and a power plant was planned for Kahului to supply electricity to Wailuku. 1900 was also the year in which the bubonic plague broke out in Kahului, the first death recorded as caused by the plague occurring on Saturday, February 4th. An article in the *Maui News* of 17 February 1900 announced,

> The plague has reached Maui. Six deaths have occurred and the whole of Chinatown [in Kahului] is a heap of ashes. The people of Maui are aroused to action and feel confident of being able to control and stamp out the pest in a short time [. . .]
>
> Sheriff Baldwin at once established a strict quarantine at Kahului which is still maintained. The Maui Board of Health met at once and selected a site for a pest house and one for a detention camp, the latter being established at the race track of the Maui Racing Association.
>
> […] by noon on Monday [13 February] the detention camp was ready for its occupants. Over 200 Chinese, Japs and natives were fumigated and dressed in new suits, and at two o’clock the procession quickly moved out to their new quarters.
>
> Scarcely had they reached their destination before everything was prepared for the destruction of their old quarters. At three o’clock a cloud of dust and broken timbers leaped into the air, accompanied by the savage roar of dynamite; then another and another, being the exterior houses of the doomed district. Soon dense volumes of smoke, through which pierced yellow shafts of flame, told that the work of

> destruction was begun. In two hours the whole block from the Kahului saloon to the Custom House was a heap of glowing ashes. The breeze was from the sea and no trouble was experienced in holding the fire within the prescribed district. [*Maui News,* 17 February 1900]

An account of Wailuku in 1901 states that the newly constructed railroad linking the Kahului wharf to Wailuku, Sprecklesville, and Pā‘ia allowed new opportunities in the marketing of fish from Kahului to inland locations (Maly and Maly 2003:452). The fish market of Wailuku sold fish caught in Kahului and was described as “a small affair with only 5 stalls, which are run by 2 Chinese and 5 natives, and is owned by a private individual” (Maly and Maly 2003:433) (Figure 13). The growth of Wailuku, which was named the county seat in 1903, continued during the first decades of the twentieth century. An early photograph, ca. early 1900s, taken from the Wailuku sand hills show the town expanding into former cane fields (Figure 14).

4.4.1 Military

In the early 1940s, the harbor town of Kahului was transformed from a sleepy plantation mercantile area to an important military defense depot. Following the entry of the United States into World War II, the rapid construction of military defensive structures demanded the immediate use of plantation wharf space, heavy equipment, and operators. Plantation employees from Wailuku and Kahului were pressed into emergency service until military construction personnel arrived in the Hawaiian Islands.

On 1 January 1942, Kahului Harbor was shelled by Japanese submarines which prompted return fire from U.S. shoreline artillery forces (Clark 1989). By early 1942, the Navy’s Thirty-Nin th Construction Battalion had reinforced the pre-war construction gangs composed of Pacific Naval Air Bases (PNAB) personnel and plantation labor. Completion of Naval Air Station (NAS) Pu‘unēnē in 1940 and NAS Kahului in 1943 accelerated and heightened coastal defenses on Maui in the World War II era (Woodbury 1946) (Figure 15).

4.4.1.1 Post-War Wailuku

Immediately following the end of World War II, NAS Pu‘unēnē was completely dismantled. Over one thousand acres of fertile growing land in north Kīhei were returned to sugar cultivation by HC&S. HC&S became the largest sugar producer in the U.S. when it acquired Maui Agricultural Company in 1948 (HC&S 2018). On the development side, more improvements were made to the lands of NAS Kahului, to create a modern civilian airport where the U.S. Navy’s second Carrier Air Service Unit (CASU) had once been based.

Postwar Maui saw the wholesale development of Kahului as a master-planned community providing fee-simple ownership of single-family homes. The majority of the homes, located between Baldwin High School and Pu‘unēnē Avenue, were purchased by plantation employees and servicemen returning from duty overseas. This trend continued throughout the 1950’s, with plantation camp populations falling in the outlying communities, including Pu‘unēnē, and rising in the central town site of Kahului’s new “Dream City” (Dean 1950). The early postwar years (1946-1950) saw the increased construction of urban infrastructure in Wailuku, including projects such as the Maui Memorial Hospital in Wailuku. Areas once occupied by the military returned to cattle ranching, and pineapple and sugar cultivation. The pace of social change began to accelerate.

Figure 13. Wailuku Fish Market ca. 1886 (Hawai‘i State Archives)

Figure 14. View toward ‘Īao Valley from Wailuku sand hills showing Wailuku Town, ca. early 1900s (Bishop Museum Archives)

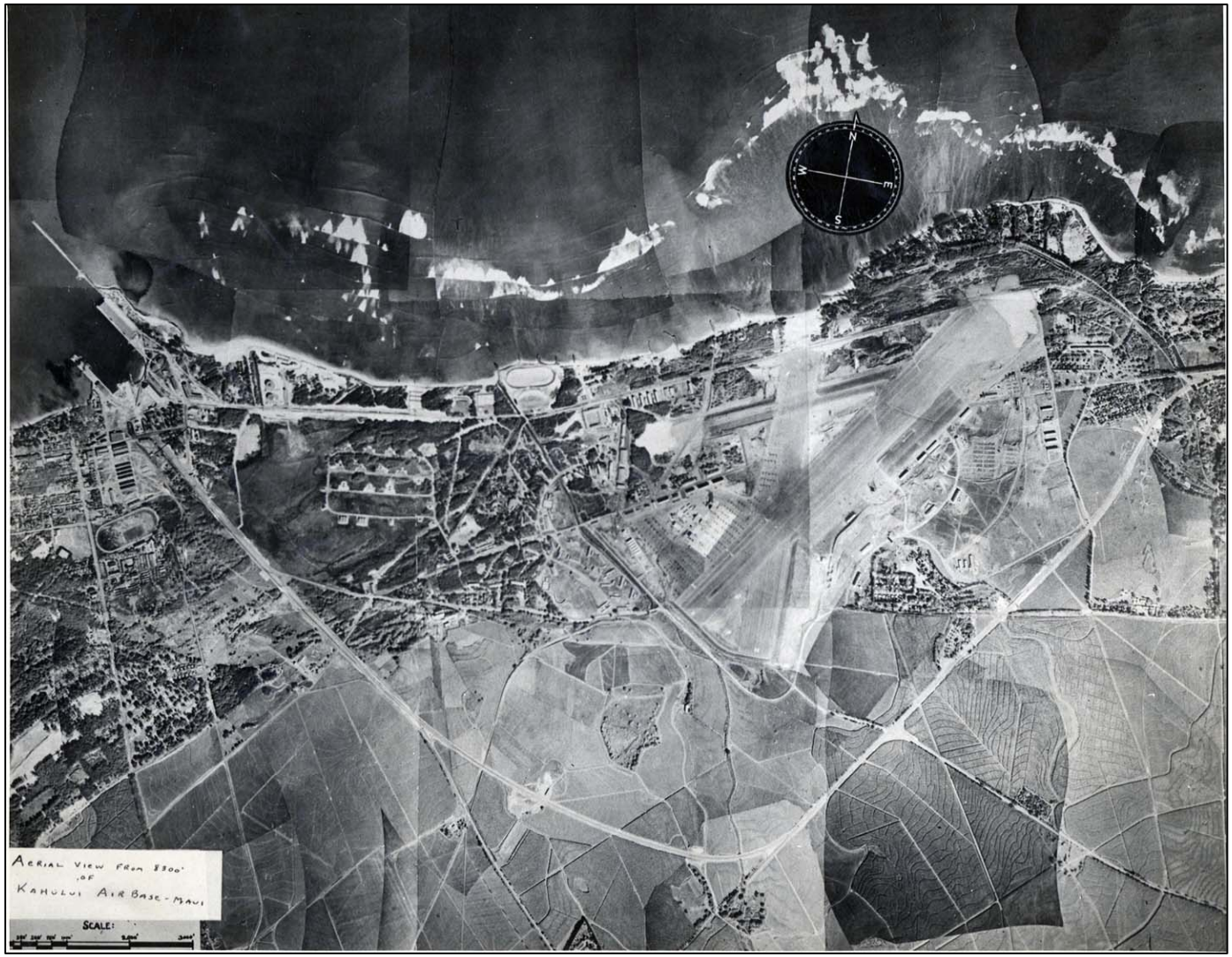

Figure 15. An aerial photograph showing Naval Air Station Kahului, 1945 (Hawai‘i Aviation)

The political power base of the County of Maui began to include Nisei, second-generation Japanese Americans, who had returned from service in Europe during World War II.

4.5 Late Twentieth Century to Present

4.5.1 Wailuku Agribusiness/Hawaiian Sugar and Company

The Wailuku Sugar Company transformed into Wailuku Agribusiness and incorporated other production such as macadamia nuts, pineapples, as well as leasing lands to other companies (Hui o Nā Wai ‘Ehā, n.d.).

In 2001, Wailuku Agribusiness sold 5,000 acres of prime agricultural lands to developers. However, “instead of returning the diverted water back into the streams, the plantation ditch and stream diversion system were retained by a new company that was formed in 2004 named Wailuku Water Company” (Hui o Nā Wai ‘Ehā, n.d.).

Wailuku Water Company as well as other large land ownership companies, such as the Hawaiian Sugar and Commercial Company, still maintain control and access to most of the water systems and streams.

> As of 2009, water continued to be diverted from streams in the Nā Wai ‘Ehā area for sugarcane irrigation in central Maui by Hawaiian Sugar and Commercial Company, for municipal and domestic uses, golf-course and landscape irrigation, maintaining pastures for cattle grazing, and other agricultural uses. [Oki et al. 2010:130]

Many residents of Maui continue to fight for water rights and water access. An article in *The Guardian* published on 28 April 2016 stated that:

> Access to Maui’s water resources is another big issue. Farmers on East Maui are trying to prevent A&B from making permanent the water use permits that have kept sugar cane bountiful and would be needed for their future diversification plans. On the west side, farmers are trying to reclaim access to streams that have been dammed and diverted for others including sugar company. Hokuao Pellegrino’s eco farm sits right next to one of the streams; it used to roar down the nearby mountain and out into the ocean but is now more sedate. He claims that the water and sugar companies have been water-banking for years and preventing farmers growing taro […]. [*The Guardian* 2016]

In 2015, the Hawai‘i Supreme Court ruled against the State Commission on Water Resource Management and provided clarity on decades-long issues with water diversion in central Maui including the streams in Nā Wai ‘Ehā. The court decision required the State Commission on Water Resource Management to uphold the laws on traditional and customary Native Hawaiian practices at streams as well as provide steps to protect these practices.

> As Native Hawaiian farmers and others pivot towards their next steps, all eyes are starting to focus on just how much water will be put back into the Waihe‘e River as well as the Waiehu, ‘Iao, and Waikapu streams, which together are known as Nā Wai ‘Ehā or ‘The four great waters.’ But the Nā Wai ‘Ehā case is just one of many struggles between plantations and farmers that for years have been undermining the

rights that the Hawai‘i Supreme Court has found to be fundamental under the State Constitution. [Kamakako‘i n.d.]

Section 5 Previous Archaeological Research

5.1 Previous Archaeological Research

The earliest archaeological studies on the island of Maui were a part of island-wide surveys conducted in the early 1900s (Stokes 1917; Walker 1931). These studies tended to focus on the generation of descriptive lists of large-scale architecture or traditional ceremonial *heiau* sites. Walker (1931) described ten *heiau* (Walker Sites 45–54) in the vicinity of the project area including: Keahuku Heiau (SIHP # 50-50-04-0045); Olokua Heiau (SIHP # -0046); Olopio Heiau (SIHP # -0047); Malena Heiau (SIHP # -0048); Pohakuokahi Heiau (SIHP # -0049); Lelemako Heiau (SIHP # -0050); Kawelowelo Heiau (SIHP # -0051); Kaulupala Heiau (SIHP # 0052); Palamaihiki Heiau (SIHP # -0053); and Oloolokalani Heiau (SIHP # -0054).

Between 1931 and 1976, only sporadic archaeological studies were undertaken in the area. Following the passage of the National Historic Preservation Act in 1966 and HRS §6E, which established the Historic Preservation Program in 1976, archaeological studies occurred as a condition of development on a more frequent basis. The lands surrounding the project area have been subject to a variety of studies including archaeological reconnaissance investigations, field inspections, archaeological inventory survey (AIS) investigations and assessments, archaeological monitoring, and burial treatment programs. Previous archaeological studies in the vicinity of the project area are detailed below (Figure 16 and Table 3). The location of historic properties identified by previous archaeological studies in the vicinity of the project area are depicted in Figure 17 and also described in Table 3.

Historic structures listed on the National Register of Historic Places (NRHP) and located within 500 m of the project area include the Ka‘ahumanu Church (SIHP # -1500), the Wailuku Civic Center (SIHP # -1616), Henry Perrine Baldwin High School/Wailuku Elementary School (SIHP # -1630), the Wai‘ale Drive Bridge (SIHP # -1633), and the Bailey House (SIHP # -3000).

5.1.1 Kennedy (1989)

Between 1 and 7 January 1983, Archaeological Consultants of Hawaii, Inc. (ACH) conducted an archaeological walk-through reconnaissance survey of Wailuku Project District #3 and Pihana District #2 (Kennedy 1989). Three historic properties were identified including SIHP # -2985, a small rock mound interpreted as a potential burial site, SIHP # -2986, a likely Chinese grave with a “typically Chinese” marker (Kennedy 1989:5), and SIHP # -2987, a small agricultural terrace complex. Mahalani Cemetery (no SIHP number assigned) was also documented.

5.1.2 Estioko-Griffin (1990)

On 14 December 1989, Estioko-Griffin (1990) conducted a field inspection at the Waiehu Development Increment C (TMK: [2] 3-3-001:010 por.). One partially exposed in situ human skeleton was identified along with several cranial fragments in the vicinity. Faunal skeletal remains were also identified. One concrete tombstone with apparent Chinese characters was also recorded. Estioko-Griffin (1990) recommended community consultation and possible reinternment on site. Archaeological monitoring was recommended due to the likelihood of encountering human remains in the project area.

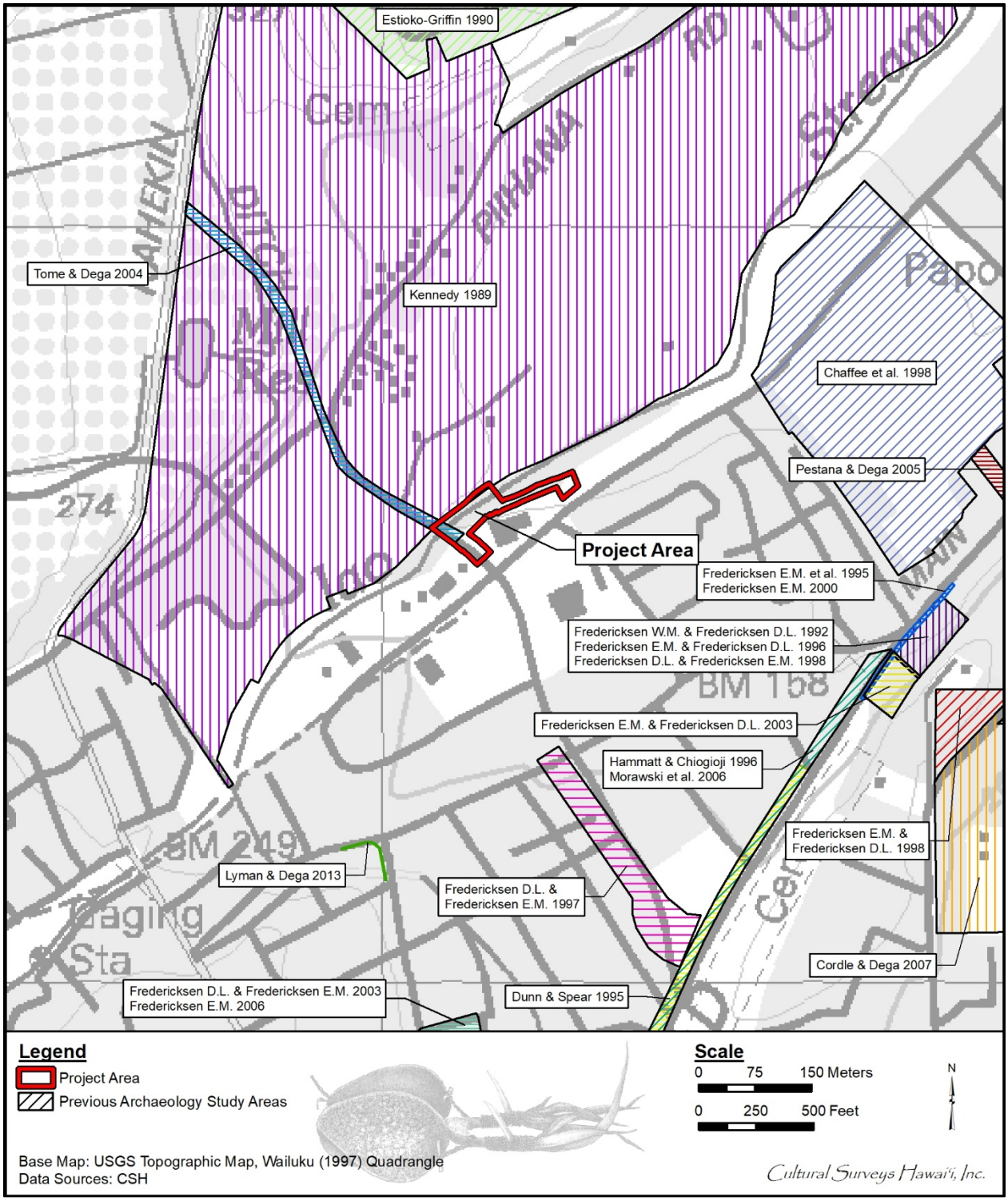

Figure 16. Portion of the 1997 Wailuku USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the project area

Table 3. Previous archaeological studies in the vicinity of the project area

Reference	Type of Study	Location	Results (SIHP # 50-50-04-####)
Kennedy 1989	Reconnaissance survey	Wailuku Project District #3 and Pihana District #2 (TMKs: [2] 3-3-multiple plats, and 3-4-multiple plats)	Recorded three historic properties: SIHP # -2985 (ACH-PH-1), a small rock mound; SIHP # -2986 (ACH-PH-2), a Chinese grave marker; and SIHP # -2987 (ACH-PH-3), a terrace complex; also noted ACH-PH-4, Mahalani Cemetery (no SIHP # assigned)
Estioko-Griffin 1990	Field Inspection	Waiehu Development Increment C (TMK: [2] 3-3-001:010 por.)	Identified at least one exposed in situ human burial site, human cranial fragments scattered faunal skeletal remains, and a concrete tombstone with Chinese characters
W.M. Fredericksen and D.L.Fredericksen 1992	Archaeological survey (surface only)	Lower Main St at intersection with Mill St (76 Station) (TMK: [2] 3-4-039:082)	No historic properties identified
E.M Fredericksen et al. 1995	Archaeological inventory survey	Easement along Lower Main St and intersection with Mill St (TMKs: [2] 3-4-039:081–083)	Documented surface remnants of SIHP # -3112, Kahului Railroad bed and identified SIHP # -4127, a buried habitation site with potential burial pit outline
Dunn and Spear 1995	Archaeological monitoring	Waiale Rd from Waiinu Rd to Main St overpass (TMKs: [2] 3-4-002:036; 3-4-003:019; and 3-4-010:002)	Identified three historic properties: SIHP # -4005, a previously disturbed burial; SIHP # -4067, an isolated hearth; and SIHP # -4068, a cultural layer with 16 pre-Contact burials and 21 habitation features
Hammatt and Chiogioji 1996	Archaeological field inspection	Waiale Rd and Lower Main St (TMKs: [2] 3-4-multiple plats)	No historic properties identified
E.M. Fredericksen and D.L. Fredericksen 1996	Archaeological data recovery	Lower Main St at intersection with Mill St (76 Station) (TMKs: [2] 3-4-039:081, and 082)	Investigated SIHP # -4127, buried habitation site, encountered an immature monk seal (*Monachus schaunislandi*) burial and 33 additional component features

Reference	Type of Study	Location	Results (SIHP # 50-50-04-####)
D.L. Fredericksen and E.M. Fredericksen 1997	Archaeological inventory survey	Mahalani Street Extension (TMKs: 3-8-046: por. 001, 002, 003, 004, 017, 018, 030, and 032; 3-8-007 por. 121)	No historic properties identified
D.L. Fredericksen and E.M. Fredericksen 1998a	Archaeological inventory survey	Intersection of Lower Main St and Mill St (TMK: [2] 3-4-039:082)	Documented continuation of SIHP # -4127, buried habitation layer; identified SIHP # -4414, burial of two individuals within a test pit
E.M. Fredericksen and D.L. Fredericksen 1998	Archaeological inventory survey	150 Lunalilo St (TMK: [2] 3-8-007:047)	Identified SIHP # -4418, buried habitation layer containing pits, hearths, refuse pit, possible posthole, and traditional materials including worked human bone
Chaffee et al. 1998	Archaeological inventory survey	Wailuku Parkside Property (TMKs: [2] 3-4-030:019, 020 por., and 023 por.)	No historic properties identified
E.M. Fredericksen 2000	Inadvertent discovery	Easement on Lower Main St and Mill St	Reported an inadvertent burial, designated a component of SIHP # -4127, discovered during archaeological monitoring (no associated monitoring report available)
E.M. Fredericksen and D.L. Fredericksen 2003	Archaeological monitoring	MECO Substation, Lower Main St (TMK: [2] 3-4-039:051)	Documented continuation of SIHP # -4127, a buried habitation layer
D.L. Fredericksen and E.M. Fredericksen 2003	Archaeological inventory survey	Lokenani Hale, Wailuku Elderly Apartments (TMKs: [2] 3-4-012:045, 047, 048, 083, and 086)	Identified SIHP # -5484, former Nishiwa Bakery foundation

Reference	Type of Study	Location	Results (SIHP # 50-50-04-####)
Tome and Dega 2004	Archaeological inventory survey	TMKs: portions of [2] 3-4-020:048, 075, 888, and 3-4-032:001	No historic properties identified, Imi Kala road extension crosses historic bridge (SIHP # -5564), Spreckels Ditch (SIHP # -1508), and previously unrecorded irrigation ditch (SIHP # -5566)
Pestana and Dega 2005	Archaeological inventory survey	709 Uluhea Way (TMK: [2] 3-4-022:005)	No historic properties identified
E.M. Fredericksen 2006	Archaeological monitoring	Lokenani Hale, Wailuku Elderly Apartments (TMKs: [2] 3-4-012:045, 047, 048, 083, and 086)	Identified SIHP # -5763, buried road bed/cobble road base underlying Loke and Nani streets within off-site sewer and water line excavations
Morawski et al. 2006	Archaeological monitoring	Kehalani Mauka Subdivision	Identified SIHP #s -5680, one complete in situ human burial site, -5965 and -5966, isolated and disturbed human remains, -5963, historic roadbed, and -5964, portion of historic sugarcane flume
Cordle and Dega 2007	Archaeological monitoring	Henry Perrine Baldwin High School, proposed eight-classroom building (TMK: [2] 3-8-007:004)	Henry Perrine Baldwin High School designated as SIHP # -1630 (NRHP #00000667); no additional historic properties identified
Lyman and Dega 2013	Archaeological inventory survey	Mill St and Central Ave (retaining wall) (TMKs: [2] 3-4-007:051, 067, and 147)	Identified SIHP # -7721, early twentieth century dry-stacked stone retaining wall

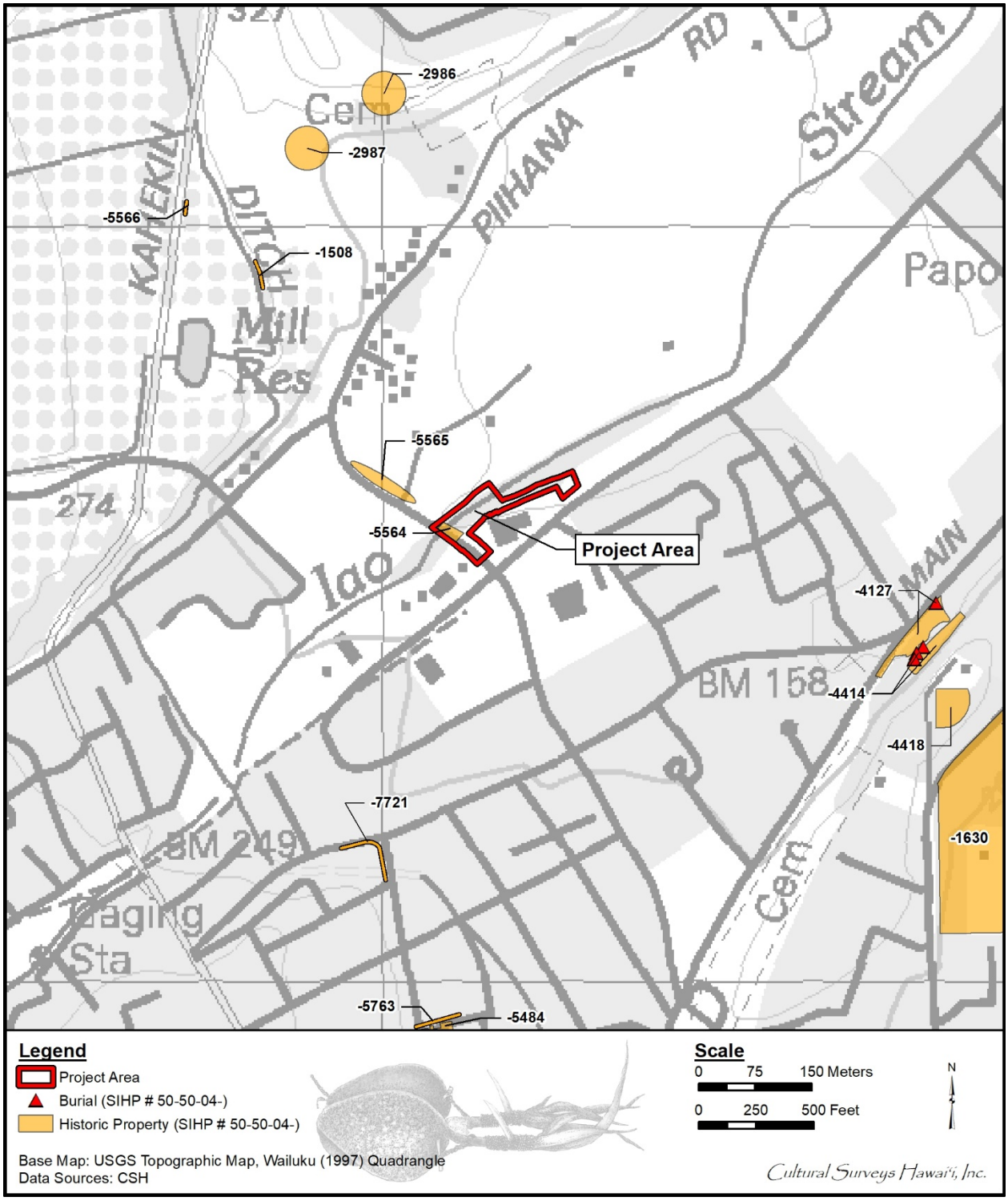

Figure 17. Portion of the 1997 Wailuku USGS 7.5-minute topographic quadrangle showing previously documented historic properties in the vicinity of the project area

5.1.3 Fredericksen and Fredericksen (1992)

In 1992, Xamanek Researches conducted a surface survey at TMK: [2] 3-4-039:082 for a proposed Texaco Service Station, the site of the current 76 Station. This parcel is directly north of the MECO Wailuku Substation #3 property; it is currently owned by Mid-Pac Petroleum and has an active 76 Gas Station business. They noted the presence of a “feature containing a concentration of water-worn stones” near the roadway (Fredericksen and Fredericksen 1992:3). The feature is a remnant from the Kahului Railroad bed, designated SIHP # -3112. Due to dense vegetation of the area, archaeological monitoring was recommended.

5.1.4 Fredericksen et al. (1995)

In June 1995, Xamanek Researches conducted an AIS for the right-of-way easement along Lower Main Street fronting the gas station parcel for a DPW project to widen the road and install traffic signals at the intersection with Mill Street (TMK: [2] 3-4-039:081–083) (Fredericksen et al. 1995). The project area was approximately 450 ft long. Remnants of the Kahului Railroad bed (SIHP # -3112) were documented on the surface, extending about 1 to 1.5 m above the ground level. Subsurface testing included seven backhoe trenches, five auger tests, and a test unit within Parcel 82. Overall, the area appeared heavily impacted by development. However, a buried habitation site (SIHP # -4127) was identified in the northern portion of the project area. SIHP # -4127 consisted of a remnant cultural layer with a possible burial pit outline, traditional artifacts, and shell midden. Archaeological data recovery was recommended.

5.1.5 Dunn and Spear (1995)

From February through April 1995, Scientific Consultant Services, Inc. (SCS) conducted archaeological monitoring for an 18-inch sewer line project along the eastern side of Waiale Road (TMKs: [2] 3-4-002:036; 3-4-003:019; 3-4-010:002) (Dunn and Spear 1995). The project extended from Waiinu Road north toward the Main Street overpass and into Lower Main Street. Three historic properties were identified along the Sand Hills area. SIHP # -4005 is a previously disturbed human burial encountered in the backfill surrounding a previous pipeline trench located south of West Ka‘ahumanu Avenue. SIHP # -4067 is an isolated hearth feature located south of Oluloa Drive. Radiocarbon dating of charcoal from the feature supported a pre-Contact time frame.

SIHP # -4068 was identified as a very fine sand cultural layer containing 16 pre-Contact burials and 21 habitation features, located north of Nakoa Drive. The habitation features were interpreted as nine pre-Contact postholes, four post-Contact postholes, three hearths, a possible burial pit and concentration of non-human remains, and three unknown features (Dunn and Spear 1995:14). Various traditional and historic artifacts also were recovered from SIHP # -4068 including basalt and volcanic glass flakes, shell scrapers, echinoid abraders, marine shell, mammal and fish bones, charcoal, and glass, ceramic, and metal fragments. Scattered human remains also were recovered during probe trenches on the southeast side of Waiale Road at the intersection with Kaohu Street.

SIHP # -4068 was identified as a very fine sand cultural layer containing 16 pre-Contact burials and 21 habitation features, located north of Nakoa Drive. The habitation features were interpreted as nine pre-Contact postholes, four post-Contact postholes, three hearths, a possible burial pit, and concentration of non-human remains, and three unknown features (Dunn and Spear 1995:14). Various traditional and historic artifacts also were recovered from SIHP # -4068 including basalt and volcanic glass flakes, shell scrapers, echinoid abraders, marine shell, mammal and fish bones,

charcoal, and glass, ceramic, and metal fragments. Scattered human remains also were recovered during probe trenches on the southeast side of Waiale Road at the intersection with Kaohu Street.

A reinterment site was established at the location of SIHP # -4068 Burial #s 1 and 8 for all the recovered remains found during the project. Three concrete caps were used to preserve the areas. Portions of some SIHP # -4608 burial features (#s 5, 9, and 12) remained in situ beyond the excavation areas. Burial #s 10 and 11 also were preserved in place.

5.1.6 Hammatt and Chiogioji (1996)

On 13 October 1996, CSH conducted an archaeological field inspection as a component study for an archaeological and historical assessment of an approximate 500-ft long corridor of the Waiale Road/Lower Main Street ROW (Hammatt and Chiogioji 1996). A surface survey conducted throughout the project area did not identify any new historic properties on the shoulder of the developed roadway comprising the project corridor. A berm was observed along the eastern extent of the project area, identified as a remnant berm servicing the now out-of-use Wailuku Sugar Company railroad line. The interpretation of the berm was confirmed by discarded rail segments lying along the base of the berm; however, the discarded rails were the only remainder of the historic era feature. Researchers recommended an archaeologist remain on site for all ground disturbing activities associated with this project due to known subsurface historic properties previously identified by Dunn and Spear (1995), for the potential to encounter human burials, and because the project was to be conducted near the historic Waiale Road Bridge.

5.1.7 Fredericksen and Fredericksen (1996)

In 1996, Xamanek Researches completed archaeological data recovery on SIHP # -4127 (Fredericksen and Fredericksen 1996). Two strata of cultural layers were identified. The upper layer, Layer 1, contained evidence of historic disturbances, as well as 18 features. The underlying Layer II contained a considerable amount of food midden, traditional artifacts, and 16 features including an intentional immature monk seal (*Monachus schaunislandi*) burial with a severely fractured skull. Radiocarbon dating of Layer II supported a late pre-Contact period (D.L. Fredericksen and E.M. Fredericksen 1998a:21).

5.1.8 D.L. Fredericksen and E.M. Fredericksen (1997)

In 1997, Xamanek Researches conducted an archaeological inventory survey for portions of the Mahalani Street Extension project in Mahalani Street Extension in Wailuku (TMKs: [2] 3-8-046: por. 001, 002, 003, 004, 017, 018, 030, and 032; 3-8-007 por. 121) (Fredericksen and Fredericksen 1997). Two phases were completed, a reconnaissance survey and a series of subsurface excavations. Eight machine excavated trenches were completed in high probability areas. No historic properties were identified. Archaeological monitoring was recommended for any ground disturbance activities in the project area due to the likelihood of encountering human remains in the vicinity.

5.1.9 D.L. Fredericksen and E.M. Fredericksen (1998a)

During the summer of 1997, Xamanek Researches conducted an AIS for the proposed Texaco Service Station project (D.L. Fredericksen and E.M. Fredericksen 1998a). Twelve backhoe trenches were excavated in the lower portion of the project area, between Lower Main Street and

the area less than 160 ft AMSL. Safety precautions restricted the use of the backhoe in the upper portion, above 160 ft AMSL. A continuation of the previously identified buried habitation site (SIHP # -4127) was remnant in nine trenches in the lower portion. SIHP # -4127 included a sand cultural layer containing historic and traditional artifacts in addition to at least seven pit features and a possible waterworn cobble pavement. Previously disturbed cultural material was observed in the other three backhoes trenches. The previous disturbance to the area primarily was caused by the dismantling of the Kahului Railroad (D.L. Fredericksen and E.M. Fredericksen 1998a:40).

The investigation in the upper portion of the project area included the monitoring of seven geotechnical test pits and the manual excavation of one test trench. A burial pit containing a minimum of two individuals was discovered during the excavation of Test Pit (TP) 5a. Individual # 1 was in a flexed position, and Individual # 2 was indicated by an articulated hand and forearm that extended into the sidewall. The burials were preserved in place. The burials were associated with a cultural layer that also contained traditional and post-Contact artifacts, charcoal, and features. The cultural layer and burial site were designated as SIHP # -4414. The authors note,

> There is no clear evidence that Sites 4127 and 4414 are contiguous. Site 4127 lies some 20 to 30 feet below Site 4414. The latter probably originates from the top of the dune to the south, while the former appears to be associated with habitation sites along the level of Lower Main Street. [D.L. Fredericksen and E.M. Fredericksen 1998a:50]

Radiocarbon dating on a basin-shaped pit feature (Feature 1.1b) sample from SIHP # -4414 yielded a conventional age of 410 +/- 100 and calibrated date ranges of AD 1325 to 1340 and AD 1390 to 1670 (two sigma, 95% probability). D.L. Fredericksen and E.M. Fredericksen (1998a:50) reported that “the two sites identified on the parcel are not one contiguous site, but rather represent [two] occupation periods separated by as much as 100 to 200 years.”

5.1.10 E.M. Fredericksen and D.L. Fredericksen (1998)

Between July and September 1997, Xamanek Researches conducted an AIS of a 1.679-acre parcel for the Na Leo Pulama O Maui Immersion Preschool and Family Language Resource Center (TMK: [2] 3-8-007:047), located adjacent to the northwest corner of the Henry Perrine Baldwin High School property, at 150 Lunalilo Street. The parcel is within the Wailuku Sand Hills and the Pu‘uone sand dune complex. Subsurface testing revealed a relatively undisturbed historic property identified as a traditional habitation layer and designated as SIHP # -4418. The buried cultural layer extended over approximately 2,000 sq m (0.49 acres) in the northwestern portion of the parcel and was encountered between 10 and 30 cmbs. Cultural materials also had been exposed on the surface in the area. Nine features were identified, consisting of five basin-shaped pits, two hearths, a refuse pit, and a possible posthole (E.M. Fredericksen and D.L. Fredericksen 1998:42). The traditional materials included worked human bone, various coral, shell, urchin, bone, and stone tools, faunal and marine remains, charcoal, fire-cracked rock, and waterworn pebbles. SIHP # -4418 was interpreted as dating between the sixteenth and seventeenth centuries based on radiocarbon analysis results (E.M. Fredericksen and D.L. Fredericksen 1998). Intact sand dune deposits were present over the entirety of the project area.

5.1.11 Chaffee et al. (1998)

In January 1998, SCS conducted an AIS for the proposed Wailuku Parkside property (TMK: [2] 3-4-030:019, 020 por., 023 por.). The investigation included 40 backhoe trenches throughout the 24.64-acre project area. No significant cultural deposits or features were encountered. The area appeared “heavily impacted by prior mechanical development of the soil” including sugarcane cultivation and grubbing activities (Chaffee et al. 1998:i, 16). Overall, the stratigraphy consisted of various fill material overlying decomposing bedrock or an old riverbed deposit near the ‘Īao Stream.

5.1.12 Fredericksen (2000)

In October 1997, Xamanek Researches conducted a mitigation project in the easement along Lower Main Street, fronting the gas station parcel. Notably, at this time, CSH has been unable to obtain a copy of the mitigation report by E.M. Fredericksen and D.L. Fredericksen (1998b). According to E.M. Fredericksen and D.L. Fredericksen (2003), a human burial was discovered at 75 cmbs. The burial is a component of the SIHP # -4127, habitation area. The burial was preserved in place and the proposed electrical conduit was rerouted. According to D.L. Fredericksen and E.M. Fredericksen (1998b:4–5), Xamanek Researches conducted archaeological monitoring for the easement project in late 1997 to January 1998 for an electrical conduit trench and installation of two man-hole boxes. They report an in situ burial was found and preserved in place, and disarticulated human remains were to be reinterred at a later date. It was also noted that the report of findings for the monitoring project was pending. It is not clear whether the burial is the same as the one discussed for the mitigation project.

5.1.13 E.M. Fredericksen and D.L. Fredericksen (2003)

Between October and November 2002, Xamanek Researches conducted archaeological monitoring for a proposed MECO Substation in TMK: [2] 3-4-039:051 (E.M. Fredericksen and D.L. Fredericksen 2003). It was noted that five marked post-Contact graves were present in the parcel. Ground disturbance included the removal of a portion of the sand dune behind the substation, a retaining wall, and a conduit trench to Lower Main Street. The excavation areas were around the outside of the current substation, on the eastern and southwestern side and along the Lower Main Street shoulder. Overall, fill material was present in the upper 30 to 50 cm of the excavations and was overlying natural dune sand. A continuation of a previously identified buried habitation site (SIHP # -4127) was encountered during excavations for the retaining wall and for the conduit trench that extended in between the substation and a manhole box near the Lower Main Street easement. The cultural layer contained considerable traditional artifacts, marine midden, fish and mammal remains, charcoal, and burnt *kukui* nut shells. As described above, SIHP # -4127 was initially documented by Fredericksen et al. (1995) during an AIS of the ROW along the adjacent gas station parcel. The site was subsequently documented by Fredericksen and Fredericksen (1996) during an archaeological data recovery and by D.L. Fredericksen and E.M. Fredericksen (1998a) during an AIS of the gas station parcel. E.M. Fredericksen and D.L. Fredericksen (2003:3) stated it was likely that SIHP # -4127 continued within the MECO property. Archaeological monitoring was recommended for any future groundwork.

5.1.14 D. L. Fredericksen and E. M. Fredericksen (2003)

In 2003, Xamanek Researches completed an archaeological inventory survey for the proposed Lokenani Gardens Wailuku Elderly Housing project in Wailuku (D.L. Fredericksen and E.M. Fredericksen 2003). The survey identified SIHP # -5484, the foundation of the former Nishiwa Bakery that was built in 1950 and demolished in the 1980s. Archaeological monitoring was recommended for the project in consultation with the SHPD.

5.1.15 Tome and Dega (2004)

In 2004, SCS conducted an archaeological inventory survey for the proposed Imi Kala Street and Neki Place Extension Routes (Tome and Dega 2004). The study identified a historic single-stacked rock wall within the Neki Extension. In the Imi Kala Road extension, three historic properties were identified that include the Imi Kala Bridge (SIHP # 50-50-04-5564), Spreckels Ditch (SIHP # 50-50-07-1508), and a previously unrecorded irrigation ditch (SIHP # 50-50-04-5566).

5.1.16 Pestana and Dega (2005)

In July 2005, SCS completed an AIS (lack of finds recorded as an archaeological assessment) of 0.45-acre lot at 709 Uluhea Way (TMK: [2] 3-4-022:005), off Lower Main Street (Pestana and Dega 2005). The investigation included nine backhoe trenches. No significant cultural deposits or features were encountered. Overall the stratigraphy consisted of various fill material overlying “an extremely densely-bedded cobble and boulder layer” (Pestana and Dega 2005:12). Based on the cultural sensitivity of the Lower Main Street area, archaeological monitoring was recommended for any future groundwork.

5.1.17 Fredericksen (2006)

Following the 2003 archaeological inventory survey for the Lokenani Gardens Wailuku Elderly Housing project, in 2006, Xamanek Researches completed archaeological monitoring for the same project area (Fredericksen 2006). Archaeological monitoring documented SIHP # -5763, a buried road bed/cobble road base underlying Loke and Nani streets within off-site sewer and water line excavations for the project.

5.1.18 Morawski et al. (2006)

Between December 2003 and July 2005, SCS and Archaeological Services Hawaii (ASH), conducted archaeological monitoring at the proposed Kehalani Mauka Subdivision in Wailuku and Waikapu Ahupua‘a (TMK: [2] 3-5-002:001 por. and 3-5-001:017 por.) (Morawski et al. 2006). Five historic properties were identified including SIHP #s -5680, one complete in situ human burial site, -5965 and -5966, isolated and disturbed human remains, -5963, a historic roadbed, and -5964, a portion of a historic sugarcane flume. Future archaeological monitoring was recommended for any ground disturbance in the Kehalani Mauka Subdivision area.

5.1.19 Cordle and Dega (2007)

Between May 2004 and August 2005, SCS conducted archaeological monitoring for the Henry Perrine Baldwin High School for a proposed Eight Classroom Building (Cordle and Dega 2007). It was noted that the excavation documentation for this project had been lost and was not available

for the report of findings. However, reportedly the ground disturbances associated with the new building were relatively shallow (<100 cmbs) and no significant cultural materials or deposits were observed. No natural sand deposits were reported. It was noted that the dune sand likely had been removed from the area previously (Cordle and Dega 2007:10).

5.1.20 Lyman and Dega (2013)

In 2013, SCS completed an AIS for the Mill Street and Central Avenue Retaining Wall project (Lyman and Dega 2013). During the survey, SIHP # -7721, a dry-stacked stone retaining wall, was documented extending along the western edge of Central Avenue north to the intersection of Mill Street, then continuing approximately 5 m along the southern edge of Mill Street. SIHP # -7721 was assessed as significant pursuant to HAR §13-275-6, Criterion d (information content). Lyman and Dega (2013:18) recommended no further work for this historic property. Following the completion of the survey, the Central Avenue portion of SIHP # -7721 was reconstructed as a modern wall. The Mill Street portion of SIHP # -7721 remains intact and consists of a cut and faced basalt stone and mortar retaining wall abutting the modern concrete sidewalk.

Section 6 Community Consultation

6.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with 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 Wailuku. CSH initiated its outreach effort in December 2020 through letters, emails, and/or telephone calls. CSH completed the community consultation in March 2021.

6.2 Community Contact Letter

Letters (Figure 18 and Figure 19) along with a map, an aerial photograph, and floor plans of the project were mailed with the following text:

> At the request of R.M. Towill Corporation on behalf of the County of Maui, Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua‘a, Wailuku District, Maui Island, TMK: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por. The project area is depicted on a portion of the 2013 Wailuku U.S. Geological Survey (USGS) topographic quadrangle map and and a 2018 aerial photograph.
>
> **Proposed Project**
>
> The project is located along Wailuku River, downstream of the Imi Kala Bridge in Wailuku, Maui. The proposed project will include repair to the banks of the stream in the vicinity of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity areas. The repair will include the installation of concrete boulder fill (CBF) at the toe of the slope. The design of the repairs to the slope is assumed to consist of removal of the existing CBF and replacement with the new CBF, excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth, and increasing the size of the boulders to withstand the stream velocity during the 100-year recurrence interval storm event.
>
> **Purpose of the CIA**
>
> The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* (assistance) and guidance regarding the following aspects of our study:

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

1860 Main Street Wailuku, Hawai'i 96793 Ph: (808) 242-9882
P.O. Box 1114 Kailua, Hawai'i 96734 Ph: (808) 262-9972 Fax: (808) 262-4950

Job code: WALUKU 75 kkaapana@culturalsurveys.com www.culturalsurveys.com

December 2020

Aloha,

At the request of R.M. Towill Corporation on behalf of the County of Maui, Cultural Surveys Hawai'i, Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua'a, Wailuku District, Maui Island, TMK: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por. The project area is depicted on a portion of the 2013 Wailuku U.S. Geological Survey (USGS) topographic quadrangle map (Figure **1**) and a 2018 aerial photograph (Figure **2**).

Proposed Project

The project is located along Wailuku River, downstream of the Imi Kala Bridge in Wailuku, Maui. The proposed project will include repair to the banks of the stream in the vicinity of Imi Kala Bridge and the project area will include construction site access, mobilization, and construction activity areas. The repair will include the installation of concrete boulder fill (CBF) at the toe of the slope. The design of the repairs to the slope is assumed to consist of removal of the existing CBF and replacement with the new CBF, excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth, and increasing the size of the boulders to withstand the stream velocity during the 100-year recurrence interval storm event.

Purpose of the CIA

The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* (assistance) and guidance regarding the following aspects of our study:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites—for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kama'āina* (Native-born) who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua'a* (traditional land division extending from the mountains to the sea) lands.**

Figure 18. Community consultation letter, page 1

WAILUKU 75 – CIA for the Iao Stream Levee 27 Repair Project

Page 2

- **Any other cultural concerns the community might have related to Hawaiian or other ethnic cultural practices within or in the vicinity of the project area.**

If you contribute to this effort and with your permission, we would like to use your name in the report to give you proper credit.

Due to the current situation with COVID-19, CSH has temporarily halted in-person consultation as a necessary precaution. We are available to speak with you over the phone, by video chat, or you may also submit a written statement regarding the project, project area, and/or your knowledge of the area. If you prefer to submit a written statement, CSH is able to provide a questionnaire that you may use as a guideline or you may answer the questionnaire directly. Please choose what is convenient for you, though the questionnaire is not necessary. A pre-stamped envelope will be provided to send your statement back to us.

With respect to social-distancing, we are working primarily from home and are available at any time through email. If you would prefer to meet in-person, we can schedule a date to meet with you while still following the safety guidelines. Your patience, understanding, and cooperation is greatly appreciated, and we pray for the safety of you and your loved ones.

If you are interested in participating in this study, please contact Kamuela Kaapana by email at kkaapana@culturalsurveys.com or by phone at (808) 262-9972.

Mahalo nui loa,

Kamuela Kaapana
Cultural Researcher

Figure 19. Community consultation letter, page 2

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites—for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kama‘āina* (Native-born) who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua’a* (traditional land division extending from the mountains to the sea) lands.**
- **Any other cultural concerns the community might have related to Hawaiian or other ethnic cultural practices within or in the vicinity of the project area.**

If you contribute to this effort and with your permission, we would like to use your name in the report to give you proper credit.

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With respect to social-distancing, we are working primarily from home and are available at any time through email. If you would prefer to meet in-person, we can schedule a date to meet with you while still following the safety guidelines. Your patience, understanding, and cooperation is greatly appreciated, and we pray for the safety of you and your loved ones.

If you are interested in participating in this study, please contact Kamuela Kaapana by email at kkaapana@culturalsurveys.com or by phone at (808) 262-9972.

In most cases, two or three attempts were made to contact individuals, organizations, and agencies. Community outreach letters were sent to 57 individuals or groups, 11 responded, and three of these *kama‘āina* and/or *kūpuna* met with CSH for more in-depth interviews.

6.3 Community Contact Table

Table 4contains the names, affiliations, dates of contact, and comments from NHOs, individuals, organizations, and agencies that participated in the consultation process. Results are presented below in alphabetical order.

Table 4. Community contact table

Name	Affiliation	Comments
Ampong, Foster	Kama‘āina	Emailed on 22 December 2020 Mr. Ampong relied on 23 December 2020 *Mahalo,* *Will look this over and get back to you* CSH replied on 23 December 2020 *Aloha mai e Foster,* *Mahalo nui for getting back to me. If you have any questions, please do not hesitate to contact me.* *Hope you have a safe, healthy, and happy holidays!* CSH followed-up with Mr. Ampong on 9 February 2021 *I just wanted to follow up with you and see if you are interested in participating in a talk story session for the cultural impact assessment (CIA) for the proposed Iao Stream Levee 27 Repair Project in Wailuku Ahupua‘a.* *Attached you will find the consultation letter which will include information about the potential project as well as figures indicating the project location.* *If you would like to talk story or have any questions, please feel free to let me know.* Mr. Ampong replied on 10 February 2021 *Mahalo for your follow up.* *Yes. Maybe we can Zoom. I am free today, if this works for you.* CSH interviewed Mr. Ampong on 10 February 2021
Fisher, Scott	Chief Conservation Officer, Hawaiian Islands Land Trust (HILT)	Mailed letter on 21 December 2020 Emailed on 22 December 2020 Mr. Fisher replied on 22 December 2020 *Aloha Kamuela,* *I am happy to help in any way that I can; please let me know a good day and time to meet.* *Mahalo* *Scott* CSH replied to Mr. Fisher on 23 December 2020 *Mahalo nui for getting back to me and expressing interest in meeting.* *Due to COVID-19 and for the safety of all parties and their families, we are unable to meet in-person. So we can either do 1) phone interview or 2) video-*

Name	Affiliation	Comments
		conference via ZOOM. Please let me know which day will work for you. *As for a date and time, I am pretty free next week, between Monday-Wednesday. Usually mid-morning to early afternoon works best for me. Should we say Tuesday, 12/29 at 11am? If this doesn't work for you, give some some days and times and we can decided on one that works best for both of us.* *Also, attached is CSH Authorization and Release Form. Please review and sign. If you have any questions, please feel free to let me know.* *Looking forward to hearing from you.* Mr. Fisher replied to CSH on 24 December 2020 *Aloha Kamuela,* *No problem regarding the zoom/phone meeting; if at all possible, could we do a zoom meeting? The best time for me is Monday around 2:00 PM. Let me know if that works for you. I am not at my office at the moment so I don't have access to a printer/scanner, but I will send you the release form on Monday before our meeting, when I am at my office. I look forward to it.* CSH interviewed Mr. Fisher on 28 December 2020 via Zoom
Hau, Skippy	*Kama‘āina*; Aquatic Biologist, DLNR Division of Aquatic Resources	Mailed letter on 21 December 2020 Emailed on 22 December 2020 Mr. Hau replied on 26 December 2020 *The name that comes to mind would be Duke Sevilla. The other person would be Hokuao Pellegrino with Hui O Na Wai Eha (President) who took over from John Duey who has retired. I'm sure both would be willing to be interviewed.* *I regret that Diannah Goo just passed this year.* *I just finished my research on hihiwai and documentation of native stream animals in Wailuku (‘Iao) Stream. In my discussions with kupuna they remembered gathering and harvesting opae, ‘o'opu, and hihiwai in the past. I am trying to finish two manuscripts and hope to retire in the next year.* *While there is a lot of homeless, I am not clear on the amount of gathering taking place. I remember talking with folks who would hike into the valley to gather opae.*

Name	Affiliation	Comments
		I know that Filipino folks will build rock walls and collect ‘o’opu nakea to eat after heavy storms. I remember talking with Mr. Froggy Wakamatsu and his stories when he was growing up to catch ‘o’opu and make money to go to the movies. (Wakamatsu Fish Market). *Sorry many are no longer around. I’m glad I got to talk story with them.* *I’m back at work on January 6th.* CSH replied to Mr. Hau on 28 December 2020 *Mahalo nui for sharing some information with me about the stream . It is sad to hear that many of these kupuna have passed but hopefully their knowledge will be passed down for generations to come.* *If you are interested in talking more, please let me know what days and times work best with you and we can work something out. I am pretty free in January.* *I hope you and your ohana are all well. Happy New Years!* Mr. Hau replied to CSH on 28 December 2020 *Except for a few meetings, my January schedule is clear.* *Will you be visiting Maui?* *If you’d like, you can come with us when we do our hihiwai survey in Wailuku stream.* CSH replied to Mr. Hau on 30 December 2020 *Unfortunately, I am unable to visit Maui. I am on Oahu. Due to the coronavirus, we are limiting travel to the other islands. But I would definitely like to learn more about your work on hihiwai. I hope they are thriving well.* CSH interviewed Mr. Hau on 25 January 2021

6.4 *Kama‘āina* Interviews

The authors and researchers of this report extend our deep appreciation to everyone who took the time to speak and share their *mana‘o* and *‘ike* 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.

6.4.1 Dr. Scott Fisher

On 28 December 2020 CSH met with Dr. Scott Fisher to discuss the proposed Iao Stream Levee 27 Repair project. Due to Covid-19 restrictions, in-person meetings were suspended for the health and safety of all parties. The interview was conducted via Zoom, a video conference application. Dr. Fisher is the Chief Conservation Officer for the Hawaiian Islands Land Trust (HILT), a 501 (c) (3) land conservancy organization, which formed when four island-based land trusts—Hawai‘i Island Land Trust, Maui Coastal Land Trust, O‘ahu Land Trust, and Kaua‘i Public Land Trust—merged in 2011. Combined, HILT has "protected over 18,000 acres of Hawaii's most precious lands and natural resources for Ka‘ū on Hawaii Island to Hanalei, Kauai" (Hawaiian Islands Land Trust n.d.)

> HILT takes a uniquely Hawaiian and holistic approach to land conservation. We conserve lands that enable Hawai‘i's long-term well-being, lands with *scenic views, agricultural resources, wildlife habitats, water resource areas, cultural and historical values, and outdoor recreation opportunities.* We seek to complement the stewardship others are providing for mountaintop watersheds by concentrating largely on needs and opportunities for coastal and agricultural lands. [Hawaiian Islands Land Trust n.d.]

Dr. Fisher is also an active member of the Maui-Lana‘i Island Burial Council and is passionate about conservation and the cultural history of the lands of Maui. Dr. Fisher shared about Nā Wai ‘Ehā, the Four Waters of Maui, which refer to the prominent rivers in four different *ahupua‘a*. Nā Wai ‘Ehā consists of Waikapū, Wailuku, Waiehu, and Waihe‘e. The waters that flow in Nā Wai ‘Ehā come from Mauna Kahālāwai, which Dr. Fisher estimated to be around 1.5 million years old. *Ma uka* of Wailuku River is ‘Īao Valley. The highest point of ‘Īao is known as Kūkaemoku. Dr. Fisher also estimated that ‘Īao is similar in age to Mauna Kahālāwai.

Dr. Fisher shared that along the rivers were many *lo‘i kalo* and evidence of cultivation. One prominent feature is *loko kalo i‘a* or *loko i‘a kalo*. He continued, saying that *loko kalo i‘a* were popular due to their purpose and function.

> Hawaiians built loko i‘a kalo (taro fishponds) in the mountains next to streams. Stream water flowed through an ‘auwai (ditch) into the lo‘i (taro patches). From the taro patches the water flowed into deeper ponds. These deep ponds were used to to raise fish and taro. Taro was planted in mounds of soil. Fish swam around these mounds to find food. The dish are insects, algae, and plants that fell into the ponds. Small mākāhā (grates) kept the larger fish from escaping into the stream. The maka‘āinana (common people) harvested fish from these ponds for food. [Pacific American Foundation 2003:12]

Although Wailuku is the only *ahupua‘a* out of Nā Wai ‘Ehā that did not show any evidence of *loko kalo i‘a*, Dr. Fisher explained that this could mean the *loko kalo i‘a* have been lost and/or not documented.

The evidence of *lo‘i kalo* and *loko kalo i‘a* provide proof of high density of inhabitants within the area of Wailuku. Dr. Fisher mentioned that Wailuku was known to be the residence of many *ali‘i*. Even the *hale noho* of Kahekili, the *ali‘i nui* of Maui, was constructed in Wailuku.

Dr. Fisher mentioned the battle of Kepaniwai. This battle was one of the many battles that took place on Maui, however, the Battle of Kepaniwai is known as the battle in which Kamehameha I conquered Maui. At the time of Kamehameha's arrival on Maui, Kahekili was on O‘ahu and his son, Kalanikūpule was on Maui. Kamehameha and his fleet of warriors landed by Kahului Harbor and along the coastline. Dr. Fisher mentiond that the canoes went out as far as Kapoho in Waihe‘e. One of the key components that led Kamehameha to victory was the help of Issac Davis and John Young and the use of their canons. Dr. Fisher mentioned that the canons, named Lopaka and Kalola, were used by Davis and Young. These two men were "trained canonneers" and knew how to effectively employ the canons which caused major damage. Eventually, the battle ended and Kamehameha took control over Maui. Dr. Fisher suggested CSH look into the writings of Fornander and Kamakau to learn more about this battle.

Along with the high density of *lo‘i kalo* and *kānaka*, *heiau* were also prominent within the Wailuku area. Two *heiau* that Dr. Fisher mentioned were Pihanakalani Heiau and Haleki‘i Heiau. Both of these were considered *luakini heiau*, *heiau* dedicated for human sacrifice.

Dr. Fisher had heard another name/pronunciation of Pīhanakalani Heiau, Pi‘ihanakalani Heiau. The difference is the term "*pi*" and "*pi‘i*." There is a possibility that the term "*pi‘i*" was used as one of the former *ali‘i* of Maui was named Pi‘ilani. Dr. Fisher also shared that the last human sacrifice made on Pihana Heiau was a *wahine* named Kapohoahilani. Even though she was selected to be sacrificed, she still had an option to refuse. However, she volunteered herself and was killed at Pihana Heiau.

As for Haleki‘i Heiau, it was for Lonoapi‘ilani, the son of Pi‘ilani. Dr. Fisher recommended CSH review the *mo‘olelo* of Lonoapi‘ilani and his brother Kihapi‘ilani as interpreted by Kamakau. Dr. Fisher shared that many *iwi kūpuna* could be found around Haleki‘i Heiau, which supports the notion that Haleki‘i Heiau functioned as a *luakini*. In more recent years, the site of Haleki‘i Heiau is used to honor the time of Makahiki (an ancient festival beginning about the middle of October and lasting about four months, with sports and religious activities and taboo on war) and to observe the rising of Makali‘i (Pleiades or "Seven Sisters").

Dr. Fisher mentioned a trail that went from ‘Īao to Olowalu. He shared that this trail was *kapu* to *maka‘āinana* and was eventually closed off due to natural events. However, around 1941-1942 the trail was reopened to aid the military following the attack on Pearl Harbor.

In regards to the project and the surrounding vicinity, Dr. Fisher said there is potential for finding various types of artifacts and bones. Of utmost importance is *iwi kūpuna*. It has been documented that many people have lived and/or practiced cultivation along the river, which can lead to the potential disturbance of *iwi kūpuna*. Dr. Fisher added that Maui consisted of many sand dunes. Sand was an excellent place to bury *iwi kūpuna* as it helped preserve the bones. Animal bones as well as other artifacts could also be disturbed. Dr. Fisher recalled that the bones of a

flightless Ibis (a type of bird) were discovered by Tasty Crust, a restaurant in Wailuku located a block or so from the project site. He also added that other artifacts were discovered by the project area, such as *ulu maika*, *pōhaku ku‘i kalo*, and even bullets (post-Contact, possibly from World War II). As for Wailuku River, Dr. Fisher remarked that many residents are continuing to utilize the stream for cultural and gathering practices. *‘O‘opu*, *hihiwai*, and other freshwater life are still gathered.

Lastly, Dr. Fisher stated that Wailuku has a vast and rich history. Along with his previous recommendations to CSH, Dr. Fisher also suggested a few other community members to contact.

6.4.2 Mr. Skippy Hau

On 25 January 2021, CSH met with Mr. Skippy Hau to discuss the proposed Iao Stream Levee 27 Repair project. Due to COVID-19 restrictions, in-person consultations were suspended to ensure the health and safety of all parties. The interview was conducted via telephone.

Originally born and raised in Kāne‘ohe, O‘ahu, Mr. Hau moved to Maui in 1985 and has been living on Maui ever since. He works as an Aquatic Biologist with the State of Hawai‘i Department of Land and Natural Resources. Mr. Hau shared the following:

> One of the biggest pleasures in working as a biologist has been to meet and ‘talk story’ with people. I get to hear what other people do and listen to their observations. We get to visit places most people do not get to visit and sometimes we discover unidentified organisms and confirm the establishment of introduced plants and animals. [Hawaii Biological Survey, Bishop Museum 2010]

When Mr. Hau first moved to Maui, he was tasked with excavating an olive ridley turtle nest in Pā‘ia. This would lead him into a lifelong career in working with various aquatic life in many of the streams throughout Maui and other Hawaiian Islands. Known as Uncle Skippy, Mr. Hau’s passion for aquatic life, the protection of their habitats, and talking story with *kūpuna* and *kama‘āina* of Maui has inspired many to pursue similar efforts. A scholarship through Hui O Nā Wai ‘Ehā was named after Mr. Hau in honor of his work and dedication to stream and water resource advocacy describing him as “[…] someone who truly lives and breathes aloha ‘āina. We appreciate all that he has done and continues to for Maui‘s natural and cultural resources” (Hui o Nā Wai ‘Ehā, n.d

Mr. Hau spoke about the ongoing water rights issues that have plagued Maui residents for generations. There are many complex parts in regard to the parameters of exactly who has the rights to control the water. The water is currently controlled and managed by the Wailuku Water Company, which was formerly known as the Wailuku Sugar Company. One of the issues is the return of water to Wailuku River. Case Number CCH-MA-15-01 states the following:

> The flow that is reflective of typical flow conditions is the Q_{50} or the flow equal to or exceeded 50% of the time. Subtracting the current IIFS provides an estimate of water available for noninstream uses at least 50 percent of the time.

	Q_{50}	2010/2014 IIFS	Remainder
Wailuku River	25 mgd (FOF 74.)	10 mgd	15 mgd

> [Commission on Water Resource Management 2017:300]

According to the table above, the average typical flow of Wailuku River is 25 mgd (millon gallons per day). The 2010/2016 IIFS (Interim Instream Flow Standards) mandated a release of 10 mgd which resulted in a remainder of 15 mgd of water.

> A new IIFS for Wailuku River was set at 10 mgd, just below the diversion operated by WWC [Wailuku Water Company] above the ‘Īao-Waikapū and the ‘Īao-Maniania Ditches, provided that 1) when average flow for any day falls below 10 mgd, 3.4. mgd may continue to be diverted to accommodate MDW’s 3.2 mgd for this water treatment plant and 0.2 mgd for kuleana users served exclusively by the ‘Īao-Waikapū Ditch; and 2) an IIFS of 5 mgd was established at or near the mouth […] [CCH-Ma-15-01 2017:6]

The return and flow of water plays a vital role in maintaining a healthy habitat as “Wailuku River has 49% of the total habitat units within Nā Wai ‘Ehā […]” (CCH-MA012-01 2017:41).

Although issues revolving around water rights are constantly and continuously evolving, in his line of work, Mr. Hau has seen some positive outcomes since the return of the water to Wailuku River. Mr. Hau noticed the population of various aquatic life has increased. Mr. Hau shared with CSH about the aquatic life that can be found in the streams throughout Nā Wai ‘Ehā and other streams of Maui.

Hīhīwai (endemic snail*, Neritinu graposa*) are one of the native species that survives and depends on the health of streams and their access to it. Mr. Hau explained that *hīhīwai* are a species of freshwater snails found within Wailuku River. When there is a consistent stream flow from *mauka* to *makai*, *hīhīwai* will migrate from the ocean into the stream. These *hīhīwai* will form a single line as they travel upstream (Figure 20 and Figure 21).

Mr. Hau shared that in order to help with the migration, he would gather *hīhīwai* closer to the mouth of Wailuku River and transfer the *hīhīwai* to Kinihāpai Stream. However, Mr. Hau expressed that there are several factors that can affect the health and safety of *hīhīwai*. Mr. Hau shared a research paper he has written on the topic of *hīhīwai*. In his study, Mr. Hau noted that “dry streambeds, concrete channels, or multiple diversions impede and prevent upstream migrations of hīhīwai beyond estuary” (Hau 2007:179).

‘O‘opu (varieties include *Eleotridae*, *Gobiidae*, and *Blennidae*) are another aquatic life commonly found in Wailuku River, however, the area of habitat for the *‘o‘opu* is dependent on its variety. For example, *‘o‘opu* that are considered *Eleotridae* or *Gobiidae* can be found in the stream, while those that are *Blennidae* can be found at the mouth, estuary, and the ocean. Mr. Hau also shared about another variety of *‘o‘opu* (*Istilbennius gibbifrons*) he has found at the stream mouth. He shared that he has also seen *hīnana* (baby *‘o‘opu*), which are clear and about one inch in length, in Wailuku River.

Mr. Hau shared that during his many surveys of the streams in Maui as well as talking with *kūpuna* and *kama‘āina* of the area, he learned *‘o‘opu* has lived in the streams and were gathered by *kama‘āina*. Mr. Hau also talked about a severe storm that hit Maui in 2016. The storm bought torrential rain to Maui which caused many streams to flood. Mr. Hau shared images of the damage that overflooding can inflict on aquatic life. Mr. Hau provided some pictures to CSH showing the aftermath of the 2016 flooding (Figure 22) as well as a link to a video by Maui Now that provides

Figure 20. Picture of *hīhīwai* in stream (courtesy of Skippy Hau)

Figure 21. Picture of *hīhīwai* in a line formation indicating migration (courtesy of Skippy Hau)

Figure 22. Picture of 2016 flooding by Imi Kala Bridge (courtesy of Skippy Hau)

aerial footage of the results of the flood. Unfortunately, some *‘o‘opu* were found dead after the flood (Figure 23).

‘Opae ‘oeha‘a (clawed shrimp, *Macrobrachium grandimanus*) are a native variety of freshwater shrimp. This type of shrimp is typically found in streams and *lo‘i kalo* and is known by a distinct feature: one claw is bigger than the other. Mr. Hau noted that since the return of water (10 million gallons per day) to Wailuku River, the population of *‘ōpae ‘oeha‘a* has increased. *Āholehole* (Hawaiian flagtail, *Kuhlia xenura or Kuhlia sandvicensis)* can be found along the stream mouth, while some *āholehole* (*Kuhlia xenura*) can also be found upstream.

Mr. Hau shared that along with water level change, other factors can affect the health of aquatic life in Wailuku River. Currently, there are a number of invasive species such as swordtails (*Xiphophorus hellerii*), guppies (*Poecilla reticulata*), and topminnows (*Poecillia* sp.). Many of these invasive species carry parasites which attach themselves to the *‘o‘opu*, and possibly other native species.

Mr. Hau did not make any specific recommendations to CSH relating to the proposed project, however, he did want to stress the importance of stream health and other water issues relating to natural and man-made disaster. He also wanted to make it clear that native stream animals successfully reproduce and migrate up Wailuku River. Along with the images in this interview summary, Mr. Hau also provided CSH with valuable research documents on *hīhīwai*, stream health, parasites found in various streams in Hawai‘i, and Maui’s water rights issues. The life of the stream is vital to the health of the aquatic life and plays an important role in food sustainability for local families.

Figure 23. Dead *‘o‘opu* that died due to 2016 flooding (courtesy of Skippy Hau)

6.4.3 Mr. Foster Ampong

On 10 February 2021 CSH met with Mr. Foster Ampong to discuss the proposed Iao Stream Levee 27 Repair project. Due to COVID-19 restrictions, in-person meetings were suspended for the health and safety of all parties. The interview was conducted via Zoom, a video conference application. Mr. Ampong is a *kama‘āina* of Maui, tracing his *mo‘okū‘auhau* (genealogy) to various *ahupua‘a* of Maui.

Regarding the proposed project, Mr. Ampong stressed the importance of knowing and being consciously aware of the history of Wailuku. The *ahupua‘a* of Wailuku is vast in *mo‘olelo* and cultural practices. He mentioned one of the most significant battles that took place in Wailuku, the Battle of Kepaniwai. The Battle of Kepaniwai was considered the turning point for Kamehameha I and his conquest to unite Maui under his rule. When Kamehameha’s army arrived on Maui, their forces pushed the warriors of Maui into ‘Īao Valley, where they continued to battle for three days. In the end, Kamehameha I was victorious.

Mr. Ampong also discussed the land of Wailuku as well and other areas such as Waihe‘e, Waiehu, and Waikapū. These land areas consisted of *pu‘u one* or sand dunes. These *pu‘u one* ran miles along the shore and inland into the valleys. He continued by stating *pu‘u one* were significant places, where Native Hawaiians would bury their family members. Mr. Ampong shared that even though the proposed project area as well as the surrounding vicinity has been largely developed, there is still the possibility of disturbing burials during construction and that workers should be cognitive and aware of the possibility of inadvertent burial finds.

Other cultural practices such as farming and gathering are still being done by families that live along Wailuku River. The water from the stream allows families to farm *kalo* as well as grow other vegetation. *Kama‘āina* of the area are also known to gather *‘o‘opu*, *‘ōpae*, and other aquatic life.

Mr. Ampong is in agreement with the proposed project as that area needs to be repaired, however, he would like to emphasize the importance of being cognitive of the history of Wailuku, especially in regard to the *pu‘u one* system and *iwi kūpuna* buried in the *pu‘u one*.

Section 7 Traditional Cultural Practices

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 3–6 in examining cultural resources and practices identified within or in proximity of the project area in the broader context of the encompassing Waiehu landscape. Excerpts from interviews are incorporated throughout this section where applicable.

7.1 Religion Practices and Burials

Dr. Foster and Mr. Ampong both shared information about the potential disturbance of *iwi kūpuna* in and around the project area. Mr. Ampong explained that Wailuku as well as other areas of Maui were made up of *pu‘u one*, or sand dunes. It was very common for *kānaka Hawai‘i* to bury their ancestors in sandy areas. Mr. Ampong noted that even through Wailuku has been developed throughout the years, there is a possibility that *iwi kūpuna* may be disturbed during construction of the project.

Dr. Foster also shared his knowledge about the Pīhana Heiau complex and its relations to burial practices. The Pihana Heiau complex was built in the time of Kakae, *mō‘ī* of Maui in the early sixteenth century. Pihana Heiau is located on the west side of Wailuku River crested upon a sand ridge across from the modern-day Wailuku Sugar Company mill. The Pihana complex consists of

a *luapa‘u*, burials, a cave, and adjacent *heiau.* Classified as a *luakini* or sacrificial *heiau*, Pihana was known to as a place where “human scarifies were performed only on the most important occasions” at this “heiau of the highest class” (Sterling 1998:77). According to Thrum (1908), Pihana Heiau was once used for sacrifices by Kamehameha I before defeating Maui forces in the Battle of Kepaniwai.

Included in the Pihana Heiau complex is Haleki‘i Heiau. Haleki‘i Heiau is similar to Pihana Heiau in its structure and purpose. Dr. Fisher shared with CSH that Haleki‘i Heiau was possibly built for Lonoapi‘ilani, who is the son of Pi‘ilani, one of the rulers of Maui. Dr. Fisher also shared that due to the nature of Haleki‘i Heiau being a *luakini,* many burials and *iwi kūpuna* could be found around the vicinity of Haleki‘i.

In more recent years, Haleki‘i Heiau has been utilized as a site to honor the beginning and ending of Makahiki. Makahiki is “a time when men, women, and chiefs rested and abstained from all work, either on the farm or elsewhere. It was a time of entire freedom of labor” (Malo 1951:141). Native Hawaiians dedicated four months of the year, usually between October—February, to the God Lonomakua (Malo 1951:143). David Malo, a Hawaiian historian, shares that an image was created in honor of Lonomakua. This image consisted of

> […] a stick of wood having a circumference of about ten inches and a length of about two fathoms. In form, it was straight and staff-like, with joints carved at intervals and resembling a horse’s leg; and it had a figure carved at its upper end.
>
> A cross piece was tied to the neck of this figure, and to this cross piece, kea, were bound pieces of the edible pala fern. […]
>
> The image was also decorated with a white tapa cloth made from wauke kakahi […] [Malo 1951, 143-144]

7.2 Subsistence and Gathering

Handy and Handy reiterate the prolific cultivation of *kalo* in Wailuku District saying that, “in ancient times [Wailuku District] was the largest continuous area of wet-taro cultivation in the islands” (Handy and Handy 1972:496). *Kalo* was perhaps the most distinguished plant within traditional Hawaiian horticulture and society.

The well-watered ‘Īao Valley also provided ample shrimp, taro, and fish but was only accessible to commoners during the season of Makahiki (James 2002:62). Makahiki is the ancient festival beginning about the middle of October and lasting for about four months incorporating sports, religious festivities, and taboo on war.

The high degree of cultivation within Wailuku Ahupua‘a and its near neighbors give evidence that a substantial population would have been established there during the pre-Contact period.

Dr. Fisher shared that along the rivers and streams of Nā Wai ‘Ehā, *loko kalo i‘a* could be found. *Loko kalo i‘a* also known as *loko i‘a kalo* are said to be ponds built by streams to raise both fish and *kalo*. Although Dr. Fisher recalled that there were no *loko kalo i‘a* along Waliluku River. This could be because of lack of documentation or that the *loko kalo i‘a* were lost or destroyed.

The health and animals of the stream play a vital role in the community. There are many forms of aquatic life in Wailuku River. Mr. Hau, an aquatic biologist and *kama‘āina* of Maui, shared his

knowledge on the various species of aquatic life that can be found in the stream, such as *‘o‘opu*, *hīhīwai*, *‘ōpae*, and others.

Hīhīwai dwell in the mouth of Wailuku River and migrate upstream, usually migrating in a straight line. Mr. Hau shared that concrete channels, multiple divisions, and dry stream beds can impede the *hīhīwai* as they migrate. *‘O‘opu*, can also be found in Wailuku River, both within the stream and at the mouth of Wailuku River. These two along with *‘ōpae* were commonly gathered by *kūpuna* and *kama‘āina*, especially those who lived along Wailuku River.

7.3 Water Rights

Freshwater access for the people of Wailuku is extremely important as it plays a role in their livelihood. At the start of the sugar plantation era, many of the sugar companies acquired large land holdings which resulted in water from the Wailuku River being diverted for sugarcane production and to help sustain crops. This action affected many *kama‘āina* who used Wailuku River as a source of gathering and agricultural practices.

To this day, waters from Wailuku as well as the other streams of Nā Wai ‘Ehā continue to be diverted. A group called Hui o Nā Wai ‘Ehā was formed in 2003 to protect the waters of the streams from further diversion. According to the group, even though the production of sugar and other agricultural production has been drastically reduced, water is still be diverted by private owners, leaving many residents without access to stream water for traditional cultural and sustainable practices.

According to Case Number CCH-MA-15-01 (2017), 10 million gallons of water per day is to be released back into Wailuku River. Since this agreement, Mr. Hau shared there has been a population increase of aquatic life.

Although an agreement has been reached regarding the return of a portion of water to Wailuku River, the water rights issues still exist and are ever evolving.

Section 8 Summary and Recommendations

8.1 Results of Background Research

Background research for this study yielded the following results, presented in approximate chronological order:

1. The project area is situated in the *ahupua‘a* of Wailuku which is located in the larger *moku* of Wailuku on the central isthmus of the island of Maui.
2. Wailuku Ahupua‘a was included in the traditional *‘okana* of Nā Wai Eha, or “The Four Streams.” This area is home to the four largest streams found on the windward coast of Maui: Waikapū, Waiehu, Wailuku, and Waihe‘e. The streams of Wailuku include the perennial Wailuku River, also known as ‘Īao Stream. Tributaries that flow into Wailuku River include Nākalaloa, Po‘onāhoahoa, Kinihāpai, and Ae streams.
3. Pihanakalani Heiau, Haleki‘i Heiau, and Kaluli Heiau are just a few of the *heiau* within the Wailuku Ahupua‘a.
4. Wailuku was the site of Kalanihale, the royal palace of the ruling chief of Maui, Kahekili.
5. An article first published in the Hawaiian newspaper *Ke Au Hou* then cited in Sterling’s *Sites of Maui* explains the Kapela Burial Cave in ‘Īao Valley. Sources say it was Maui’s noted burial place for *ali‘i*. The following *ali‘i* were said to have been put to rest at Kapela cave: Heleipawa, Aikanaka, Kahaianuia, Hema, Luanuu, Kamea, Hua, Pau, Paumakua, Haho, Palena, Hanalaaiku, Kakaalaneo, Kekaulike, Kamehameha-nui, Laka, and Kalanikuihonoikamoku (Sterling 1998:80).
6. The high degree of cultivation within Wailuku Ahupua‘ and its near neighbors gives evidence that a substantial population would have been established there during the pre-Contact period. According to Cordy, the settlement of Wailuku represented one of two (or perhaps three) population concentrations on Maui (Cordy 1981:198–199).
7. The 1790 invasion of Maui by Kamehameha of Hawai‘i Island is memorialized in many place names within Wailuku. The Battle of ‘Īao is also known as the Battle of Kepaniwai. This battle is said to have been one of the most bitter battles fought by Kamehameha I in his bid to control the Hawaiian Islands.
8. Although almost 300 individual parcels were awarded by the Land Commission for Kuleana Lands within the *ahupua‘a* of Wailuku, these claims represented lands which were located in the upland portion of the *ahupua‘a*. Nine of these claims lie within the vicinity of the project area.
9. In 1872, the Wailuku Sugar Company was established. By 1925, Wailuku Sugar Company had taken control of other smaller sugar mills throughout Maui. During the sugar plantation era, water diversion ditches were established to transport water from streams and rivers to the sugar plantation fields.
10. Water diversion and water rights have been a serious issue between cultural practitioners and *kama‘āina* of Wailuku and the Wailuku Water Company, which controls the water flow/access.

8.2 Results of Community Consultations

CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants in order to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 57 individuals or groups; 11 responded and three of these *kama‘āina* and/or *kūpuna* met with CSH for more in-depth interview. Consultation was received from community members as follows:

1. Dr. Scott Fisher, *kama‘āina*, Chief Conservation Officer, Hawaiian Islands Land Trust
2. Skippy Hau*, kama‘āina*, Aquatic Biologist, Department of Land and Natural Resources.
3. Foster Ampong, *kama‘āina*

8.3 Identification of Cultural Practices

Community consultation conducted as part of this CIA has identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Wailuku Ahupua‘a:

1. Gathering of various stream life such as *hīhīwai*, *‘o‘opu*, and *‘ōpae*
2. Use of water from Wailuku River for sustainable practices, such as individual/family *lo‘i* and other types of agricultural farming

8.4 Identification of Impacts to Cultural Practices

No impacts to ongoing cultural practices were identified within the project area during community consultation for this CIA.

8.5 Impacts and Recommendations

Based on the results of community consultation and CSH’s expertise in conducting cultural impact assessments, the following actions are recommended to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups:

1. Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the 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 construction, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.
3. Mr. Ampong stressed the importance that workers on the project should be cognitive of the history of Wailuku. Wailuku consisted of a *pu‘u one* system and it was a customary practice

for Native Hawaiians to bury their loved ones in these areas. Even through the land area is predominately developed, there is still a potential of disturbing *iwi kūpuna*.

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Appendix D

Pre-Assessment Consultation Letters for Hawai‘i Revised Statutes, Chapter 343.

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
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May 27, 2021

Dr. Alan Downer
Administrator, Deputy State Historic Preservation Officer (SHPO)
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room.555
Kapolei, HI 96707

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Dr. Downer:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

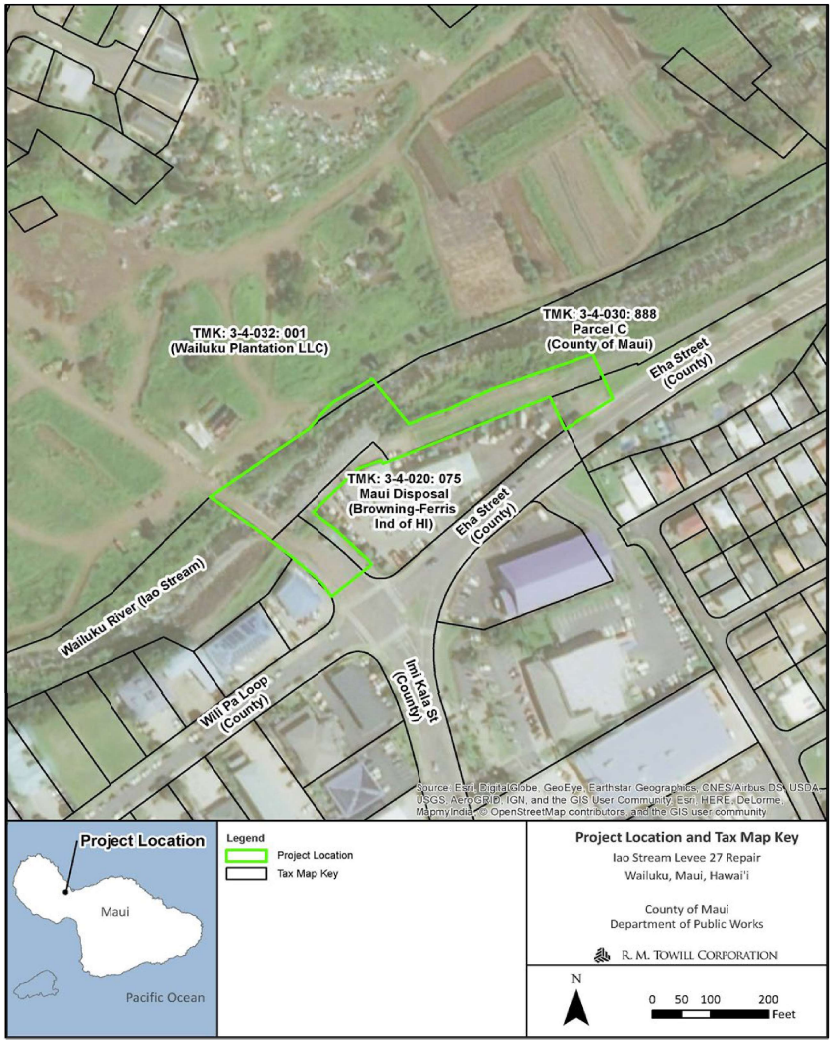
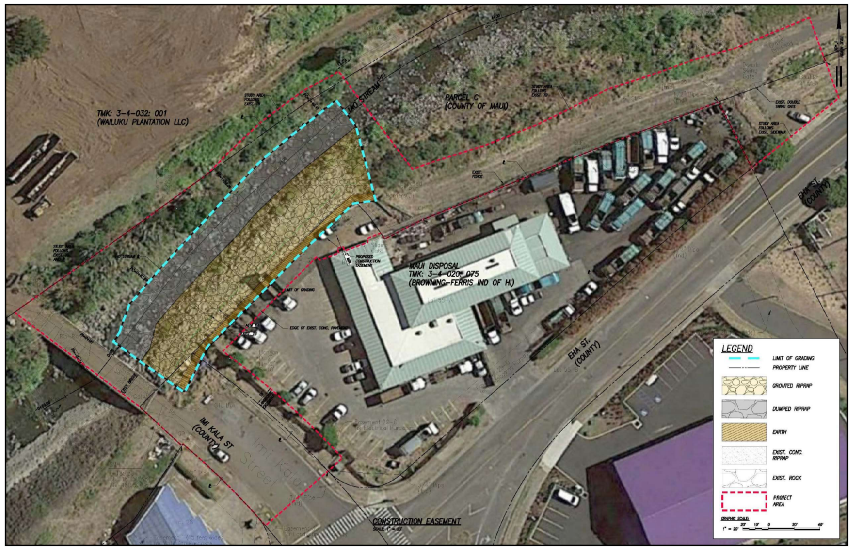


Figure 2. Overview of the Proposed Action



DAVID Y. IGE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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

TO: Public, Consulting Parties. Federal, State and City Agencies

FROM: Alan S. Downer, Administrator AD

RE: SHPD Migration of Submittals to the Hawaii Cultural Resource Information System (HICRIS)

DATE: November 30, 2020

Aloha,

The State of Hawaii Historic Preservation Division is in the process of moving to an online submission system. The Hawaii Cultural Resource Information System (HICRIS) will be the only way for SHPD to accept and process submittals. We are not accepting submissions currently, while we migrate the data from our existing systems to HICRIS. The transition period is from November 28 to December 16, 2020. Additional information on HICRIS and the launch date can be found on our website. http://dlnr.hawaii.gov/shpd/

Mahalo,

Alan Downer

Alan S. Downer, Administrator

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Mr. Alan S. Downer, Administrator
State Historic Preservation Division,
Hawai‘i State Department of Land and Natural Resources
Kakuhihewa Building
601 Kamokila Blvd, Ste 555
Kapolei, Hawai‘i 96707

Dear Mr. Downer:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 28, 2021. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

> *The State of Hawaii Historic Preservation Division is in the process of moving to an online submission system. The Hawaii Cultural Resource Information System (HICRIS) will be the only way for SHPD to accept and process submittals. We are not accepting submissions currently, while we migrate the data from our existing systems to HICRIS. The transition period is from November 28 to December 16, 2020. Additional information on HICRIS and the launch date can be found on our website. http://dlnr.hawaii.gov/shpd/*

DPW acknowledges this comment. Submittals to the State of Hawai‘i Historic Preservation Division (SHPD) for the ‘Īao Stream Levee 27 Repair Project were coordinated through the Hawai‘i Cultural Resource Information System (HICRIS).

Enclosed is a copy of the SHPD’s Chapter 6E-8 Historic Preservation Review of the proposed project, dated March 31, 2021 (Project No.: 2021PR00247, Submission No: 2021PR00247.002, Doc. No.: 2103IK10).

In summary, Imi Kala Street Bridge (State Inventory of Historic Places [SIHP] Site 50-50-04-5564), is located within the project area; however, it will not be impacted by the proposed action. SHPD concurred with the DPW’s project effect determination of “No historic properties affected”.

DPW will install interim protection measures for Imi Kala Street Bridge (SIHP Site 50-50-04-5564) prior to the start of construction. This includes the installation of temporary orange construction fencing around portions of the Imi Kala Street Bridge that will be situated near

construction activities. No other historic properties were identified that would require additional inventory or mitigation. This is identified in the project’s Draft EA, Section 4.14.1.

Thank you for reviewing the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosure

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

DAVID Y. IGE
GOVERNOR OF
HAWAII

SUZANNE D. CASE
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BOARD OF LAND AND NATURAL RESOURCES
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

March 31, 2021

IN REPLY REFER TO:
Project No.: 2021PR00247
Submission No: 2021PR00247.002
Doc. No.: 2103IK10
Archaeology

Rowena Dagdag-Andaya, Director
County of Maui
Department of Public Works (DPW)
200 S. High St.
Kalana O Maui Bldg., 4th Fl
Wailuku, HI 96793
c/o Kristi Ono
Kristi.Ono@co.maui.hi.us

Dear Rowena Dagdag-Andaya:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
County of Maui DPW Job No. 18-36
'Īao Stream Levee 27 Repair Project
Literature Review and Field Inspection Report
Wailuku Ahupua'a, Pū'ali Komohana District, Island of Maui
TMK: (2) 3-4-020:048, 075 por., 888 por.; and (2) 3-4-032:001 por.

This letter provides the State Historic Preservation Division's (SHPD's) review of the County of Maui Department of Public Works (DPW) 'Īao Stream Levee 27 Repair Project, DPW Job No. 18-36. SHPD received the submittal on March 1, 2021, including a County of Maui DPW cover letter, construction plans, and project location maps. Additionally, SHPD reviewed an archaeological literature review and field inspection report titled *Archaeological Literature Review and Field Inspection Report for the Iao Stream Levee 27 Repair Project, Wailuku Ahupua'a, Wailuku District, Maui Island TMKs: [2] 3-4-020:048, 075, 888 pors. & [2] 3-4-032:001 por.* (Rapoza et al., February 2021). Subsequently, SHPD requested a letter from the County of Maui requesting concurrence with an HRS 6E-8 project effect determination and additional information on March 11, 2021. SHPD received the County's letter requesting SHPD's with a determination of "No historic properties affected" for the proposed project on March 31, 2021 (Submission No. 2021PR00247.002).

The DPW proposes to repair a portion of the southeast bank of Wailuku River ('Īao Stream). The project area comprises 1.39 acres situated along the Wailuku River and downstream of the Imi Kala Bridge (SIHP Site 50-50-04-5564). The proposed repairs will include removing and replacing grouted riprap on the existing slope with dumped riprap placed at the slope's base to protect against scour. Ground disturbances will extend 250 ft along the streambank to a maximum depth of 9 ft. According to the submittal, previous ground disturbances include repairs to the former stream bank due to the September 2016 Wailuku River flood event and consisted of boulder fill and concrete.

Cultural Surveys Hawaii, Inc. (CSH) produced an archaeological literature review and field inspection report (Rapoza et al., February 2021) for the subject project. The report provides a project background, description of the environmental setting, field and research methods, a detailed history of the area, previous archaeological studies, fieldwork results, and recommendations. CSH conducted a 100 percent pedestrian survey of the project area with transects spaced at 5-meter intervals. One previously documented historic property was briefly updated during the survey. The report indicates the Imi Kala Bridge (SIHP Site 50-50-04-5564) was initially recorded during an

archaeological inventory survey for the proposed Imi Kala Street and Neki Place extension routes (Tome and Dega 2004). The bridge was assessed significant under Criterion "d" (have yielded, or is likely to yield, information important for research on prehistory or history), and no further work was recommended. Additionally, the survey identified two corrugated metal culverts, and two poured concrete walls to mitigate flooding and stream bank erosion along the southern bank of the Wailuku River. These features are located outside of the project area and interpreted as modern (less than 50 years old). According to the report, the Imi Kala Bridge will not be impacted by the proposed project. CSH recommended consultation with the SHPD to determine historic preservation requirements for the proposed project and consultation with the SHPD Architecture Branch if impacts are anticipated to the Imi Kala Bridge.

In a letter dated September 21, 2004 (Log No. 2004.2798, Doc. No. 0409MK08), SHPD concurred with the significance assessment for the Imi Kala Bridge. Additionally, SHPD indicated the bridge was adequately documented. However, **please note** that should a future project involve impacts to the Imi Kala Bridge, SHPD may request re-assessment of the integrity and site significance of the bridge by a SOI qualified architectural historian, historian, or historical architect.

In a letter dated March 24, 2021 (Submission No. 2021PR00247.002), DPW indicated the proposed project would not impact the Imi Kala Bridge (SIHP Site 50-50-04-5564). The DPW made an HRS 6E-8 project effect determination of "No historic properties affected" for the 'Īao Stream Levee 27 Repair Project.

Based on the information above, **SHPD concurs** with the DPW's project effect determination of "No historic properties affected" for the current County of Maui project. Pursuant to HAR §13-284-7(e), when the SHPD agrees that the action will not affect any significant historic properties. This is the SHPD's written concurrence and notification that the HRS 6E historic preservation review process is complete. The permit issuance process may proceed.

Additionally, **SHPD requests** interim protection measures be implemented prior the start of construction. Please install temporary orange construction fencing around portions of the Imi Kala Bridge that will be situated near construction activities.

Although LRFI report does not fulfill the requirements of an archaeological inventory survey as specified in HAR §13-276-5, it serves to facilitate project planning and supports the historic preservation review process. Please provide two hardcopies and one text-searchable pdf copy of the LRFI report, clearly marked Final, along with a copy of this letter, to the SHPD Kapolei office, attention Library. Additionally, provide a text-searchable pdf copy, clearly marked Final, to HICRIS Project 2021PR00247 using the project supplement option, and a pdf copy to Lehua.K.Soares@hawaii.gov.

Please attach to the permit: In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, native 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) 652-1510.

Please contact 'Iolani Kauhane, Maui Archaeologist III, at iolani.kauhane@hawaii.gov for any matters regarding archaeological resources or this letter.

Aloha,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: dsa.engineering@mauicounty.gov
public.works@mauicounty.gov
Trevor Yucha, tyucha@culturalsurveys.com

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
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Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Russell Tsuji
Administrator
Department of Land and Natural Resources
Land Division and Engineering Division
1151 Punchbowl Street, Room 220
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Tsuji:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

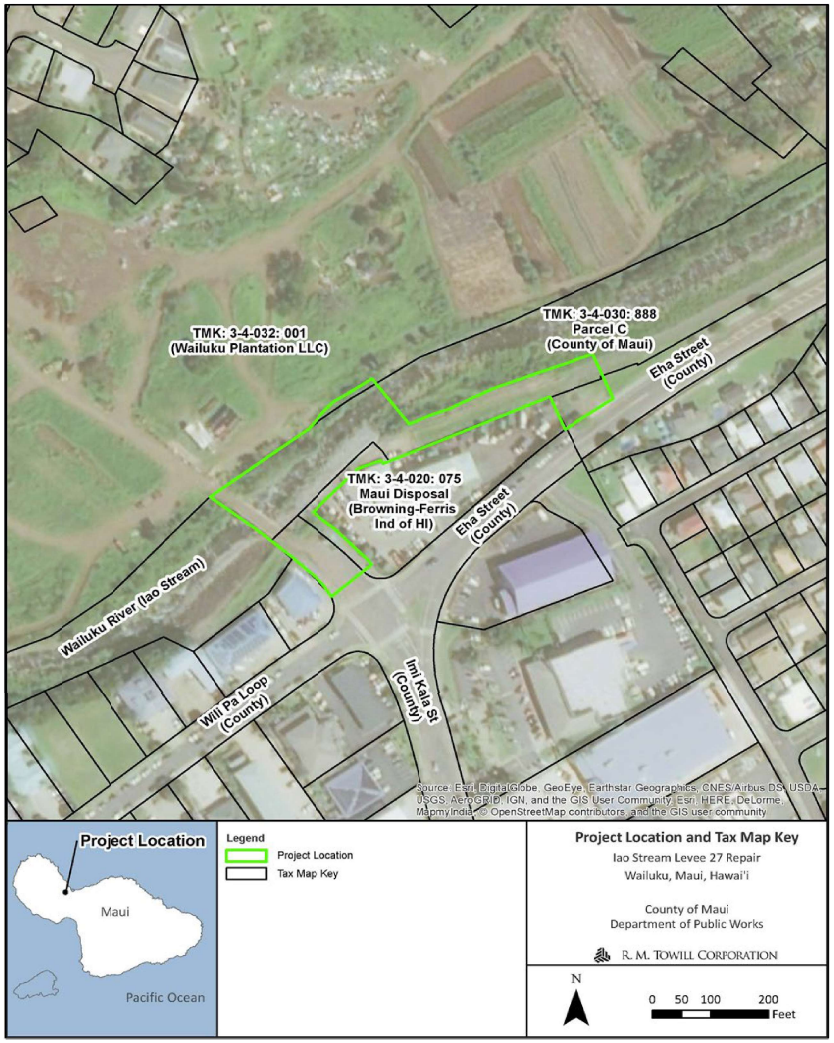
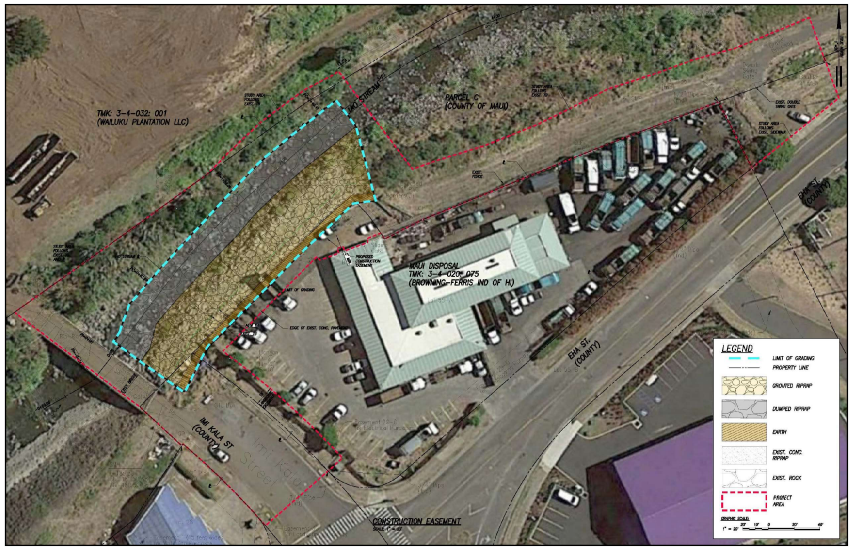


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Curt Cottrell
Administrator
Department of Land and Natural Resources
Division of State Parks
P.O. Box 621
Honolulu, Hawai'i 96809

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for 'Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai'i Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Cottrell:

The County of Maui, Department of Public Works (DPW), proposes to implement the 'Īao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawai'i. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly 'Īao Stream; 'Īao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawai'i Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the 'Īao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawai'i.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the 'Īao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

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Proposed Action

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The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

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Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
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Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
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State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

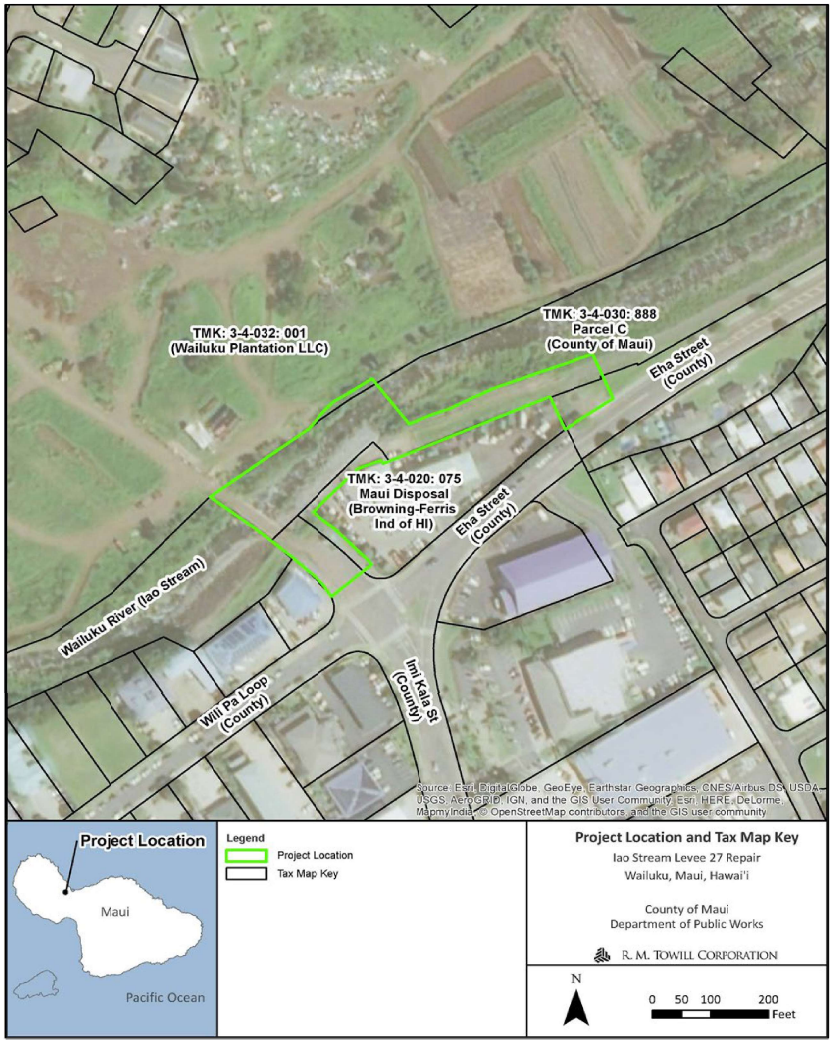
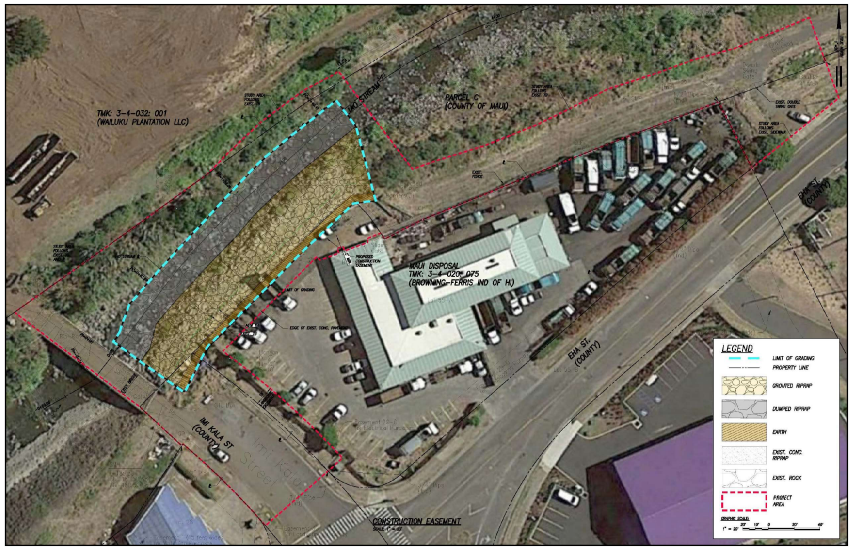


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. David Smith
Administrator
Department of Land and Natural Resources
Division of Forestry and Wildlife
Kalanimoku Building
1151 Punchbowl St., Room 325
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Smith:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

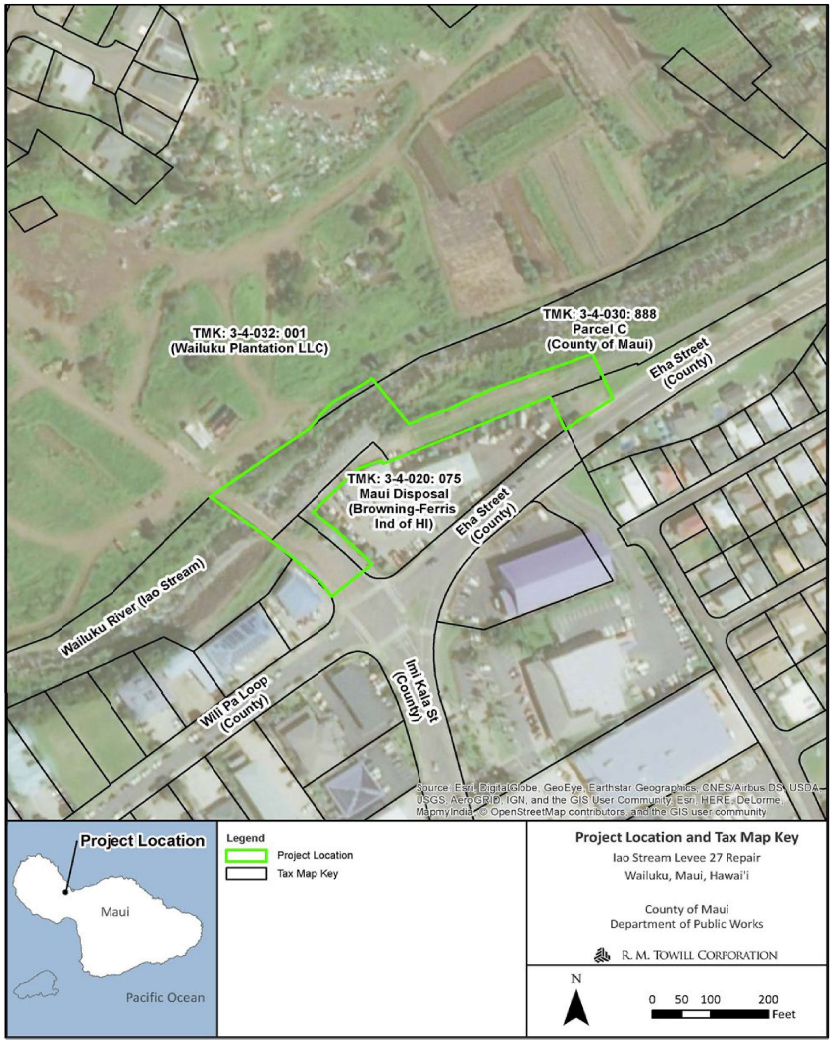
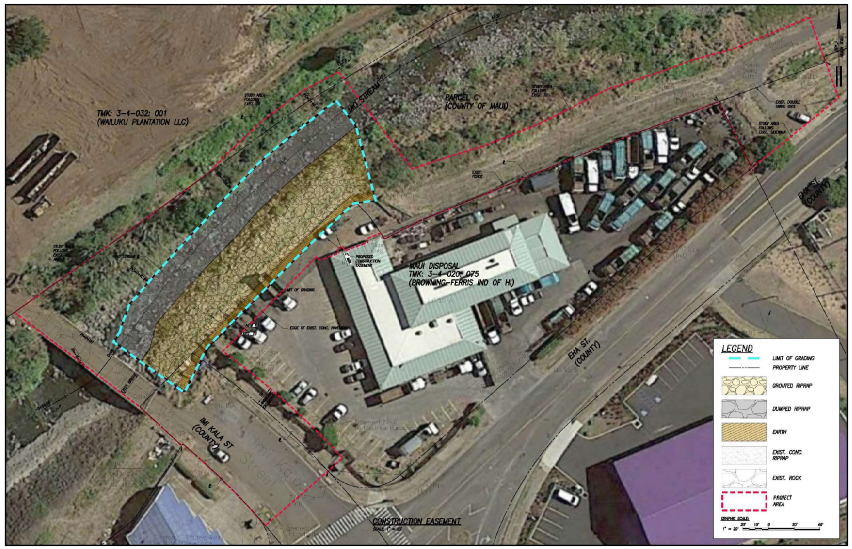


Figure 2. Overview of the Proposed Action



DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

June 22, 2021

Log no. 3167

Kristi Ono
County of Maui, Department of Public Works
200 South High Stree, Room No. 410
Wailuku, HI 96793
Kristi.ono@co.maui.hi.us

Dear Ms. Ono:

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your letter regarding review of the Hawai‘i Revised Statutes Chapter 343 Environmental Assessment Pre-assessment for the ‘Īao Stream Levee 27 Repair Project in Wailuku on Maui, Hawai‘i, TMKs: (2) 3-4-032:001 (por.), 3-4-030:888 (por.), 3-4-020:075 (por.). The proposed project consists of repairing a 240 foot long section of stream bank by grading the slope; excavating to deepen the layer of boulder fill; constructing a new revetment system consisting of a reinforced soil slope; grouted riprap face slope; under drain pipes; and a dumped riprap at the toe of the slope to protect against scour.

The State listed Hawaiian Hoary Bat or ‘Ōpe‘ape‘a (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.

The State listed Blackburn’s Sphinx Moth (BSM; *Manduca blackburni*) has a historic range that encompasses the project area. Larvae of BSM feed on many nonnative hostplants that include tree tobacco (*Nicotiana glauca*) which grows in disturbed soil. We recommend contacting our Maui DOFAW office at (808) 984-8100 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. To avoid harm to BSM, DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If you remove tree tobacco over one meter in height or disturb the ground around or within several meters of these plants they must be checked thoroughly for the presence of eggs and larvae.

We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. This disorientation can result in collision with manmade artifacts or grounding of birds. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai‘i please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens (e.g. Rapid ‘Ōhi‘a Death), vertebrate and invertebrate pests (e.g. Little Fire Ants), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the Maui Invasive Species Committee at (808) 573-6472 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid ‘Ōhi‘a Death and other harmful fungal pathogens.

We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Paul Radley, Protected Species Habitat Conservation Planning Coordinator at (808) 587-0010 or paul.m.radley@hawaii.gov.

Sincerely,

DAVID G. SMITH
Administrator

cc: Brian Takeda, Planning Project Manager, R.M. Towill Corporation

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Mr. David G. Smith, Administrator
State of Hawai‘i
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawai‘i 96813

Dear Mr. Smith:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 22, 2021 (REF: Log no. 3167). The following has been prepared in response to your comments (your comments have been *italicized* for reference):

> *The State listed Hawaiian Hoary Bat or ‘Ōpe‘ape‘a (Lasiurus cinereus semotus) has the potential to occur in the vicinity of the project area and may roost in nearby trees. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.*

DPW acknowledges this comment. A discussion on the project’s conservation measures to avoid and minimize impacts to Hawaiian hoary bats is provided in the project’s Draft EA, Section 4.8.2.

> *The State listed Blackburn’s Sphinx Moth (BSM; Manduca blackburni) has a historic range that encompasses the project area. Larvae of BSM feed on many nonnative hostplants that include tree tobacco (Nicotiana glauca) which grows in disturbed soil. We recommend contacting our Maui DOFAW office at (808) 984-8100 for further information about where BSM may be present and whether a vegetation survey should be conducted to determine the presence of plants preferred by BSM. To avoid harm to BSM, DOFAW recommends removing plants less than one meter in height or during the dry time of the year. If you remove tree tobacco over one meter in height or disturb the ground around or within several meters of these plants they must be checked thoroughly for the presence of eggs and larvae.*

DPW acknowledges this comment. The results of a biological survey undertaken in 2021, and a discussion on the project’s conservation measures to avoid and minimize impacts to Blackburn’s Sphinx Moth is provided in the project’s Draft EA, Section 4.8.2.

> *We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. This disorientation can result in collision with manmade artifacts or grounding of birds. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai‘i please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.*

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DPW acknowledges this comment. During construction, the movement of plant or soil material between worksites will be minimized, where possible, and all equipment, materials, and personnel cleaned of excess soil and debris to mitigate the spread of any high-risk invasive species in the area. This is identified in the project’s Draft EA, Section 4.8.1.

Thank you for reviewing the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
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R. M. TOWILL CORPORATION
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Planning
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Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Kaleo Manuel
Deputy Director
Department of Land and Natural Resources
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

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Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

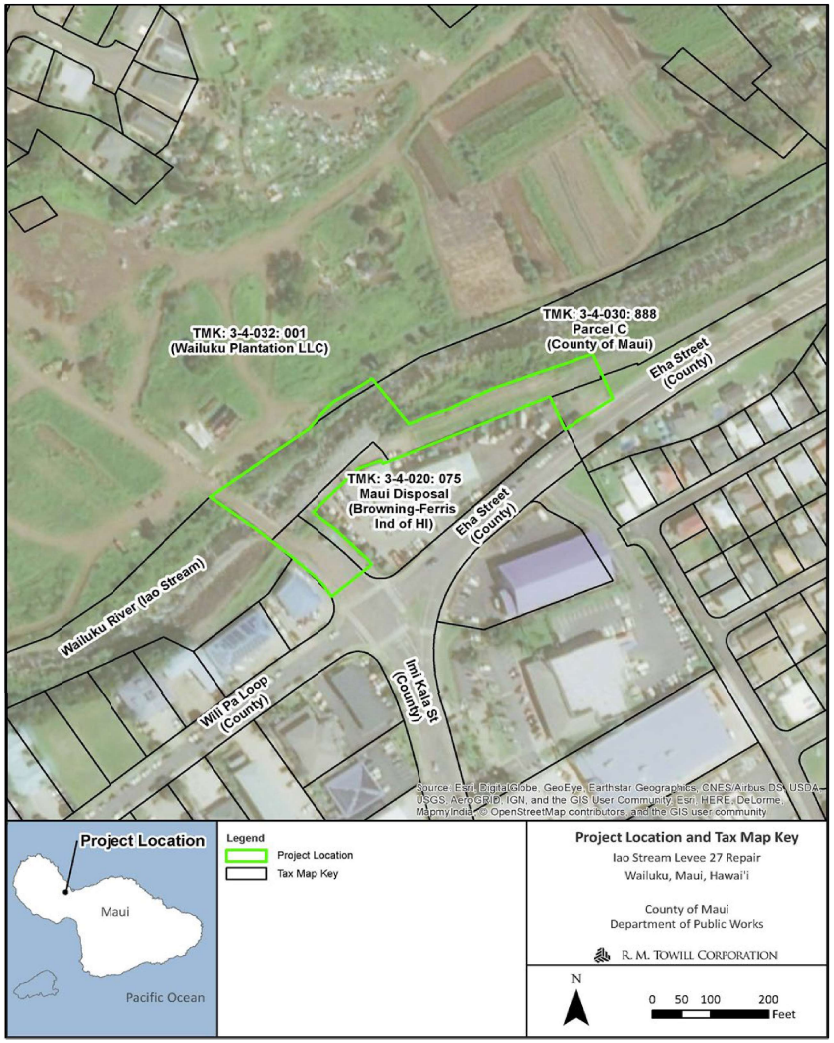
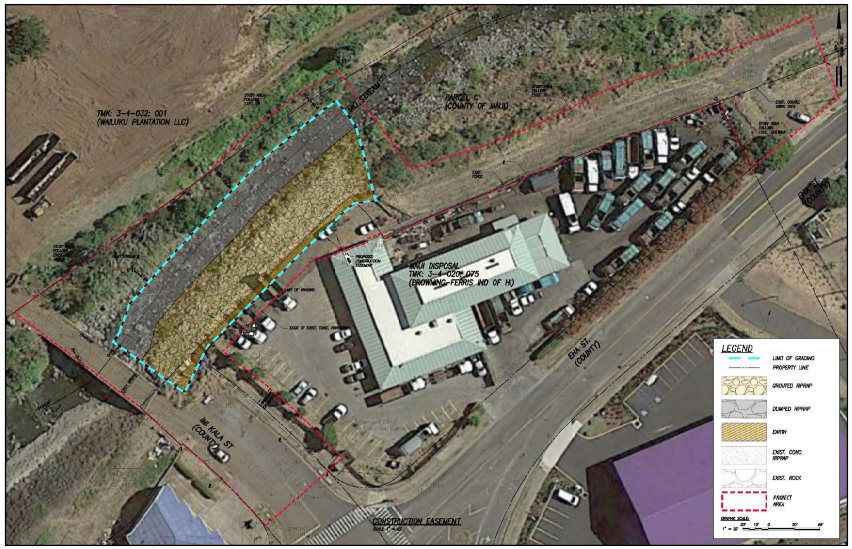


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Samuel J. Lemmo
Administrator
Department of Land and Natural Resources
Office of Conservation & Coastal Lands
Kalanimoku Building
1151 Punchbowl St., Room 131
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Lemmo:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

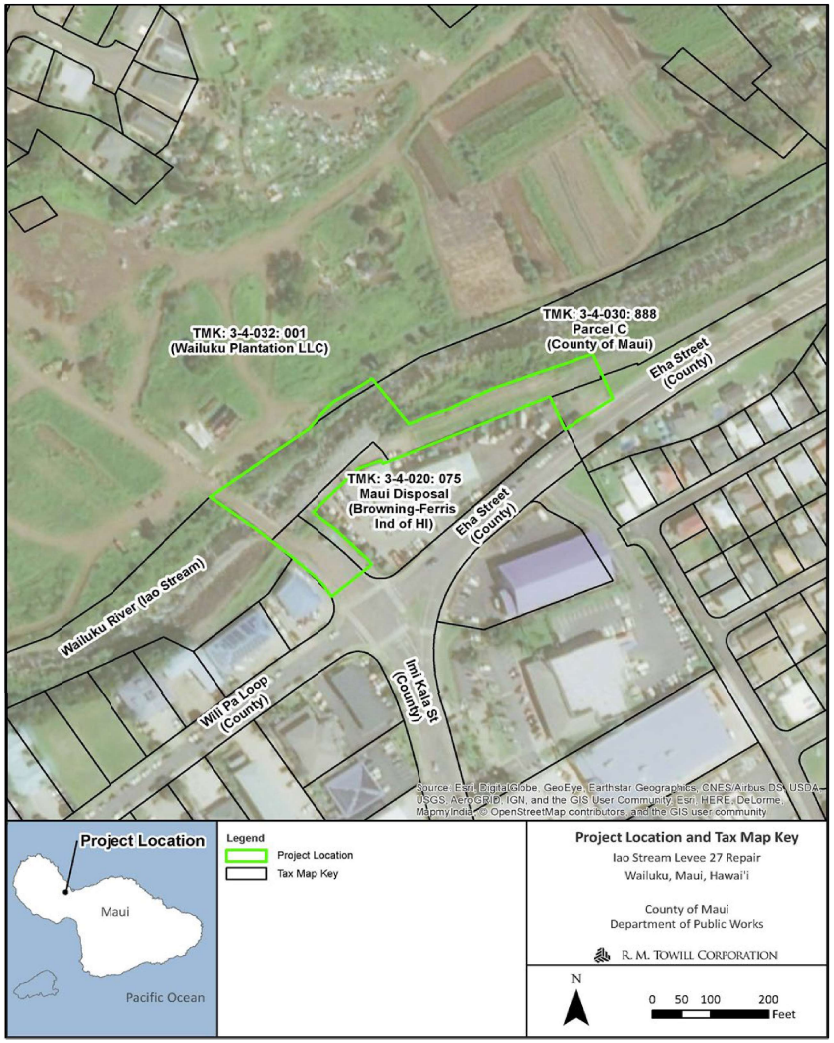
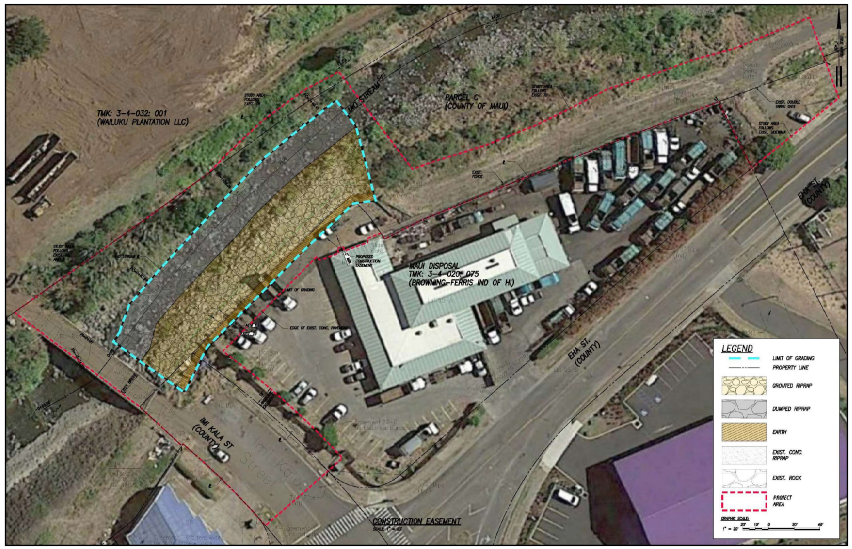


Figure 2. Overview of the Proposed Action



DAVID Y. IGE
GOVERNOR OF
HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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:RB

COR: MA 21-147

JUN - 7 2021

Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Rm. 410
Wailuku, Maui, Hawaii, 96793

SUBJECT: Iao Stream Levee 27 Repair Project
Wailuku Town, Wailuku, Maui
Tax Map Key: (2) 3-4-032:001, 3-4-030:888, and 3-4-020:075

Dear Ms.Ono,

This letter is in response to your request that the Office of Conservation and Coastal Lands (OCCL) respond to this project with any comments, concerns, or regulatory requirements. The OCCL notes that the above referenced TMKs, and therefore the project, do not appear to be located in the Conservation District; therefore, project activities do not appear to be within the OCCL's jurisdiction.

Should you have any questions regarding this correspondence, contact Rachel Beasley at (808) 587-0386.

Sincerely,

Sam Lemmo

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

cc: Maui County Planning Department
Brian Takeda, R.M. Towill Corporation

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Mr. Samuel J. Lemmo, Administrator
State of Hawai‘i
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P.O. Box 621
Honolulu, Hawai‘i

Dear Mr. Lemmo:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 7, 2021 (REF:OCCL:RB COR: MA 21-147).

We appreciate your statement acknowledging that the proposed project is not located in the Conservation District, and therefore, outside the OCCL's jurisdiction. The proposed action involves the use of land within the Agricultural and Urban State Land Use Districts. This is identified in the Draft EA, Section 6.2.3.

Thank you for reviewing the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Brian Neilson
Administrator
Department of Land and Natural Resources
Division of Aquatic Resources
1151 Punchbowl Street, Room 330
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Neilson:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

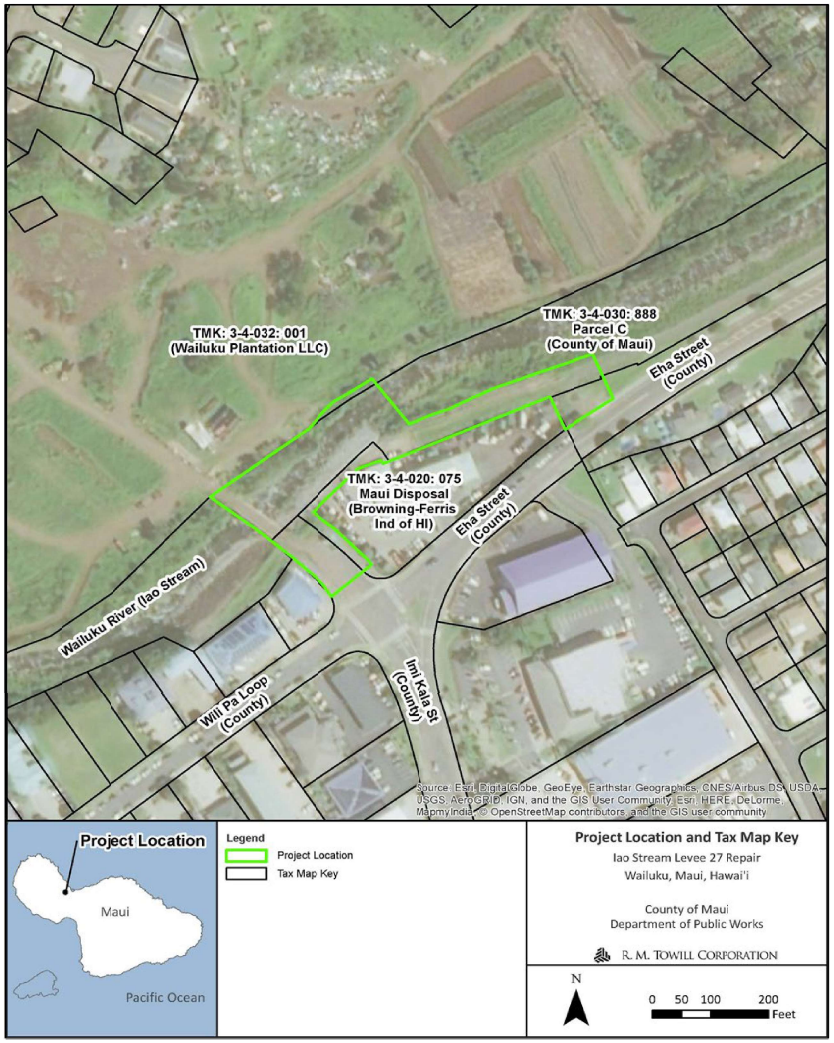
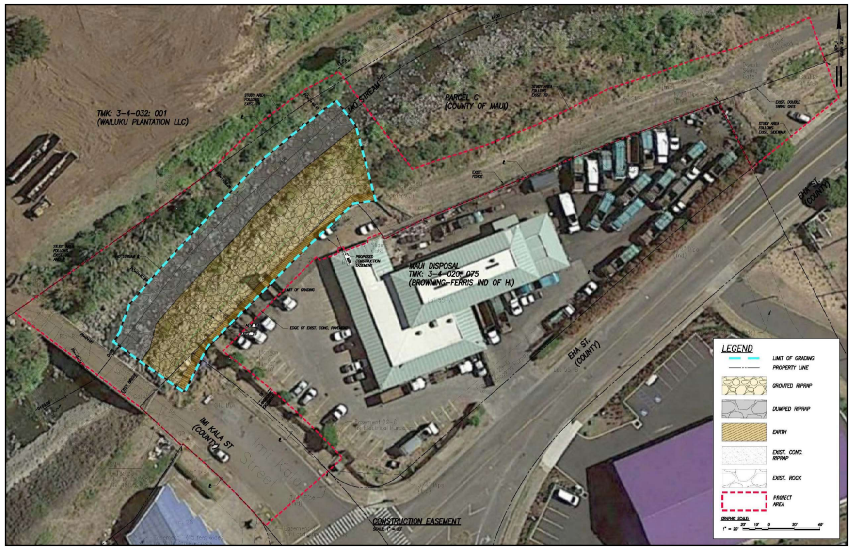


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Colette Machado
Chair
Office of Hawaiian Affairs
560 N. Nimitz Hwy., Suite 200
Honolulu, HI 96817

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Machado:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

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County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
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2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
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Sincerely,

Brian Takeda

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Planning Project Manager

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Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
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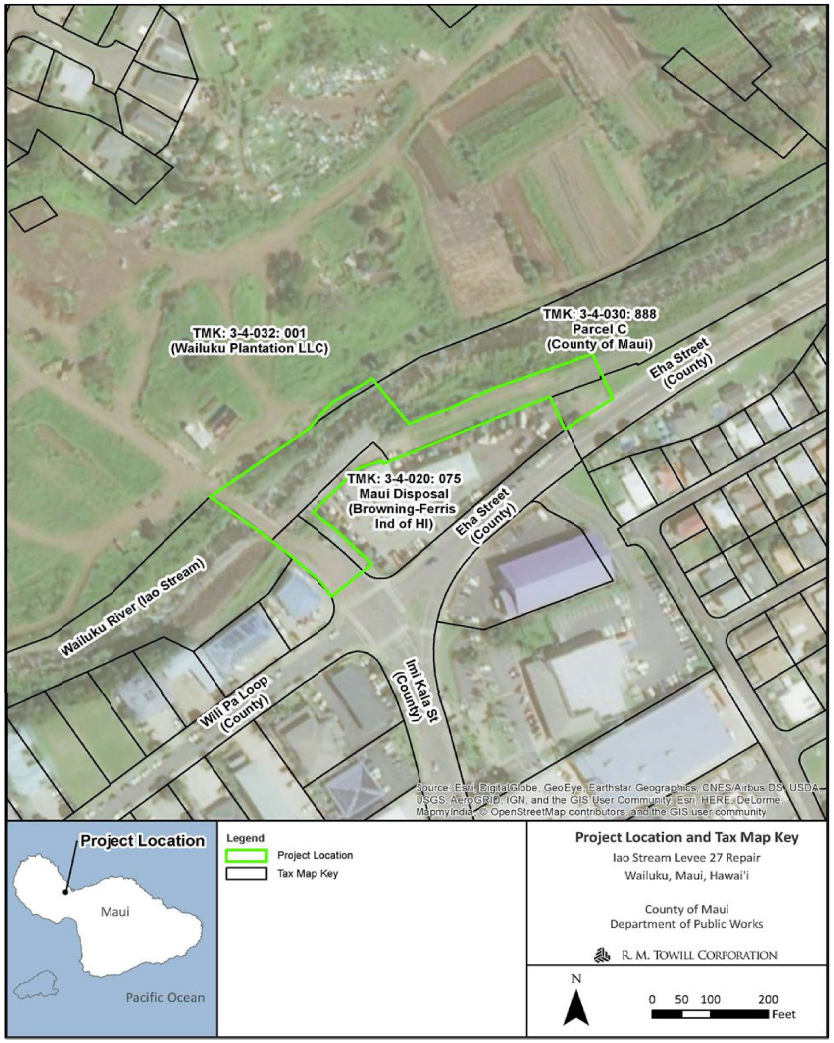
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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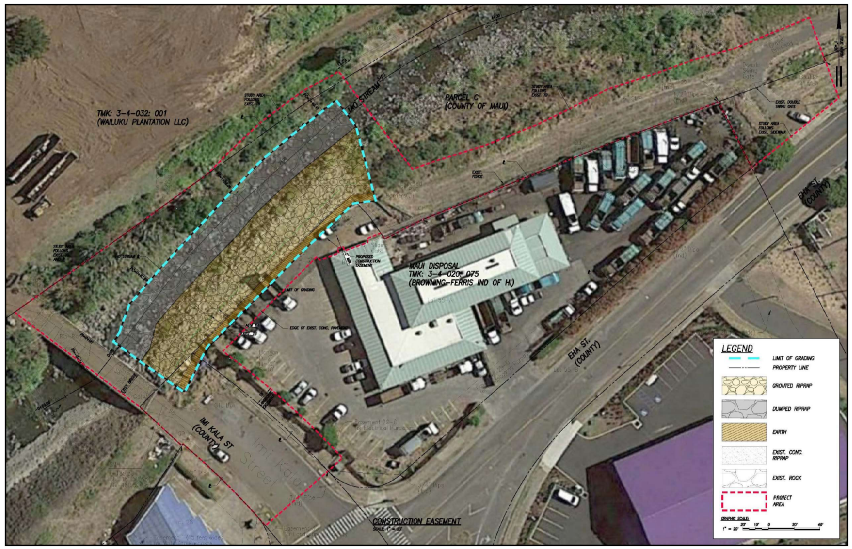

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Keith Kawaoka
Deputy Director for Environmental Health Administration
Department of Health
Environmental Planning Office
919 Ala Moana Blvd., Room 312
Honolulu, HI 96814

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Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

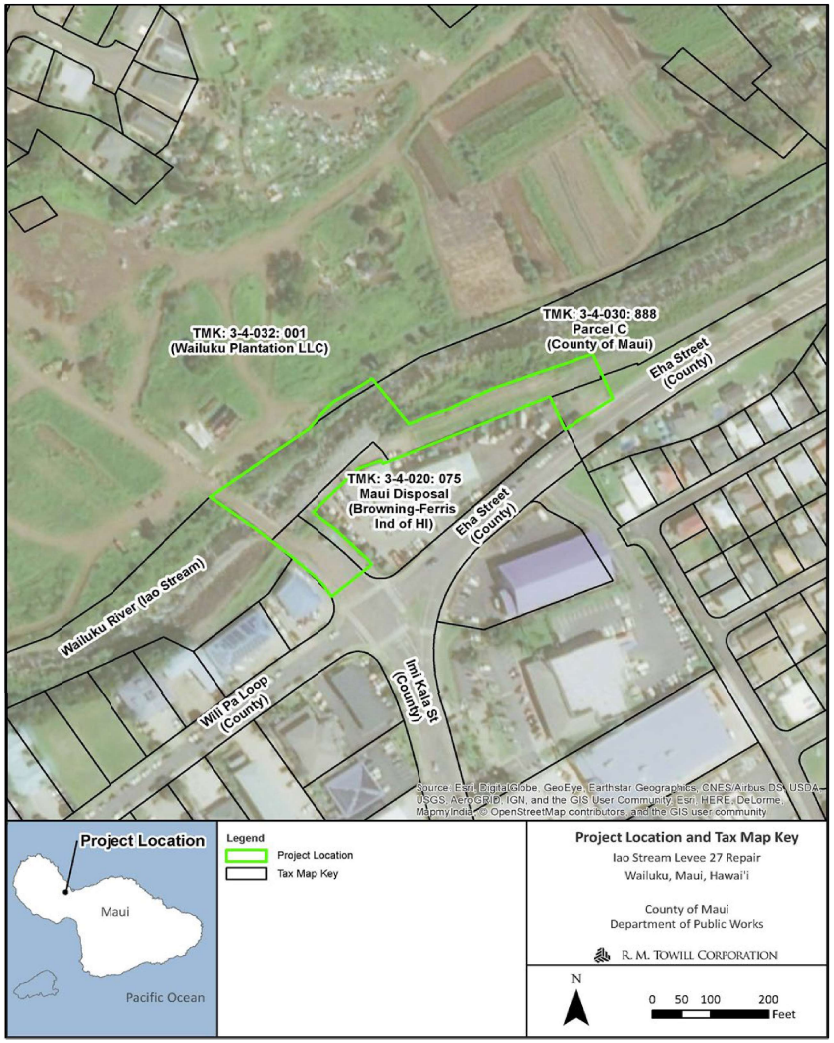
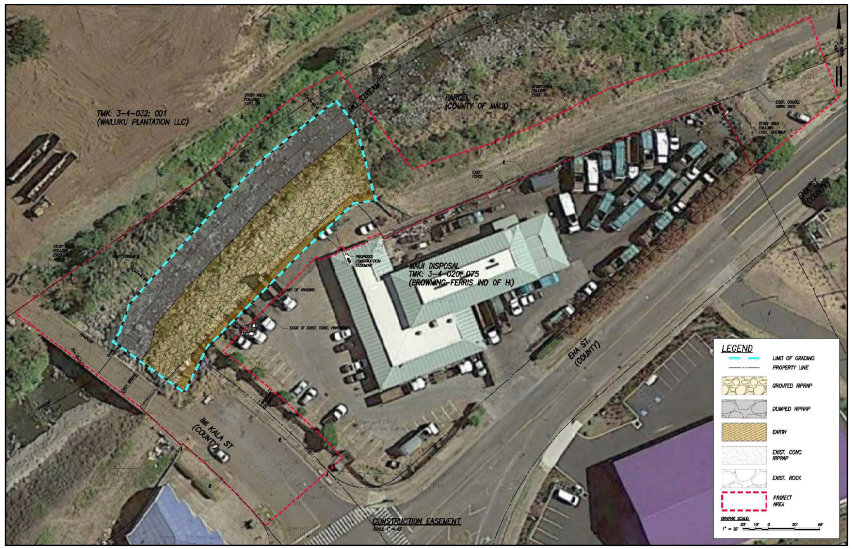


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Alec Wong, P.E.
Chief
Department of Health
Clean Water Branch
2827 Waimano Home Road
Hale Ola Building, Room 225
Pearl City, HI 96782-1487

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Wong:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

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County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

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Sincerely,

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Planning Project Manager

Enclosures:
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Figure 1, Project Location and Tax Map Key
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cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
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Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

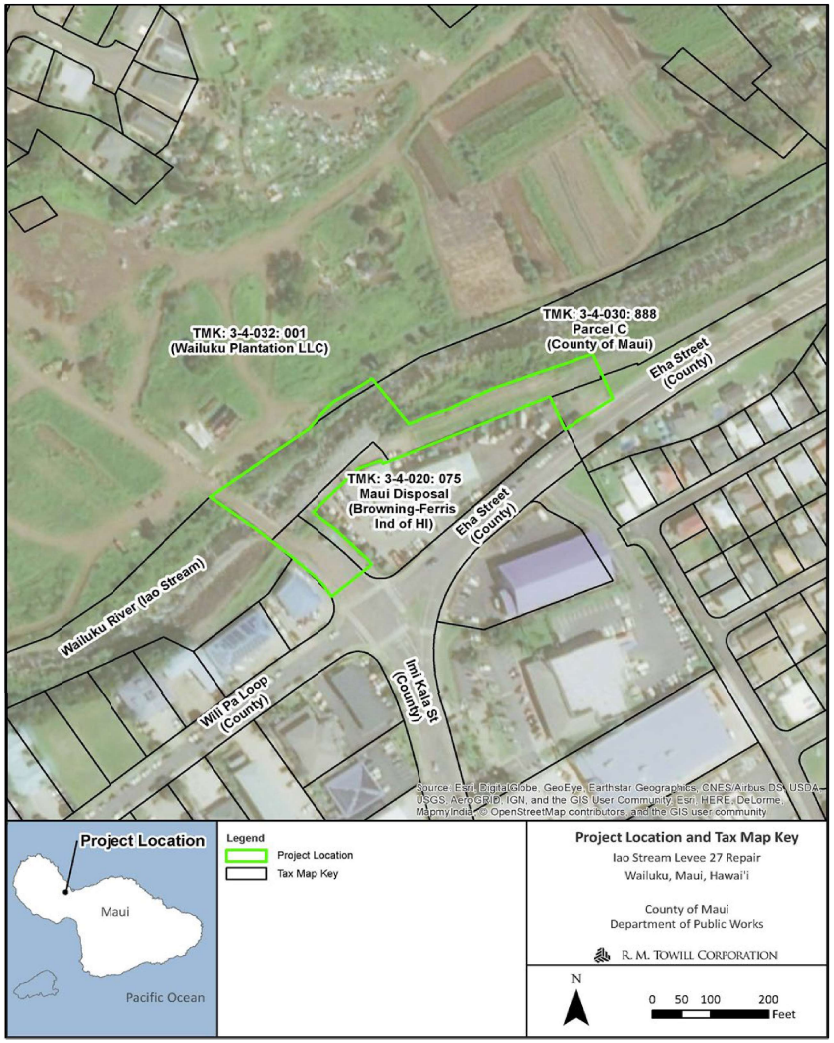
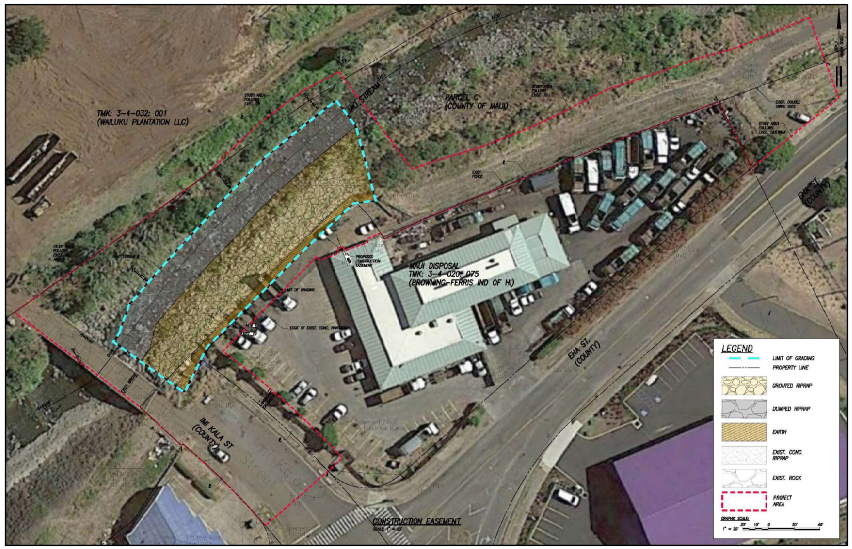


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Leo R. Asuncion Jr., AICP
Director
Department of Business, Economic Development
and Tourism Office of Planning
P.O. Box 2359
Honolulu, HI 96804

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Asuncion Jr.:

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Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

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In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

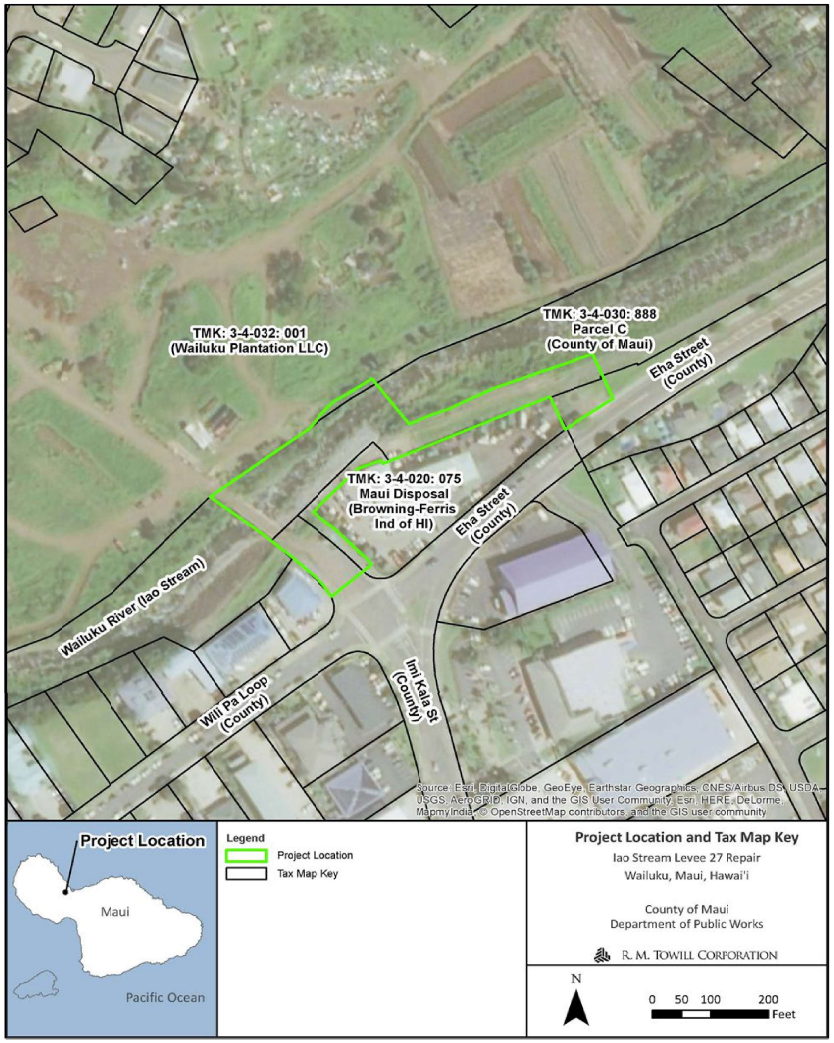
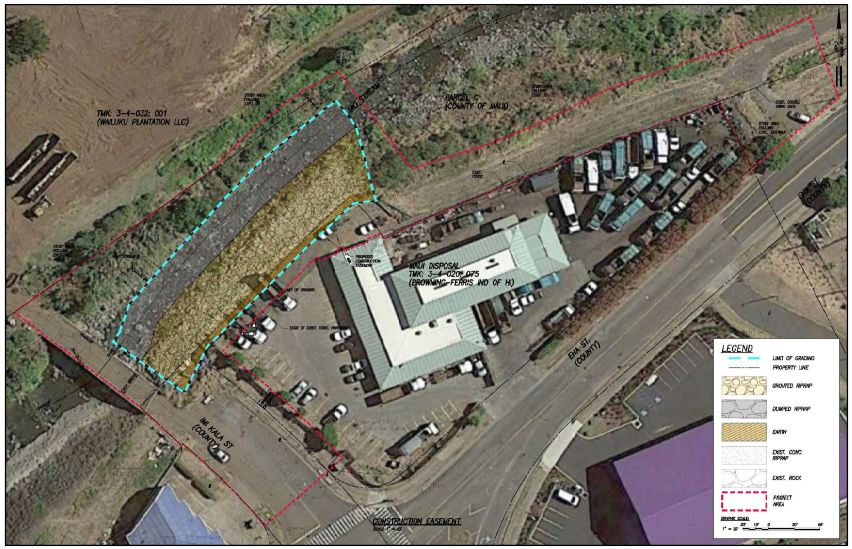


Figure 2. Overview of the Proposed Action



OFFICE OF PLANNING
STATE OF HAWAII

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

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

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR
OFFICE OF PLANNING

DTS 202106101048HE

June 16, 2021

Ms. Kristi Ono
Project Manager
Department of Public Works
County of Maui
Engineering Division
200 South High Street, Room 410
Wailuku, Hawaii 96793

Dear Ms. Ono:

Subject: Pre-consultation Environmental Assessment for the ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai'i
TMKs: (2) 3-4-032: 001 (Por); 3-4-030: 888, (Por); and 3-4-020: 075

Thank you for the opportunity to provide comments for the preparation of a Draft Environmental Assessment (Draft EA) for the proposed ʻĪao Stream Levee 27 Repair Project, Wailuku, Maui. The pre-consultation review material was transmitted to our office via email notification on May 27, 2021.

It is our understanding that the County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project. This streambank repair involves the stabilization of a 240 foot long section of the ʻĪao Stream (formerly known as the Wailuku River) right stream bank. The project is located downstream of the l mi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27. The proposed repair is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in the lower elevation areas of Wailuku, Maui.

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1. Hawaiʻi Coastal Zone Management (CZM) Program
The CZM area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" (HRS § 205A-1).

In implementing the objectives and supporting policies of the Hawaiʻi CZM program, agencies are required to consider ecological, cultural, historic, esthetic, recreational, scenic, open space values, coastal hazards, and economic development. As this project is being

proposed by a County of Maui agency, the Draft EA would benefit from an analysis on the project's consistency with the objectives and supporting policies of the Hawaiʻi CZM Program, HRS § 205A-2, as amended. Compliance with HRS § 205A-2 is an important component for satisfying the requirements of HRS Chapter 343.

2. Coastal Zone Management Act (CZMA) - Federal Consistency
We acknowledge that the pre-consultation review material, under the Project Summary Table, identifies a CZM federal consistency review as a potential approval needed for the project. OP is the lead state agency with the authority to conduct CZMA federal consistency reviews. We recommend that DPW contact our office regarding the policies and procedures on conducting a federal consistency review.

3. Stormwater Runoff, Erosion, and Water Resources
The review material also lists a National Pollutant Discharge Elimination System for Construction Storm Water and Construction Dewatering as a potential needed permit. Pursuant to Hawaiʻi Administrative Rules (HAR) § 11-200.1-18(d)(7) – identification and analysis of impacts and alternatives considered; to ensure that nearshore marine resources of the Island of Maui remain protected, the negative effects of stormwater inundation and sediment loading surrounding the proposed project site should be evaluated. The impact of stormwater runoff, sediment loading, and water quality should not be limited to just the construction phase but discuss long term mitigation strategies as well.

Issues that may be examined include, but are not limited to, project site characteristics in relation to flood and erosion prone areas, potential vulnerability of water resources, the shoreline, and examining any increase of permeable surfaces in the area. Developing mitigation measures for the protection for surface water resources and the coastal ecosystem should take this into account, pursuant to HAR § 11-200.1-18(d)(8).

If you have any questions regarding this comment letter, please contact Joshua Hekekia at (808) 587-2845, or John Nakagawa at (808) 587-2878 on CZMA federal consistency concerns.

Sincerely,

Mary Alice Evans

Mary Alice Evans
Director

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Ms. Mary Alice Evans, Director
State of Hawai‘i
Office of Planning
P.O. Box 2359
Honolulu, Hawai‘i 96804

Dear Ms. Evans:

Response to Preassessment Comments for Hawai‘i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments dated June 16, 2021 (Ref. No. DTS 202106101048HE). The following has been prepared in response to your comments (your comments have been *italicized* for reference):

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1. *<u>Hawai‘i Coastal Zone Management (CZM) Program</u>*
   The CZM area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" (HRS § 205A-1).
   In implementing the objectives and supporting policies of the Hawai‘i CZM program, agencies are required to consider ecological, cultural, historic, esthetic, recreational, scenic, open space values, coastal hazards, and economic development. As this project is being proposed by a County of Maui agency, the Draft EA would benefit from an analysis on the project's consistency with the objectives and supporting policies of the Hawai‘i CZM Program, HRS § 205A-2, as amended. Compliance with HRS § 205A-2 is an important component for satisfying the requirements of HRS Chapter 343.

DPW acknowledges this comment. An analysis of the project's consistency with the objectives and supporting policies of the Hawai‘i Coastal Zone Management Program, HRS § 205A-2, as amended, is provided in the Draft EA, Section 6.2.6.

2. *<u>Coastal Zone Management Act (CZMA) - Federal Consistency</u>*
   We acknowledge that the pre-consultation review material, under the Project Summary Table, identifies a CZM federal consistency review as a potential approval needed for the project. OP is the lead state agency with the authority to conduct CZMA federal consistency reviews. We recommend that DPW contact our office regarding the policies and procedures on conducting a federal consistency review.

DPW acknowledges this comment. The State of Hawai‘i Office of Planning will be consulted to identify permitting requirements pertaining to its jurisdiction. If required, a Coastal Zone Management federal consistency application will be submitted to the State of Hawai‘i Office of Planning after completion of the EA process. This is identified in the Draft EA, Section 6.2.6. Additionally, the Draft EA, Section 7, identifies Coastal Zone Management federal consistency review by the Office of Planning as a permit/approval that may be required.

3. *<u>Stormwater Runoff, Erosion, and Water Resources</u>*
   The review material also lists a National Pollutant Discharge Elimination System for Construction Storm Water and Construction Dewatering as a potential needed permit. Pursuant to Hawai‘i Administrative Rules (HAR) § 11-200.1-18(d)(7) – identification and analysis of impacts and alternatives considered; to ensure that nearshore marine resources of the Island of Maui remain protected, the negative effects of stormwater inundation and sediment loading surrounding the proposed project site should be evaluated. The impact of stormwater runoff, sediment loading, and water quality should not be limited to just the construction phase but discuss long term mitigation strategies as well.
   Issues that may be examined include, but are not limited to, project site characteristics in relation to flood and erosion prone areas, potential vulnerability of water resources, the shoreline, and examining any increase of permeable surfaces in the area. Developing mitigation measures for the protection for surface water resources and the coastal ecosystem should take this into account, pursuant to HAR § 11-200.1-18(d)(8).

DPW acknowledges this comment and will comply with the requirements of Hawai‘i Administrative Rules (HAR) § 11-200.1-18(d)(7). The project will be designed to protect surface water quality and nearshore marine resources from stormwater runoff and sediment loading during and following construction. In compliance with HAR § 11-200.1-18(d)(8), mitigation measures will be developed for the protection of surface water resources and the coastal ecosystem.

Since the proposed action may generate discharges to State waters during construction, a Section 404, Clean Water Act (CWA)/Section 10, Rivers and Harbors Act (also referred to as Department of the Army Permit); and Section 401 WQC would be required. In accordance with CWA regulations, an applicable monitoring and assessment plan and National Pollutant Discharge Elimination System permits for construction storm water and construction dewatering would also be required prior to construction. As required a Site-Specific Construction Storm Water Best Management Practices will be prepared and followed by the project contractor to handle the treatment of storm water runoff, erosion, and sediment control. This is identified in the Draft EA, Section 4.5.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Roderick Becker
Comptroller
Department of Accounting and General Services
Public Works Division
Kalanimoku Building
1151 Punchbowl Street
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Becker:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

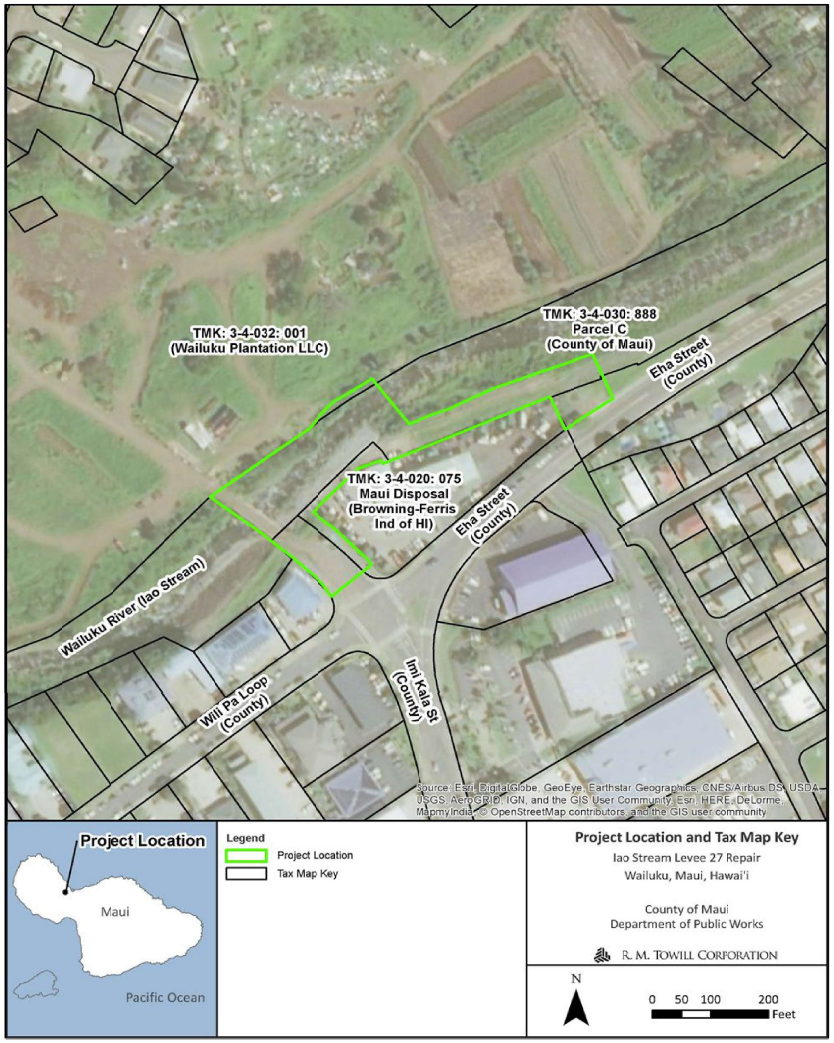
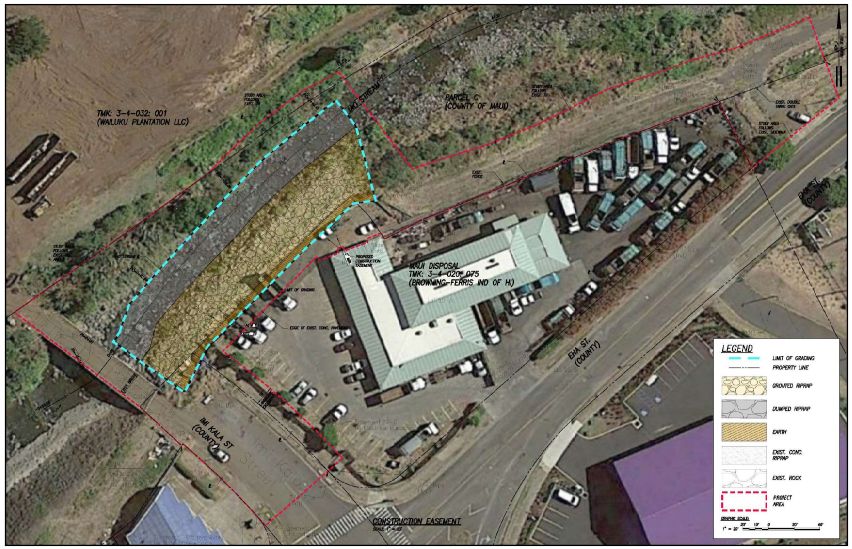


Figure 2. Overview of the Proposed Action



DAVID Y. IGE
GOVERNOR

CURT T. OTAGURO
COMPTROLLER

AUDREY HIDANO
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)21.110

JUN - 8 2021

Ms. Kristi Ono, Project Manager
Department of Public Works
County of Maui
Engineering Division
200 South High Street, Room 410
Wailuku, Hawaii 96793

Dear Ms. Ono:

Subject: Pre-Consultation: DRAFT Environmental Assessment for
Iao Stream Levee 27 Repair Project
Wailuku, Maui, Hawaii
TMK: (2) 3-4-032: 001; (2) 3-3-030: 888; and (2) 3-4-020: 075

Thank you for the opportunity to comment on the subject project. We have no comments to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Planning Branch at 586-0584.

Sincerely,

CHRISTINE L. KINIMAKA
Public Works Administrator

GT:mo
c: Mr. Brian Takeda, RM Towill
Wade Shimabukuro, DAGS Maui District Office

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Ms. Christine L. Kinimaka, Public Works Administrator
State of Hawai‘i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai‘i 96810

Dear Ms. Kinimaka:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 8, 2021 (Ref. No. (P)21.l 10).

We appreciate your statement acknowledging that the proposed project will not impact any of the Department of Accounting and General Services' projects or existing facilities and that you have no additional comments to offer.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Jade Butay
Director
Department of Transportation
Aliiaimoku Building
869 Punchbowl Street
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Butay:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

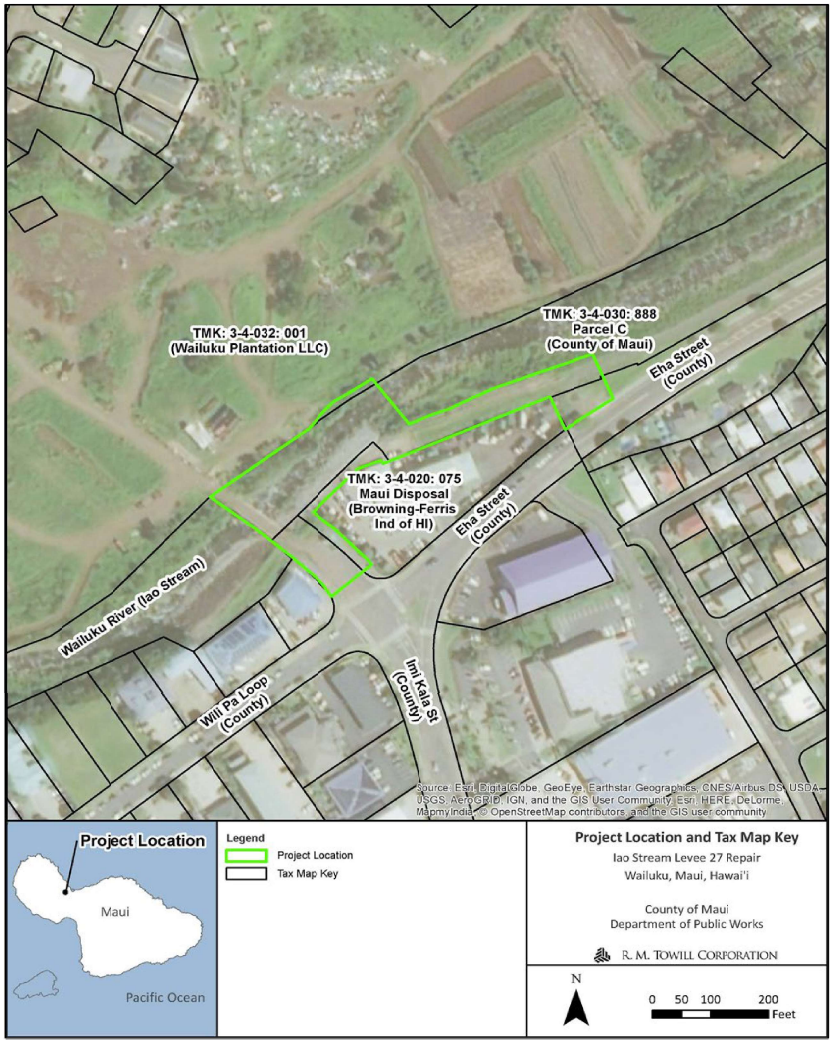
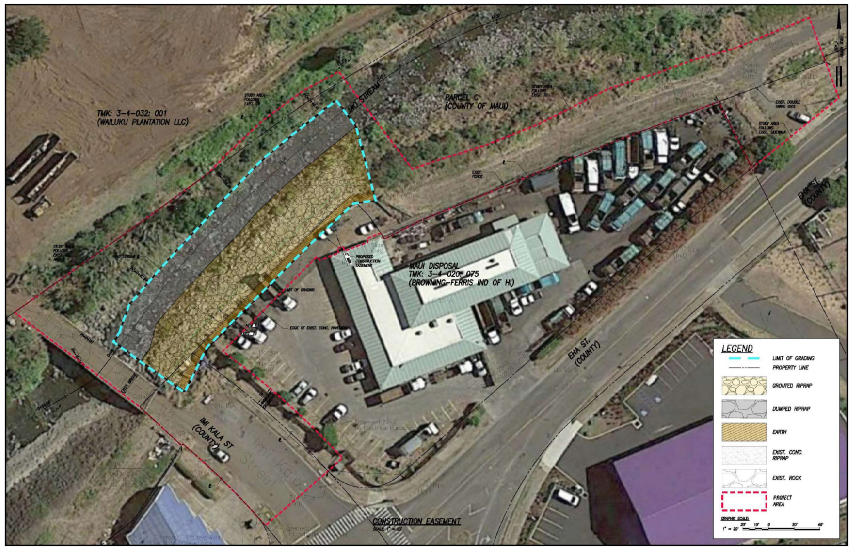


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
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Telephone 808 842 1133
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Garett Kamemoto
HCDA Interim Executive Director
Hawai'i Community Development Authority
Department of Business, Economic Development & Tourism
547 Queen Street
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for 'Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai'i Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Kamemoto:

The County of Maui, Department of Public Works (DPW), proposes to implement the 'Īao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawai'i. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly 'Īao Stream; 'Īao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawai'i Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the 'Īao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawai'i.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

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Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the 'Īao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

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The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

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- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
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Consultant:	R. M. Towill Corporation
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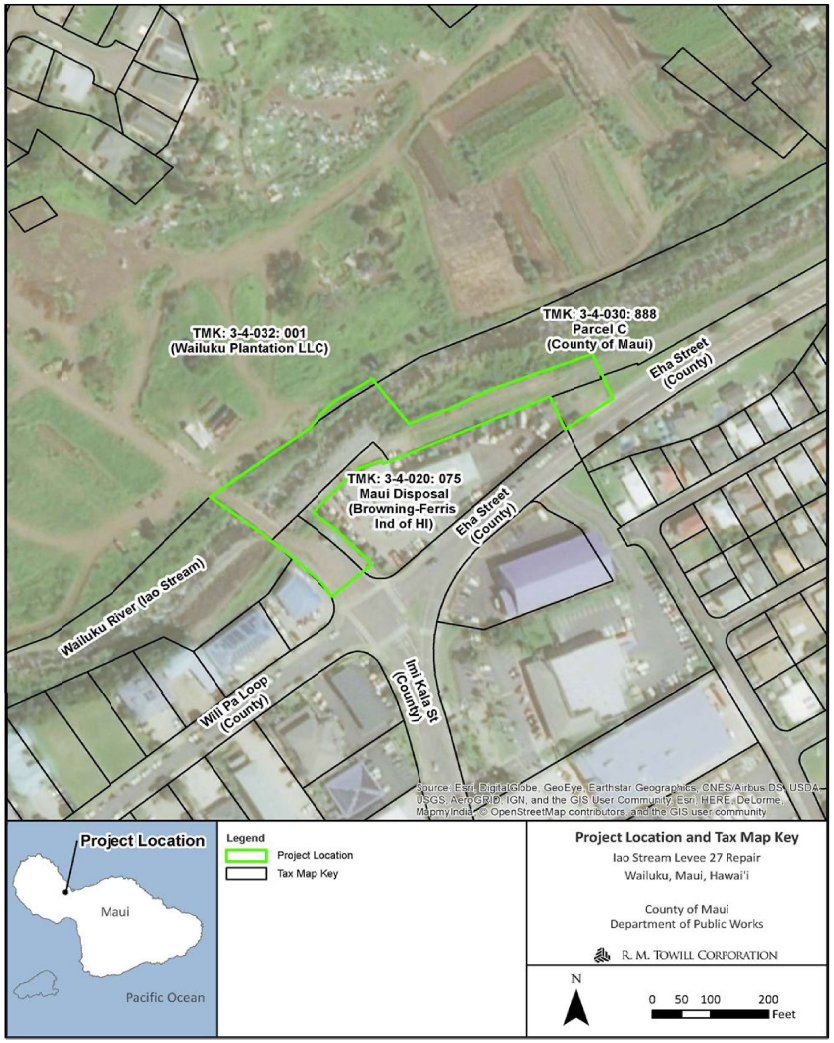
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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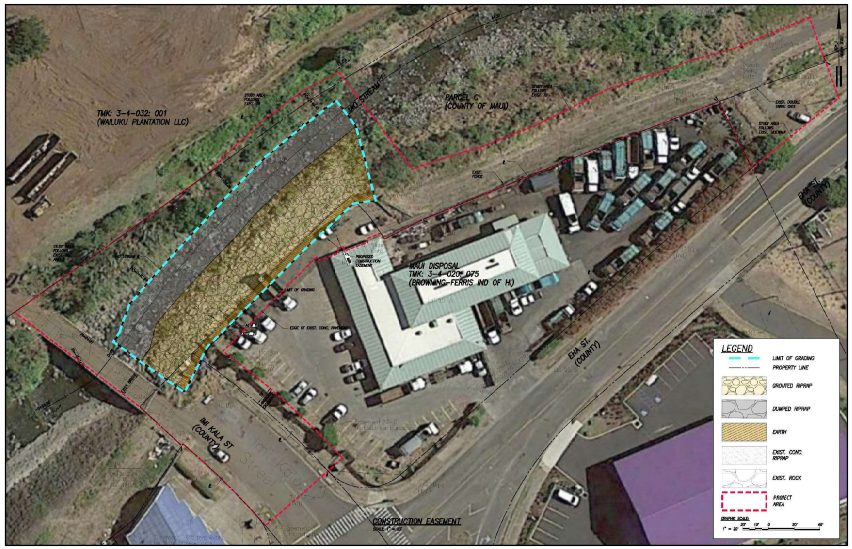

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Jobie Masagatani
Chair
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Masagatani:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

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We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

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Sincerely,

Brian Takeda

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Planning Project Manager

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Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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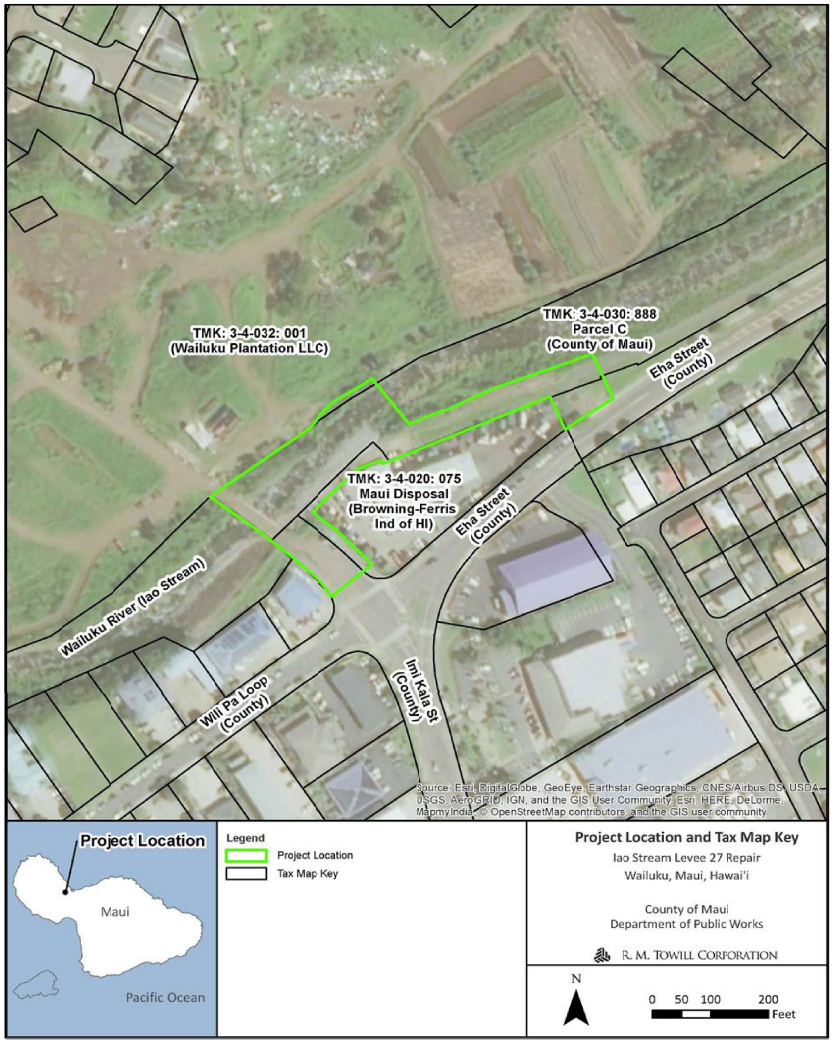
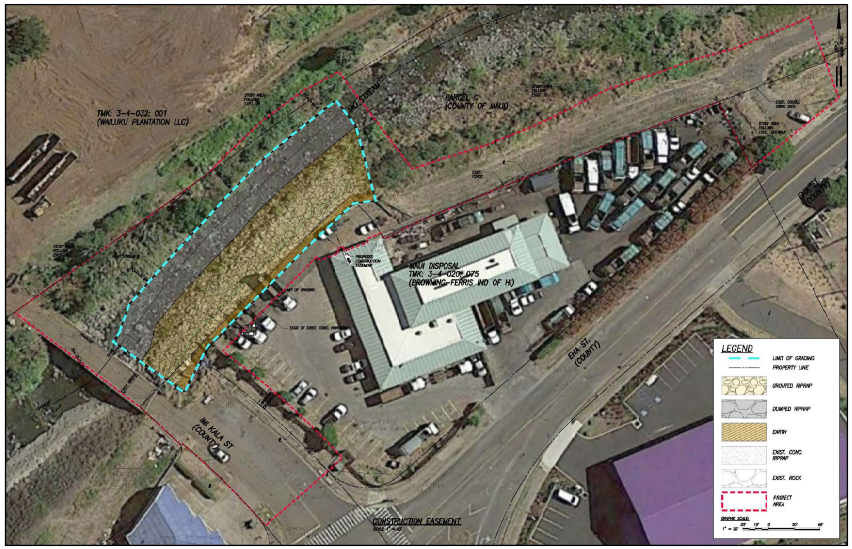


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
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Telephone 808 842 1133
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Keith Kawaoka
Acting Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

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Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

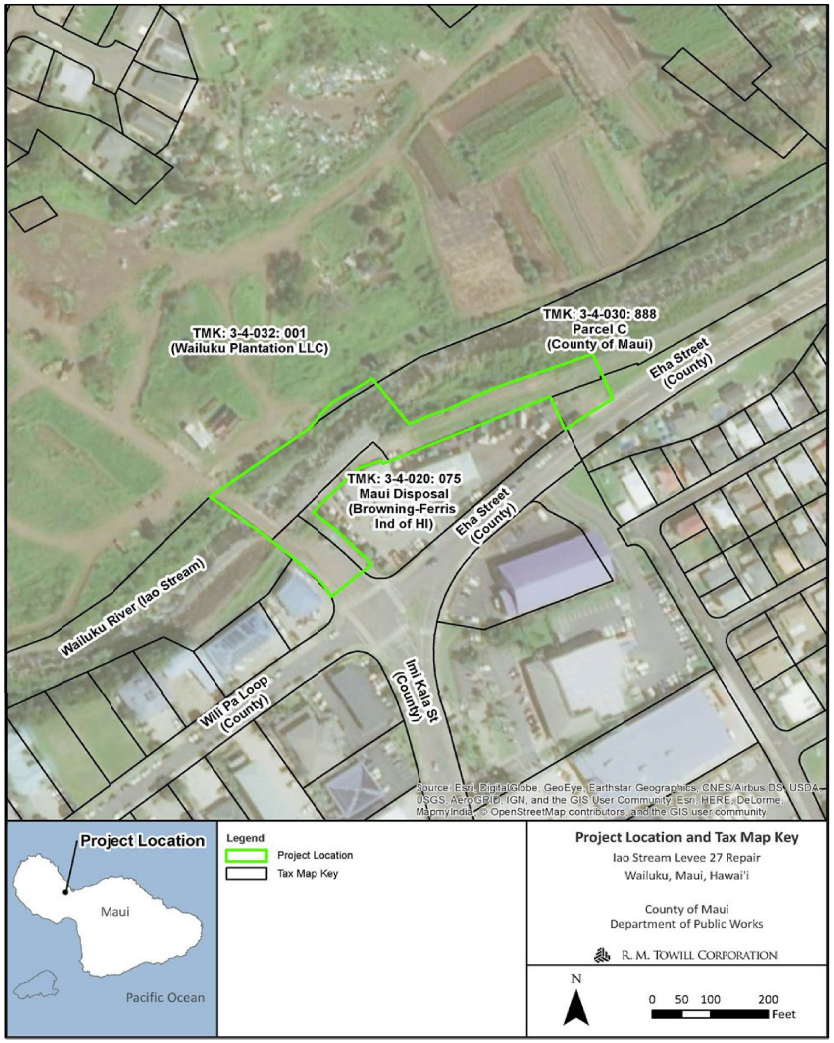
Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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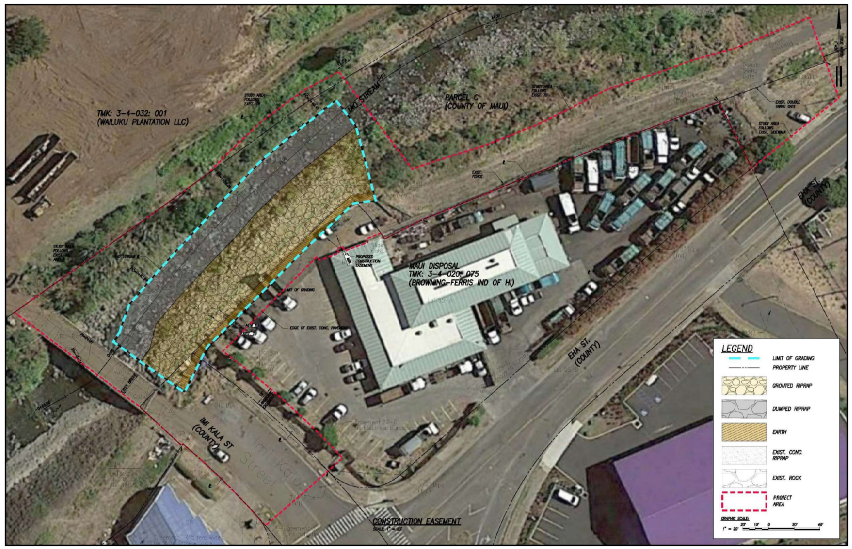

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Justine Nihipali
Planning Program Manager
Office of Planning
Hawaii CZM Program
235 South Beretania Street, 6th Floor
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Nihipali:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

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Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
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Brian Takeda

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Planning Project Manager

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Project Summary

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Consultant:	R. M. Towill Corporation
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Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
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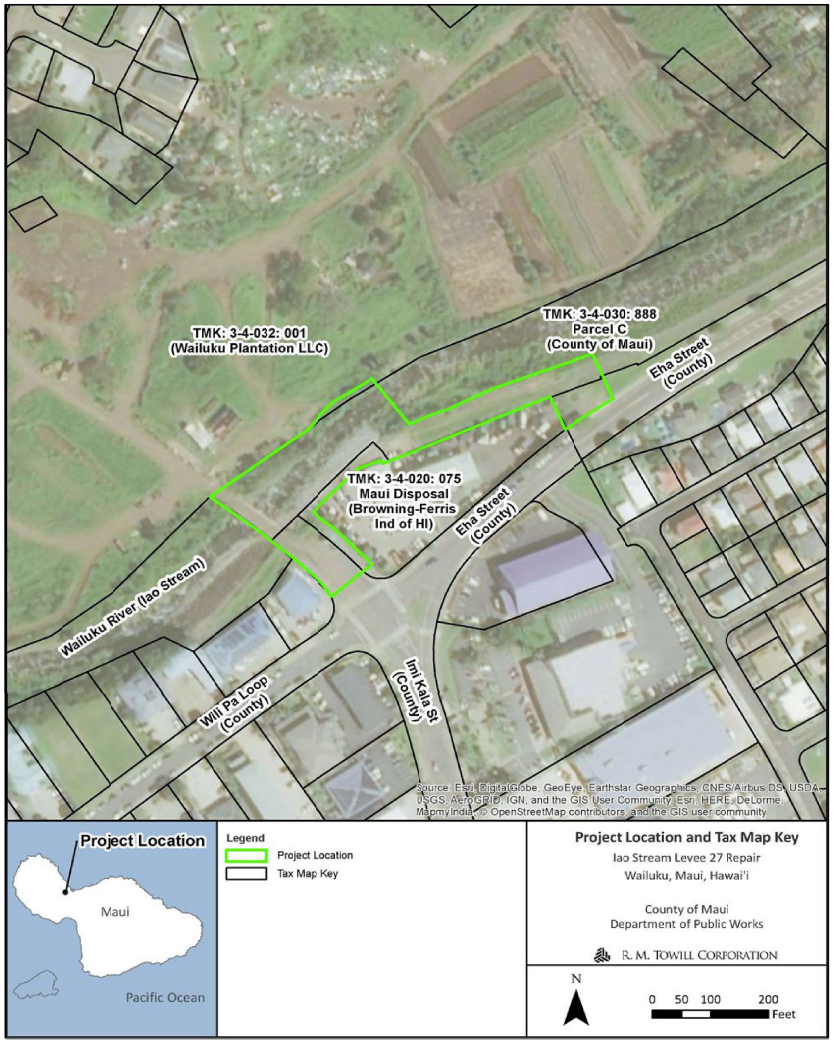
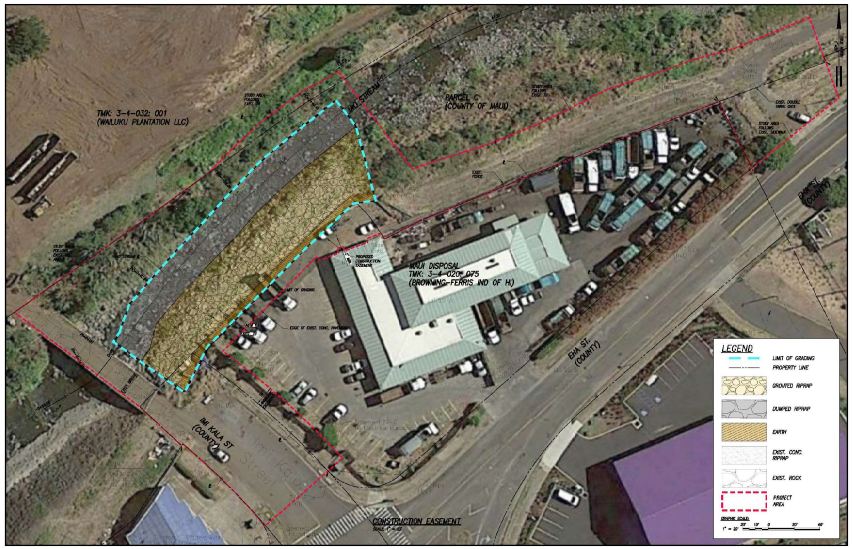


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
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Telephone 808 842 1133
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Michele Chouteau McLean
Director
Maui County Planning Department
2200 Main Street Suite 315
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. McLean:

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Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

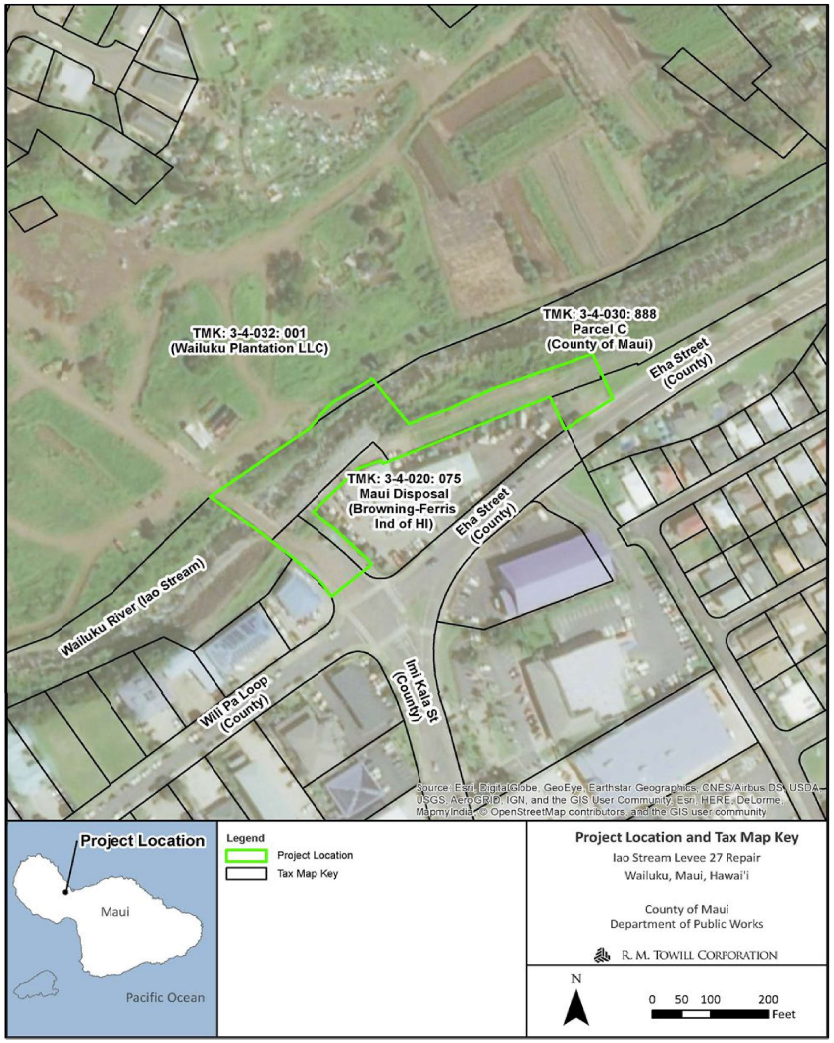
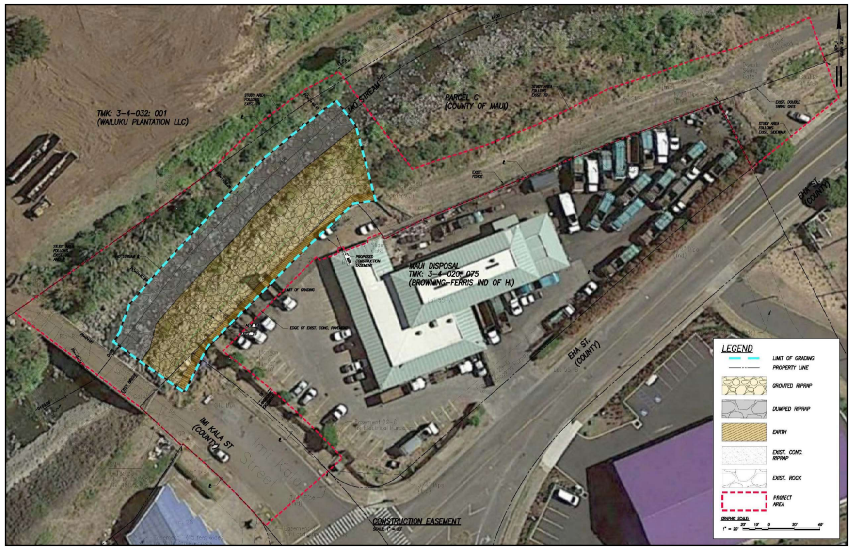


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Clayton Yoshida
Administrator
Maui County Planning & Permitting Department
Planning Division
2200 Main Street Suite 619
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Yoshida:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

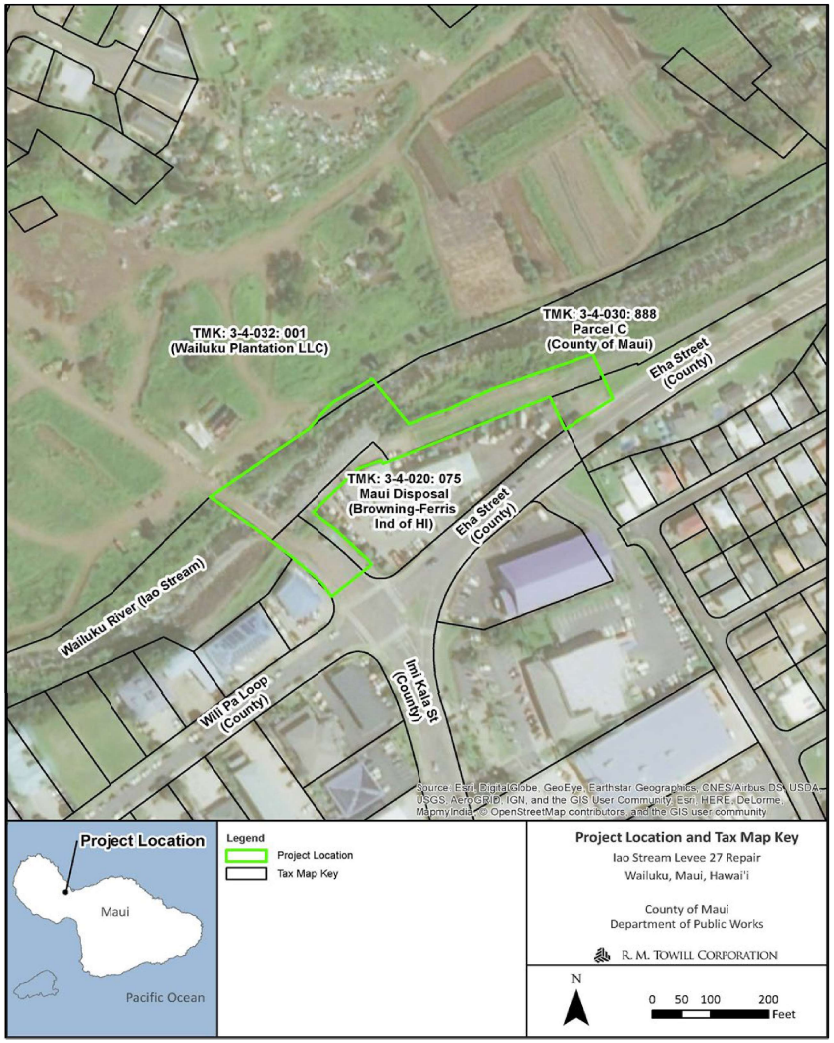
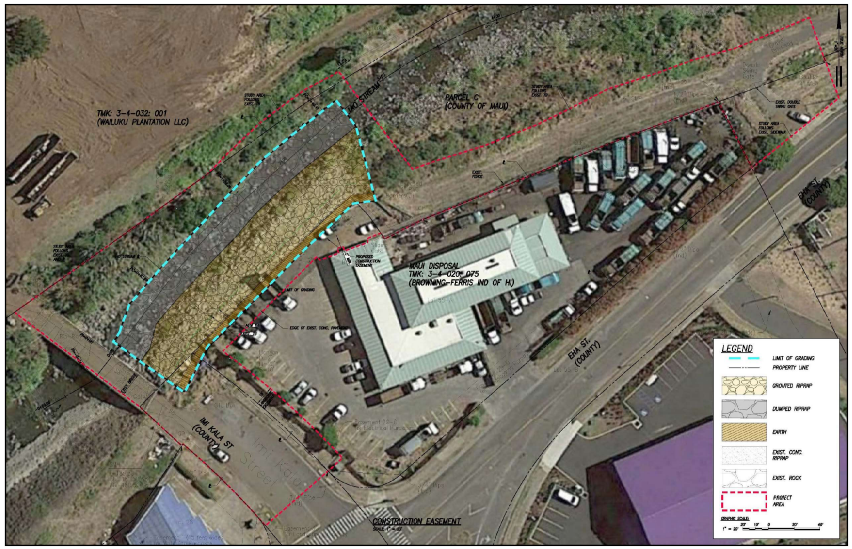


Figure 2. Overview of the Proposed Action



MICHAEL P. VICTORINO
Mayor
MICHELE CHOUTEAU MCLEAN, AICP
Director
JORDAN E. HART
Deputy Director

DEPARTMENT OF PLANNING
COUNTY OF MAUI
ONE MAIN PLAZA
2200 MAIN STREET, SUITE 315
WAILUKU, MAUI, HAWAII 96793

June 18, 2021

Kristi Ono, Project Manager
County of Maui Department of Public Works
200 South High Street, Suite 410
Wailuku, Hawaii 96793

Dear Ms. Ono:

SUBJECT: REQUEST FOR EARLY CONSULTATION COMMENTS FOR PREPARATION OF A DRAFT ENVIRONMENTAL ASSESSMENT FOR COMPLIANCE WITH CHAPTER 343, HAWAII REVISED STATUTES FOR THE PROPOSED IAO STREAM LEVEE 27 REPAIR PROJECT, LOCATED IN WAILUKU, ISLAND OF MAUI, HAWAII TMK: (2) 3-4-032:001 (POR.), (2) 3-4-030:888 Parcel C (POR.), (3) 3-4-020:075 (POR.), IMI KALA STREET AND EHA STREET (RFC 2021/0096)

The Department of Planning (Department) is in receipt of the above-referenced request for early consultation comments in preparation of a Draft Environmental Assessment (EA) for the proposed repairs on approximately 230 feet of the Wailuku River Stream bank, upstream of Iao Stream Levee 27 to protect further erosion of the bank, protect the downstream levee and provide reduced flood risk. The letter requesting comments did not include completed Zoning and Flood Confirmation Forms; but, we assume that they will be included in the Draft Environmental Assessment.

The Department notes that the parcels are outside of the Special Management Area. In addition, the work will occur outside of the exposure area for a six foot sea level rise, and outside of the tsunami evacuation areas.

In addition, the Department has the following comments:

The scope of work will occur within a Federal Emergency Management Area (FEMA)-designated floodway (Zone AE) on (2) 3-4-032:001. Therefore, in accordance with Maui County Code, Section 19.62.050(D), a Conditional Letter of Map Revision (CLOMR) should be submitted for approval by FEMA. See **Exhibit 1**. In addition, the consultant should apply for a

Flood Development Permit (FDP). FDP-approval will be held by the County pending FEMA approval of the CLOMR. For any questions with regard to special flood hazard areas, please contact the Department's Floodplain Administrator Diego Sanchez-Gomez by email at Diego.Sanchez-Gomez@co.maui.hi.us or by phone at (808) 270-7139.

Accordingly, Maui County Code, Section 19.62.100, MCC further states "The director shall not issue or recommend issuance of any permit or approval involving modification, construction, lining, or alteration of any drainage facility, river, or stream unless such modification, construction, lining, or alteration does not reduce the capacity of the drainage facility, river, or stream, or adversely affect any downstream or adjacent property." Please ensure that this information is included in the Draft EA.

Thank you for the opportunity to comment on the permit review. Should you have any questions please contact Staff Planner Tara Furukawa by email at tara.furukawa@co.maui.hi.us or by phone at (808) 270-8205.

Sincerely,

CLAYTON I. YOSHIDA
Planning Program Administrator

for MICHELE MCLEAN, AICP
Planning Director

Attachments:
xc: Brian Takeda, Planning Project Manager, R.M. Towill Corporation (PDF)
John Rapacz, Planning Program Administrator (PDF)
Diego Sanchez-Gomez, Floodplain Administrator (PDF)
Clayton I. Yoshida, Planning Program Administrator (PDF)
Tara K. Furukawa, Staff Planner (PDF)
Project File
MCM:CIY:TKF:rma
K:\WP_DOCS\Planning\RFC\2021\0096_IaoStreamLevee27Repairs\AgencyComments.docx

National Flood Hazard Layer FIRMette

FEMA

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 39.2 / 17.6 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/6/2021 at 2:06 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

EXHIBIT

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Ms. Michele McClean, AICP
Planning Director
County of Maui
Department of Planning
One Main Plaza
2200 Main Street, Suite 315
Wailuku, Maui, Hawai'i 96793

Attention: Mr. Clayton I. Yoshida, Planning Program Administrator

Dear Ms. McClean:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments dated June 18, 2021. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

> *The Department of Planning (Department) is in receipt of the above-referenced request for early consultation comments in preparation of a Draft Environmental Assessment (EA) for the proposed repairs on approximately 230 feet of the Wailuku River Stream bank, upstream of lao Stream Levee 27 to protect further erosion of the bank, protect the downstream levee and provide reduced flood risk. The letter requesting comments did not include completed Zoning and Flood Confirmation Forms; but, we assume that they will be included in the Draft Environmental Assessment.*

DPW acknowledges this comment. The Zoning and Flood Confirmation Forms from the Zoning Administration and Enforcement Division are included in the Draft EA Section 6.3.4 as Figures 6-3, 6-4, 6-5, 6-6.

> *The Department notes that the parcels are outside of the Special Management Area. In addition, the work will occur outside of the exposure area for a six foot sea level rise, and outside of the tsunami evacuation areas.*

DPW appreciates your statement acknowledging that the proposed project is outside of the Special Management Area, exposure area for a six-foot sea level rise, and tsunami evacuation area. This is identified in the Draft EA, Section 4.7 and 6.3.6.

> *In addition, the Department has the following comments:*
> *The scope of work will occur within a Federal Emergency Management Area (FEMA)-designated floodway (Zone AE) on (2) 3-4-032:001. Therefore, in accordance with Maui County Code, Section 19.62.050(0), a Conditional Letter of Map Revision (CLOMR) should be submitted for approval by FEMA. See Exhibit 1. In addition, the consultant should apply for a Flood Development Permit (FDP). FDP-approval will be held by the County pending FEMA approval of the CLOMR. For any questions with regard to special flood hazard areas, please contact the Department's Floodplain Administrator Diego Sanchez-Gomez by email at Diego.Sanchez-Gomez@co.maui.hi.us or by phone at (808) 270-7139.*

DPW acknowledges that the project will occur within a Federal Emergency Management Area (FEMA)-designated floodway (Zone AE) on (2) 3-4-032:001. During consultation with the County of Maui, Floodplain Administrator, Diego Sanchez-Gomez, it was determined that a Conditional Letter of Map Revision (CLOMR) would not be required if Simple Encroachment Calculations were submitted for the project showing no loss of conveyance (No-Rise). Because no loss of conveyance (No-Rise) is expected as a result of the proposed project, Simple Encroachment Calculations will be submitted for approval by County of Maui, Department of Planning. Only in the event that the project’s Simple Encroachment Calculations show a loss of conveyance would a CLOMR be submitted for approval by FEMA. In addition, a Flood Development Permit will be submitted for approval by the County of Maui. This is identified in the Draft EA, Section 4.7 and 7.

> *Accordingly, Maui County Code, Section 19.62.l00, MCC further states "The director shall not issue or recommend issuance of any permit or approval involving modification, construction, lining, or alteration of any drainage facility, river, or stream unless such modification, construction, lining, or alteration does not reduce the capacity of the drainage facility, river, or stream, or adversely affect any downstream or adjacent property." Please ensure that this information is included in the Draft EA.*

DPW acknowledges this comment and will ensure the project complies with Maui County Code, Section 19.62.l00. The proposed repairs to the revetment system would not reduce the capacity of Wailuku River or adversely affect any downstream or adjacent property. This is identified in the Draft EA, Section 4.7.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Jeffrey T. Pearson
Director
Department of Water Supply
200 South High Street, 5th Floor
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Pearson:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

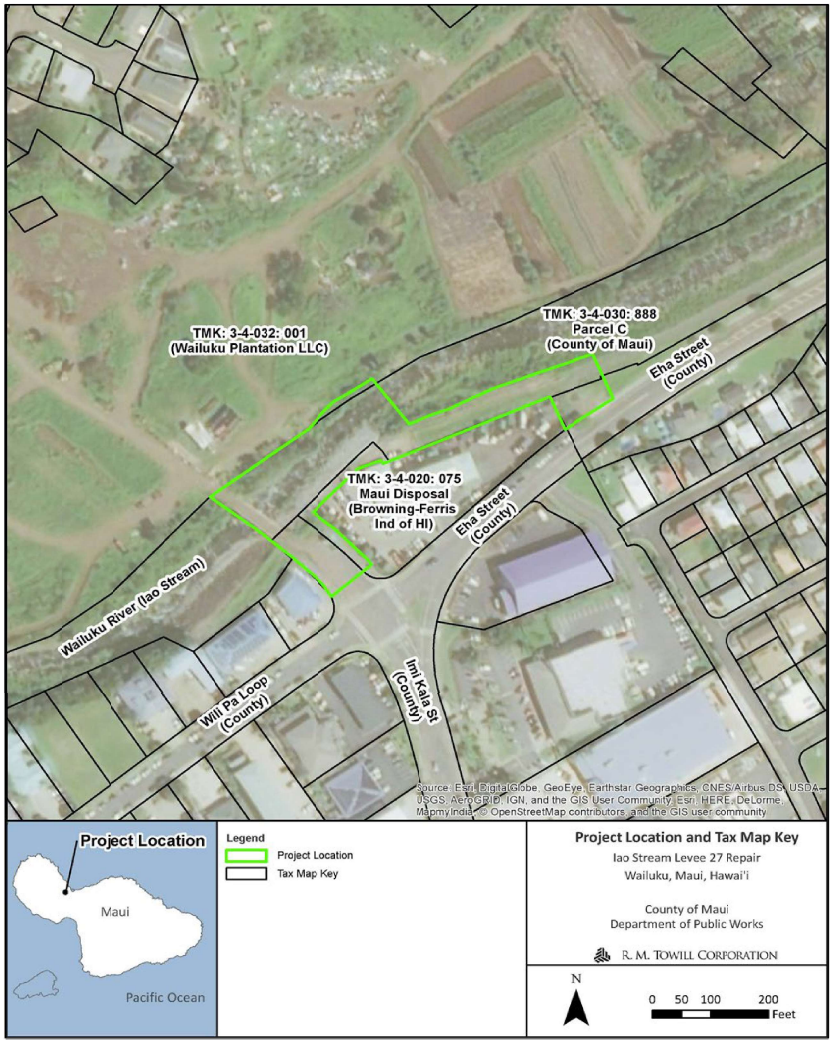
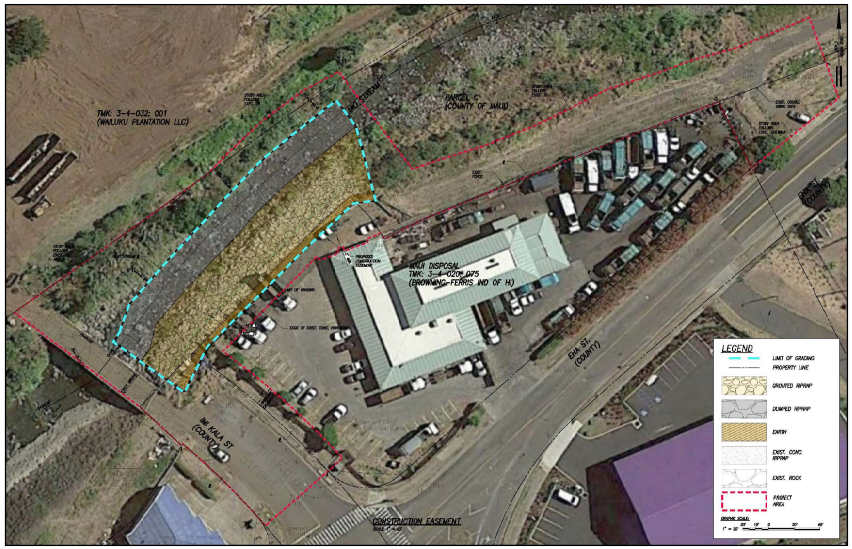


Figure 2. Overview of the Proposed Action



MICHAEL P. VICTORINO
Mayor

JEFFREY T. PEARSON, P.E.
Director

HELENE KAU
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793
www.mauicounty.gov/water

June 14, 2021

Ms. Kristi Ono, Project Manager
County of Maui Department of Public Works
Engineering Division
200 South High Street, Room 410
Wailuku, Maui, Hawai'i, 96793

Dear Ms. Ono:

Re: Preassessment for 'Īao Stream Levee 27 Repair Project
TMKs: (2)-3-4-032:001 (Por.; Wailuku Plantation LLC); (2)-3-4-030:888 (Parcel C.; Por.: County of Maui); (2)-3-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. Of Hi.); and Imi Kala Street and Eha Street (No TMKs; county of Maui)
Wailuku, Maui, Hawai'i

Thank you for the opportunity for the County of Maui Department of Water Supply's (MDWS) Water Resources and Planning Division to comment on the Preassessment for 'Īao Stream Levee 27 Repair Project. The MDWS Central Maui System services the Wailuku area, within which the project is located.

MDWS Infrastructure

The proposed project site is near MDWS infrastructure. The MDWS has a 36-inch water pipe that crosses the stream approximately 42 feet mauka of the project boundary. A 12-inch water pipe runs along Eha Street, approximately 35 feet southeast of the project boundary. Please contact Tammy Yeh at DWS Engineering (270-7835) to verify accuracy of the waterline location before construction.

Construction BMPs for Pollution Prevention

In order to protect ground and surface water resources, we recommend that in addition to any required Best Management Practices (BMPs), the following measures designed to minimize infiltration and runoff

be implemented during construction:

1. Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground.
2. Properly and promptly dispose of all loosened and excavated soil and debris material from drainage structure work.
3. Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site.
4. Properly install and maintain erosion control barriers such as silt fencing or straw bales.
5. Disturb the smallest area possible.
6. Retain ground cover until the last possible date. Stabilize denuded areas by sodding or planting as soon as possible. Use high seeding rates to ensure rapid establishment of stands of plants. In order to minimize chemical run-off, apply biocides only during dry periods of low rainfall.
7. Keep run-off on site.

We hope you find this information useful. Should you have any questions, please contact staff planner Alex Buttaro at (808) 463-3103 or alex.buttaro@mauicounty.gov.

Sincerely,

Jeffrey T. Pearson, P.E.
Director
BAB

Cc: MDWS Engineering
Brian Takeda, R.M. Towill Corporation

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2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Mr. Jeffrey T. Pearson, P.E.
Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Maui, Hawai'i 96793

Dear Mr. Pearson:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 14, 2021. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

> *Thank you for the opportunity for the County of Maui Department of Water Supply's (MDWS) Water Resources and Planning Division to comment on the Preassessment for 'Iao Stream Levee 27 Repair Project. The MDWS Central Maui System services the Wailuku area, within which the project is located.*

DPW acknowledges the County of Maui Department of Water Supply's Central Maui System services the Wailuku area. This is identified in the Draft EA, Section 4.13.2.

> ***MDWS Infrastructure***
> *The proposed project site is near MDWS infrastructure. The MDWS has a 36-inch water pipe that crosses the stream approximately 42 feet mauka of the project boundary. A 12-inch water pipe runs along Eha Street, approximately 35 feet southeast of the project boundary. Please contact Tammy Yeh at DWS Engineering (270-7835) to verify accuracy of the waterline location before construction.*

DPW acknowledges this comment and thanks the Department of Water Supply for information regarding the location of two nearby water pipes. DPW will ensure the contractor verifies existing infrastructure locations prior to the start of construction. This is identified in the Draft EA, Section 4.13.2.

> ***Construction BMPs for Pollution Prevention***
> *In order to protect ground and surface water resources, we recommend that in addition to any required Best Management Practices (BMPs), the following measures designed to minimize infiltration and runoff be implemented during construction:*
> 1. *Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground.*
> 2. *Properly and promptly dispose of all loosened and excavated soil and debris material from drainage structure work.*
> 3. *Maintain vehicles and equipment to prevent oil or other fluids from leaking. Concrete trucks and tools used for construction should be rinsed off-site.*
> 4. *Properly install and maintain erosion control barriers such as silt fencing or straw bales.*
> 5. *Disturb the smallest area possible.*
> 6. *Retain ground cover until the last possible date. Stabilize denuded areas by sodding or planting as soon as possible. Use high seeding rates to ensure rapid establishment of stands of plants. In order to minimize chemical run-off, apply biocides only during dry periods of low rainfall.*
> 7. *Keep run-off on site.*

DPW acknowledges this comment and will implement the measures above, to the extent practicable, to minimize infiltration and runoff during construction to ensure the protection of ground and surface water resources. This is identified in the Draft EA, Section 4.5.1.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Eric Nakagawa
Director
Department of Environmental Management
2050 Main Street, Suite 2B
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Nakagawa:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

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Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

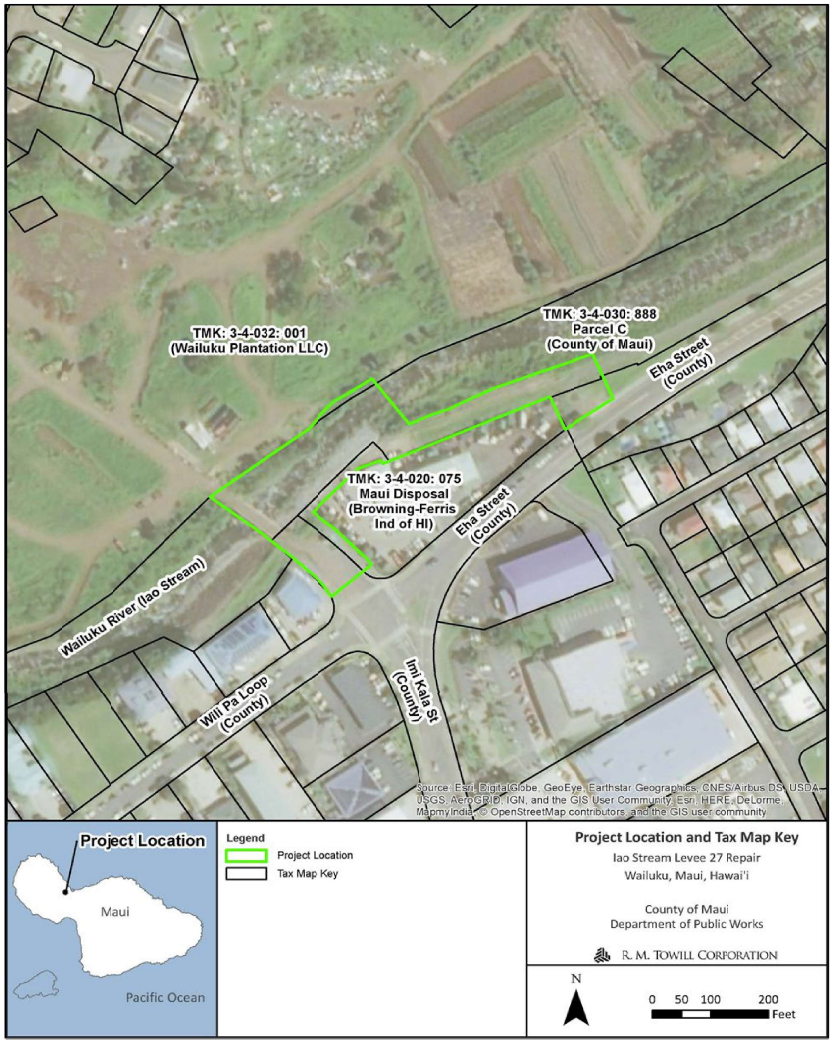
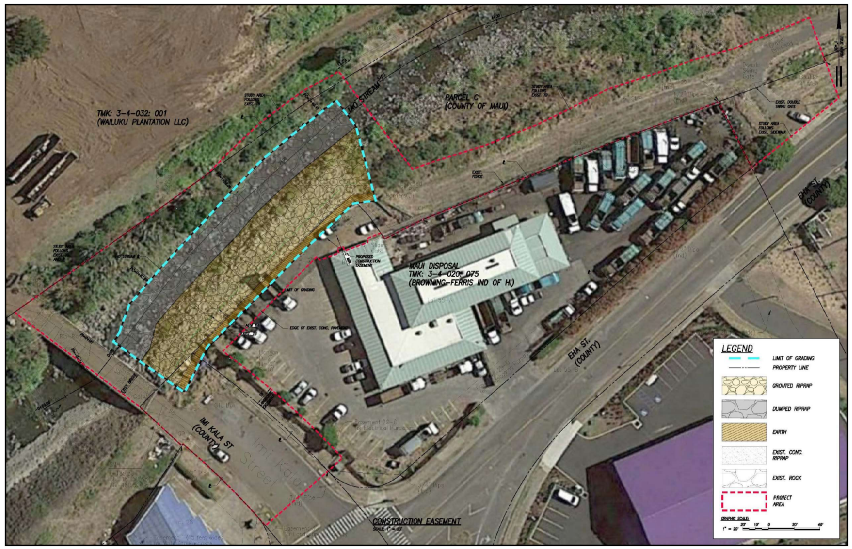


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Karla Peters
Director
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Peters:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

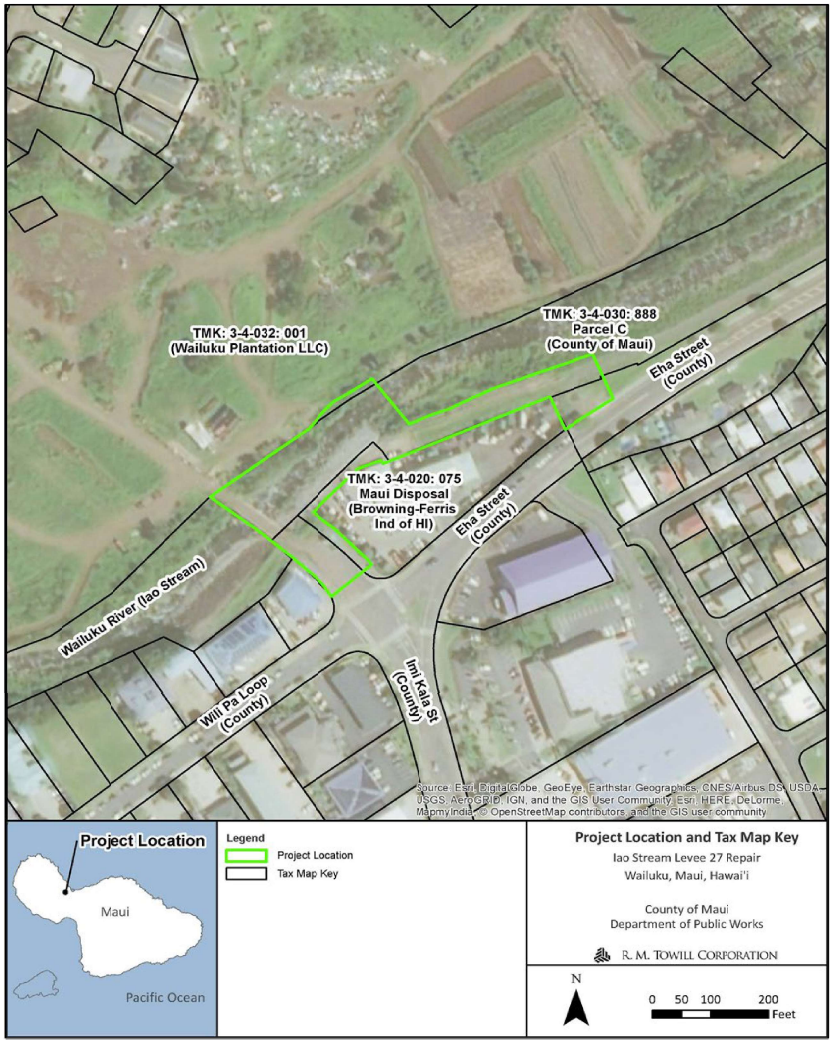
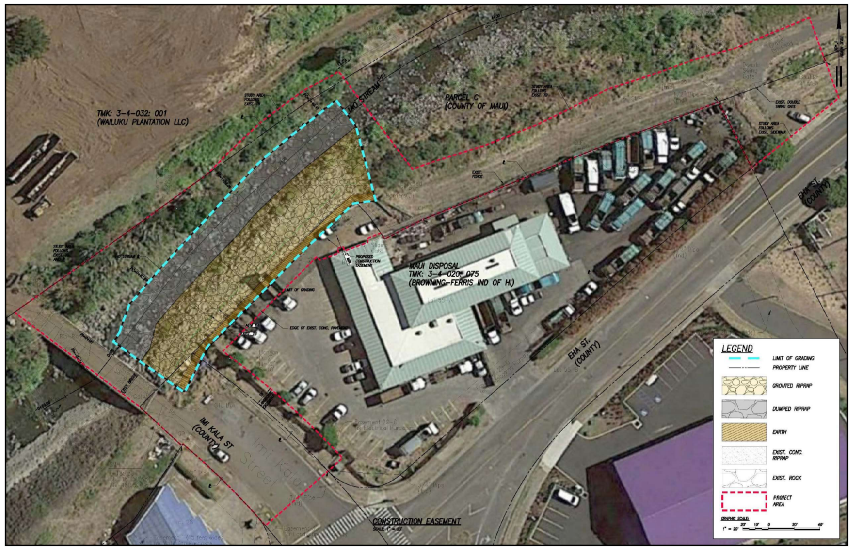


Figure 2. Overview of the Proposed Action



MICHAEL P. VICTORINO
Mayor

KARLA H. PETERS
Director

MARY A. KIELTY
Deputy Director

DEPARTMENT OF PARKS AND RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawai'i 96793
Main Line (808) 270-7230 / Facsimile (808) 270-7942

June 3, 2021

Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room 410
Wailuku, HI 96793

Dear Ms. Ono:

SUBJECT: HAWAII REVISED STATUTES (HRS), CHAPTER 343, ENVIRONMENTAL ASSESSMENT (EA) PRE-ASSESSMENT FOR IAO STREAM LEVEE 27 REPAIR PROJECT, WAILUKU DISTRICT, ISLAND OF MAUI, HAWAII, TAX MAP KEYS (TMKS): (2) 3-4-032:001 (POR.; WAILUKU PLANTATION LLC); (2) 3-4-030:888 PARCEL C (POR.; COUNTY OF MAUI); (2) 3-4-020:075 (POR.; MAUI DISPOSAL CO., INC. BROWNING-FERRIS IND. OF HI.); AND IMI KALA STREET AND EHA STREET (NO TMKS; COUNTY OF MAUI)

Thank you for the opportunity to review and comment on the subject project. The Department of Parks and Recreation has no comment at this time.

Should you have any questions, please feel free to contact me or Samual Marvel, Chief of Planning and Development, at samual.marvel@co.maui.hi.us or (808) 270-6173.

Sincerely,

KARLA H. PETERS
Director of Parks and Recreation

c: Brian Takeda, R.M. Towill Corporation, Planning Project Manager
Samual Marvel, Chief of Planning and Development

KHP:SM:csa

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Ms. Karla H. Peters, Director
County of Maui
Department of Parks and Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawai'i 96793

Dear Ms. Peters:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 3, 2021.

We acknowledge that the Department of Parks and Recreation does not have any comments at this time.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Marc Takamori
Director
Department of Transportation
2145 Kaohu Street, Suite 102
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Takamori:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

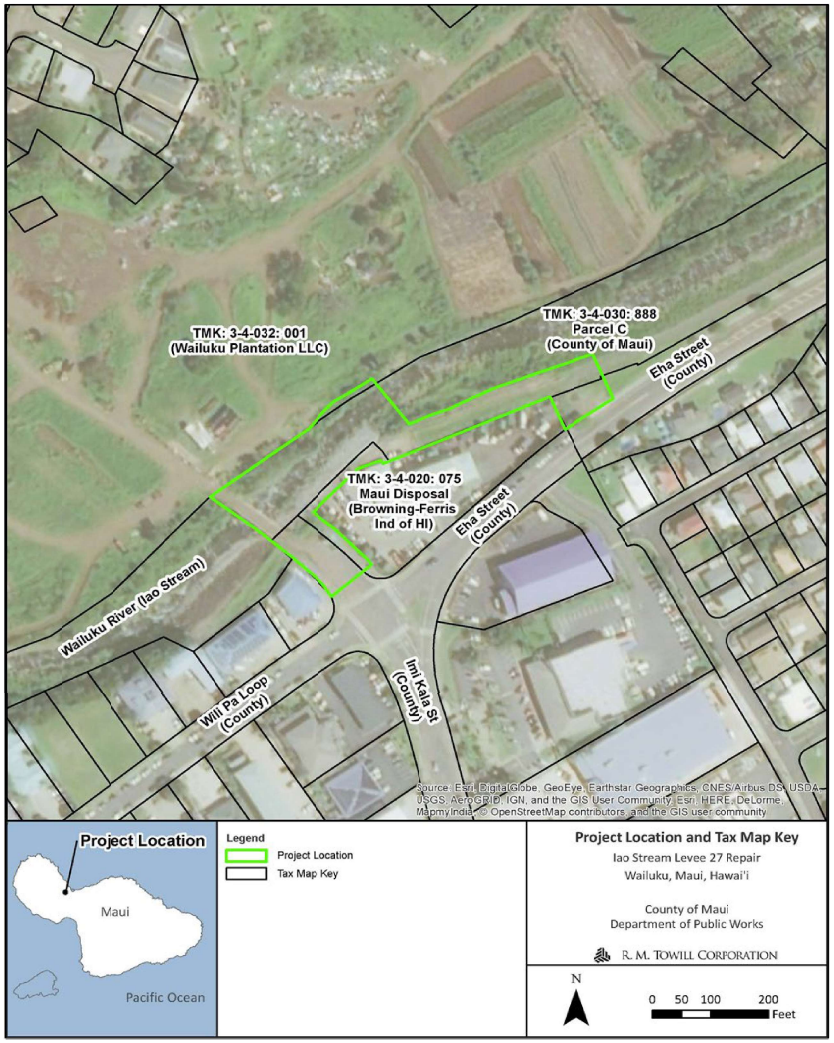
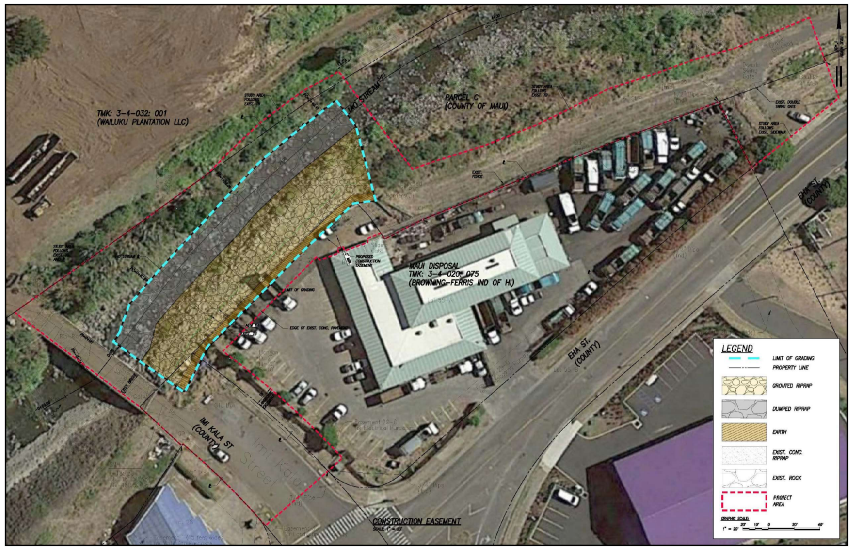


Figure 2. Overview of the Proposed Action



MICHAEL P. VICTORINO
Mayor

MARC I. TAKAMORI
Director

MICHAEL B. DU PONT
Deputy Director

DEPARTMENT OF TRANSPORTATION
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAI'I 96793

TELEPHONE: (808) 270-7511
FAX: (808) 270-7505

June 14, 2021

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, HI 96793
Email: Kristi.ono@co.maui.hi.us

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, HI 96819
Email: briant@rmtowill.com

SUBJECT: 'IAO STREAM LEVEE 27 REPAIR PROJECT

Dear Ms. Ono,

Thank you for the opportunity to review and comment on this project.

It was stated that access to the site will be off of Imi Kala Street. We have 2 Maui Buses traveling through Imi Kala Street and Wili Pa Loop on an hourly basis. If there are any plans to close any of those two streets, please notify our department ahead of the schedule so we're able to plan for a re-route.

Other than mentioned, we have no additional comments.

Sincerely,

Marc Takamori
Director

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

August 6, 2021

Mr. Marc Takamori, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Maui, Hawai'i 96793

Dear Mr. Takamori:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 14, 2021. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

> *It was stated that access to the site will be off of lmi Kala Street. We have 2 Maui Buses traveling through lmi Kala Street and Wili Pa Loop on an hourly basis. If there are any plans to close any of those two streets, please notify our department ahead of the schedule so we're able to plan for a re-route. Other than mentioned, we have no additional comments.*

DPW acknowledges this comment. During construction, primary construction access to the section of Wailuku River where the repairs to the revetment system are proposed is planned to be from Eha Street, northeast of Imi Kala Street and the Maui Disposal Co, Inc. site. Access from Eha Street is not expected to impact traffic.

Additionally, Imi Kala Street, from its intersection with Wili Pa Loop and Eha Street to the Imi Kala Street bridge will be used for staging and storage of construction materials and for possible access to the construction site. The section of Imi Kala Street that will be used, ends at the Imi Kala Street bridge which is barricaded off and does not allow for through traffic over the bridge. Imi Kala Street and Eha Street are both under the jurisdiction of the County of Maui.

The project will continue to be coordinated with the County of Maui, Department of Transportation, and a work on county highway permit obtained as necessary for the use of the section of Imi Kala Street from the bridge crossing of Wailuku River to the intersection of Imi Kala Street with Eha Street and Wili Pa Loop. The remainder of Eha Street and Imi Kala Street, including their intersection with Wili Pa Loop, is not expected to be affected by the proposed project. Therefore, no impact to traffic traveling through the area is expected. Accordingly, no impacts to buses traveling through Imi Kala Street and Wili Pa Loop are expected. This is identified in the Draft EA, Section 4.13.1.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Mike Victorino
Mayor
Office of the Mayor
200 South High Street, 9th Floor
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Victorino:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

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Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

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Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

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We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
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Wailuku, Maui, Hawai'i 96793
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With a copy to:

Mr. Brian Takeda, Planning Project Manager
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Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
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Special Management Area:	No
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Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

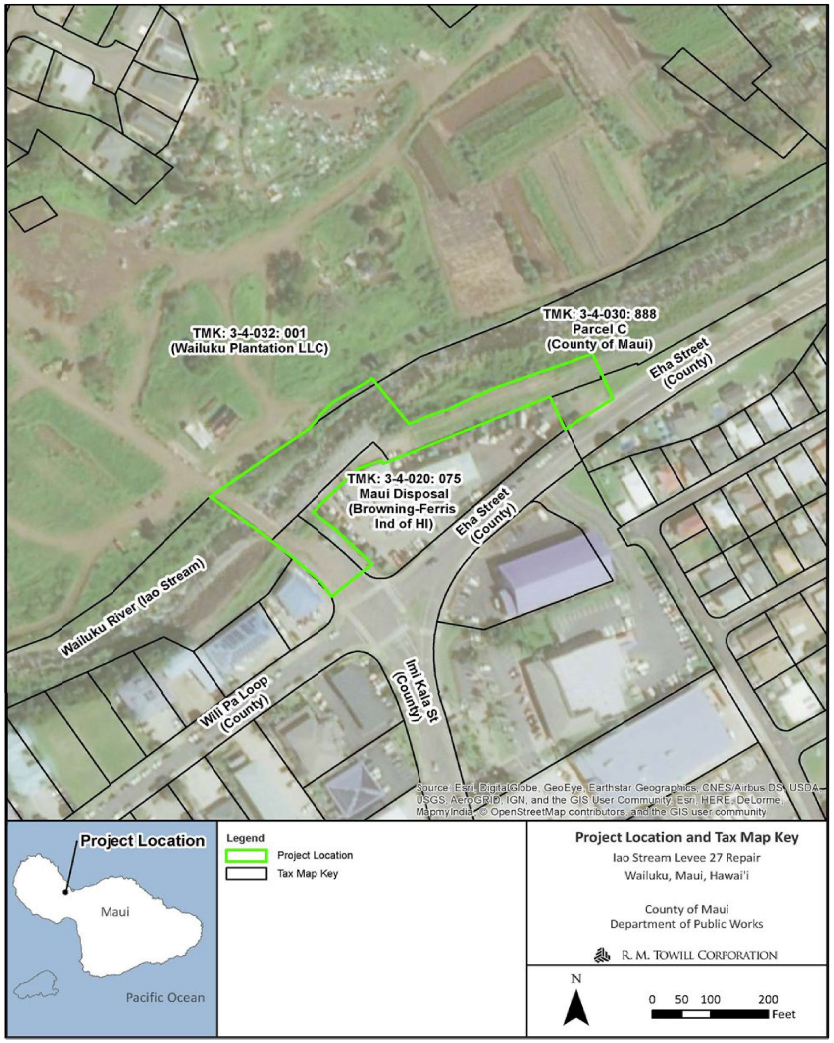
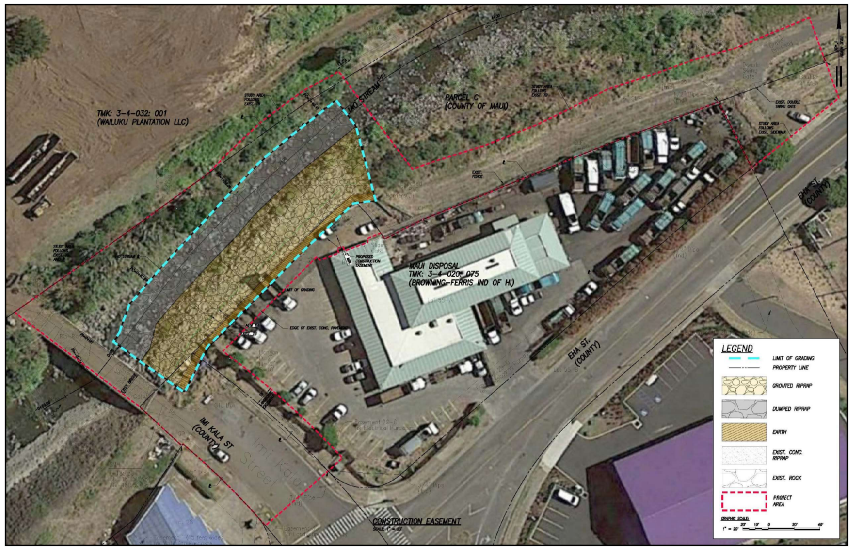


Figure 2. Overview of the Proposed Action



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Suite 200
Honolulu Hawaii 96819-3470
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Rodrigo Rabara
Division Chief
Maui County Engineering Division
200 South High Street, 4th Floor
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Rabara:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

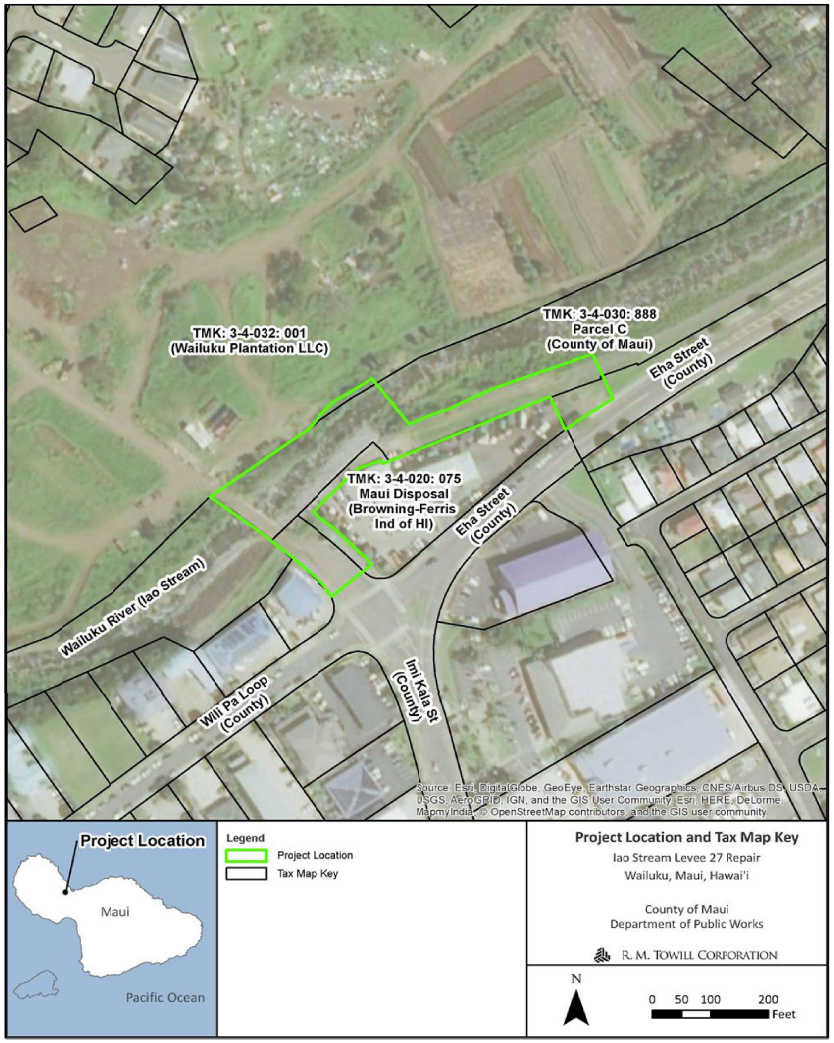
Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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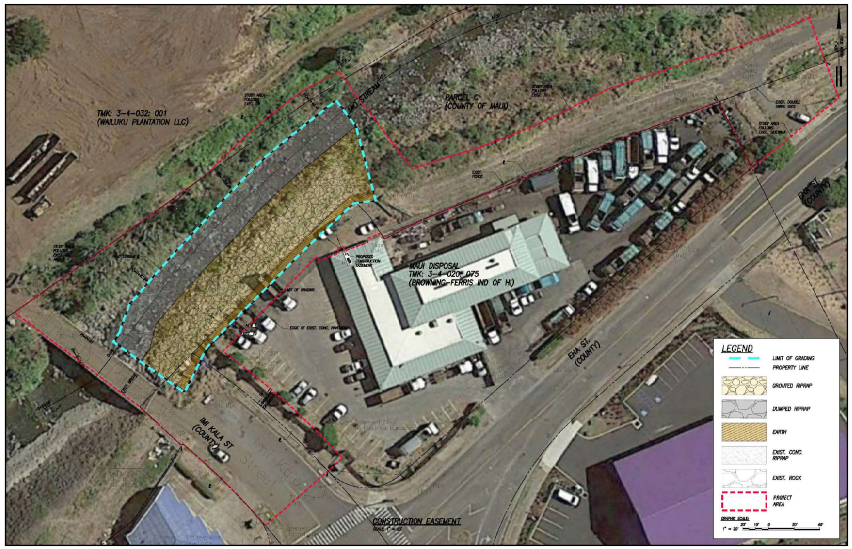

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Mr. Tivoli Faaumu
Chief of Police
Maui Police Department
55 Mahalani Street
Wailuku, HI, 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

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County of Maui, Department of Public Works
Engineering Division
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Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

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Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

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Project Summary

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Figure 1. Project Location and Tax Map Key

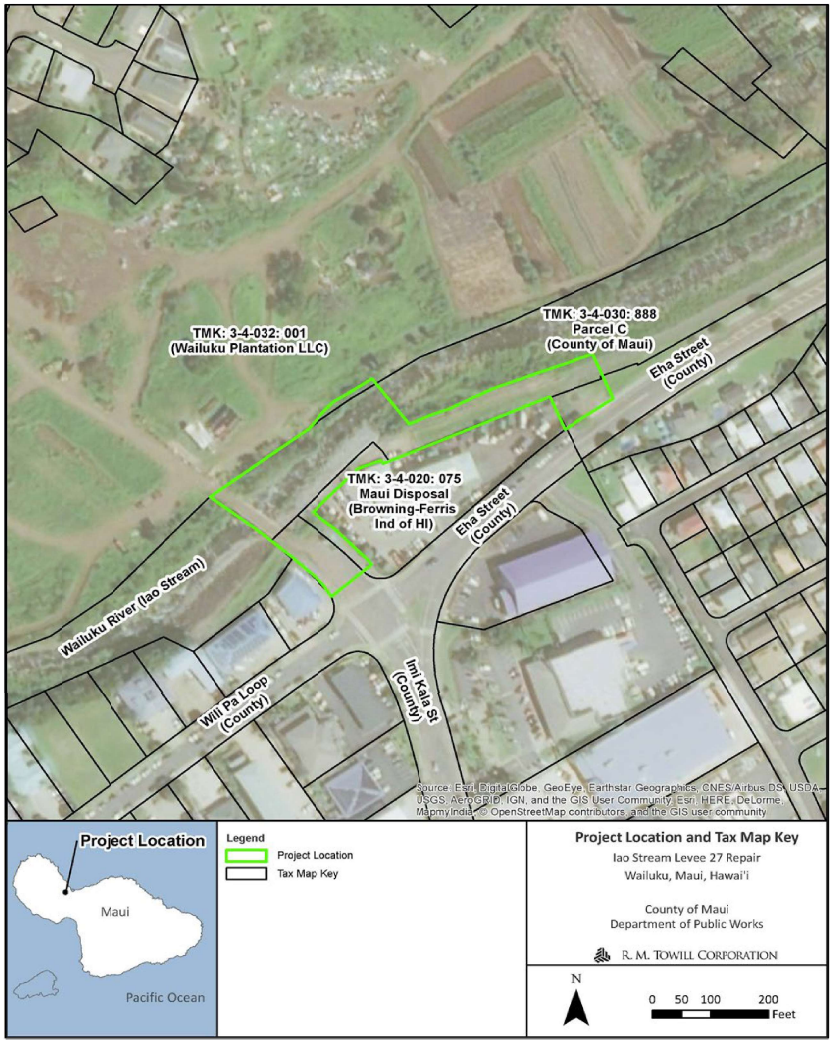
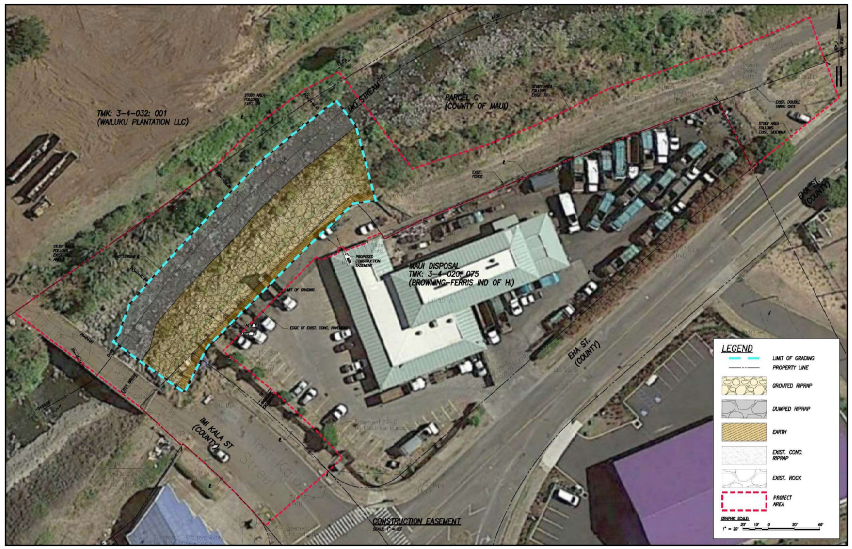


Figure 2. Overview of the Proposed Action



MICHAEL P. VICTORINO
MAYOR

OUR REFERENCE

YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

TIVOLI S. FAAUMU
CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

June 7, 2021

Mr. Brian Takeda
Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawaii 96819

Re: Hawaii Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Pre-assessment for Iao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaii TMK: (2) 3-4-032:001 (por.), (2) 3-4-030:888 (por), (2) 3-4-020:075 (por.), and Imi Kala Street and Eha Street

Dear Mr. Takeda:

This is in response to your letter dated May 27, 2021 requesting comments for the preparation of the environmental assessment for the Iao Stream Levee 27 repair project.

In review of the submitted documents, we would like to recommend the project meets the minimal standards set forth by county codes and state laws. If the roads will be temporarily closed to alternating traffic, we ask the project manager utilize flag men to conduct traffic control and proper signage posted along the routes during construction.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Assistant Chief John Jakubczak
for: DEAN M. RICKARD
Acting Chief of Police

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
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Planning
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August 6, 2021

Dean M. Rickard, Acting Chief of Police
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai‘i 96793

Dear Acting Chief Rickard:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 7, 2021. The following has been prepared in response to your comments (your comments have been *italicized* for reference):

> *In review of the submitted documents, we would like to recommend the project meets the minimal standards set forth by county codes and state laws. If the roads will be temporarily closed to alternating traffic, we ask the project manager utilize flag men to conduct traffic control and proper signage posted along the routes during construction.*

DPW acknowledges this comment and will ensure the project meets the minimal standards set forth by county codes and state laws. If temporary closure of roadways to alternating traffic is required during construction, DPW will utilize flag personnel or approved equivalent to conduct traffic controls and post proper signage along the routes. This is identified in the Draft EA, Section 4.13.1.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
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May 27, 2021

Mr. David Thyne
Fire Chief
Fire and Public Safety
200 Dairy Road
Kahului, HI 96732-2978

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Thyne:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

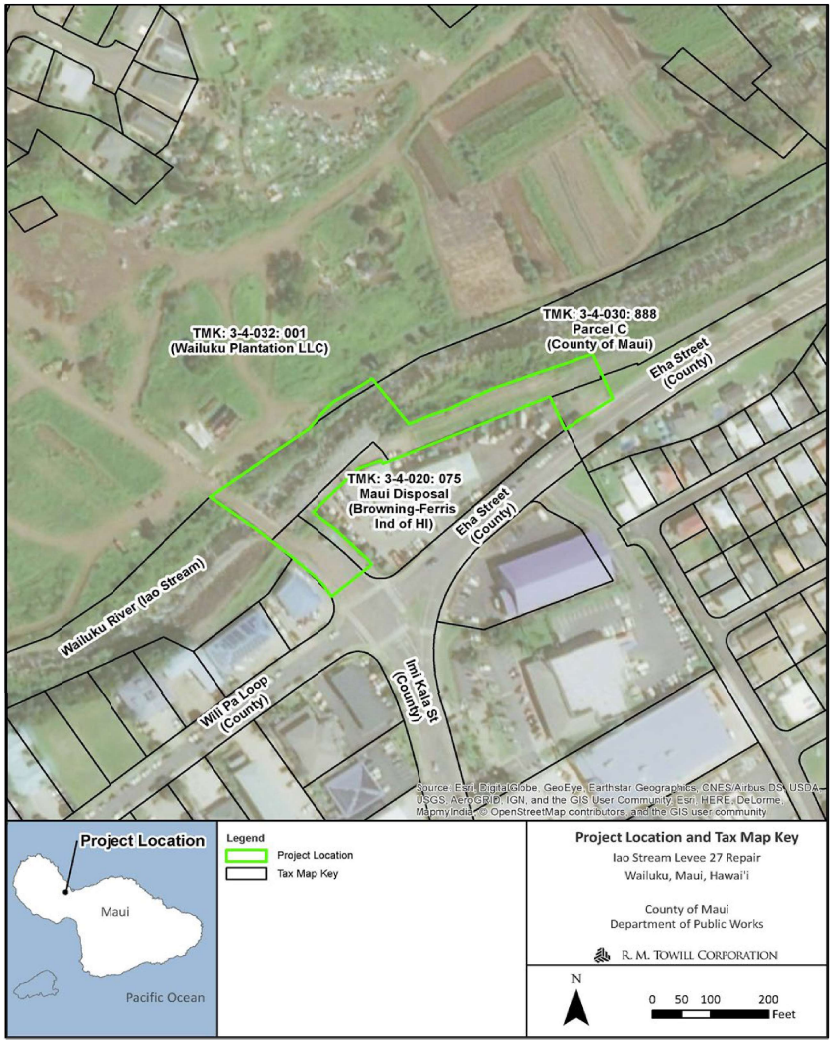
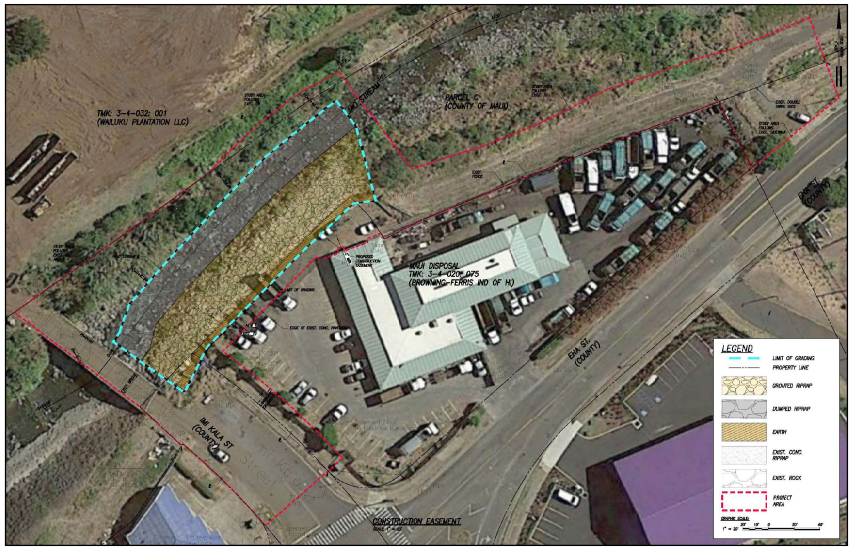


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
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Telephone 808 842 1133
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R. M. TOWILL CORPORATION
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Planning
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May 27, 2021

Mr. Brian Schatz
U.S. Senator
300 Ala Moana Blvd., Rm 7-212
Honolulu, HI 96850

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Schatz:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

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The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

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

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Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

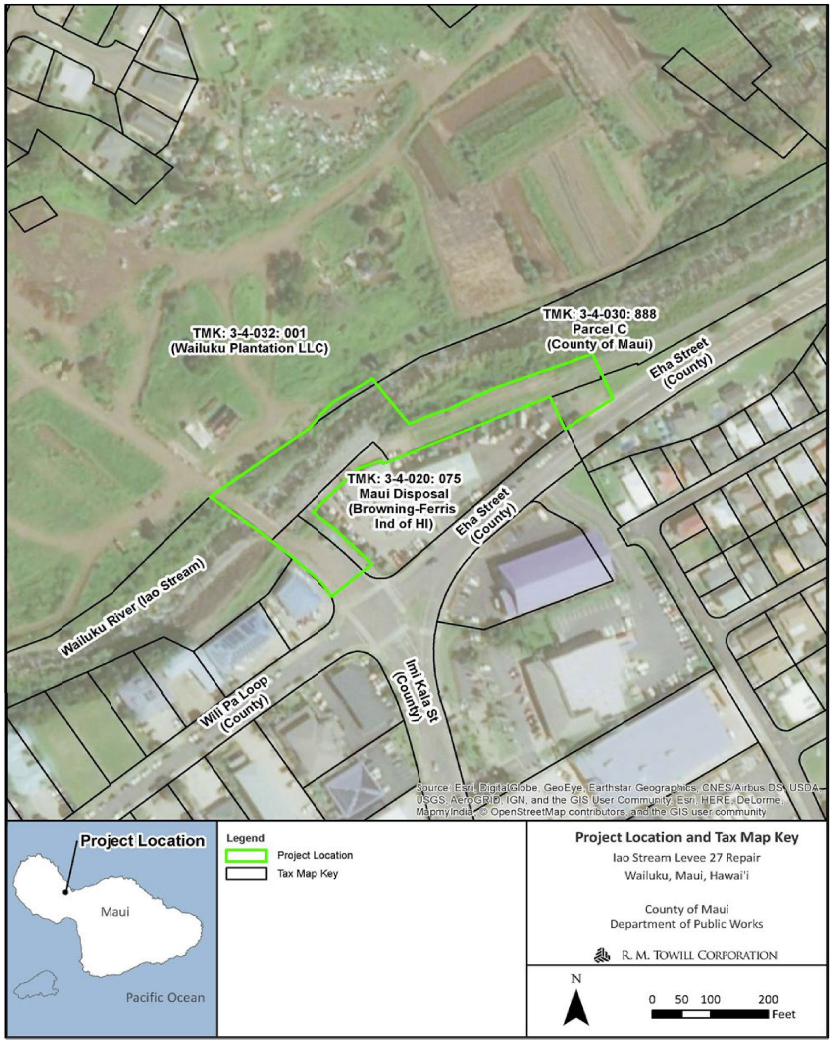
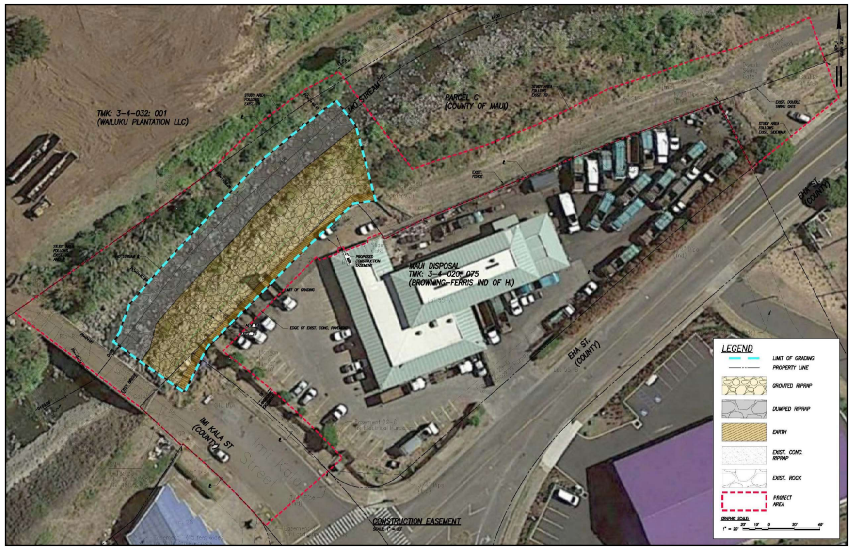


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Mazie Hirono
U.S. Senator
300 Ala Moana Blvd. Rm. 3-106
Honolulu, HI 96850

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Hirono:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

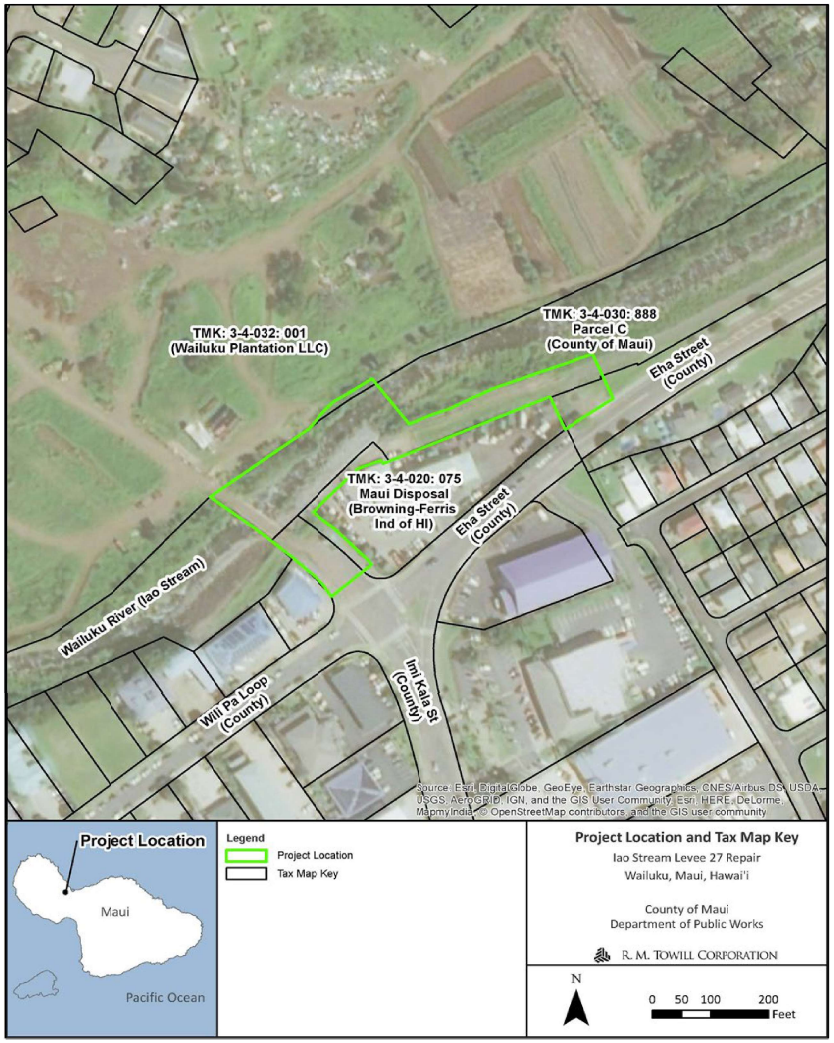
Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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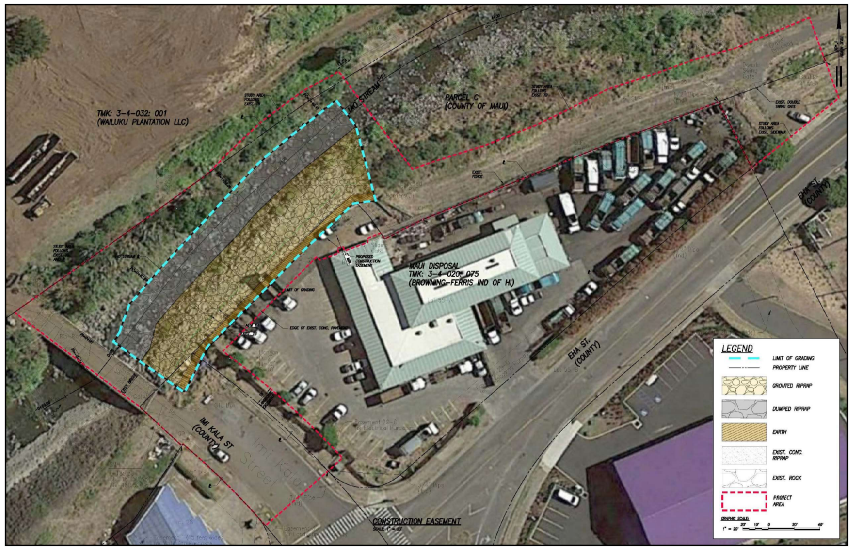

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SINCE 1930

Planning
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Environmental Services
Photogrammetry
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Construction Management

May 27, 2021

Mr. Ed Case
U.S. Representative
1003 Bishop Street, Suite 1110
Honolulu, HI 96813

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Case:

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We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
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Figure 1, Project Location and Tax Map Key
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Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
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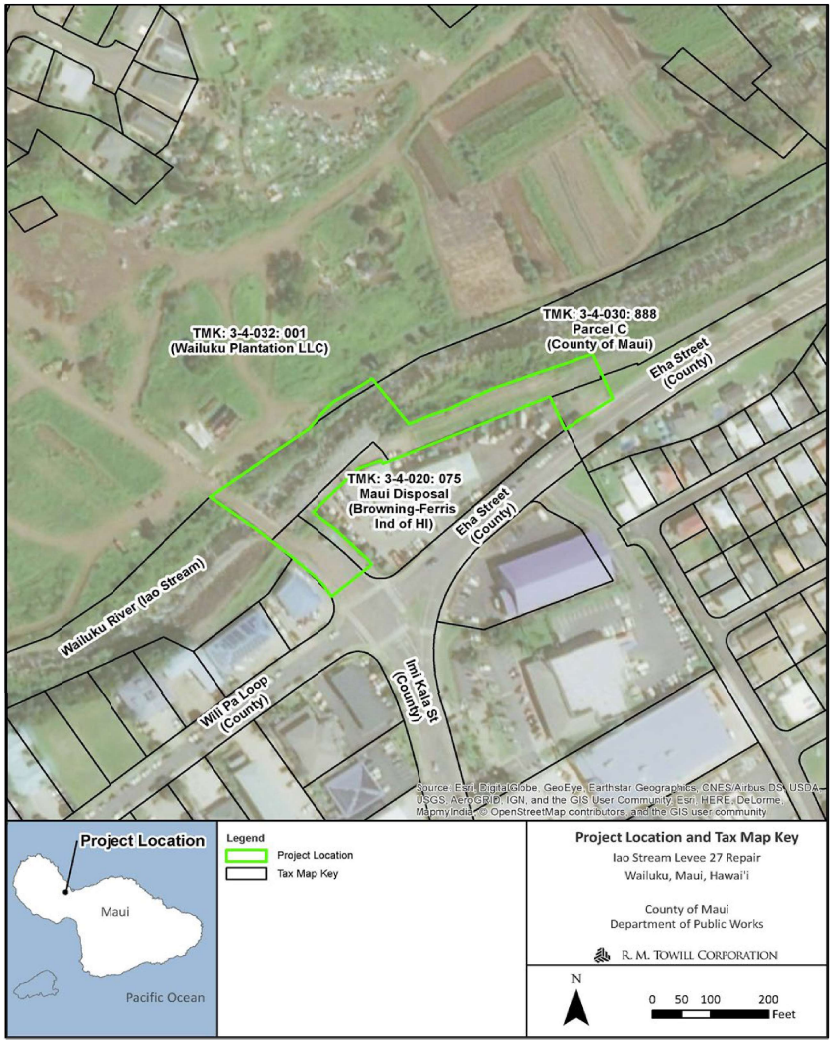
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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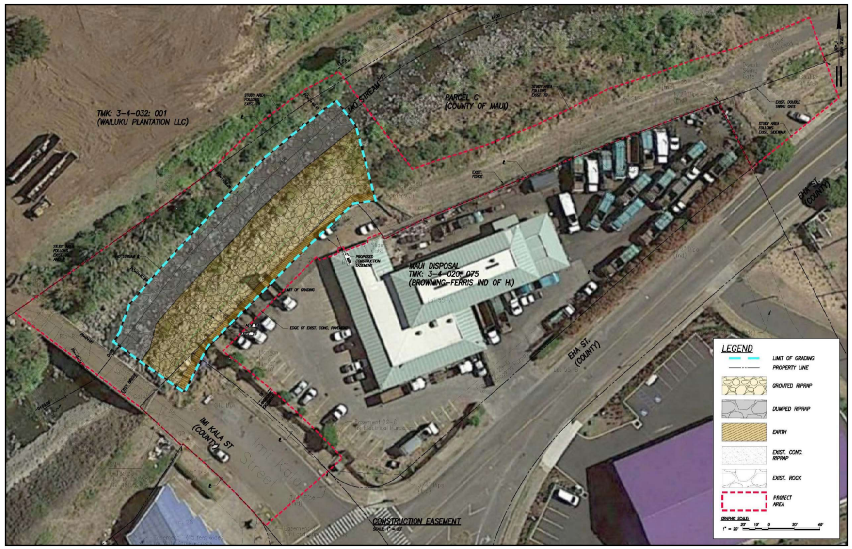

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SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
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Construction Management

May 27, 2021

Mr. Kaiali'i Kahele
U.S. Representative
99 Aupuni Street, Suite 118
Hilo, HI 96720

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Kahele:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

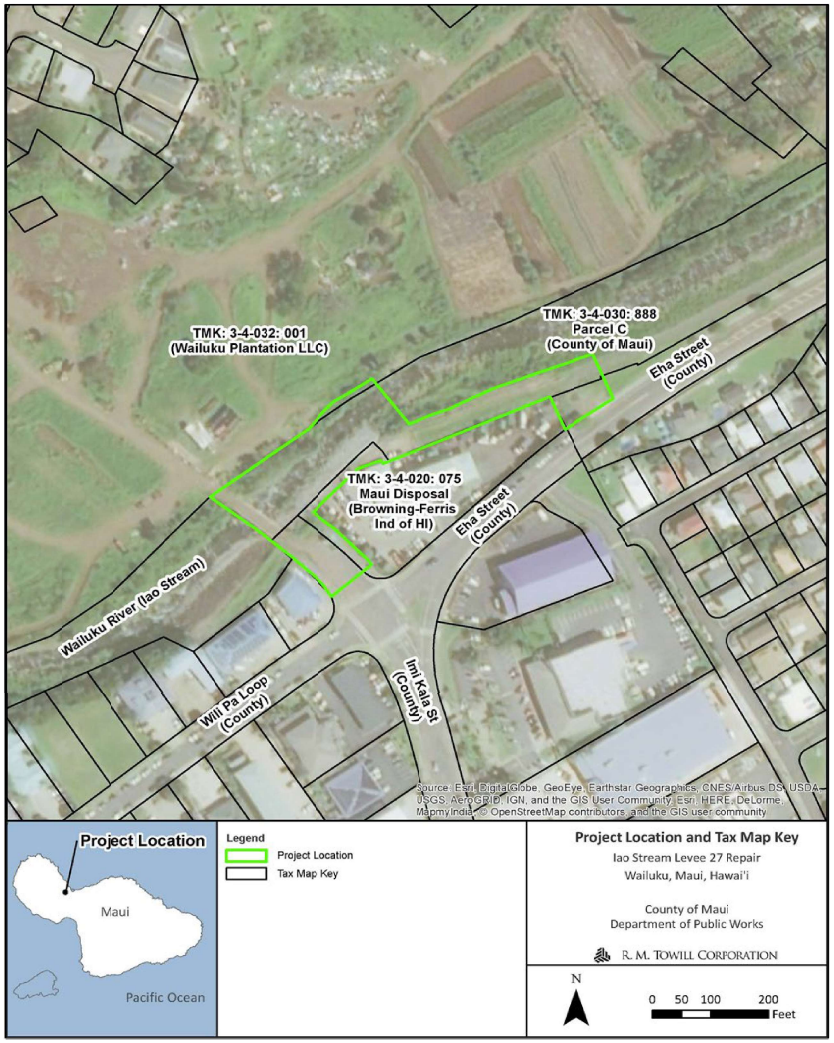
Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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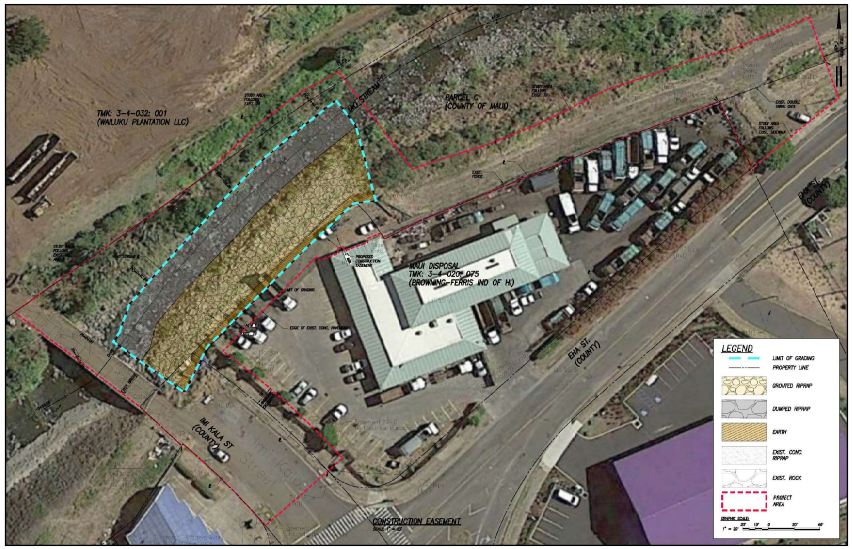

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
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Planning
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May 27, 2021

Mr. Scott Seu
CEO
Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, HI 96840

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County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

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Figure 1. Project Location and Tax Map Key

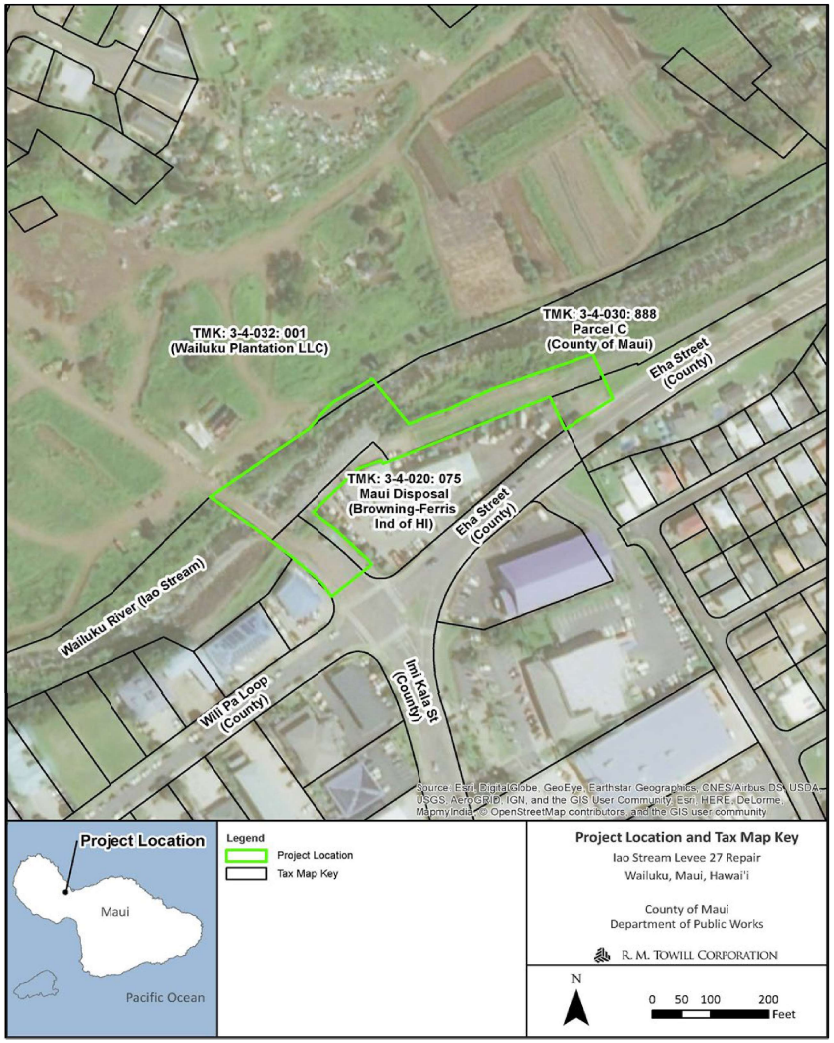
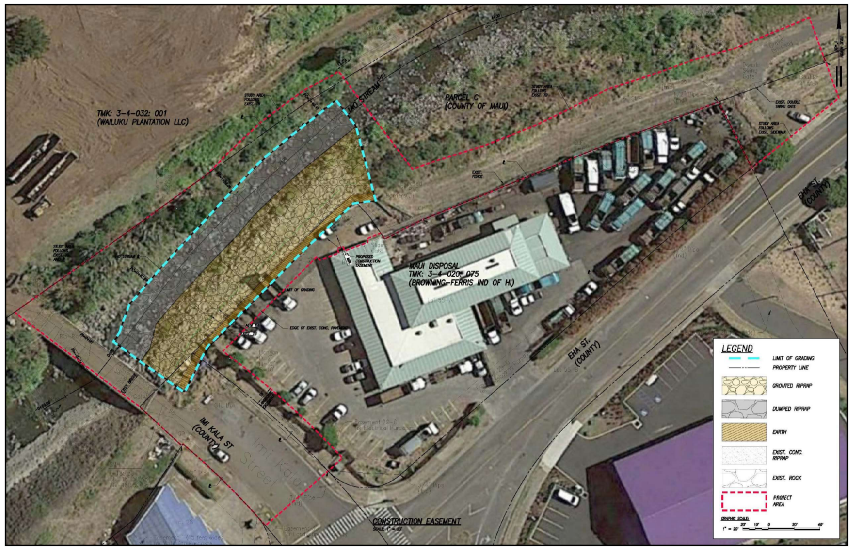


Figure 2. Overview of the Proposed Action



June 9, 2021

Ms. Kristi Ono, Project Manager
County of Maui – Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, HI 96793

via email: Kristi.ono@co.maui.hi.us

Subject: Preassessment for Iao Stream Levee 27 Repair Project (Wailuku River)
Environmental Assessment
Imi Kala Street and Eha Street
Wailuku, Maui, Hawaii
Tax Map Key: (2) 3-4-032:001, 3-4-030:888, 3-4-020:075

Dear Ms. Ono,

Thank you for allowing us to comment on the subject project.

In reviewing our records and the information received, Hawaiian Electric Company has no comments or objections to the subject project. We do not anticipate any impacts or conflicts with our facilities.

Should you have any questions or concerns, please feel free to call me at 871-2340 (or at ray.okazaki@hawaiianelectric.com).

You may send any correspondence for this project or future projects to:

Hawaiian Electric Company–Maui County
Engineering Department
Attn: Principal Engineer/Supervisor
P.O. Box 398
Kahului, HI 96733

Sincerely,

Ray Okazaki

Ray Okazaki
Engineer II, Engineering
Hawaiian Electric Company – Maui County

c: Mr. Brian Takeda, Planning Project Manager (R.M. Towill Corporation)
(briant@rmtowill..com)

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Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
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Planning
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August 6, 2021

Mr. Ray Okazaki, Engineer II
Hawaiian Electric Company–Maui County
Engineering Department
Attn: Principal Engineer/Supervisor
P.O. Box 398
Kahului, Hawai‘i 96733

Dear Mr. Okazaki:

Response to Preassessment Comments for Hawai‘i Revised Statutes, Chapter 343, Environmental Assessment (EA) for ‘Īao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawai‘i

On behalf of the County of Maui, Department of Public Works (DPW), thank you for your preassessment comments transmitted on June 9, 2021.

We appreciate your statement acknowledging that the proposed project will not impact any Hawaiian Electric Company facilities and that you have no additional comments or objections.

We appreciated your review of the subject project and allowing us this opportunity to respond. Your letter and this response will be included in the Draft EA. Should there be any questions, please contact the undersigned by telephone at (808) 842-1133.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

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May 27, 2021

Ms. Jocelyn A. Perreira
Executive Director
Wailuku Main Street Association, Inc.
1942 Main Street, Unit 101
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Perreira:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

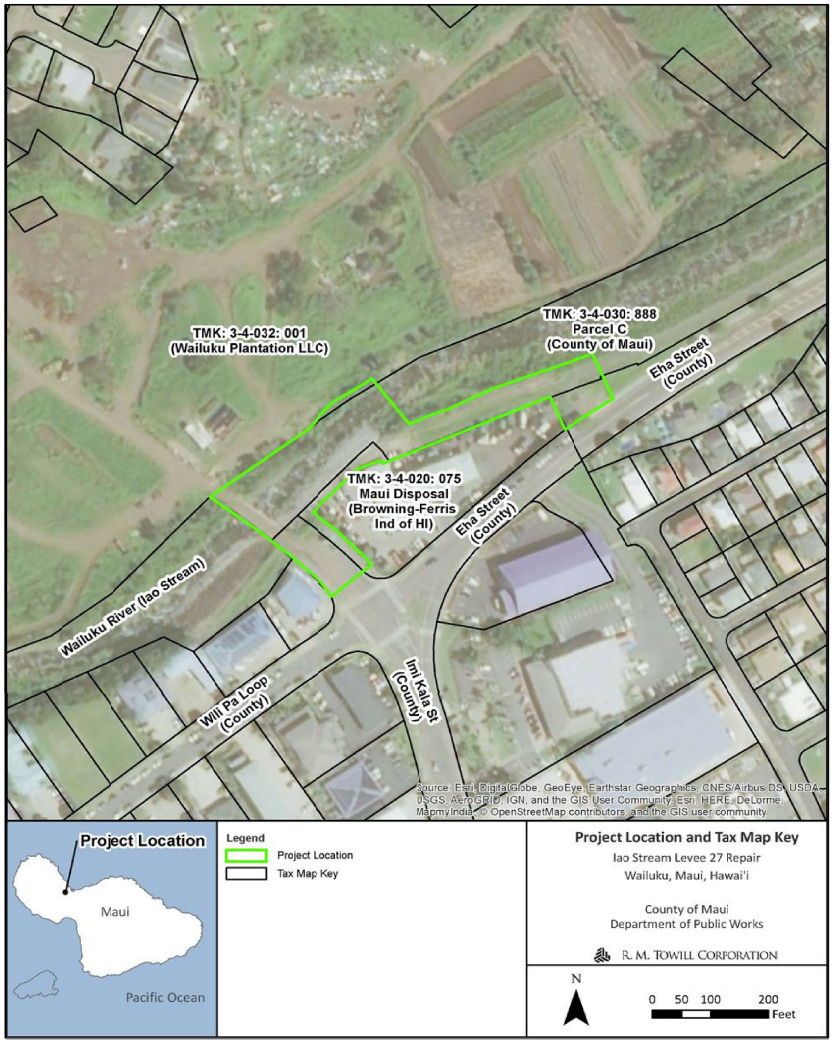
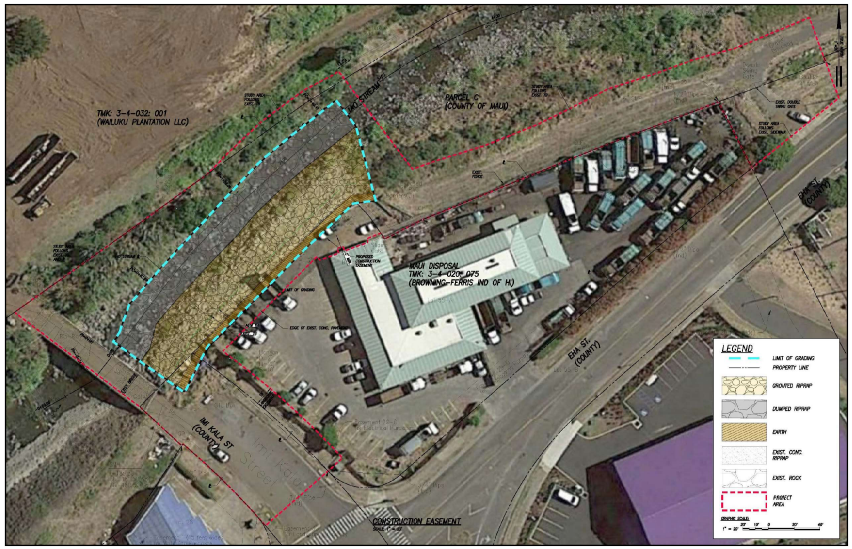


Figure 2. Overview of the Proposed Action



2024 North King Street
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Honolulu Hawaii 96819-3470
Telephone 808 842 1133
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Kiersten Faulkner
Executive Director
Historic Hawaii Foundation
680 Iwilei Road, Suite 690
Honolulu, HI 96817

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Faulkner:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

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Request for Comment

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Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

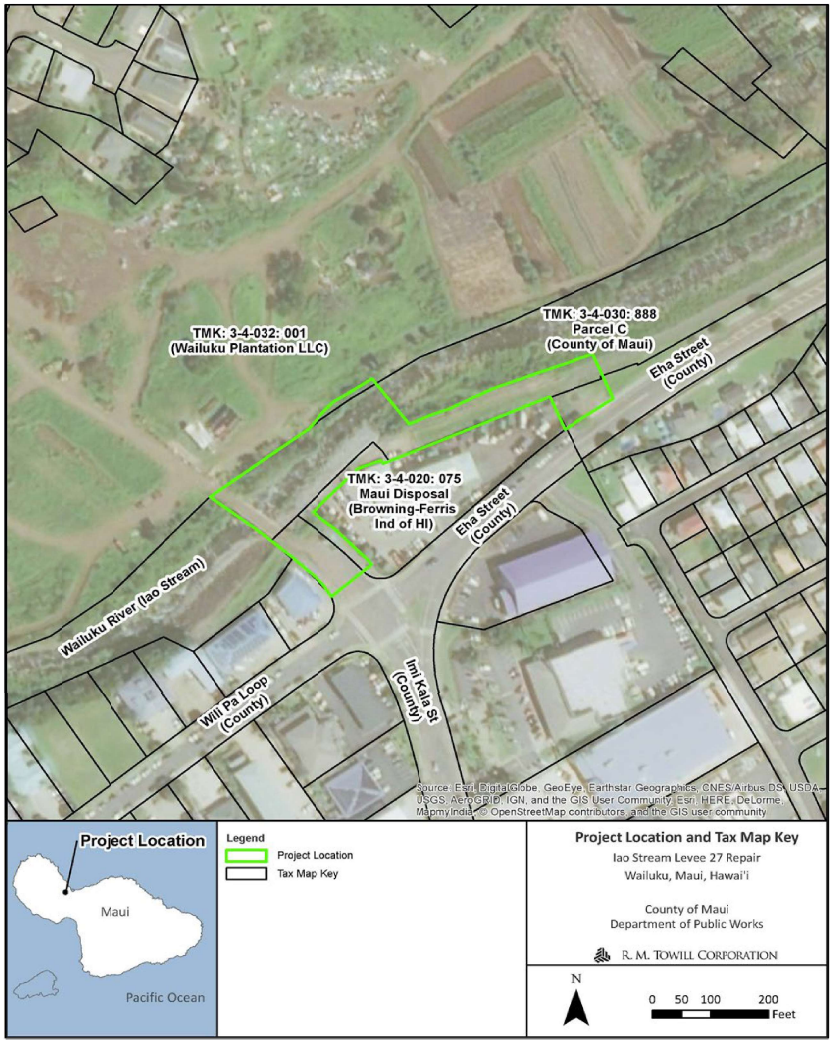
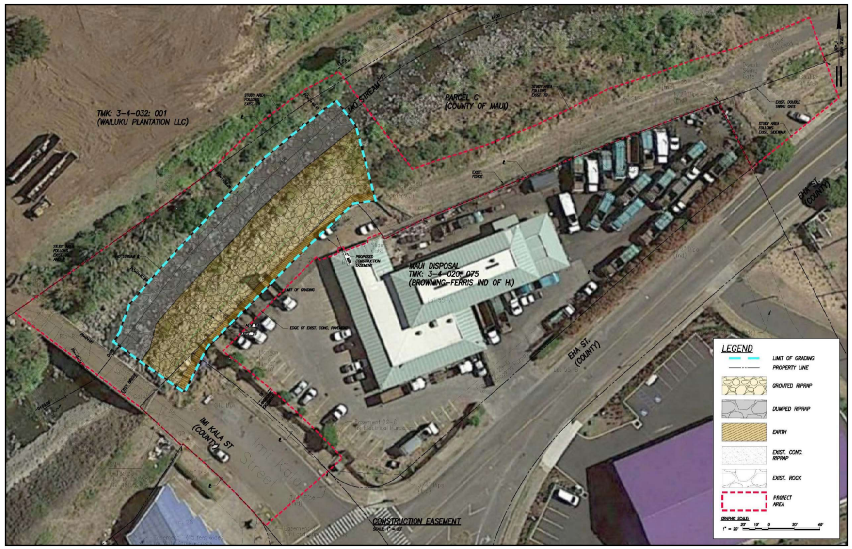


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Maui Disposal Co, Inc.
280 Imi Kala Street
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Adjacent Landowner:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

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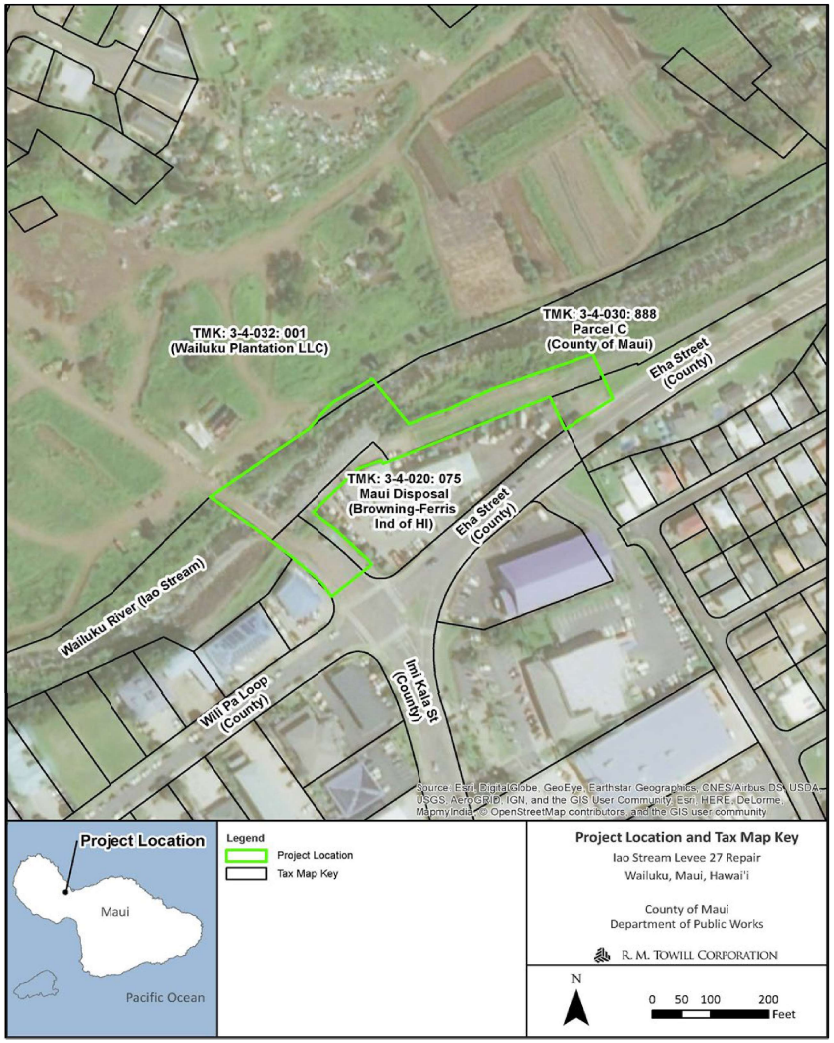

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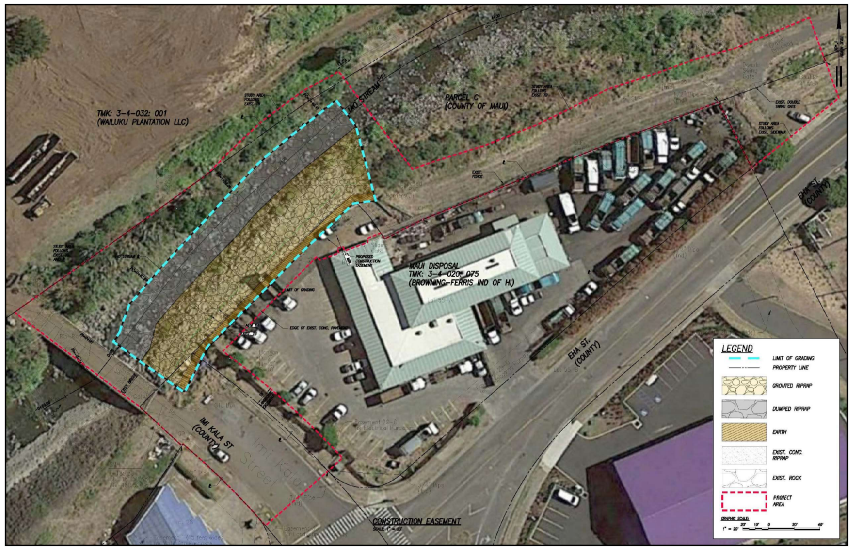

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May 27, 2021

Wailuku Plantation LLC
541 Waiehu Beach Road
Wailuku, HI 96793

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County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
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Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

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Planning Project Manager

Enclosures:
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Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
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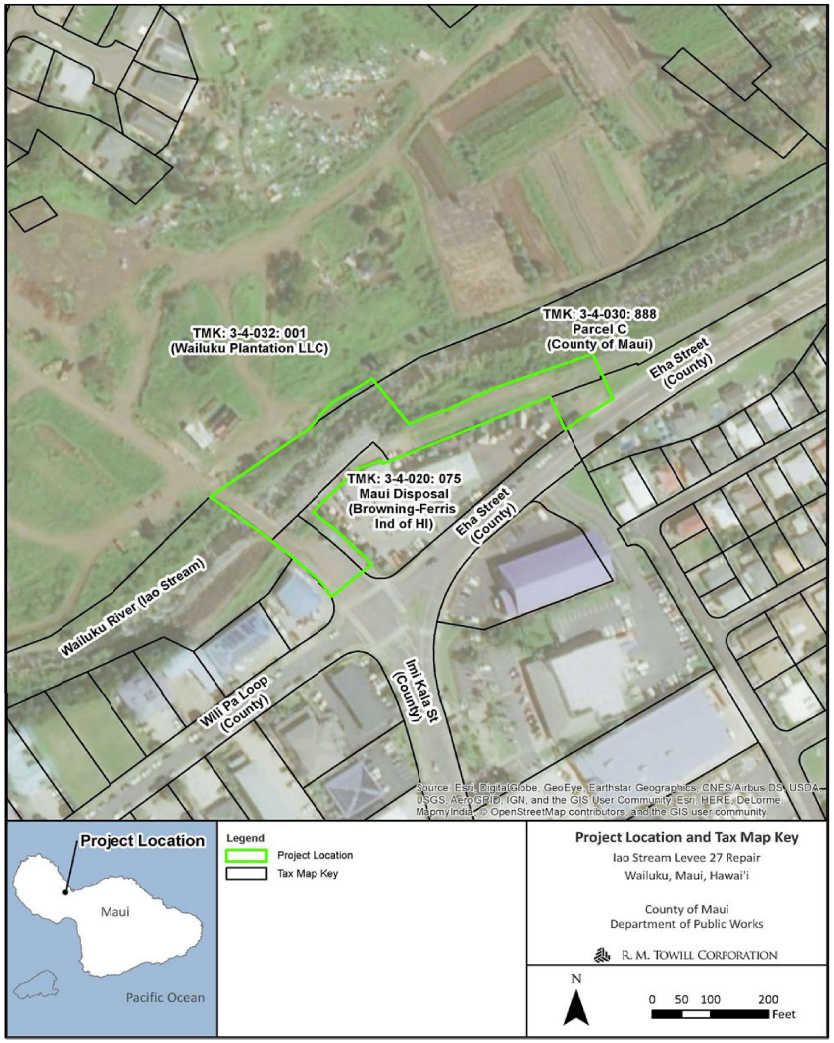

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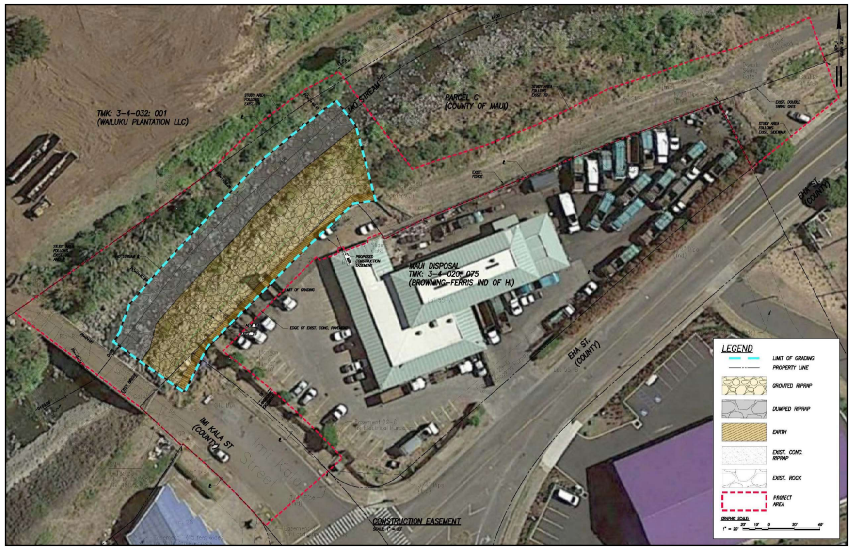

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Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Plan B-KG LLC
3991 Victors Way
Easton, PA 18045

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Adjacent Landowner:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

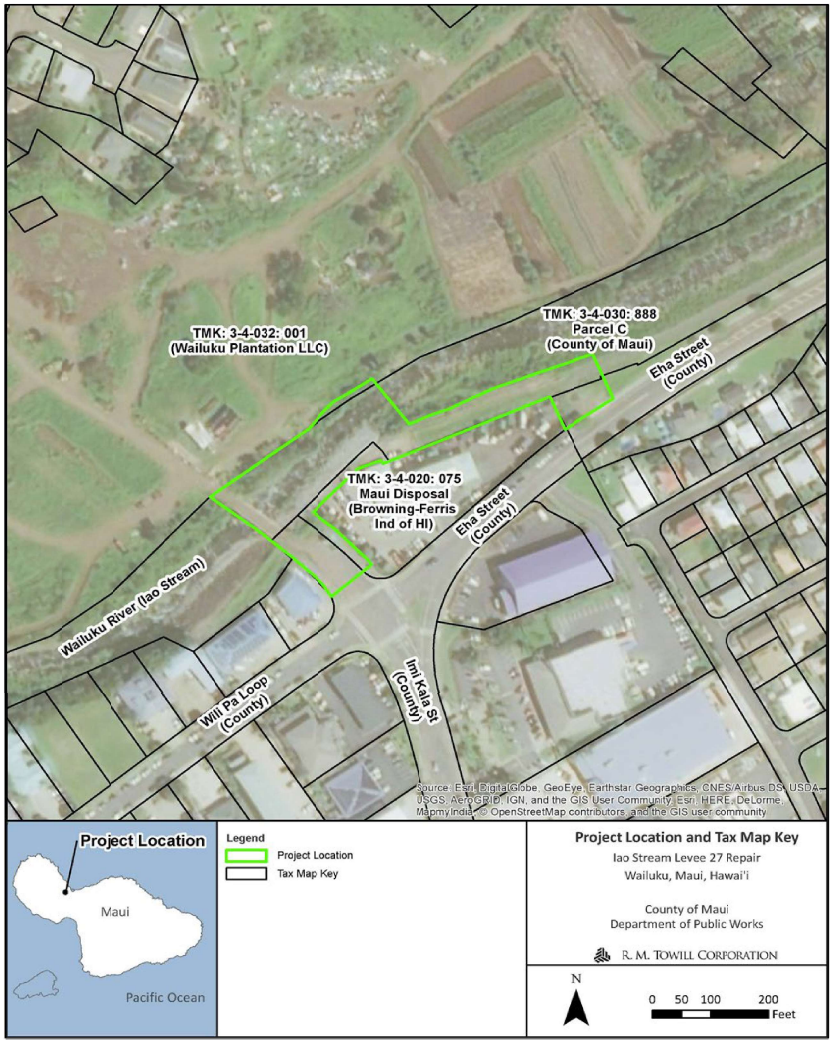
Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key



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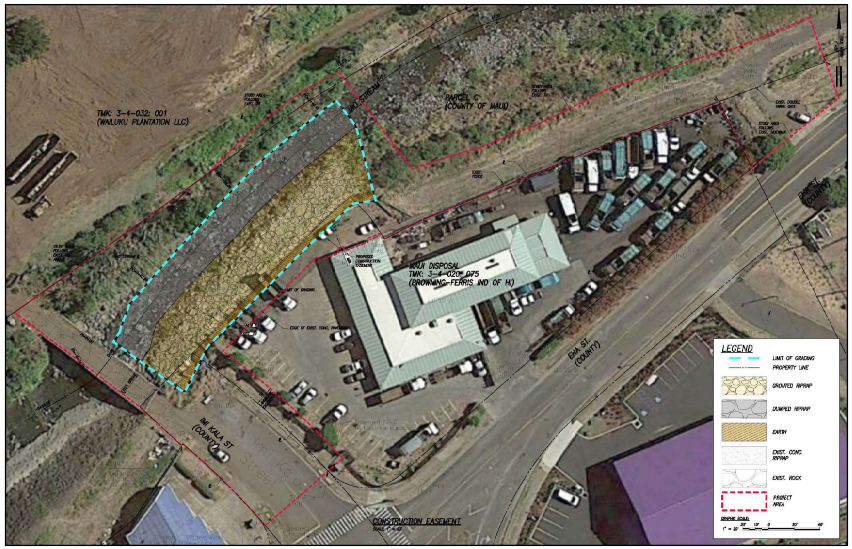

2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
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May 27, 2021

Mr. Clyde Kahalehau
c/o Ms. Johanna Kamaunu
Wailuku Aha Moku Council
222 Waihee Valley Road
Wailuku, HI 96793

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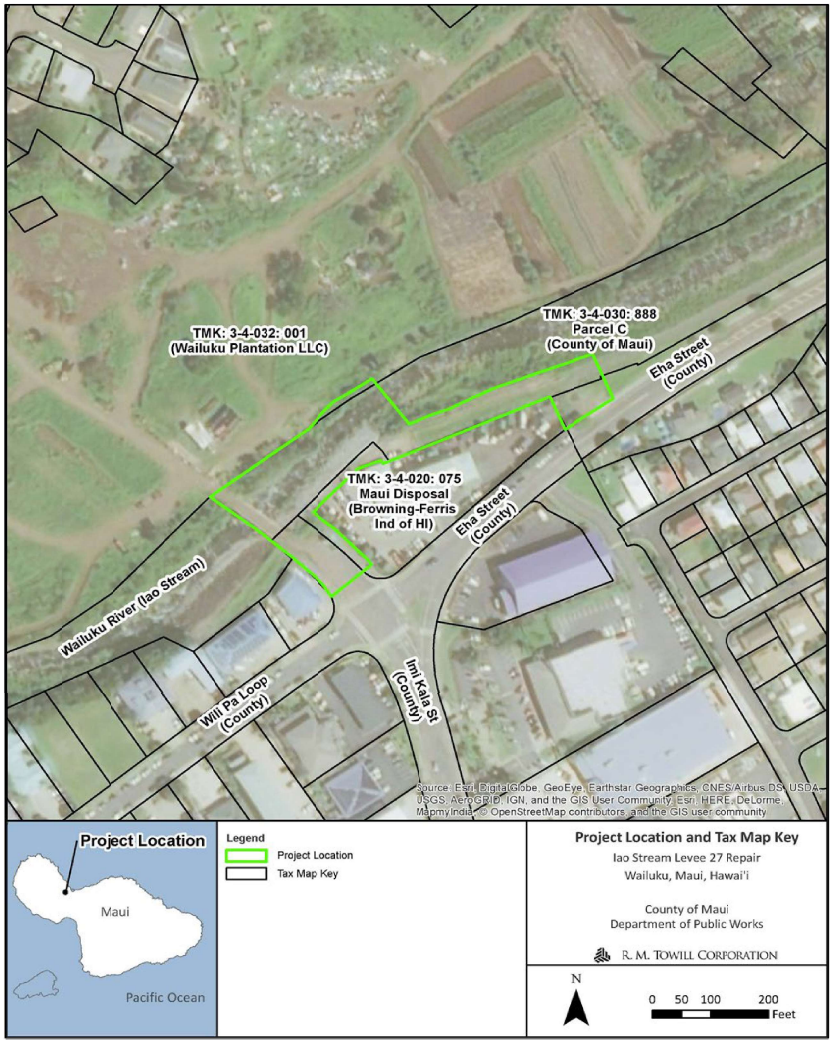

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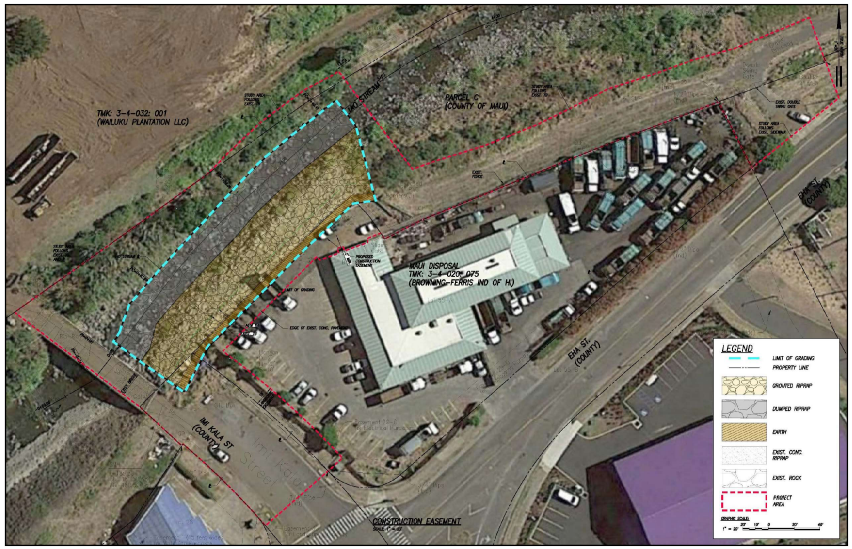

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R. M. TOWILL CORPORATION
SINCE 1930

Planning
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May 27, 2021

Mr. Hokuao Pellegrino
President
Hui O Na Wai Eha
213 West Waiko Road
Waikapu, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Mr. Pellegrino:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

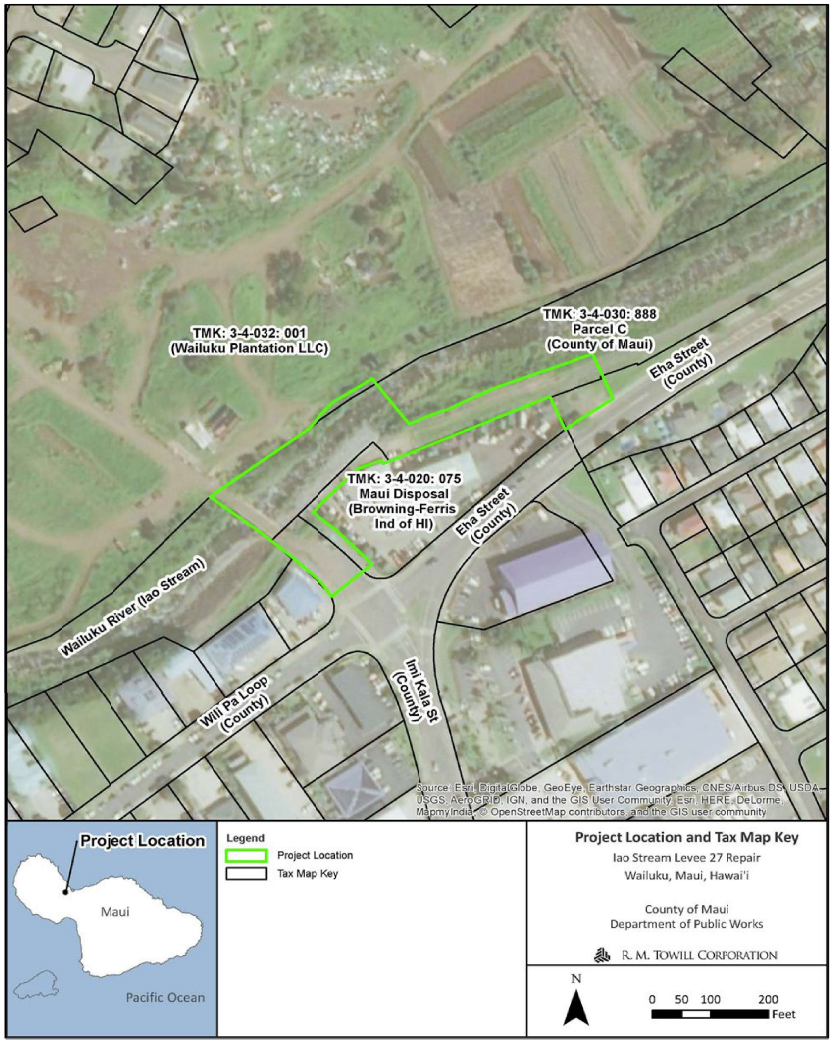
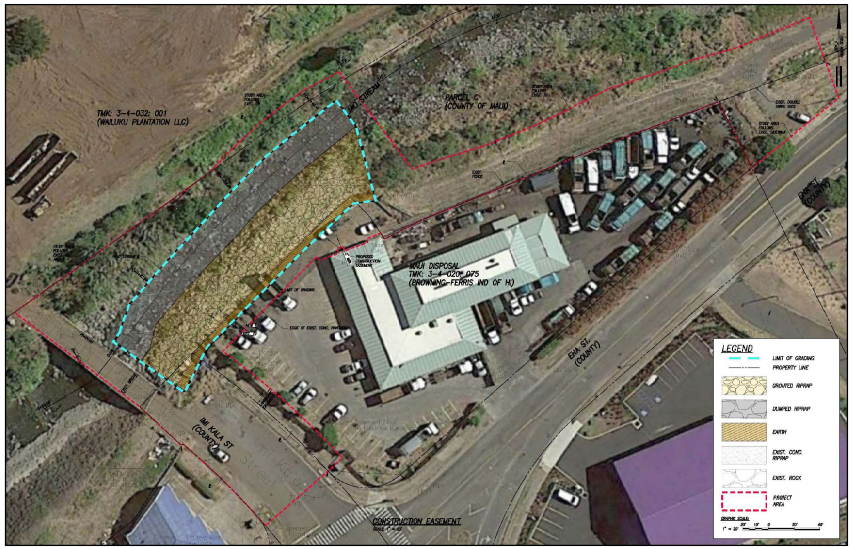


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Clare Apana
Resident
260 Halenani Drive
Wailuku, HI 96793

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

Dear Ms. Apana:

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Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

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We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
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Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
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State Land Use District:	Agricultural and Urban
Special Management Area:	No
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Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

Figure 1. Project Location and Tax Map Key

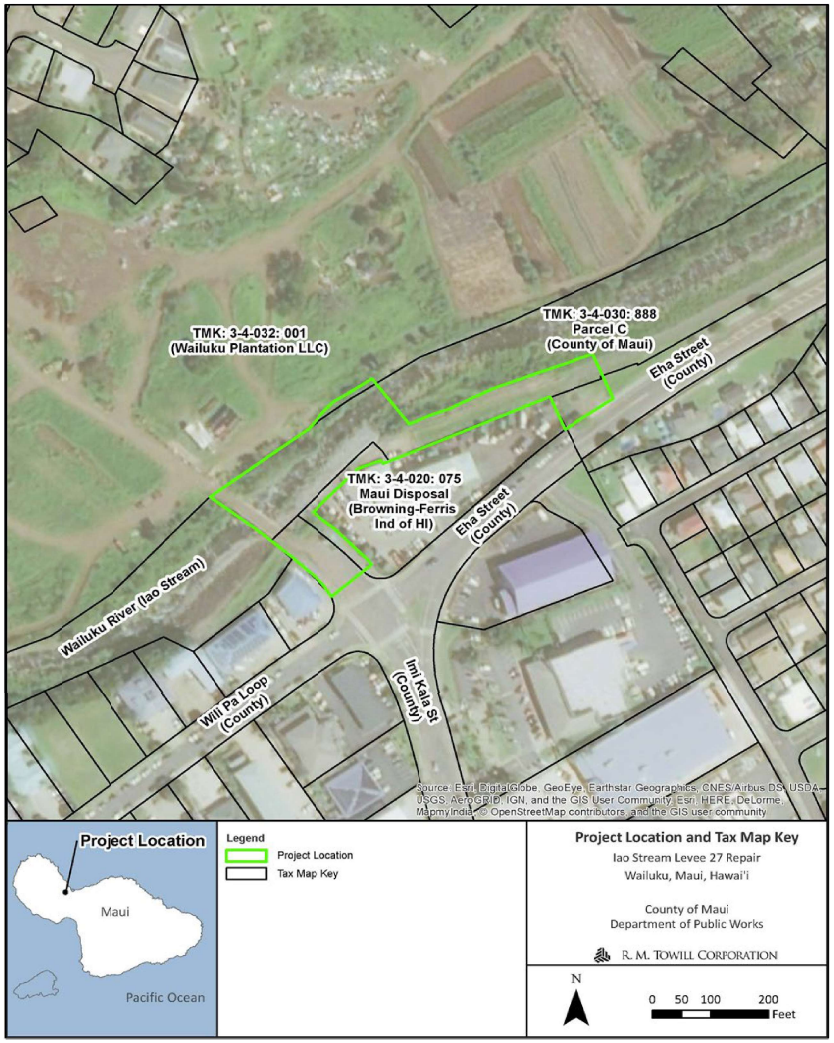
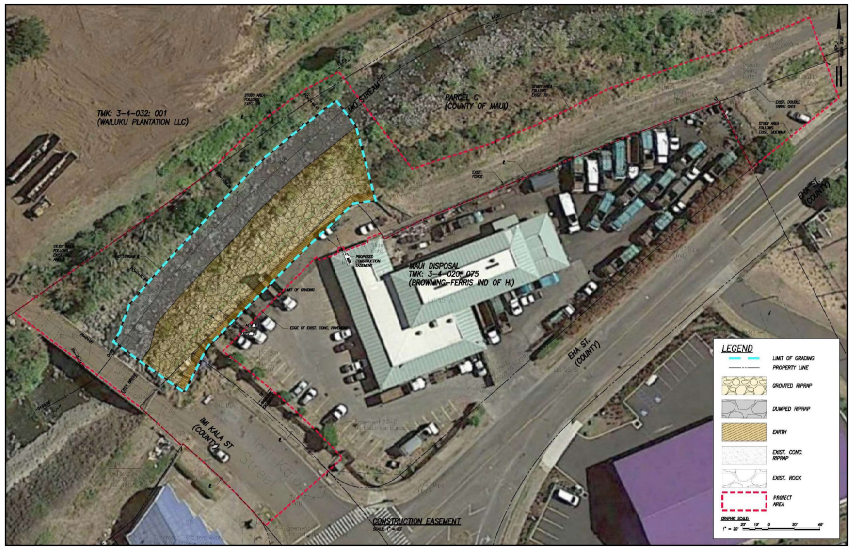


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
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R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Katherine Mullett
Field Supervisor
Department of the Interior
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Box 50088
Honolulu, HI 96850-5000

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Dear Ms. Mullett:

The County of Maui, Department of Public Works (DPW), proposes to implement the ʻĪao Stream Levee 27 Repair project in Wailuku, Island of Maui, Hawaiʻi. The purpose is to repair an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream; ʻĪao Stream was officially changed back to Wailuku River as of May 27, 2015, by the Hawaiʻi Board of Geographic Names) right stream bank (looking downstream). The project is located downstream of Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27, and is intended to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi.

The project site and area of disturbance are primarily within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui). However, due to the stream alignment and available space for construction and staging and storage, portions of the project site are located within neighboring parcels including TMK (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street Right of Ways (no TMK; County of Maui). The project construction area including areas for staging, storage, construction access, entry and activities including grading, is approximately 1.39 acres. See Project Summary, and Figure 1, Project Location and Tax Map Key.

Please note that DPW also has a bank stabilization project further upstream along the Millyard with a similar scope of work. The two projects needed to be separated because the specific section of the stream embankment in the subject project protects the levee system downstream which must be accredited per the National Flood Insurance Program.

Project Background

In September 2016, heavy rains caused erosion of the Wailuku River right stream bank downstream of the Imi Kala Street Bridge within the project area resulting in significant damage to the existing bank and the potential for impacts to the ʻĪao Stream Levee 27 (USACE, 2016). A joint post-event inspection was conducted by the U. S. Army Corps of Engineers (USACE) and County of Maui, DPW, to verify and quantify the damage. During site reconnaissance, erosion of the existing bank, toe erosion, and side slope failure on the right stream bank downstream of Imi Kala Bridge was noted.

The County of Maui performed emergency repairs of the stream bank in 2017. The emergency repairs included placement of concrete boulder fill (CBF) along approximately 230 lineal feet of the sloped stream bank downstream of Imi Kala Bridge. The CBF slope had a maximum height of about 20 feet and a gradient of about 1 Horizontal to 1 Vertical (1H:1V) and consisted of reinforced soil backfill with boulders along the slope surface. The void spaces between the boulders were filled with concrete. The boulders had a nominal diameter of 2 to 3 feet. However, a site reconnaissance in March 2018 discovered that the boulders placed at the toe of the stream bank have been washed away, exposing the underlying stream bank along the bottom portion of the CBF slope. Scouring of the exposed soils was also observed.

Repeated flooding of Wailuku River has resulted in undermining of the existing stream bank with the potential to impact the existing downstream ʻĪao Stream Levee 27. High stream flows have resulted in downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the base of the right bank structure. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by extensive damage to the right bank that occurred as a result of the September 2016 storm event. The proposed action is needed to protect residences and commercial properties from flood damage during major storm events.

Proposed Action

The proposed action consists of features intended to repair an approximately 240 feet long section of the Wailuku River right stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The section of the embankment to be repaired is located downstream of the Imi Kala Street Bridge and upstream of the ʻĪao Stream Levee 27 and is not a part of the ʻĪao Stream Levee System.

The repairs would be accomplished by removing the existing CBF slope to accommodate the new repairs; grading the slope; excavating to deepen the layer of boulder fill at the toe of the slope below the scour depth; and constructing a new revetment system consisting of reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. See Figure 2, Overview of the Proposed Action.

The new embankment will have a slope gradient similar to the existing, approximately 1H:1V, slope, and armor protection to reduce the potential for scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.

Once constructed the stabilized bank protection will occupy an area of 0.4 acres and be mostly within the County of Maui-owned parcel containing the Wailuku River, identified by TMK (2) 3-4-030: 888 Parcel C (por.; County of Maui), with small portions of the embankment protection in TMK (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI) and the Imi Kala Street Right-of-Way boundary (no TMK; County of Maui).

Compliance with HRS, Chapter 343 is triggered by the use of County land and monies for the design and construction of the improvements proposed as part of this action. Based on our evaluation, an EA is necessary for compliance with HRS, Chapter 343. The EA will provide information on the project and the potential for environmental effects from the proposed actions.

Proposed Construction Activities

Minor construction-related traffic, noise, and air quality (dust) disturbances are anticipated. Construction equipment used for this project may include but are not limited to pile drivers, compactors, cranes, concrete mixers, concrete delivery and pump trucks, bulldozers, cranes, welders, excavators, loaders, backhoes, trenchers, graders, water trucks, dump trucks, flatbed trucks, and powered hand tools. The contractor will be required to observe and comply with all Federal, State, and local laws required for the protection of public health, safety, and the environment.

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

The Maui DPW will assess the presence of terrestrial and stream aquatic biota for listed threatened and endangered species and will utilize one or more potential BMPs that may include but not be limited to:

- Repair activities may be limited to one side of the stream to allow amphidromous animals to use the stream as a migratory pathway and maintain stream flow through the reach.
- Cofferdams or similar BMPs constructed of sandbags or other approved materials, interwoven with thick plastic sheeting to minimize leakage, to be employed around in-water work areas.
- Filter socks may be placed along the lower edge of stream banks in work areas to prevent movement of eroded material into the water.

Prior to the start of construction, an Archaeological Literature Review and Field Inspection Report (ALRFI) will be conducted. Located upstream of the project site is the Ima Kala Bridge, a previously documented historic property, designated as State Inventory of Historic Places (SIHP) # 50-50-04-5564. The bridge spans the Wailuku River and connects to Imi Kala Street. While the project area includes the Imi Kala Bridge, the project will not involve any impacts to this historic property. Additionally, the proposed project is not expected to have any adverse impacts on other archaeological or historical resources that may be within the project boundary. This is due to the proposed project actions being conducted inside the streambank of the continuously flowing Wailuku Stream.

In the event that historic resources, including structural remains, subsurface cultural deposits, or human skeletal remains, are identified during the construction project, all work will cease in the immediate project vicinity of the find, protected from additional disturbance, and the State Historic Preservation Division (SHPD) will be notified at (808) 692-8015.

Upon the completion of work, areas surrounding the project site disturbed or damaged by construction will be restored as much as practicable to pre-existing conditions.

Preliminary Project Schedule

Construction of the project is expected to begin in Spring 2022 to coincide with the end of the wet season. The duration of construction will be approximately 6 to 8 months. The exact construction dates will be available when a contractor has been selected for the project.

Request for Comment

We are soliciting any comments, concerns, or regulatory requirements that you may have regarding this project. Additionally, we seek your input on whether the proposed project may have any impacts on existing or planned projects, programs, or policies, that we should take into consideration during the preparation of the EA. We would appreciate your cooperation in providing your comments within 3 weeks from the date of this letter (i.e., received or postmarked by Friday, June 18, 2021). Please reference "'Īao Stream Levee 27 Repair Project " in your subject heading and include your full name and mailing address with your comments by E-mail or mail to:

Ms. Kristi Ono, Project Manager
County of Maui, Department of Public Works
Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
Email: Kristi.ono@co.maui.hi.us

With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
E-Mail: briant@rmtowill.com

Thank you for participating in the environmental review process. If you have any questions regarding the proposed actions, please contact us at the addresses above.

Sincerely,

Brian Takeda

Brian Takeda
Planning Project Manager

Enclosures:
Project Summary
Figure 1, Project Location and Tax Map Key
Figure 2, Overview of the Proposed Action

cc: Kristi Ono, Project Manager, County of Maui, Department of Public Works

Project Summary

Project Name:	ʻĪao Stream Levee 27 Repair
Type of Document:	Draft Environmental Assessment (EA) pursuant to Chapter 343, Hawaiʻi Revised Statutes (HRS) and Title 11, Chapter 200.1, Hawaiʻi Administrative Rules (HAR)
Anticipated Determination:	Finding of No Significant Impact (FONSI)
EA Review Trigger:	Propose the use of County lands and funds
Location and Landowners:	Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (por.; County of Maui); (2) 3-4-020: 075 (por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of HI); and Imi Kala Street and Eha Street (no TMK; County of Maui)
Proposing/Determining Agency:	County of Maui, Department of Public Works (DPW)
Consultant:	R. M. Towill Corporation
Proposed Action:	The County of Maui, DPW, is proposing to implement repairs to an approximately 240 feet long section of the Wailuku River (formerly ʻĪao Stream) stream bank, upstream of the ʻĪao Stream Levee 27, to prevent further erosion of the bank, protect the downstream levee, and provide reduced flood risk in Wailuku, Island of Maui, Hawaiʻi. The proposed action consists of the repair of the right stream bank (looking downstream), located downstream of Imi Kala Street bridge and upstream of the ʻĪao Steam Levee 27. The repairs include removal of the existing concrete boulder fill (CBF) slope to accommodate the new repairs; grading the slope; excavation to deepen the layer of boulder fill at the toe of the slope below the scour depth; and construction of the new revetment system consisting of a reinforced soil slope, grouted riprap face slope, under drain pipes, and dumped riprap at the toe of the slope to protect against scour. The size and depth of the boulders used for the grouted and dumped riprap will be designed to withstand the stream velocity during the 100-year recurrence interval storm event.
Land Area:	Approximately 1.39 acres
Flood Zones:	Zones X and AE
State Land Use District:	Agricultural and Urban
Special Management Area:	No
County of Maui Zoning:	AG Agriculture; M-1 (Light Industrial); M-2 (Heavy Industrial); and Road
Permits/Approvals that may be Required:	FEDERAL: Department of the Army Individual Permit and associated National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Magnuson-Stevens Fishery Conservation and Management Act, Migratory Bird Treaty Act, and Fish and Wildlife Coordination Act Consultations STATE: EA under HRS, Chapter 343; HRS, Chapter 6E Review; Section 401 Clean Water Act (CWA) Water Quality Certification (WQC); Coastal Zone Management (CZM) Federal Consistency Review; Stream Channel Alteration Permit; Section 402 CWA National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water and Construction Dewatering County of Maui: Grubbing, Grading, Stockpiling, and Street Usage Permits

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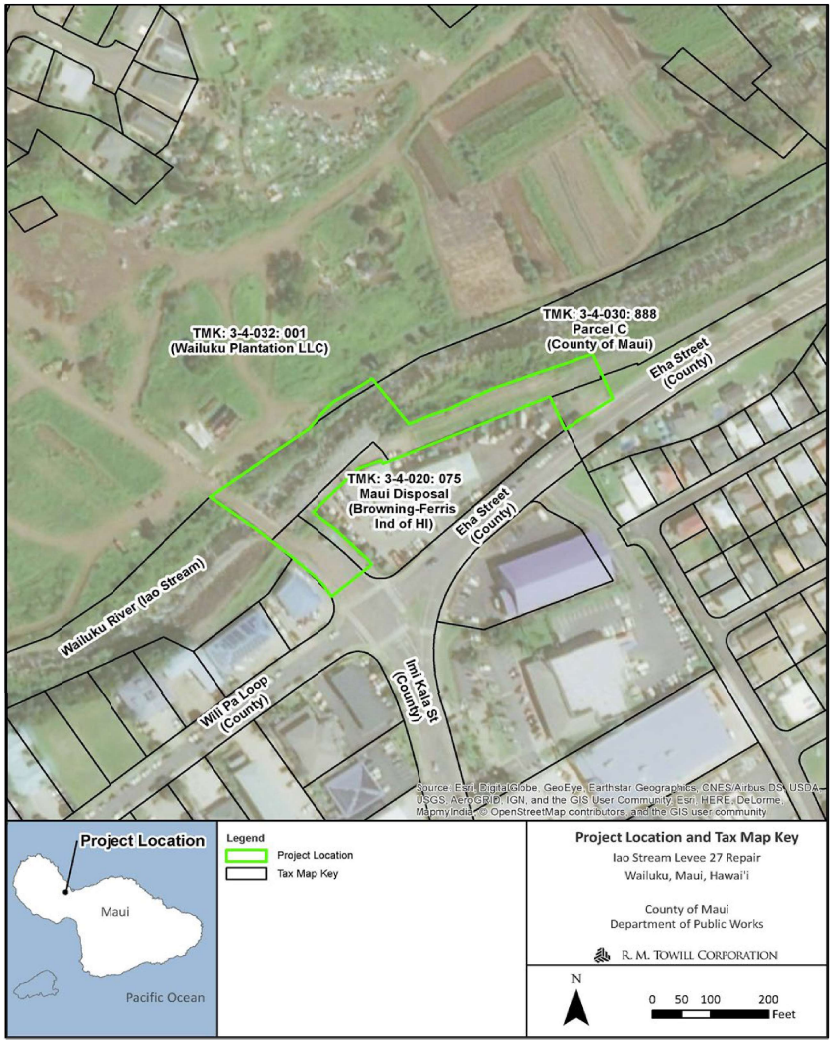
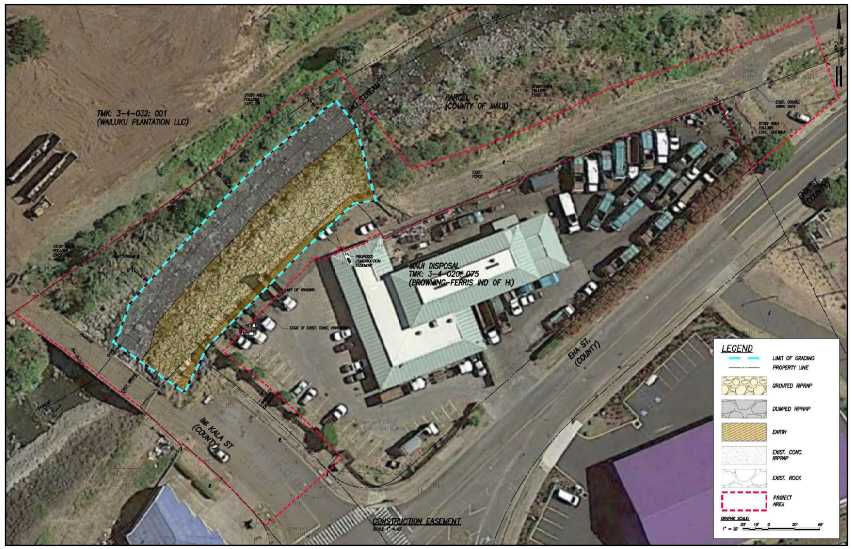


Figure 2. Overview of the Proposed Action



2024 North King Street
Suite 200
Honolulu Hawaii 96819-3470
Telephone 808 842 1133
Fax 808 842 1937
eMail rmtowill@hawaii.rr.com

R. M. TOWILL CORPORATION
SINCE 1930

Planning
Engineering
Environmental Services
Photogrammetry
Surveying
Construction Management

May 27, 2021

Ms. Linda Speerstra
Chief, Regulatory Branch
U. S. Army Corps of Engineers
Pacific Ocean Division
Building 230, CEPOH-RO

Fort Shafter, HI 96858-5440

Hawai'i Revised Statutes (HRS), Chapter 343, Environmental Assessment (EA) Preassessment for ʻĪao Stream Levee 27 Repair Project, Wailuku District, Island of Maui, Hawaiʻi Tax Map Keys (TMKs): (2) 3-4-032: 001 (Por.; Wailuku Plantation LLC); (2) 3-4-030: 888 Parcel C (Por.; County of Maui); (2) 3-4-020: 075 (Por.; Maui Disposal Co, Inc., Browning-Ferris Ind. of Hi.); and Imi Kala Street and Eha Street (No TMKs; County of Maui)

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Engineering Division
200 South High Street, Room No. 410
Wailuku, Maui, Hawai'i 96793
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With a copy to:

Mr. Brian Takeda, Planning Project Manager
R. M. Towill Corporation
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Brian Takeda

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Planning Project Manager

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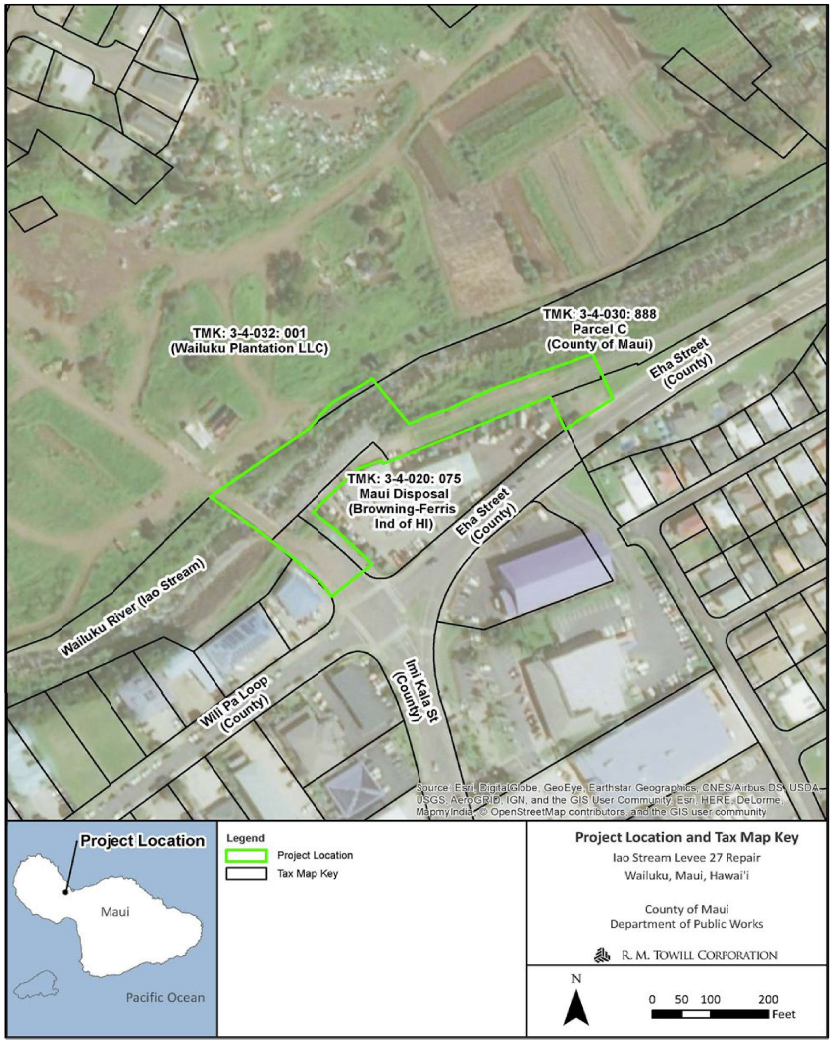
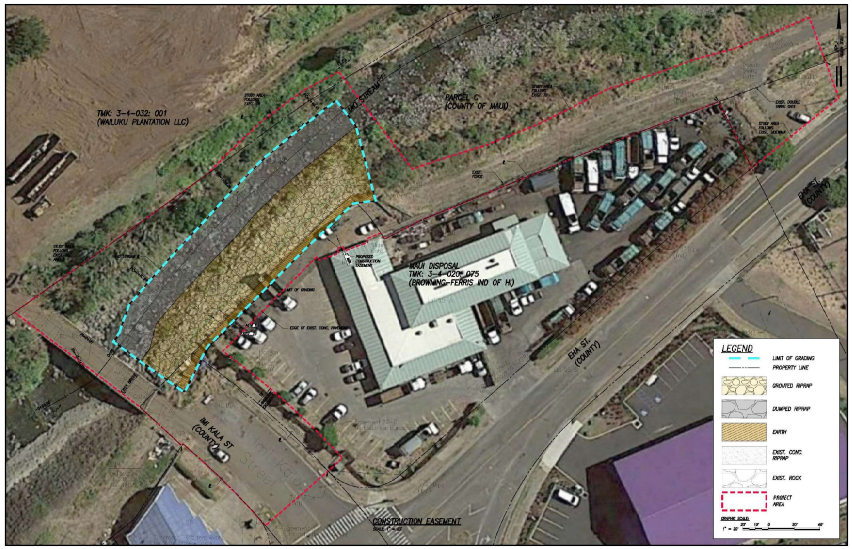
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